

**SPECIAL
ISSUE**

**Radio as a Powerful Voice for Minority
Languages and Indigenous Cultures**

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KIRIRI

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RAIDÍO
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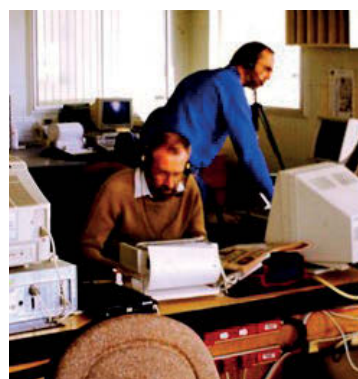
RadioUser

February 2022 £4.99

www.radioenthusiast.co.uk

CB RADIO AT 40

We reflect on the evolution of citizens band radio since it was first legalised in 1981



UK Coastal Stations

The history of the British maritime MF/VHF network



The Editor's Shack

Reviewing the ATS-25 receiver with touchscreen

HISTORY Radio Comms and the 9-11 Terrorist Attacks

Lessons from 20 years ago, and today's communications infrastructures



ADVICE Basic Aerial Technology Explored

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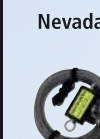
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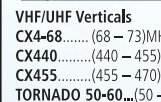
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- SD card slot

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ALBRECHT



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Robert Connolly reports on 'disappearing' ship traces in some Chinese waters, takes a look at the new ICOM IC-M804 transceiver, spots a concrete-reinforced ship and shares some NDB updates.



Voices, Communities & Enabling Technologies

Georg Wiessala
wiessala@hotmail.com

Hello and welcome to the February edition of *RadioUser*. This issue is a special one, looking, as it does, at the ideas of radio and 'voice'. 'Voice' here, can have several meanings, 'languages', 'power', 'representation' and 'participation' of listeners amongst them.

Against this background, Richard Nosworthy begins, by focusing on the role of radio in supporting so-called 'minority languages' in both the UK and Europe. What can radio do to help prevent those carriers of culture from dying out? In a similar vein, Martín Butera examines the part radio plays in empowering indigenous communities in Brazil. Chrissy Brand looks at home-grown radio worldwide and has a radio portrait of Egypt.

Away from our special language-and-community-focus this month, Tim Kirby celebrates 40 years of legal CB in the UK and looks at the increasing integration of radio and Voice-over-Internet Protocol (VoIP) technology. We also have the traditional DXing community in mind, with up-to-date reviews of both the new *Global Radio Guide* and the latest *Klingenfuss* publications, prefiguring our annual reviews issue next month.

There are the usual frequency listings and rallies pages too, for you to use and enjoy.

In a welcome return to RU, Larry Bennett casts a searchlight on the history of the UK MF and VHF Coastal Station Network, while Robert Connolly reports on surreptitiously disappearing ship traces in the Far East.

Our other regular columns this time will open up for you the world of extreme weather and radio, the future of UK spaceports and a practical focus on the effects of 'ground' on aerials



and communications. What is more, Scott Caldwell has Part Two of his analysis of '9-11', broadcast radio and two-way comms, Keith Hamer and Garry Smith continue to trace the history of the BBC in its Centenary Year, and David Smith outlines two-way comms at RAF Lossiemouth. Kevin Ryan, meanwhile, examines COP-26 and unearths the different environmental effects of various kinds of radio.

You may also wish to update yourself on a range of new products. I have made a modest contribution with my brief look at the ATS25 (SI4731-Chip) radio, which is this month's item in *The Editor's Shack*.

Elsewhere, we look at *Senhaix* and *Xiegu* radios and preview the new WINRADIO WR-G69DDCe *Artemis*, a new high-end professional-level SDR, which we will review as soon as possible in these pages.

Last but certainly not least, I would like to apologize for the 'spelling gremlins' that crept onto the cover of our December 2021 issue. The line at the top should read DSP Noise *Cancelling*, of course, whereas the bottom-left corner was all about a *Heritage Collection* at Collingwood. Thanks to our reader Stephen Maule for alerting me to those.

Stay in touch and, as always, do let me know what you would like to see covered here in the future.

Georg Wiessala

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What's New

Have you got something new to tell our readers about? If so, then drop a line to wiessala@hotmail.com



AIS-Receive Version of the Icom IC-M510 VHF/DSC Marine Radio

Ian at Icom UK reports as follows: "The latest addition to our line-up of marine products is the AIS RX version of the IC-M510, our stylish VHF/DSC with a large easy to read full-colour display also offering secondary control using our Smartphone App. The IC-M510 fixed-mount marine transceiver is suitable for both leisure and commercial vessels with its elegant yet rugged, waterproof Icom build quality.

Packed with great features, our new model now offers the ability to receive AIS signals (AIS version only) so users can see surrounding vessel traffic in real-time and make individual DSC calls to selected targets. Users can command and control the IC-M510 from a smartphone using the RS-M500 app (iOS and Android) through its built-in WLAN transmitter. With access points, users can extend the range of the IC-M510's connection throughout the vessel. Up to three smartphones can be programmed into an onboard system. With nearly half the depth of the previous model, many installation options are possible.

The 3.5-inch colour TFT LCD screen provides a wide viewing angle with high-resolution characters and icons, viewable in low light with night mode. A rear connection port allows for an additional wired station using the HM-195GB Commandmic. NMEA2000 connectivity and a two-way hailer/foghorn function can be added with the optional CT-M500 interface box. The CT-M500 wirelessly connects to the IC-M510, allowing for flexible installation. Other features include loud and clear audio, simplified navigation function, active noise cancellation, an IP68 waterproof rating and Icom's AquaQuake draining feature.

The IC-M510 (AIS Receiver Version) is now available from Icom Marine Dealers with a suggested retail price of £624.00 (inc. VAT). The standard version of the IC-M510 is available with a suggested retail price of £575.00 (inc. VAT).

To view a video introducing both versions of the IC-M510, and for further information about this new model, visit the Icom websites below."

<https://icomuk.co.uk>

<https://tinyurl.com/yfswa2jk>

<https://www.youtube.com/embed/C4zoLjekqlg>



RFinder DMRoIP Out Now

We are happy to announce that RFinder finally released DMRoIP. The RFinder B1+ is now fully capable of DMRoIP, which means that even without a DMR repeater, you will still be able to connect to your favourite DMR network using the smartphone service or Wi-Fi. You no longer need a hotspot. An important update was released for RFinder 10 that adds additional stability to DMRoIP. Please visit the Play Store and update to RFinder 10 (v10.21.355).

(SOURCE: www.network-radios.com, by CT1 EIZ; www.RFinder.shop).

<https://tinyurl.com/y36f9a82>

For the latest news and product reviews, visit www.radioenthusiast.co.uk



Runbo P5 4-Watt Rugged VHF/UHF Tablet

Access *Brandmeister*, *DMR+* and *TGIF* networks, easily from this 4W rugged VHF/UHF Tablet. Running Android, you can install all the available Play Store apps. This means that you can install Zello, Team Speak, EchoLink and many others and use the built-in PTT button to key the transmission on such apps. Can you imagine that? If you don't reach an EchoLink node, just use 3G, 4G or even

Wi-Fi, and you are connected. Never miss a QSO again just because there isn't a nearby repeater.

Compatible with most worldwide smartphone providers, including *Verizon*, *AT&T*, *T-Mobile*, *Google Fi*, and so on.

<https://tinyurl.com/bdaspsz8>

<https://tinyurl.com/4u5n9bj8>

<https://tinyurl.com/bdfm838e>



Wide-Bandwidth SDR from Winradio

The WinRADIO WR-G69DDC 'Artemis' is a top performance, software-defined, wide-band, ultra-fast-search-speed (3GHz/s) HF/VHF/UHF/SHF receiver. Two independent and mutually exclusive inputs are provided, one for each range: 8kHz to 80MHz and 43MHz to 8GHz. A real-time 80/34MHz-wide spectrum analyser is included with a 32MHz-wide instantaneous bandwidth available for recording, demodulation and further digital processing over the whole frequency range. The receiver's performance results from its innovative, combination of direct-sampling and superheterodyne, digital down-conversion architecture along with the use of leading-edge components and design concepts. These result in excellent sensitivity, phase noise and dynamic range, highly accurate and stable tuning, high scanning speed and perfect demodulation. These key features create a receiver in a class of its own, making it capable of filling not only the role of a monitoring receiver but also that of a fast search receiver and measuring receiver, with many operational and instrumentation features not usually found on receivers of any price category. The entire 32 MHz DDC (digitally down-converted) bandwidth is available for recording and demodulation and is ideal for hopping frequencies analysis. Three demodulators allow the simultaneous reception and decoding of radio signals within the entire band. The WR-G69DDC also features optional external reference frequency inputs and outputs as well as 1PPS pulse input. In addition, stereo analogue output is also possible, as well as wide audio (10 Hz-150 kHz). The special data port offers numerous possibilities which include GPIO (general purpose I/O), HSP (high-speed data output), or traditional RS232 interface.

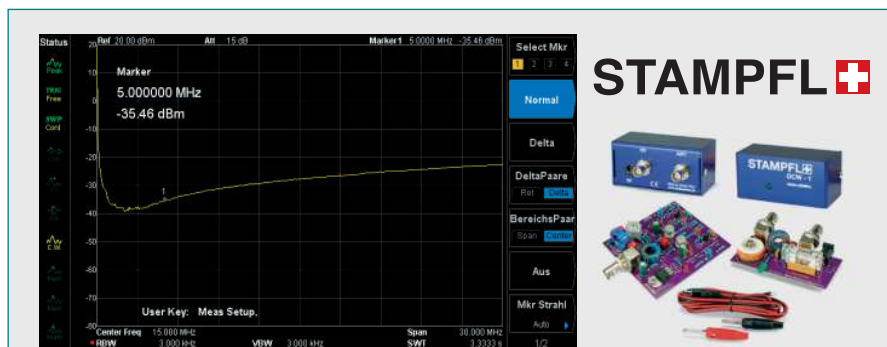
(SOURCES: Winradio | SWLing Post)

[The WinRADIO WR-G69DDC will be reviewed in-depth in the April 2022 issue of RadioUser - Ed.]

<https://tinyurl.com/4j9btp69>

<https://tinyurl.com/4bcart6b>

<https://tinyurl.com/yf62sttn>



Stampfl MWS-1 Standing Wave Barrier

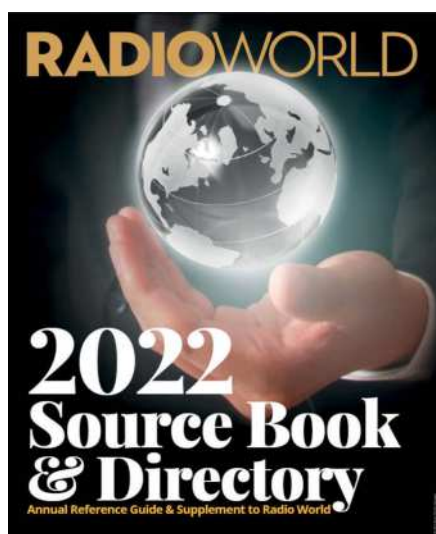
The Stampfl MWS-1 is a standing wave barrier. A device such as this one by this well-known Swiss manufacturer can improve reception. The standing wave barrier interrupts the ground loop and suppresses any interference caused by the cable shield.

This latest Stampfl model is designed only to work with receivers (not transmitters) between 0.15 – 30 MHz.

(SOURCE: Stampfl | SWLing Post)

<https://tinyurl.com/yvr9a3m8>

<https://tinyurl.com/536739hv>



TWO NEW EBOOKS FROM RADIOWORLD: Each year our friends at the Radio World (RW) editorial team compile a directory of companies that offer products and services to support radio broadcast professionals.

The **2022 Sourcebook & Directory** is now out. It includes an alphabetical company listing as well as a cross-index by types of product or service. The companies you'll find here are your source for audio processors, remote control systems, transmitters, microphones, air lights, contracting, integration services, the list goes on. In related news, the quality of professional broadcast transmitters available today is unquestionably high.

That's good news for radio engineers and managers who are in the market for a new one. If someone hasn't purchased a transmitter in a while, what should they know? What are the most important recent developments in how they are designed and manufactured? **Trends in Transmitters** is another one of Radio World's latest free eBooks.

Xiegu X6100 QRP SDR Portable

Nevada Radio is delighted to be appointed a UK dealer for the new XIEGU X6100 QRP SDR Portable transceiver from China. with built-in Bluetooth function. The X6100 has a high-resolution colour screen for easy reading, built-in Bluetooth function and will transmit on both the HF and 6m Amateur bands. The Receiver coverage is from 0.5MHz to 30MHz, plus from 50 - 54MHz. The transceiver produces 10W RF output from an external supply or 5W from a battery supply whilst also boasting a built-in automatic antenna tuner. The radio is supplied with a 3,000 mAh Lithium battery and a range of accessories including a hand microphone, connecting lead and charger. The XIEGU X6100 has both FCC and CE approvals and is sure to be popular for both travel and portable use. The first batch is due to arrive in the UK in January 2022. The radio is priced at just under £600 and is available from Nevada Radio and ML&S: (SOURCE: Mike Devereux, Managing Director Nevada Group; see also SWLing Post).

<https://tinyurl.com/yck3jld8>
www.nevadaradio.co.uk
<https://tinyurl.com/bdes7erc>

Its editors have RW asked engineers, managers and our sponsoring manufacturers to comment. They explored how a smart buyer can differentiate among products; what capabilities they value most; and what features or services they'd like to see added.

The editors of RW asked about the impact of 'virtualisation' on transmitters, and what buyers should know about hybrid radio platforms that are coming into the marketplace [...]. And they sought an update on MDCL and liquid cooling. Learn from technology veterans, as well as from manufacturers, such as *WorldCast Systems*, *Broadcast Electronics*, *GatesAir*, *Nautel* and *Rohde & Schwarz*.

<https://www.radioworld.com>

DAB DIGITAL RADIO MULTIPLEX LICENCES

EXTENDED: The Government is giving Ofcom the power to renew the two licences – owned by Digital One Ltd Multiplex and Sound Digital Ltd Multiplex, due to expire in 2023 and 2028 respectively – until December 2035. Between

them, they carry 45 radio services, with the majority owned by Global (16), Bauer (10) and Wireless (7). Digital One is fully owned by Arqiva, whilst Sound Digital is owned by Arqiva, Bauer and Wireless.

Media Minister Julia Lopez said: "Radio's distinctive and much-loved format means it continues to be at the heart of people's lives. Today we are confirming plans to extend radio multiplex licences until 2035 so our hugely popular stations can continue to reach audiences through digital radio networks and we can give broadcasters the certainty they need to invest in their future services."

The Government says that renewing the two multiplex licences via a Legislative Reform Order will provide long-term continuity for various national commercial stations to broadcast digitally [...].

(SOURCE: Radio Today | National Press Digital Radio and Audio Review):

<https://tinyurl.com/yck539d3>
<https://tinyurl.com/y62krkvs>

For the latest news and product reviews, visit www.radioenthusiast.co.uk

Richard Nosworthy

helo@richardnosworthy.cymru

Tune through the AM bands in Europe and you will hear many languages coming through the ether. For example, from my home in Cardiff, the daytime reception of mainly English stations is joined at night by continental broadcasts in French and Spanish.

Of course, these are not the only languages spoken in Europe. There are many lesser-used tongues in use across the continent, more often found on FM or Internet radio. These languages have immense value. They are not only a means of communication but also part of identity, culture and heritage. Despite the threats they face, people are working hard to make sure they're part of Europe's future, not just relics of the past.

In this two-part mini-series, I will look at how radio serves these language communities, starting with a focus on public service broadcasters. Of course, I cannot cover all the languages, but instead will look at some themes and issues, with examples mainly in western Europe.

"But I can't understand these languages!", you might say. Perhaps true, but I find there is great pleasure in hearing their unfamiliar tones, particularly in the music from those cultures.

I also hope this might even inspire you to learn a few words or phrases and enjoy a taste of Europe's minority languages. It may even help on your next holiday!

What Are Europe's Smaller Languages?

According to a European Parliament (EP) Briefing from 2016, 40 to 50 million people speak one of the EU's 60 regional and minority languages (RMLs, Table 1).

<https://tinyurl.com/myz5z98j>

These include 'stateless' regional languages like North Sami (Sweden and Finland), as well as state languages that are minority tongues elsewhere (e.g. German in Poland).

There are also 'non-territorial' languages such as Romani and Yiddish.

The 20th Century was a period of turmoil for Europe's smaller languages. However, towards the end of the century, steps were taken to protect and promote these languages, and in 1998 the *European Charter for Regional and Minority Languages* entered into force.

<https://tinyurl.com/2p977rkh>

Despite this, the briefing also cites the *UNESCO Atlas of the World's Languages in Danger*, warning that 128 languages are endangered in Europe. Basque is consid-



BBC CYMRU WALES/BBC RADIO CYMRU

Minority Language Radio in Europe (Pt 1)

Richard Nosworthy makes a welcome return to RadioUser, with a two-part feature on the role of radio in the context of the support for minority languages, language-learning and preservation, and oral cultures.

ered vulnerable, Cornish is critically endangered, and some, like Alderney French, are already lost.

<http://www.unesco.org/languages-atlas>

Radio may have helped spread the bigger languages across the Continent, but it's also a crucial technology to protect, celebrate and promote minority languages, as well as connecting the people that use them.

Welsh and Radio: A Personal Story

It can be difficult to fully appreciate the value of minority languages from the perspective of major languages such as English.

I am from an English-speaking family. Growing up in the east of Wales, I knew little of the communities that spoke *Cymraeg* less than an hour's drive away.

Yes, I heard (and learnt a little) Welsh in

school and it was present in the community and on the airwaves, but to me, it never really felt like a 'real' living language at the time. How wrong I was!

Through education, travel, and thanks to colleagues and friends, I have been fortunate to be able to learn Welsh to fluency. It has opened my eyes to new perspectives, helped me meet new people and given me access to different cultures and ideas.

Radio has played its part in this too. I remember the fading signals of BBC Radio Wales' programmes for Welsh learners when I was a student in England, and then becoming hooked on the music of 'Cool Cymru' with the rise of bands like Catatonia and Super Furry Animals in the 1990s.

As a volunteer on the (since closed) community station Radio Maldwyn, I occasionally read the news in Welsh. Through work, I

Why not visit our new online bookshop at www.radioenthusiast.co.uk/store

Fig. 1: Shân Cothi presents BBC Radio Cymru's late morning show, *Bore Cothi*.

Fig. 2: "El matí de Catalunya Ràdio", the main morning news program, with Laura Rosel.

Fig. 3: *Búnquer* – a successful comedy show on Catalunya Ràdio.

Fig. 4: Neansaí Ní Choisdealbha, RTÉ Raidió na Gaeltachta's Music Editor, speaking to box player Ademar O'Connor, with Moyra Fraser in the background on a keyboard; from a recent outside broadcast for the *Fleadh Cheoil* music festival.

Fig. 5: Áine Ní Bhreisleáin, presenter of RTÉ's *Bladhaire* entertainment programme, during a live programme from Dublin city centre Christmas 2019. Pictured with Hugh Carre, a contributor.

Fig. 6: RTÉ's Rónán Mac Aodha Bhui broadcasting live from the *Oireachtas* Festival in 2017.

Fig. 7: The logo of BBC Radio nan Gàidheal, which broadcasts in Scottish Gaelic.

Fig. 8: BBC Radio nan Gàidheal broadcast from the TRNSMT Festival in Glasgow.

Fig. 9: The *SpeakGaelic Extra* programme is on BBC Radio nan Gàidheal and *BBC Sounds*.

have done Welsh language interviews on BBC Radio Cymru (Fig.1).

I have even started my very own Welsh-language podcast:

<https://richardnosworthy.wales/podcast>

My own story echoes wider changes.

Welsh, following decades of decline, has stabilised thanks to hard campaigning, political action and more positive attitudes. While it is particularly under threat in the western 'heartlands', it's grown in the south and east. A recent Government survey showed that 29.2% of people in Wales aged three or older were able to speak the language.

<https://tinyurl.com/yes3demw>

The rise of radio and audio content in Welsh reflects this increasing confidence. The BBC has now added a second channel in *Cymraeg*. Radio Cymru 2 is available via DAB and the internet, offering a lighter alternative to the morning news programme.

<https://tinyurl.com/374va43t>

There are also many Welsh programmes and podcasts on *BBC Sounds*, and that's before we consider the other broadcasters using Welsh, which I will investigate in Part 2 of this article.

Innovation in Catalonia

Europe's state or public broadcasters, which often have the most time and biggest resources at their disposal, provide minority language services in several countries, alongside the bigger state languages.

Catalan is one of the stronger minority languages in Europe. It is spoken in eastern Spain, Andorra, south-eastern France and



Alghero on the Italian island of Sardinia. It has around 9 million speakers, and while it has official status in Andorra and Catalonia, its situation is much more fragile in France.

In the Spanish region of Catalonia, Catalan's relative strength and confidence is reflected in the range of programmes and stations available.

Catalunya Ràdio (Fig. 2) – termed by some the "national radio broadcaster of Catalonia", was founded in 1983 to promote the use and knowledge of the Catalan language and its culture.

Over the years it has grown to include four stations entirely in Catalan:

- Catalunya Ràdio, the general station
- Catalunya Informació is the news station
- Catalunya Música is devoted to classical

and contemporary music
• iCat is the musical and cultural channel.

<https://www.ccma.cat/catràdio>

The station prides itself on its news, comedy and youth programmes, and its female representation.

As well as traditional radio, Catalunya Ràdio has a presence on many internet platforms. The group has pioneered 'visual radio' with its comedy programme *El Búnquer* (The Bunker, Fig. 3).

<https://tinyurl.com/2p96wuxe>

As well as being available as a 'normal' radio show and podcast, a video version is available to watch online. The show has earned more than two million digital views and a loyal and engaged audience on YouTube and Instagram. I watched some of

RTÉ RAIDÍÓ NA GAELTACHTA



The Bunker online and was quite impressed by the station's approach.

The presenters, sitting in their 'dungeon' studio with a small audience, discuss various historical figures such as William Shakespeare and chess player Bobby Fischer. While this format is quite popular with podcasters on platforms like YouTube, I think there is more scope for it to tie in to broadcast radio elsewhere.

Irish - Campaigns, Culture and Community

The situation in Ireland is quite different to Catalonia. While many people in the republic speak or understand Irish, thanks in part to the education system, daily use is among a much smaller minority. The traditional strongholds of the language are the *Gaeltacht* - areas where Irish has a special status.

RTÉ Raidió na Gaeltachta came on air for the first time on Easter Sunday 1972 and became the second legal radio station in the state (Figs.4-6).

<https://www.rte.ie/radio/rnag>

The station was established because of a campaign by the *Gaeltacht Civil Rights Movement*, who had successfully set up the pirate radio station, Saor Raidió Chonamara in 1970.

The service was initially broadcast for just over 2 hours a day to the *Gaeltacht*. Little by little, the broadcasting hours grew, as did the range of programmes, with Raidió na Gaeltachta today broadcasting 24/7.

It has become an essential link between *Gaeltacht* communities, and intrinsic to the health of the Irish language. The latest figures show the station has 92,000 listeners per week, with higher concentrations in the main *Gaeltacht* areas.

While news and sport are key parts of the service, RTÉ's Caitriona Ní Bhaoill told me the station is tailored to communities it serves: "There are, naturally, certain subjects of more interest to our audiences that might not feature on the English-language media, for example, a lot of our audiences live in rural areas,



STEVE O'CONNOR



VALERIE O'SULLIVAN

so coverage of farming, fishing issues would probably be more likely on our station, and also coverage of issues around the language."

Raidió na Gaeltachta has also played an important role in the development of traditional music. An example of this is the afternoon programme *Binneas Béil*, which I have been enjoying via internet stream. This show is on air from 3-5 pm from Monday to Wednesday, with 'traditional, folk, world music and song'. It's an atmospheric and relaxing mix of tunes, a marked contrast to many mainstream English-language stations, especially during the daytime.

<https://www.rte.ie/radio/rnag/binneas-beil>

It is worth noting that in Northern Ireland, BBC Gaeilge produces 5 hours of Irish radio per week, a mix of factual programmes, sports, arts and music, as well as one-off specials.

<https://tinyurl.com/592u376x>

Moreover, BBC Radio Ulster produces Ulster-Scots radio content such as the magazine programme *Kintra* each week throughout the year.

<https://tinyurl.com/ycxzyspe>

Language Learning in Scotland

Learners are crucial for the future of any threatened language. I know how useful radio can be to support this, especially when combined with other materials. In Scotland, supporters of Scottish Gaelic are using radio as part of a multimedia project to increase the number of speakers.

Most of modern Scotland was once Gaelic-speaking, but by the 2011 Census the language had declined massively, with just 1.1% of Scots speaking it. That said, it is still a majority tongue in the Western Isles, and there are reasons for optimism: The decline has slowed in recent years, with the losses in its



heartlands being balanced by growth in other parts of the country, as well as more Gaelic-medium education.

BBC Radio nan Gàidheal is the only national radio service broadcasting in Scottish Gaelic. It is on the air seven days a week, and news is the 'backbone' of the schedule (Figs. 7-8).

As in Ireland, traditional Gaelic music is also a key part of the station, and it's said to be, "a door through which non-speakers of the language often engage with the service." The aim to bring on board non-Gaelic speakers is also reflected in the *SpeakGaelic* project (Fig. 9).

<https://tinyurl.com/4e7wm7bs>

<https://speakgaelic.scot>

This is advertised as, "a new generation of Gaelic learning" and is a collaboration between Sabhal Mòr Ostaig (National Centre for Gaelic Language and Culture in Skye) and MG Alba (a Scottish Government funded media organisation which delivers the BBC ALBA platforms), as well as the BBC itself.

BBC Radio nan Gàidheal produces the project's radio programmes/podcasts, with *Speak Gaelic* content also available on TV (BBC Alba) and online (YouTube, BBC Sounds and iPlayer).

There is a host of material on the website too.

I listened to the first episode of the *Speak Gaelic* podcast on *BBC Sounds*. The theme was Caraidean Ùra (New Friends) - and presenter John Urquhart explained how the programme would follow the same themes as other online content, but in more depth. As you would expect, it starts with the basics, with a chance to listen and repeat, e.g. "Is mise Richard" (my name is Richard).

<https://tinyurl.com/c37u3jke>

In conclusion, radio/audio is a fantastic medium for simply focusing on how a language sounds, without the distraction of images and spelling.

In the second part of this feature, I will look at private and voluntary broadcasters in Europe's minority languages, from local FM stations to internet radio and podcasting.



Language	Approx number of speakers	Stations/Programmes
Sámi languages	30,000	NRK Sami (Norway) https://radio.nrk.no/direkte/sapmi SR Sápmi (Sweden) https://sverigesradio.se/sameradion
Catalan	10 million	Catalunya Ràdio https://www.ccma.cat/catradio/directe/catalunya-radio
Irish	Irish Republic: 1.8 million (daily usage outside education: 73,000) Northern Ireland: 4,130 people use Irish as their main home language, 185,000 have a little knowledge of the language.	RTE Raidió na Gaeltachta https://www.rte.ie/radio/rnag BBC Gaeilge https://tinyurl.com/svcc8n8u
Welsh	880,000	BBC Radio Cymru https://www.bbc.co.uk/sounds/play/live:bbc_radio_cymru
Basque	750,000	Euskadi Irratia https://www.eitb.eus/eu/irratia/euskadi-irratia/irratia-online

Table 1: Some Examples of Broadcasters in European Minority Languages.

For the latest news and product reviews, visit www.radioenthusiast.co.uk

David Harris
mydogisfinn@gmail.com

David Harris is impressed by the listings and articles in the latest edition of the **Global Radio Guide (GRG)**, one of the primary publications for global DXers and short wave radio enthusiasts.

I am always astonished by the quality of articles and information and the sheer volume of this bi-annual publication, which is only available as a downloadable eBook.

Since 2014, Gayle (a long-standing columnist for the former *Monitoring Times* radio magazine) has been producing, twice a year, this listening guide and encyclopaedia of all things short wave.

For a little under £7, one gets a 177-page radio book, plus a 342-page listener guide.

Gayle kicks the book off with a very perceptive 20-page essay on China, its radios stations and its global reach. China is the most populous country in the world with 1.4 billion people. It is a global power with its designs over Taiwan, effective control of Hong Kong and colonisation of many atolls and reefs in the South China Sea. China is the world's largest broadcaster and the biggest player on the short waves with its state broadcaster China Radio International.

Gayle also lists other Chinese short wave stations, for example, Holy Tibet, Beibu Bay Radio, and Xinjiang and Yunnan. There are some 17 national stations in China, and she even gives help in the pronunciation of Chinese terms for the benefit of the dedicated 'QSLer' who wants to verify Chinese national stations.

Several short chapters are looking at current short wave radios, music on SW, and the history of VOA in the Philippines. If you are looking to buy an SDR radio, or perhaps just want to try to understand how they work, then there is an unsurpassed 24-page guide to the world of radio via your computer.

The Tropical Bands have not been forgotten either and have their own article.

Monitoring SW utility frequencies is a fascinating part of the hobby but does not seem to experience overwhelming levels of interest for many in the UK. However, Gayle's husband Larry shows that there is plenty to listen to here – especially if you live in the USA.

He has written a 50-page guide to the world of what he calls the "action bands" – mainly aviation, maritime and military SW communications.

Action Bands and Short Wave Radio

Global Radio Guide (17th ed.) Winter 2021/2022
by Gayle van Horn.

Teak Publishing, USA. 2021.

e-Book. \$8.99. 519 pp.

Available on Amazon.

ASIN B09MV5XMFZ

www.teakpublishing.com

In a section entitled *Bits and Bytes* Gayle has put together much useful information about websites including

www.worldradiohistory.com.

This is an archive of hundreds of old radio magazines including *The Short Wave Magazine* (from 1935-2000), the predecessor of *RadioUser*.

There is also a useful listing of DX radio programmes, and many articles of recent radio news. The main part of the publication is the 342 pp hour by hour Listeners' Guide.

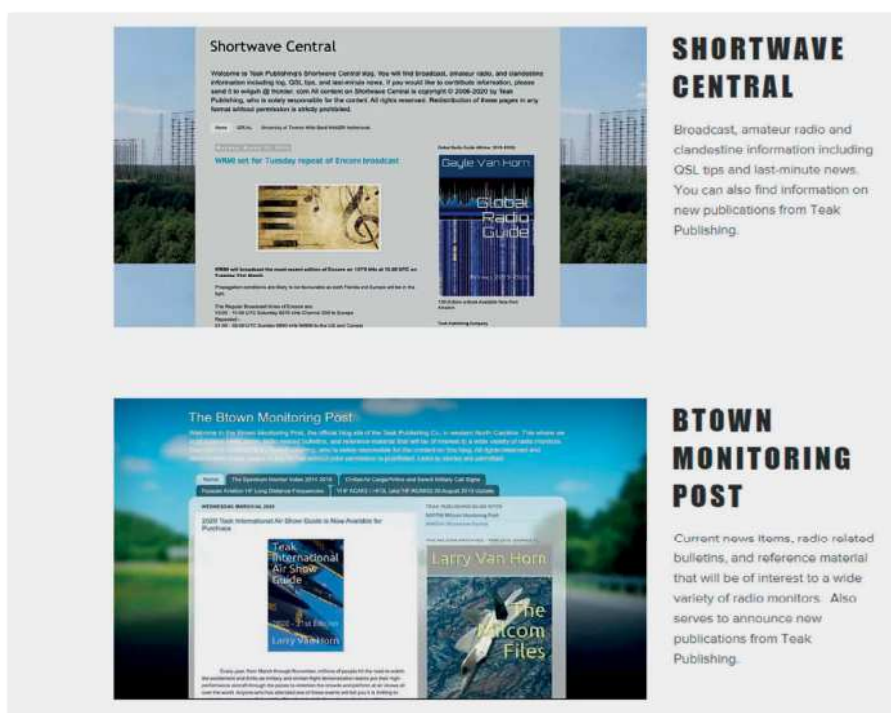
Just note what the current time is and have a look at what stations are broadcasting. It is a simple concept but not one that any other frequency guide has chosen to adopt.

To put together such a publication once



a year would be a commendable enterprise but to do it twice a year is really astounding.

The Winter edition is now available, with the Summer 2022 version due out in May 2022. This is, surely, a 'must-buy' for any SW radio listener.



Rallies & Events

All information published here reflects the situation up to and including 17th January 2022. Readers are advised to check carefully with the organisers of any rally or event, before setting out for a visit. The Radio Enthusiast website will have updates, please check here regularly. To get your event onto this list, please, e-mail full details as early as possible: wiessala@hotmail.com

6 February

RED ROSE RALLY: St Joseph's Hall, Mather Lane, Leigh WN7 2PR; Individual stands, LAMCO dealership stand, low-cost Bring and Buy (BB|D|FP|CR|RSGB|TS).

Colin: rally@wmrc.co.uk

<http://wmrc.co.uk/rally.htm>

10 February

AMERICAN RADIO RELAY LEAGUE

(ARRL): Orlando, Florida 32821, USA. (See also next entry)

www.arrl.org/arri-expo

11-13 February

ORLANDO HAMCATION: Central Florida Fairgrounds and Expo Park. Second-largest ham radio convention in the USA. More than 65 commercial traders, a huge boot sale area, US ham license tests. HamCation is also excited to host the ARRL National Convention.

www.hamcation.com

20 February

RADIOACTIVE FAIR: Mid Cheshire ARS; Nantwich Civic Hall, Cheshire CW5 5DG (BB|CR|D|FP|RF|RSGB|TS)

<https://midcars.org>

<http://www.radioactivefair.co.uk>

6 March

EXETER RADIO & ELECTRONICS RALLY:

America Hall, De La Rue Way, Pinhoe, Exeter, EX4 8PW.

Pete G3ZVI

g3zvi@yahoo.co.uk

13 March

HAMZILLA RADIO FEST: Discovery Science Park, Gateway House, Ramsgate Road, Sandwich, Kent CT13 9FF. Tickets are available now from £3/Tables £12. Those who bought tickets and tables in advance will have their booking carried forward to Hamzilla 2022.

<https://hamzilla.uk>

9 April

YEOVIL ARS: 36th QRP CONVENTION. The Digby Hall, Sherborne, Dorset, DT9 3AA (Car parking charges apply on Saturdays)

Doors open 09:30 am to 2:00 pm; Admission £3 (regrettably, no dogs except guide dogs) BB|TS|Club Stalls; Supported by RSGB, RAFARS & BYLARA. Regrettably, there will be no talks this year, due to Covid.

<https://tinyurl.com/fyj9vtca>

24 April

CAMBRIDGE REPEATER GROUP RALLY:

Foxton Village Hall, Hardman Road, Foxton, Cambridge, Cambs CB22 6RN; Doors open at 9.30 am for the public (7.30 am for traders). Admission is £3. (BB, CBS, CR, TI, TBS).

Lawrence, M0LCM

Tel: 07941-972724

rally2022@cambridgerepeaters.net

www.cambridgerepeaters.net

1 May

NARSA (NORTHERN AMATEUR RADIO SOCIETIES ASSOCIATION) EXHIBITION (BLACKPOOL RALLY): Norbreck Castle Exhibition Centre, Blackpool FY2 9AA

Dave M00BW

Tel: 01270 761 608

dwilson@btinternet.com

www.narsa.org.uk

2 May

DARTMOOR RADIO RALLY (BANK HOLIDAY MONDAY):

The Yelverton War Memorial Hall, Meavy Lane, Yelverton. Devon, PL20 6AL. Doors open at 10 am and admission is £2.50 (BB|CR|FP|TS).

Roger, Tel: 07854 088882

2e0rph@gmail.com

20-22 May

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<https://hamvention.org>

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Georg Wiessala

wiessala@hotmail.com

The editor has had the opportunity to evaluate the 26th Edition of the **Klingenfuss Shortwave Frequency Guide** and the **2022 Super Frequency List**. Here are his thoughts.

This 2022 edition is the 26th incarnation of this stalwart of HF frequency guides. At 344 pages, it is the same length as the 2021 version. The cover shows a picture from *PanAm Global Radio* (which we have featured in *RadioUser*, August 2021: 34). The layout and structure of this guide are, once again, similar to previous years, and a huge amount of information has been presented clearly and in a logical format.

Over the last few years, some overall trends have emerged in this handbook, for example, the strength and reliability of the utility radio listings, the provision of a critical political and historical background to some of the listings, the value of the extra information provided (much of which is not to be found elsewhere) the emphasis on receiving radio via the *Kiwi SDRs* (web-based Software-Defined Receivers) network, and the foregrounding of today's latest digital data transmissions. These trends continue strongly in this year's edition, and a reference (to our friends at the *US Spectrum Monitor*) right at the beginning (page 3) encapsulates perfectly both the excitement of new technologies and the ultimate irreplaceability of DXing from home.

As before, the 2022 SFG relies on a plethora of first-rate screenshots to make its point, and to whet the appetite of every self-respecting radio enthusiast. This is particularly evident in the introductory chapters on utility and broadcast signals monitoring, which are 'must-read' sections with *über-informative* content far above what many may reasonably expect from a frequency book. Sections 2.5.2./3, for example (*Fixed Service*), opens the doors wide to the many data stations that there are; from beacons and maritime mobile to humanitarian services, aeronautical to disaster comms, and military to meteorological providers.

The beginner in this evergreen hobby will find, in these introductory pages, all the information they could ever require to understand the technical aspects of propagation and modulation, automatic monitoring and direction-finding, TDOA (Time Difference On Arrival) features, and much else besides – all meaningfully illustrated with appropriate screen grabs.

The Klingenfuss 2022 Shortwave Frequency Guide



Klingenfuss 2022 Shortwave Frequency Guide & Super Frequency List

2022 Shortwave Frequency Guide

"Secret" HF Signals for SDR Fun

Klingenfuss Publications

ISBN 978-3-941040-72-4

344 pp. pbk.

The main part of the volume is, naturally, the *Frequency Lists of Utility and Broadcast Radio Stations*, from 20 to 27870kHz. The former runs from pp. 48 to 192, whereas the latter occupies 2325 to 25800kHz on pp. 208 -275. All are organised clearly by *frequency, callsign, station name, ITU classifier, mode, and details*.

Don't miss the preliminary information to both these lists (pp. 46-47 and especially pp. 194-207), for some fascinating background detail on how the data are presented, and also some key information on DRM and the future of SW broadcasting. The tenor here is that professional digital utility station radio nets are on the rise.

For me, one of the best parts of the book lies hidden here, in the provision of some much-needed context of such matters as the physical limits of the HF Spectrum, the legacy of the Cold War, issues of service provision and propaganda and the 'megaflop' that is DRM.

I know I have said this before; however, once again, I'd recommend that you take a look at these pages (194-before you delve into the frequency lists. Section 4.4. in particular (on 'Internet, SATCOM and HF Radio in Dictatorships') is an informative necessary prelude to pursuing a hobby that lives inside - and from - shifting politics and international relations.

No other guide, as far as I know, contains such eye-opening details, and Jörg Klingenfuss deserves much praise for reminding us of this framework.

Last, but certainly not least, the appendices: Transmission Sites are listed here, as are Broadcast Stations in A-Z order, some real gems among them. Take a look at pp. 283-290 and gasp at the SW dominance under the entry of 'China (Communist Undemocratic)'; and the German entry shows that, since the incomprehensible demise of *Deutsche Welle* from Short Wave, the broadcaster once again merits only one moniker: "*nuls points*". Compare and contrast with the BBC listing and weep, my friends.

I do like evidencing HF reception via screenshots, and this is the guide for you, if you enjoy this too, as is the JK Digital Data Decoder Screenshots list on a USB stick for the more discerning analyst.

Following a sample of the best screengrabs, Jörg closes this book by providing more additional details, like guides to acronyms, languages, names and target area abbreviations, clandestines, and much more.

In conclusion, this remains the most comprehensive guide currently available, and it looks set to remain the go-to gold-standard reference for many years to come in our ever-changing world.

Essential, accurate, reliable and highly recommended, indeed.

Take a look also at the other offerings and bundles from Jörg Klingenfuss, such as the *2022 Super Frequency List (Broadcast and Utility)*, and the *2022 Frequency Database for the Perseus LF-MF-HF Software-Defined Receiver*, to complement the book and expand on the information provided.

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RADIO ENTHUSIAST BOOKSHOP

Radio Listener's Guide 2022

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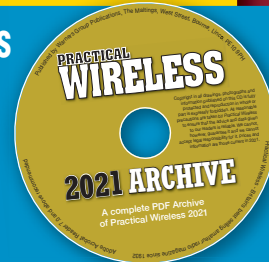


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David Smith

dj.daviator@btinternet.com

On 2 December 2021, NATS accomplished the biggest ever geographical airspace change in the UK, removing long-established air routes over Scotland and freeing aircraft to choose their most direct flight path.

With up to 2,000 flights using this crucial part of UK airspace every day and supporting 80% of transatlantic traffic, this introduction will save CO₂ every year equivalent to the power used by some 3,500 family homes (12,000 tonnes CO₂/year).

It will also save 500,000 nautical miles of flying per year – the equivalent of 23 trips around the world.

The new Free Route Airspace (FRA) covers approximately 150,000 square miles of airspace over the North Sea, Scotland, the North Sea, Northern Ireland, and a small portion of northern England – a footprint over twice the size of the UK. The new design has no noticeable difference on the ground, only affecting aircraft at a high-level above 25,000ft.

NATS has been developing the Free Route Airspace (FRA) concept in UK airspace for over five years. It allows airlines the freedom to take the optimal route, considering variables such as weather and wind speed – flexibility that seemed impossible in the past.

But as technology has moved forward and cross-border collaboration has evolved, it has become a reality today helping to reduce cost, fuel burn, flight time and CO₂ emissions.

The traditional 'fixed-routes-in-the-sky' were decided many decades ago when navigational techniques and aircraft technology were very different. At the time, it made sense to think of routes much like fixed 'motorways' in the sky: To get from A to B, you would travel along one corridor until you got to a junction that let you change direction towards your destination, which is often not the most direct route. Modernising Scottish airspace was the first stage of a long-term NATS plan to introduce FRA over the whole of the UK.

<https://www.nats.aero>

Airspace Alterations at Luton Airport

The CAA has approved the airspace change known as *London Luton Airport Arrivals*, which follows an extensive public



Present Airspace Changes and Future Air and Space Ops

David Smith throws a spotlight on major UK airspace changes, Luton Airport traffic handling, and plans for future air and space operations. He also introduces a comms profile of RAF Lossiemouth ATC.

consultation that ran from October 2020 to February 2021. It received feedback from more than 2,400 respondents. The consultation, co-sponsored by London Luton Airport and NATS, consulted on two options to simplify and modernise the arrival routes for flights into the UK's fifth-busiest airport and segregate them from Stansted's, to ensure continued safety.

The feedback was incorporated into the final design, resulting in minimal changes from today's flight paths below 5,000ft with greater dispersion of flights above 5,000ft. The location and orientation of the new holding area near the A1-A14 junction were adjusted; and the lowest standard altitude

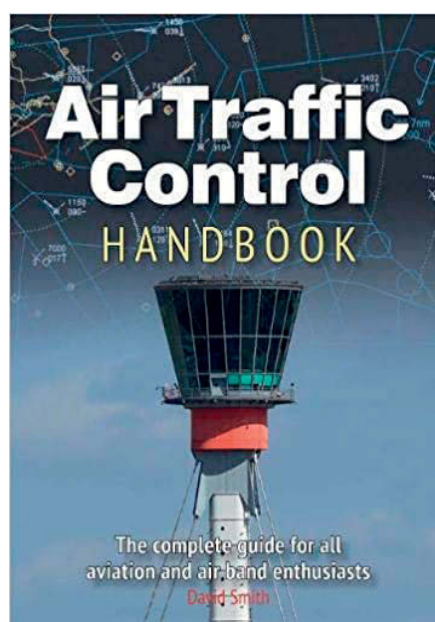
of the hold was raised by 1,000ft, reducing potential noise impacts on the residents of St Neots and Huntingdon.

Now that the airspace change has been approved, work is underway to train the air traffic controllers and ensure pilots are familiar with the new routes and accompanying procedures ahead of the full implementation on 24 February 2022.

<https://www.caa.co.uk/home>

Air and Space Traffic of the Future

The last decade has seen an increase in entirely new air and space technologies, from very low to very high levels. This



includes drones and air taxis for Urban/Advanced Air Mobility, High Altitude Platform Systems for communication, surveillance and Earth observation, commercial space and sub-orbital vehicles for air-launching, experimentation and space tourism.

Other new entrants are expected in the coming years, such as intercontinental supersonic flight, hypersonic and sub-orbital aircraft, and re-entry-from-orbit vehicles.

To support all these new developments, regulations are being devised to allow the safe accommodation and integration of these operations into the airspace, without disproportionately affecting the current and future aviation sector. While drone regulation is well underway in Europe, regulation for high altitude operations is still in its infancy. With eight space sites in the UK, two in Germany and one each in Sweden, Norway, Spain, Italy and the Azores, building good communications will be the key to accommodating their navigational needs in commercial airspace.

Higher Airspace Operations include supersonic and hypersonic flights, sub-orbital flights, aero-launching and vertical launching into orbit, and re-entry from orbit, all of which are carried out in the higher airspace, namely above Flight Level 600 (60,000ft approximately).

Below this, traditional aircraft are controlled today, but not in outer space.

This month's photograph shows an EasyJet Airbus A319 on short final at Liverpool Airport.

RAF ATC Profiles 10: Lossiemouth

ICAO Code: EGQS IATA Code: LMO

Frequencies	(MHz)
Lossie Approach/Radar	315.150 362.775 362.200* 123.300*
Lossie Director	277.525
Lossie Talkdown	378.775 255.925 123.300*
Lossie Tower	279.050 118.900
Lossie Ground	268.625
Lossie Ops	369.300
Winter Ops	291.150
* NATO Common Frequency. Available on request only.	
ATIS	
Lossie Information	369.150
Nav aids	
Lossie- based Typhoons only)	ILS/DME CAT I - Runway 23 TACAN LSM 111.300 (TACAN restricted to
Runways	05 (2764 x 45m) 23 (2764 x 45m) 10 (1850 x 46m) 28 (1850 x 46m)

Notes (A-Z)

Helicopter Operations

Visiting helicopters are to land and depart from a runway threshold. Pilots should expect to land on the runway not in use. Helicopters must taxi over or on paved surfaces and cross runways at right angles, only with ATC clearance.

Holding

TACAN holds to NE and SW of the aerodrome.

Military Aerodrome Traffic Zone (MATZ)

A circle of 5nm in radius, up to 3,000ft above aerodrome level, with final approach stub aligned on Runway23.

Military Instrument Departures

MIDs from all four runways.

Noise Abatement

Visual circuit noise abatement for recovering aircraft: Runway 23: Visual circuit is flown outside Lossiemouth town. If the aircraft must go around, this should be done from the end of the downwind leg, provided that visual contact has been established with any aircraft carrying out instrument approaches. For Runway 28: Break to be executed to maintain clear of Gordonstoun School and Duffus village. Runway 10: Aircraft are to execute the join to give minimal disturbance to the Gordonstoun inhabitants.

Pressure Settings

Lossiemouth and nearby Kinloss operate on a Clutch QFE pressure setting within the Combined MATZ and associated instrument procedures.

Use of Runways

Lossiemouth operates a slow lane policy on the south side of the runway in use. After landing, aircraft are to maintain in the slow lane unless otherwise authorised by ATC.

Warnings

Due to the proximity with Kinloss, aircraft on radar recovery to Lossiemouth Runway 05/10 will only receive a traffic service when transiting through or overflying the Kinloss MATZ. Instrument Approach Procedures for this aerodrome have been established outside controlled airspace. Milltown disused aerodrome is 4 miles southeast of Lossiemouth. The runway is prominent with a similar layout.

Enter our competitions at www.radioenthusiast.co.uk/competitions

Chrissy Brand

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During Storm Arwen, in late November 2021, I was reminded of how powerless we can be – pun intended.

The weather caused me a delayed journey home after a city centre gig, followed by a long walk from a distant station, being battered by sleet. That was bearable, but what was worrying occurred a few hours later, around dawn, when much of the Calder Valley in which I live, was affected by a power cut.

Good communications from *Northern Powergrid* had alerted most people by text of the outage, and the estimated twelve to 24 hours it would take to fix. However, not all the people affected received the text, including my elderly neighbours.

Battery Power

No electricity meant, of course, that there was no internet, plus the mobile phone networks were down in many areas. Therefore, it was impossible to communicate with concerned family and friends. I dug out one of my many portable radios (Fig. 1) and was grateful for its battery-powered technology.

Neighbours of mine were not so fortunate, as they rely on accessing radio stations either through Freeview on television or the internet and a smart speaker. I was pleased to lend them a selection of my portable radios, with rechargeable batteries.

The shops were all closed due to the power cut, so you could not go and buy batteries. A local pub, *The Honest John*, did open, and was able to serve tea, mulled wine, beer and non-blended cocktails. We gathered around their roaring fire and paid for our drinks with cash, just as in days of yore.

As all radio enthusiasts have long known, wind-up, solar and battery-powered radio can offer a lifeline, especially in times of crisis, wherever you are in the world. Our over-reliance on electricity belies the importance of radio.

Although BBC Radio 4, BBC Leeds and BBC Manchester offered general coverage of the storm damage and an overview of its impact, there was little information to specific communities who were, quite, literally in the dark.



1

Storms, Sands and Communities

In times of rough weather and other emergencies, **Chrissy Brand** looks at the strengths and weaknesses of community radio and peruses the Egyptian radio and podcast scene.

Localised reporting from a more community-based station is required, along the lines of Radio Wuppertal in Germany, which, as I explained last month, came to the rescue during the July 2021 floods (*RadioUser*, *Emerging Issues*, January 2022: 34-37).

www.radiowuppertal.de

The closest FM community radio stations to the Calder Valley do not transmit a strong enough signal to be heard clearly, if at all. Crescent Radio in Rochdale, Oldham Community Radio, Drystone Radio in Craven and Wharfedale, Fever FM in Leeds and Pendle Radio.

On top of that, I doubt if many residents

even know of their existence. I fear this 'pattern of unawareness', and many rural areas being without a community station is similar throughout much of the UK. Ofcom maintains a list of the UK community radio stations, which probably needs to be publicised more widely.

<https://tinyurl.com/mr359jbx>

I will forever champion internet radio stations and presenters as mechanisms of wider choice and platforms to play music and spoken word content, beyond that which is found on the broadcast bands.

However, internet radio, just like AM and FM, is only useful or meaningful whilst it

Fig. 1: Battery-operated radios like the *Eton Grundig Executive Satellit* are vital during power cuts. Fig. 2: Recycle Radio's Dave Ives and his little red tin full of music. Fig. 3: Immerse yourself in the sounds of Egypt, with Nogoum FM. Fig. 4: Have a cup of tea while hearing a podcast, Egyptian style. Fig. 5: Blues Kitchen Radio and a Ray Charles mural by the Manchester artist Akse.

can reach audiences of listeners.

In times of power cuts, the broadcast bands and internet, as sources of entertainment or information channels, can disappear in a puff of smoke. As we are in an era of climate change effects – not to mention the pandemic – public education campaigns are needed to ensure every household has a radio and a stockpile of batteries, torches and candles in case of power cuts.

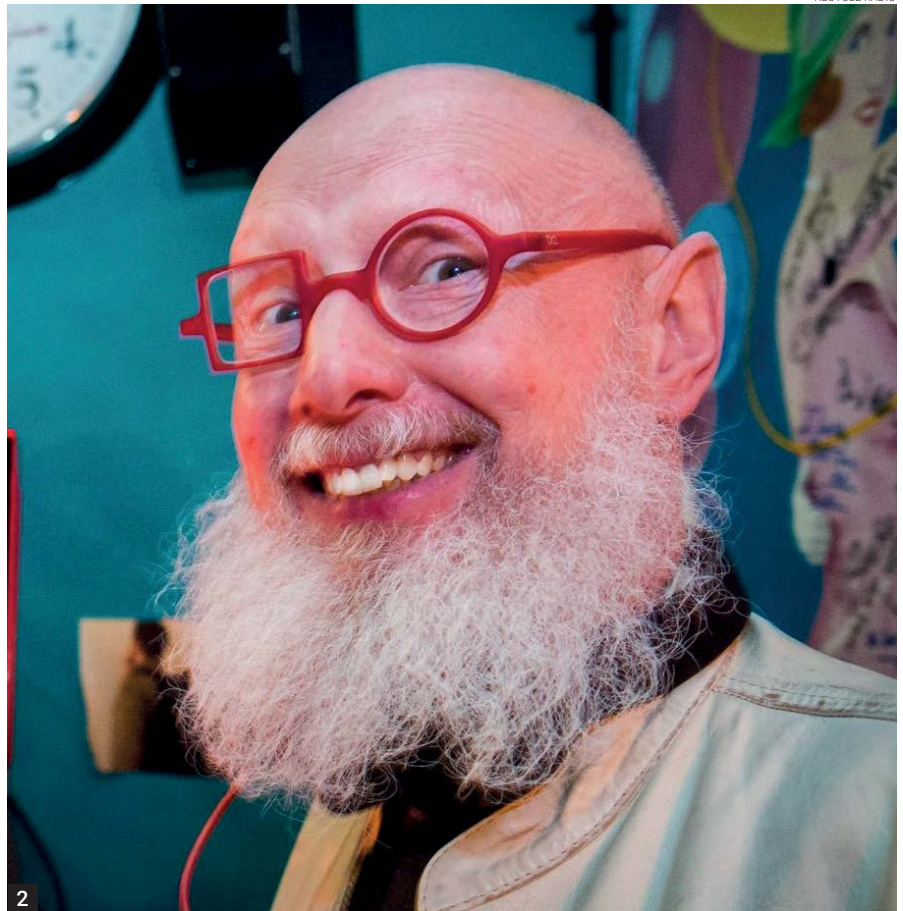
In tandem with this, local radio stations will need to improve their coverage during emergencies, and more community radio stations need to be commissioned to help people cope with emergencies. Community stations also need to be funded and equipped to provide live news coverage, when necessary, and not rely solely on pre-recorded programmes from volunteer presenters.

Valiant Valley Radio

There is no shortage of internet-radio programmes in the Calder Valley, doubtless, in part, due to it being home to many creative people: Recycle Radio, for example, comes from Hebden Bridge and is live each Saturday from 1400 to 0000 UTC. Programmes are then repeated throughout the rest of the week. *Creedy's Late Breakfast Show* starts proceedings, followed by a selection of programmes varied shows, which include: *The Venetian Job*, Northern Soul music on *The Soul Train* with Harry Grundy, and, for the final hour, *Electronic Beats*.

My pick of the bunch is Dave Ives's *Music from the Red Tin* (Fig. 2). A chatty style of presenting merges with hauntingly beautiful music, some of it themed, other standalone and the odd recordings from gigs in the pubs and clubs around the region. Martha Tilston's *Wild Swimming* and *Swimming Song* by Vetiver were a themed coupling.

Calder Valley Radio is another online station, also heard via a station app or smart speaker. Programme highlights for me include Fiona Love's *Positive Vibes* from 1000 to 1200 UTC on Mondays and Tuesdays, plus *All About Folk* each Sunday (2000 to 2200 UTC) and *Late*



Night Sessions, every other Thursday from 2000 to 2200 UTC.

You will find a couple of syndicated shows on the station too. *Jon Richardson and the Futureonauts* is about the well-known comedian pondering on sleepless nights, "Are we going to run out of food? Is

it already too late to stop climate change? Should I start learning Mandarin? Are killer death robots from the future already among us? Will my kids grow up to see a real tiger or giraffe?"

Meanwhile, Stephen Howie's uplifting programme, *Grooveline*, enters its 25th

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Date	Time (UTC)	Station	Programme	Podcast	URL/ Stream/ Frequency
Daily	24/7	Radio Diffuser Acreana, Rio Branco, Acre	The Voice of the Jungle, Brazilian folk music	www.difusora.ac.gov.br	4885kHz and www.difusora.ac.gov.br
Daily	24/7	Chili Radio, Thailand	Music, local news, sport, Asia Pop 40.	Chili Radio app	https://chiliradiothailand.com
Daily	24/7	Radio Amadeus, Buenos Aires, Argentina	Classical music, concerts and recordings	Radio Amadeus app	FM, and online radioamadeus.com.ar
Monday	1900 to 2100	Drystone Radio	The Astronomy Show	https://tinyurl.com/282bfknb	FM and https://drystoneradio.com
Monday Tuesday to Friday	0500 to 1100 0600 to 1100	WBGO, Newark	Jazz After Hours with Greg Bryant	https://tinyurl.com/2p9ct4bf	www.wbgo.org
Wednesday Repeated Sunday	1600 to 1730 2100 to 2230	Radio Wimborne	The Campfire Folk show with Laurie Marshall	www.radiowimborne.co.uk	94.6 MHz http://radio.canstream.co.uk:8057/live.mp3
Thursday	2203 to 2359	BBC Radio Scotland	Natasha Raskin Sharp, with an eclectic selection of tunes, plus classic vinyl.	BBC Sounds App	DAB, FM and www.bbc.co.uk/sounds/brand/b08lh88b
Friday Monday	2032 to 2100 0932 to 1000	BBC World Service	Crowd Science, questions about life, Earth and the universe.	BBC Sounds App	DAB, short wave, and www.bbc.co.uk/programmes/p04d42rc
Saturday	1900 to 2000	Chris Country	Superstar Concert, awesome live performances	Chris Country app	DAB, smart speaker www.chriscountry.co.uk
First and 4th Sunday	1100 to 1130	Radio Northern Europe International	Pop, dance and traditional music	https://tinyurl.com/589vz8k7	6070 and 9670KHz and FM https://rnei.org Full schedule https://rnei.org/listen

Table 1. Chrissy's Top Listening Recommendations for the Month Ahead in International Radio.

year, delivering, "soul, jazz-funk, acid jazz and soulful house in a weekly show and soulful house mixes on-demand." *Grooveline* can also be heard in partnership on many stations, including Passion Radio on DAB and Austrian, English-speaking station, Vienna Radio International. Sadly, the latter station does not appear to have an operational streaming feature at present, although some programmes can still be heard via links. One of these is *Big Bob's Memory Lane*, which may appeal to those who like music from the Rock and Roll Era. Programmes are themed and November saw programme titles of *Review of 62, TV Western Themes, Trains and Cheating*.

www.recycleradio.co.uk
www.mixcloud.com/RecycleRadio
www.caldervalleyradio.co.uk
www.mixcloud.com/cvalleyradio
<https://tinyurl.com/2p8fzujk>
<http://vienna-radio.at>
www.groovelineonline.com
<https://memorylaneshow.com>

An Ear on Egypt

From a country of storms and hills to one of sand and desert. Radio Cairo made a surprising, but welcome, return to short wave in November. Its old frequency of 9900kHz was in use, with English from 2215 to 2330 UTC to Europe and 0045 to 0200 to the Americas. However, as in the past when Radio Cairo was on short wave, poor modulation made the signals all but unlistenable. A station spokesperson also stated that live streaming will not be available for a while.

www.egradio.eg/LiveRadio

That led me to turn elsewhere for Egyptian radio and podcasts. Nogoum FM (Fig. 3) is a live online radio station in Cairo, with news, talk, and entertainment. The output is, of course, in Arabic, but the website can be translated into the language of your choice and the Facebook page has English posts on it. There is also a YouTube channel where you can watch programmes with descriptions in English, as well as a station app.

I listened to a few music programmes on Nogoum FM as it is always exciting to expand my musical horizons. Some of the contemporary songs I heard had a touch of European dance music about them, whilst others were uniquely 'Egyptian' and transported me to another place straight away.

Assala Nasri is a Syrian singer who has been a star in Egypt since the 1990s, *Shaghel Baly* ('Bali Workers') is among her songs worth seeking out. Amr Diab is another middle-aged, popular Egyptian singer who I recommend. His song *Matkhashish* (*Don't Be Afraid*) is a good starting point.

www.nogoumfm.net
www.facebook.com/nogoumfm
www.youtube.com/c/NogoumFM

Tiba Radio is an English-language station, "building a family of friends, residents and guests who've come on holiday or to live in the Red Sea coastal resort of Hurghad."

The music played is a wasted opportunity, consisting of the usual UK radio staples of Pete Townshend, Hazell Dean, Celine Dione, Neil Diamond et al. Other programmes include *Love at Eleven*; *Nine*



o'clock Live, the finest gigs ever recorded; Supersonic Seventies; Totally Awesome 80s; and Solid Gold Sixties. I would hope Tiba Radio's remit would introduce visitors and expats to Egyptian culture, not regurgitate the western world of pop.

To counteract that, I found links to 43 Egyptian radio stations at Egypt Radio Net to explore, including plenty that offer exciting music content.

<https://egyptradio.net>

I believe that to gain an understanding of any nation or region, you need to start with its history. However, it should be borne in mind that history can be told from different perspectives, making it necessary to read or listen around a subject. *The History of Egypt Podcast* covers ancient Egypt and is written and produced by academic, Dominic Perry in Auckland, New Zealand.

<https://tinyurl.com/96u95rnX>

The American Research Center in Egypt also has its roots in the ancient era and runs a podcast that, "features exciting research and fieldwork, presented by scholarly authorities."

www.arce.org/podcast



CHRISSY BRAND

One of the most interesting podcasts I have heard is called *One Year in Egypt*. Camika, from the USA, "documents her first time abroad as a teacher in Giza, as she experiences personal transformation, deconstructing the Egyptian myths, teaching middle school youth, and exploring the deeper parts of never being out of the country the same year she turns 50." Camika talks in a very natural, down-to-earth, way and it feels like you are listening to her over a cup of tea in a Giza café (Fig. 4).

<https://player.fm/series/one-year-in-egypt>

Egypt Daily News is a website, in English, rather than a podcast, but has given wide and independent coverage of events in the country since the year 2000. National and world news vies with entertainment, sport, science and technology.

www.egyptdailynews.com

New and Blue

The Blues Kitchen is a bar and music venue in London and Manchester. I visited the Manchester branch recently and was impressed by the atmosphere and the décor (Fig. 5). The Blues Kitchen also run a radio programme and a YouTube channel. The radio programme is informative and easy to listen to, with interesting facts, figures and talk about music, new and old. You come away feeling your knowledge has been enhanced.

<https://tinyurl.com/2p95cnka>

Postcard Panorama, a *Shortwave Radio Conversation*, is a new programme in the pipeline to be aired monthly on

WRMI. Tammy Walker is the producer and presenter, and she explains how the programme, "will bring together radio-related anecdotes and events submitted by listeners, with each episode focused on a particular theme rather than on a broadcaster or program. So it's a listener mailbag program but organized a bit differently than most. We're taking submissions for the first episodes now."

A previous programme from Tammy on WRMI was called *Short Waves/Short Poems*, and poetry will feature in *Postcard Panorama* as well. The themes for 2022's programmes include radio and love in February, radio mysteries in March, international connections in April, radio mothers in May, a road trip in June, radio memories in July, and summer, sun and propagation in August.

www.tdwalker.net

www.postcardpanorama.com

www.shortwavesshortpoems.com

Finally, try the six-part podcast series called *Between Dream and Tragedy; Europe's Story after 1989*. It is, "a history of Europe, but not as you've heard it before ... an alternative history of the momentous steps that created today's EU." You can also download the transcripts as PDF documents.

The person behind it is Luke Cooper, academic and scholar of international relations and politics, and co-host of the *Another Europe* podcast.

www.iwm.at/podcasts?series_id=72

www.anothereurope.org/podcast

Radio News

DAB DIGITAL RADIO ARRIVES IN ALDERNEY:

Nation Broadcasting has launched a DAB transmitter for its Channel Islands DAB multiplex on Alderney, meaning for the first time, 28 DAB+ digital radio services are available on the island. This significantly increases listener choice as only seven services have been available until now on FM for Alderney listeners. The 28 new services include a mixture of services such as existing local station Quay FM, services from other Channel Islands broadcasters, in addition to new digital formats such as speech radio, oldies, easy listening and current hit music. Jason Bryant, Founder of Nation Broadcasting said: "With a population of 2,000 people, Alderney becomes the smallest community to gain access to DAB digital radio services in the British Isles. The launch of our new Alderney transmitter completes our Channel Islands local DAB+ multiplex plans, submitted to Ofcom in 2019. I am particularly pleased to have over-delivered on the number of available services, and we will shortly announce the final new audio service for the Channel Islands." Ash Elford, Nation's DAB Platform Manager added: "We'd like to thank Quay FM, Factum Radioscape and Commtronix for their innovative partnership with Nation Broadcasting to launch the Alderney transmitter. Out-of-the-box thinking is what makes Nation Broadcasting a leader in DAB+ digital radio broadcasting."

<https://tinyurl.com/2p9cwp2k>

CZECH RADIO SWITCHES OFF MW AND LW:

Radio on Medium Wave (MW) and Long Wave (LW) has been history in many parts of Europe for years. Now, in the Czech Republic, at least the public broadcaster will stop transmitting on MW and LW. The powerful transmitters on the frequencies 270, 639 and 954 kilohertz could also be received in large parts of Germany. The reason given for the move was the widespread availability of terrestrial digital radio DAB+ and the high costs of broadcasting. Those still listening using medium waves were to be persuaded to switch with a campaign. The radio station *Český rozhlas* set up a telephone hotline to answer questions. It was not known at first whether the transmitters would be retained or used for other purposes. The antenna of the medium-wave transmitter Liblice B, East of Prague, is considered the highest structure in the Czech Republic, with a height of 355 metres. *Impuls*, the most-listened-to private station, wants to remain faithful to Medium Wave for the time being. It broadcasts its second programme, with pop and country music, on analogue transmission. (SOURCES: DPA | Mike Terry, via the *Southgate ARC* | *SWLing Post*).

<https://tinyurl.com/2p84s3dd>

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Larry Bennett

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For nearly 100 years, a network of Coast Radio Stations provided wireless communications to vessels navigating the coastal waters (and sometimes beyond) of the United Kingdom. Some stations were originally owned and operated by Lloyd's of London (many former lookout, semaphore or flag stations) or The Marconi Company, and an uneasy agreement between the companies allowed a degree of co-operation.

However, after the Post Office opened their first Coast Radio Station at Bolt Head (Devon) in 1908, the former Lloyd's and Marconi stations were taken under the umbrella of the Post Office in 1909.

At that time, all stations used the 'spark' method of Morse code signalling, which – although relatively reliable – did eventually cause a great deal of interference to BBC broadcast transmissions in their vicinity, which gave rise to numerous complaints to the press and Parliament.

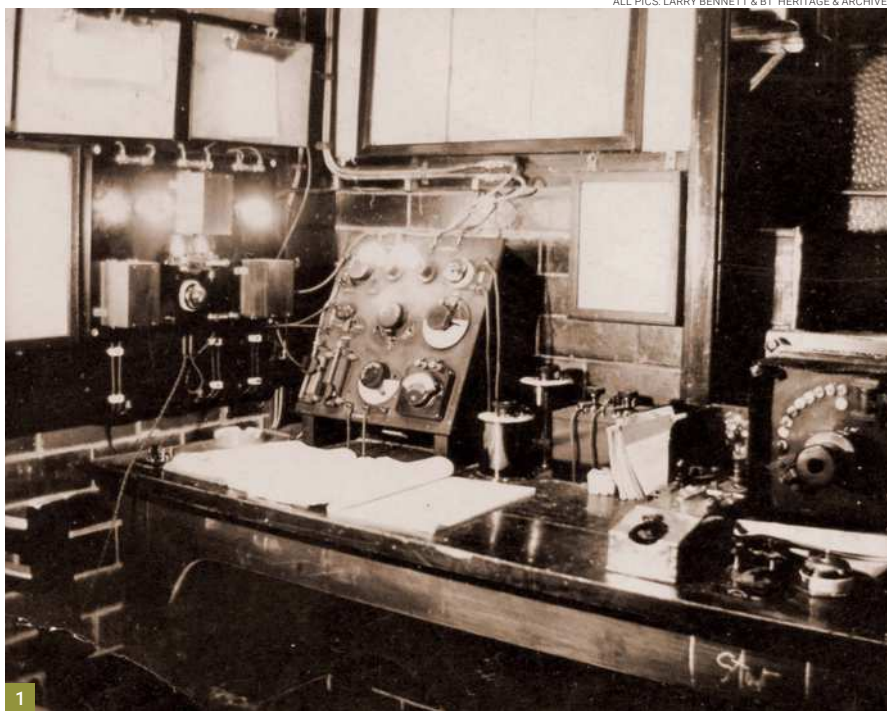
The further development of improved communication methods was put 'on hold' during World War I (1914-1918), with the Admiralty taking charge of the Coast Station network. On resumption of peace in 1918, the stations underwent a great deal of upgrading and modernisation.

Some of the older Coast Stations such as The Lizard and Grimsby were replaced by more modern stations at Land's End/GLD and Humber/GKZ at Mablethorpe, and other smaller stations such as Hunstanton and Skegness were closed down having outlived their initial usefulness. The introduction of valve technology ended the 'spark' transmissions at each station, much to the relief of the BBC and countless radio listeners close to the transmitting sites.

Three stations were operated in Ireland, Malin Head/GMH, Rosslare/GRL and Valentia/GCK, and following the declaration of Irish independence, these stations continued to operate but under the auspices of the Irish Post Office as 'agents' of the British Post Office (Fig. 1)

New and Relocated Stations

The Post Office were keen to provide full coverage around the UK coast, and the station at Rosslare/GRL was replaced by a station at Fishguard to provide improved coverage of the Southern Irish Sea and the Bristol Channel approaches. Call sign GRL was transferred to the new station



The UK's Coast Station Network – a Brief History

Author and RadioUser contributor **Larry Bennett G4HLN** provides an overview of the UK MF/VHF Coast Station Network, on the occasion of the publication of his much-anticipated new book.

accordingly.

However, the Fishguard station was not successful, and the station was subsequently relocated to the Portishead Radio operational site at Highbridge, near Burnham-on-Sea in Somerset. Known as Burnham Radio, this station took over the call sign GRL.

A similar relocation took place in the Northern Irish Sea where the former Marconi Station at Seaforth/GLV was closed and replaced by a new station at Anglesey. Coverage of the Western Isles in Scotland was also improved by the opening of a small station at Oban/GNE, housed in Nissen huts on a former airfield (Fig. 2).

Many private companies operated their own stations for communication with their

ships; whilst not owned or operated by the Post Office, these stations provided a useful service. Such stations as Parkstone, Folkestone and Harwich were operated, but as they could not provide links into the national telephone or telegraph network, most closed after a few years of operation (Fig. 3).

By the end of the 1930s, the network was fully established and working, and proved extremely popular, especially amongst the numerous fishing fleets. A Radiotelephone service was introduced at Humber Radio in 1937, and other stations were similarly equipped over the next few years (Fig. 4).

World War II and After

World War II (1939-1945) saw the stations



Fig. 1: Internal layout of Wick Radio/GKR c. 1922.

Fig. 2: Oban Radio/GNE showing one of the original Nissen Huts.

Fig. 3: External view of Niton Radio/GNI c. 1934.

Fig. 4: Cullercoats Radio/GCC c. 1935.

Fig. 5: Humber Radio/GKZ, c. 1955.

Fig. 6: The new station at Ilfracombe Radio/GIL, 1958.

Fig. 7: Internal view of Niton Radio/GNI, showing the computerised DOC Consoles, 1991.

Fig. 8: VHF Card from 1992 showing channels and station locations.

Fig. 9: R/O David Nancarrow sending the last W/T transmission from Land's End/GLD, 31st December 1997.

Fig. 10: A 1925 diagram of the Post Office Coast Station network, showing transmitter sites and the DF station at Flamborough. Oban and Stonehaven Radio Stations are yet to be established.

Fig. 11: The author's 2020 book on *Portishead Radio*.

once again come under Admiralty control, and a backup system of inland stations was devised to provide full coverage in case of bomb damage or occupation. The Post Office Maritime section was relocated to temporary offices in Harrogate and Blackpool, and details of every distress handled by the station were logged and passed to HQ for review.

The stations kept a sharp listening watch on all distress frequencies, as ships were prohibited from transmitting radio messages unless in a distress situation. There was also a degree of co-operation between UK and German stations for handling distress traffic, although no official agreements were in operation.

After the cessation of hostilities in 1945, the Post Office took the opportunity to upgrade the whole Coast Radio Station network, with the installation of modern receivers and upgraded transmitters.

By now, the network had settled into a reliable and effective service, with developments in maritime communication

becoming quickly handled; the introduction of the first short-range (VHF) service in 1949 from a site close to the River Thames at Shooter's Hill and using AM becoming immediately popular.

The Irish stations at Valentia and Malin Head were formally handed over to the Irish Government on 1st January 1950, with callsigns EJK and EJM, respectively.

The night of 31st January 1953 saw appalling weather hit the UK, with Humber Radio/GKZ (Fig. 5) suffering considerable flood damage, and the ferry 'Princess Victoria' being sunk just off the coast of Northern Ireland.

Portpatrick/GPK was heavily involved in handling the distress from the vessel, but 135 souls lost their lives on that terrible night.

Modernisation and VHF Services

The year 1953 brought considerable changes to the international frequency plans for Coast Stations worldwide, with the UK stations having to change working frequencies and protocols for W/T and R/T working. Many stations were allocated 'shared' frequencies in and around the 160m amateur radio band, causing many radio magazines to print a list of frequencies that radio amateurs were asked to keep clear of.

Recruitment of staff for the Coast Station network had always been a problem for the Post Office, and in 1955 a campaign was launched to attract Radio Officers to the service.

However, uptake was not as high as initially thought, and consideration was given to employing inland telegraphists – a suggestion which was strongly opposed by the various Unions involved.

Following many years of stability, a new



station was tested in 1955 at Ilfracombe, North Devon. The existing station at Burnham/GRL had some difficulty in providing reliable communications to the entrance of the Bristol Channel, so a temporary station was installed at the main Post Office in the centre of Ilfracombe. This station took over the MF R/T service from Burnham, and on 29th January 1959, a new, purpose-built station near Mullacott Cross was opened, with callsign GIL (Fig. 6).

A similar station was opened the following year at Anglesey/GLV, replacing the former station at Seaforth. These new, airy and open-plan buildings were equipped with modern transmitting and receiving equipment, and most continued in operation until the final days of the service in 2000.

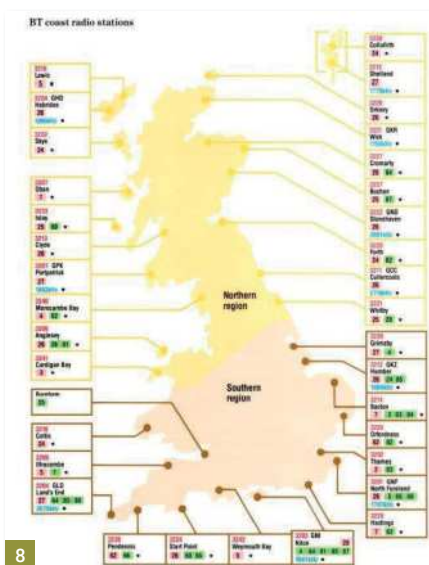
The VHF service expanded during the late 1950s, and the AM service was replaced by FM. Stations at Niton, North Foreland, Land's End and Humber were so equipped with Channel 16 and one working channel.

Golden Age and Decline

The 1960s saw numerous technological advances; the installation of radio telex facilities proved extremely beneficial for the large shipping companies, and the oil exploration industry around the UK coast brought a great deal of welcome traffic to the Coast Station network. Radio was becoming affordable to the leisure market too, and many yachts were able to install suitable equipment, following a great deal of publicity with yacht races and expeditions.

The fishing industry has always been a valuable source of traffic for the network, with many of the stations in the North East of England and Scotland handling considerable amounts of traffic from vessels departing from and arriving at their home ports. Wick Radio/GKR also provided a limited HF W/T service, originally intended for the deep-sea fishing fleet, but regularly seized upon by sea-going R/Os who found they could bypass the huge queues at Portishead/GKA by using Wick!

The 1970s was probably the 'golden age' of the network – traffic figures remained high, and all stations were keeping extremely busy. However, an internal paper produced by the Post Office entitled *Maritime Services – A Review of the Future* was published in 1979 and offered a sobering view of the future of the service, taking into account the imminent implementation of satellite services and the subsequent decline in radio traffic.



The paper was quite forthright in its plans, with the possibility of remote-controlling of the short/medium range stations being of particular interest.

The formation of British Telecom in 1982 – the new private company now responsible for the network (and its shareholders) – only served to hasten the decline of the service. Various options were discussed to save money and improve efficiency. One option was to close all the MF/VHF stations and operate them all remotely from the new Portishead Radio Control Centre in Highbridge, Somerset; another one was to operate two control stations, one in the north of the country, the other in the south.

Both had some degree of merit but the opposition from staff and Unions was considerable.

DOC and DWBS

Eventually, in 1983, the introduction of 'Distributed Operational Control' (DOC) took place, although this did go through numerous iterations over subsequent years. Plans to involve Portishead Radio were eventually dropped, although the station did eventually remotely control the MF and HF radiotelex networks (including NAVTEX) as part of the automatic system devised in the early 1980s.

A northern control station at Stonehaven/GND and a southern one at Land's End/GLD was eventually decided upon. From January 1984, Stonehaven, Humber, Niton, Ilfracombe and Anglesey all ceased broadcasting W/T navigational warnings, and Portishead took over all radiotelex services from the Coast



Stations from December 1985.

The year 1986 saw the official adoption of the 'DWBS' (Distress Watch and Broadcast Stations) at Stonehaven and Land's End, meaning that the other stations would only handle commercial traffic and operate on restricted hours; and on 31st October 1987, the W/T services at Humber, Niton and Stonehaven ceased – although Niton was to make a surprise comeback on W/T a few years later (Fig. 7).

In 1993, the merger of the southern and northern stations finally took place, thereby implementing the original plan from the 1979 review of Maritime Services (Fig. 8).

1997 saw the sad end of the W/T service from the UK Coast Stations – on 31st December that year, all W/T stations transmitted their last broadcasts,

recordings of which were made for posterity. The stations continued to provide an R/T service until 2000, but traffic figures were low – and on Sunday 30th April 2000 the end of an era came with the closure of Portishead Radio/GKA and the VHF R/T services around the UK.

The MF R/T services quietly closed down at 1200 GMT on 30th June 2000 with little ceremony – The windows were shut, the lights switched off and the doors locked for the last time.

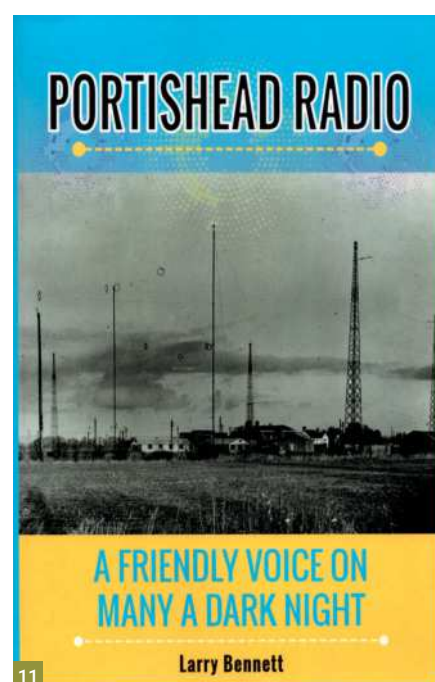
And the radio waves became silent forever (Fig. 9).

Many of the buildings are still standing to this day; some, like Ilfracombe, have found an alternative community use, and others have been converted into residential accommodation.

Further Information

Bennett, L. (2021) 'Portishead Radio Aeronautical Services'. *RadioUser*, January 2021; 41-43

Larry's previous book, **Portishead Radio – A Friendly Voice On Many A Dark Night** was previously reviewed in *RadioUser*, August 2020: 16 (David Harris), and in *Practical Wireless*, September 2020: 50 (Don G3XTT). Larry's new book, **All ships. All Ships** was previously reviewed in *Practical Wireless*, January 2022: 49 (Don G3XTT).

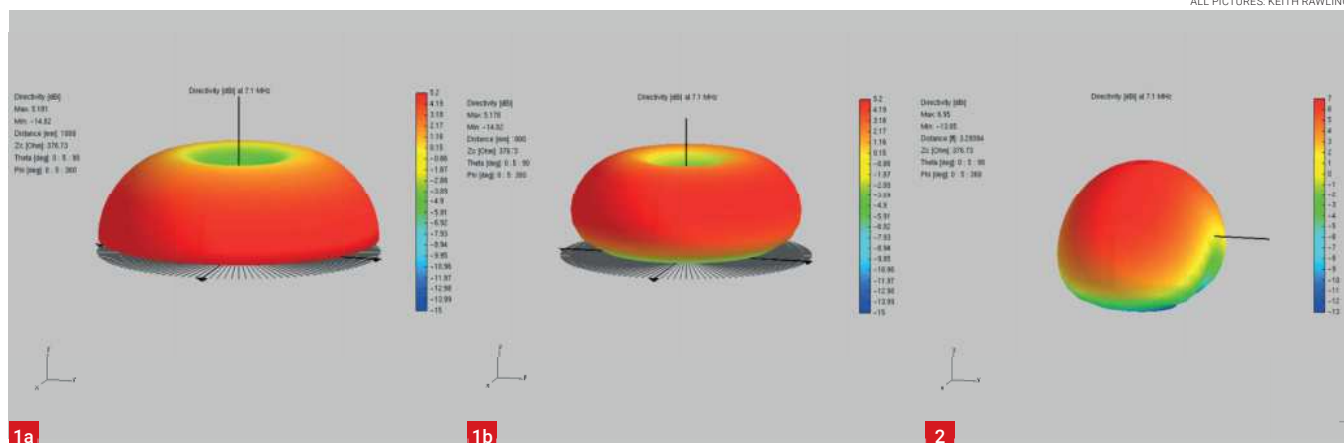


However, the buildings at Humber and Stonehaven are in a state of some disrepair, although plans for the use of the buildings are still under discussion some 20 years after closure!

For nearly a century the stations provided a valuable service to shipping and the maritime community in the UK. They should never be forgotten (Fig. 10).

[A complete and detailed history of the Coast Radio Station service can be found in Larry's new book **All Ships, All Ships: A History Of The Short & Medium-Range Coast Radio Stations In Great Britain**, available on Amazon and other online book retailers worldwide for £17.99. A limited number of author-signed copies are available from the Portishead Radio website at www.portisheadradio.co.uk.

Fig. 11 shows Larry's previous book – Ed.]



Keith Rawlings
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Basic Aerial Technology: Ground, Dipoles and BALUNS

Keith Rawlings continues his 'aerials for beginners' theme by looking at how the ground influences signal reception, expanding on dipole aerials and explaining the workings of BALUNs.

In last month's column (*RadioUser*, January 2022: 38-40), I included diagrams of the radiation patterns of an HF dipole – both in free space and above a realistic ground. This was to demonstrate how the patterns could differ due to the ground reflecting the wave.

Exactly how these waves are reflected depends on the ground beneath the aerial.

It has long been known that seawater makes an excellent ground. Many amateurs, including those on 'DXpeditions', operating from exotic islands, have found that simple aerials by a seashore work very well indeed and are very popular: The image in Fig. 1 illustrates an AN-SOF simulation of a 40m vertical with a ground plane.

In Fig. 1a, it is located over seawater. Here, the wave can be seen to propagate out at a lower angle to the ground, when compared to Fig. 1b, which is located above 'poor' ground.

A 7.1MHz $1/4\lambda$ vertical with a ground plane mounted at ground level as in Fig 1 will have a very different radiation pattern compared to a 7MHz dipole that is located at $1/4\lambda$ above ground (Fig. 2).

In this case, the signal is reflected by the ground and is mainly forced upwards. This same dipole will have a radiation pattern that varies depending on its height above ground.

The diagram shows that, when a dipole is mounted at an electrically low height, most of the radiation goes upwards, whereas a vertical will have its radiation go outwards at a lower angle.

Signal Enhancement

For 'DX' working, a lower radiation angle is desirable as the signals will travel

closer to the horizon. Therefore, on paper at least, the vertical is the better aerial choice for long-distance working.

However, consider the scenario on 40m during the daytime. The band is unlikely to be open to 'long-distance working' because lower frequency signals will be adsorbed by the D-Layer.

On account of this, the advantage of low angle radiation is somewhat reduced.

The dipole, however, will have most of its signal travelling directly upwards. Signals going upwards will penetrate the D-Layer and 'bounce' off of the F-Layer coming 'near vertically' back down to earth again.

This is the basis for NVIS operation (Near Vertical Incidence Skywave) and distances achieved can be in the 0-400 mile range. For short-range working in daylight, the dipole will be the better aerial. By looking again at Fig 1 you can see that the vertical has practically no signal in the vertical direction.

Incidentally, a dipole for 20m at the same height (which is a $1/2\lambda$) would be affected less by ground and have a lower radiation level.

Ground Reflections and Phase Shift

Ground reflections can enhance signal reception but they can also do the opposite.

The image in Fig. 3 is a simplified diagram of waves leaving an aerial. The *direct wave* travels away from the aerial as expected. However, there can be a reflected wave *off of the ground*.

The extent of this reflected wave will depend on the aerial height and the ground type.

Moreover, there may be a certain amount of adsorption of the signal by the ground.

If we consider a wave travelling as depicted in Fig. 3, the *direct wave* is taking a more direct route than the *reflected wave*. This will cause a time lag between the two waves with the reflected wave being the slower.

This is known as phase shift, and it can have a significant effect on how signals are received.

If the arrival time of the reflected wave and the direct wave is the same, the signal may be *re-enforced*, which can

Fig. 1: An AN-SOF simulation, showing the predicted pattern of a $1/4\lambda$ ground plane over seawater (Fig. 1a) and poor ground (Fig. 1b).

Fig. 2: An AN-SOF Predicted Pattern of a 40m $1/2\lambda$ dipole at 33ft.

Fig. 3: A diagram showing ground reflection.

Fig. 4: Predicted current along a horizontal dipole at the top (Fig. 4a); a dipole with ends bent back horizontally (Fig. 4b), and a dipole with its ends dropping down (Fig. 4c).

Fig. 5: AN-SOF predicted current along a dipole with the ends bent back upon itself.

Fig. 6: A Fan dipole.

Fig. 7: Parallel dipoles.

improve reception. If, for example, the signals are 180° out of phase with each other, they will cancel one another out, and the signal may be seen to 'fade out' completely.

More on Dipoles

Last month (*RadioUser*, January 2022: 38-40) I also mentioned dipoles and used an AN-SOF-generated image to demonstrate current levels on a dipole element. This current was at a maximum at the centre of the element, coinciding with maximum radiation, so we need to keep this point as high as possible.

However, this does mean that we can take a few liberties with the ends of the dipole, as these are not so important to its radiation.

In Fig. 4, we have three diagrams of current distribution on a 7.1MHz dipole.

At the top is a conventional horizontal dipole. Below this, there is a dipole with the ends bent back horizontally at 90° . And at the bottom is the same dipole, but with the ends dropping vertically at 90° .

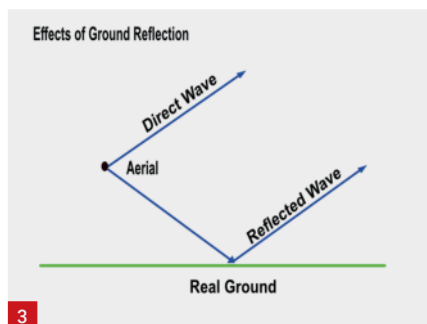
In Fig. 5 you see the current distribution where the element has a section dropping down vertically, and the remainder has been bent back underneath the main element, with the red section remaining in the clear.

In all diagrams, we can see the *red area*, in which the current is at its highest.

The *blue areas*, where current is at its lowest, contributes little to the radiation of a dipole and can reasonably be 'bent' if circumstances so dictate. This may be due to restricted space and has just a small effect on performance.

In Fig. 5, 13ft of each end of the dipole has been altered.

Using the AN-SOF 3D Current Distribution Graphic one can experiment and get a good idea of where the currents are running along a wire.



A Fan of Dipoles

As mentioned last month, a dipole is effectively a single-band aerial, operation on its third harmonic excepted.

If one wishes to stick with a dipole, but cover more frequencies, there are ways to 'multi-band' them. A couple of ways can be seen in Figs. 6 and 7. These are known as *Fan Dipoles* (Fig. 6) or *Parallel Dipoles* (Fig. 7)

This is a technique where several individual dipoles are fed from the same feed point. The wires may either run parallel to each other or be fanned out. Each dipole should be resonant on its own frequency; as such, it will radiate as a 'resonant dipole' on that frequency.

Therefore several different bands can be covered using a single feeder. This works by each dipole presenting a low impedance at the feed point on its resonant frequency. Then, when moving away in frequency on one dipole, its impedance increases and it will not absorb power. At the resonant frequency of another dipole, the impedance will fall, and it will take power from the feeder.

Each parallel/fan dipole will appear to have a number of resonant frequencies, corresponding to the frequency of each of the different dipoles.

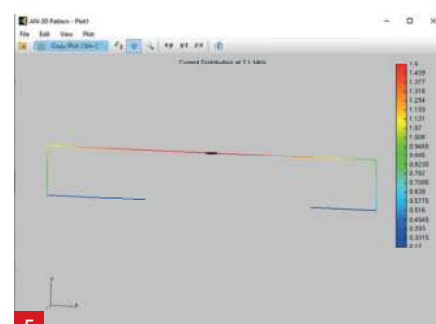
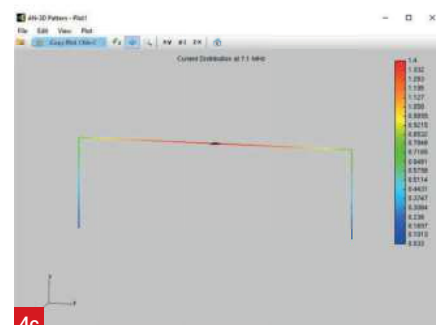
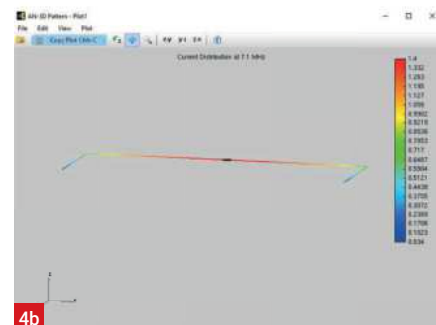
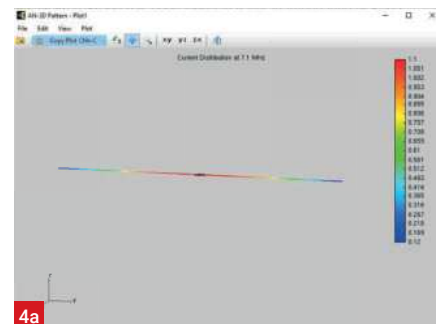
There are a few construction points to take into account with multiple dipoles:

In Fig. 6, for instance (Fan Dipole) the dipole for the lowest frequency, which is the longest, will carry the whole weight of the array, and this may cause considerable sag.

One way around this may be to use a single pole to support the dipole as an Inverted-V type aerial.

Another one would be the use of much lighter wire for the shorter aerials.

Look out for interaction between the dipoles. This will make accurate tuning of each element difficult, as one element can de-tune the others to some extent. I know this from experience, having once spent a very frustrating day trying to sort out an



80-10m parallel dipole.

The graph in Fig. 7 (Parallel Dipole) shows a method of construction, in which the dipoles are 'fanned' out.

With this configuration, the interaction between elements should not be so great. However, this does mean more anchor points for the wires. Quite naturally, the more elements are included in this type of array, the greater is the likelihood of its sagging. It is also feasible to take the different wires for each band away from the feeder in different directions, fanning

them out as required.

Another point to consider during design time is to ensure that the individual dipole resonant frequencies do not correspond to harmonics (3rd, 5th and so on) of another dipole since both will have a low impedance at this point. Each half of the dipole is an electrical quarter-wavelength long to give a total of a half-wavelength.

As previously discussed, the feed is in the centre where the current is highest and the voltage lowest resulting in a good impedance match for 50Ω coaxial cable.

The formula for these designs is the same as for an ordinary dipole:

- $492/f$ in feet.
- $150/f$ in metres.
- $5905/f$ in inches.
- Where 'f' is the frequency in MHz.

Be generous with these calculated lengths, as there will be variations due to local objects and interaction between wires. It is always prudent to add a little extra length and trim them later for the best match.

Some patience is required when tuning; the more wires you use the more patience you will need!

For beginners, I suggest starting with just two or three wires and increasing the number, after some experience has been gained. Another idea – if there is room – is to add another separate array and feeder for different frequencies, to switch between them at the operating position. Remember that, while the currents are low at the dipole ends, the voltage will be high when used for transmitting. Therefore, do make sure the ends are safely away from people and animals.

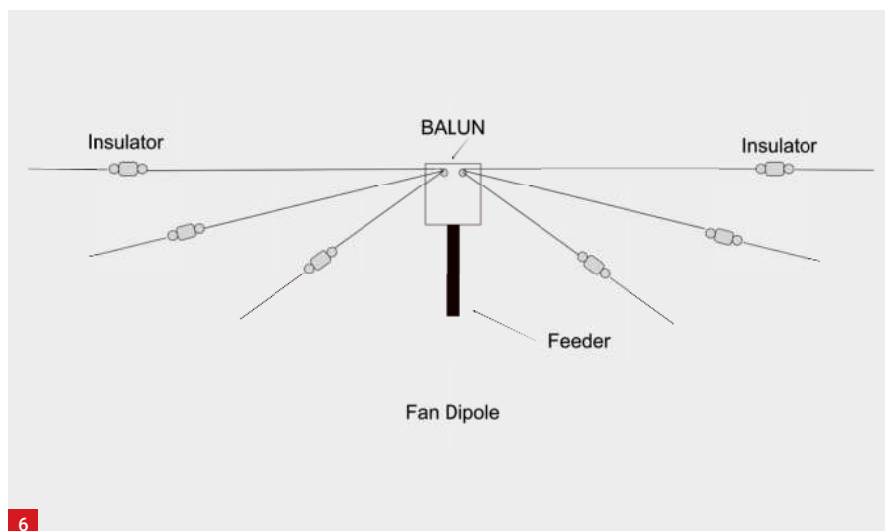
Some method of tuning will be required to bring each dipole to resonance. A licensed amateur may be able to use a transmitter and SWR meter. For the listener, some form of analyser could be used. It is recommended that adjustments are made at the feed point and not at the shack end of the cable being used.

An Aerial ('Antenna') Matching Unit (AMU) can be used to electrically 'trim' a dipole when it is slightly off-frequency. However, ideally, you ought to try to get it as close to resonance as possible.

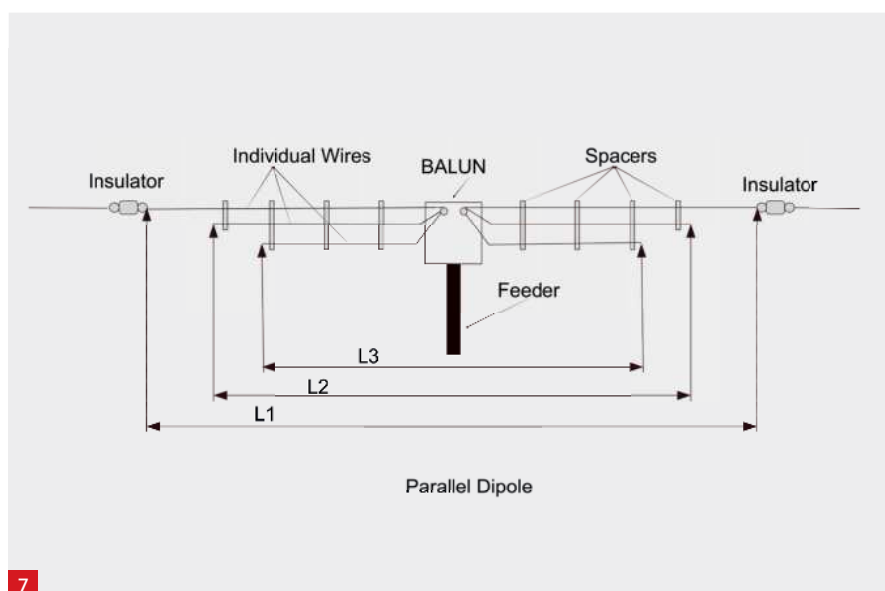
I will cover more about 'wide-banding' a dipole next month.

BALUN

A dipole is a balanced device. Coaxial cable is unbalanced. If we connect one dipole half to the inner of our coax and the



6



7

other to the outer, we have unbalanced it; one side of the dipole will be grounded to the radio.

This may not be an issue while receiving, but it may mean noise pick-up in some cases and radiation of RF off of the feeder when transmitting, none of which is desirable.

To counter this, a BALUN (Balanced-to-Unbalanced) is added to the dipole *at the feed point*.

The dipole element(s) are connected to the balanced terminal of the BALUN, and the cable is attached to the unbalanced side, usually with a connector such as an SO239. In this case, a length of coaxial cable can then be connected with a PL259, which then runs back to the station.

The type of BALUN needed for a dipole and 50Ω coax feed will be a 1:1 type.

This ('1:1') means it has no impedance transformation. It will be 50Ω in and 50Ω out, although it should be recognised that the dipole elements may not end up being 50Ω even when tuned; so there will probably always be a slight mismatch.

There are various designs of BALUN, and I will cover those in the future. However, for now, a simple one for the HF bands (a 'Choke BALUN') can be made from winding around 20ft or so of RG58 cable over some PVC pipe (50 to 75 mm in diameter) to form a so-called 'quick-and-ugly' choke-balun.

The dipole element connects to the inner and outer of the coax at the feed point and the cable runs to the shack, with the idea being that the outer cable is now 'choked' to RF. A BALUN will add extra weight, so remember to allow for this in your design.

Radio News



CLASSIC FM LIVE RETURNS TO THE ROYAL ALBERT HALL IN 2022: Classic FM will return to the Royal Albert Hall on Monday 11th April for a very special live concert to celebrate its 30th birthday. In addition to the station's anniversary, 2022 is also Her Majesty The Queen's *Platinum Jubilee* year. To celebrate, Classic FM Live will be an evening full of music written for royalty, performed by a line-up of world-class musicians with links to the Royal Family. The concert will include the following: The world premiere of a brand-new piece, commissioned by Classic FM and written and conducted by its Composer in Residence Debbie Wiseman OBE, to commemorate The Queen's Platinum Jubilee. Debbie composed Viking's signature score, *The Traveller*, and is godmother to the river ship *Viking Herja*. The new piece will be performed by the acclaimed multi-award-winning trumpet player Alison Balsom OBE, who will also play two movements from Hummel's *Trumpet Concerto in E-flat*.

The Royal Philharmonic Orchestra and the Royal Choral Society, conducted by Barry Wordsworth, whose performances will include Walton's *Crown Imperial*; Parry's *I Was Glad and Jerusalem*; *Pomp & Circumstance March No. 1* ('Land of Hope and Glory') composed by Elgar, and Handel's rousing *Zadok the Priest*, which was the first piece of music played on Classic FM when the station launched on 7th September 1992.

For more than two decades, Classic FM has been staging classical music concerts at London's Royal Albert Hall. This event will be recorded for broadcast on Classic FM on Tuesday 12th April at 8 pm.

(SOURCES: Classic FM | RadioToday).

<https://tinyurl.com/2p8p2pex>

European Private Shortwave Stations

January 1st 2022

Only **legal** stations are included. Most stations use low power, but a few use several kW. Note that UTC is used here - not CET! Abbreviations used: D = Germany, DNK = Denmark, FIN = Finland, NL = Netherlands, NOR = Norway F.pl.: future plan, Int'l = International, Irr. = irregular, LT = Local time, 24/7 = twenty-four hours a day, seven days a week Mo = Monday, Tu = Tuesday, We = Wednesday, Th = Thursday, Fr = Friday, Sa = Saturday, Su = Sunday

kHz	Country	Name	Transmitter site	Schedule (UTC)
3955	D	Radio Channel 292	Rohrbach Waal	Daily 0700-2000 & 2200-0600
3975	D	Shortwave Gold	Winsen	Daily 0700-2100
3985	D	Shortwaveservice	Kall-Krekel	Daily 1500-2100
3995	D	HCJB	Weenermoor	24/7
5895	NOR	The Sea / Radio Northern Star	Bergen	Silent, but renewal of license granted
5920	D	HCJB	Weenermoor	Daily 0700-1705
5930	DNK	World Music Radio	Bramming	24/7
5955	NL	Sunlite	Westdorpe	24/7. From week 2: Daily 0400-1700
5970	DNK	Radio208	Hvidovre	24/7
5980	DNK	Radio OZ-Viola	Hillerød	We 2200-2300
5980	FIN	Scandinavian Weekend Radio	Virrat	1st Sa LT of the month (not in January)
5990	NL	Lomp Radio	Klazienaveen	F.pl.
6005	D	Shortwaveservice	Kall-Krekel	Daily 0900-1700
6020	NL	Radio Delta International	Elburg	Su 0600-1500
6055	DNK	Radio OZ-Viola	Hillerød	Sa-Su 1200-1400
6070	D	Radio Channel 292	Rohrbach Waal	24/7
6085	D	Shortwaveservice	Kall-Krekel	Daily 0800-1800 (Radio MiAmigo Int'l)
6115	D	Radio SE-TA 2	Gera	Irr. (0900-1200 UTC)
6125	NL	Radio Europe	Alphen a/d Rijn	Irr. (1400-2300 UTC)
6140	NL	Radio Onda, Belgium	Borculo, NL	Irr. (weekends)
6150	D	Europa 24	Datteln	Daily 0800-1605
6160	D	Shortwave Gold	Winsen	0800-1500
6170	FIN	Scandinavian Weekend Radio	Virrat	1st Sa of the month (not in January)
6170	NL	Radio Piepzender	Zwolle	F.pl. (or 6195)
6185	NL	Radio Piepzender	Zwolle	Irr. (will change to 6170 or 6195 kHz)
6195	NL	Radio Piepzender	Zwolle	F.pl. (or 6170)
7280	NL	Rockpower	Nijmegen	Irr.
7340	NL	Radio Delta International	Elburg	F.pl.
7365	D	HCJB	Weenermoor	0900-1500
7445	NL	Radio Piepzender	Zwolle	Irr. (0800-1800 UTC)
9530	NL	Radio Onda, Belgium	Borculo, NL	Irr. (weekends)
9670	D	Radio Channel 292	Rohrbach Waal	24/7
11690	FIN	Scandinavian Weekend Radio	Virrat	1st Sa of the month (not in January)
11720	FIN	Scandinavian Weekend Radio	Virrat	1st Sa LT of the month (not in January)
15785	D	FunkLust	Erlangen	DRM-modulation
15790	DNK	World Music Radio	Randers	24/7
25800	DNK	World Music Radio	Mårslet, Aarhus	24/7

This list is compiled by Stig Hartvig Nielsen each first day of the month - based on details supplied by the radio stations, the stations websites, monitoring observations, HFCC registrations, and some presumptions. The list is not copyrighted and may be published everywhere. Subscription by email is free of charge; write to shn@wmr.dk.

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Buy the TRX-1E for just

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The Whistler WS1065 employs cutting edge technology to bring a high level of performance and innovative features. This model clearly raises the bar in the area of advanced trunking scanners. Frequency coverage is extensive including: 25-54, 108-17, 137-174, 216-512, 764-776, 795-805, 849-869, 896-960 and 1240-1300 MHz.

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- Alert LED • Audible Alarms • Automatic Adaptive Digital Tracking
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This 300-channel scanner can be categorized into 10 separate memory banks. Plus one-touch searches of marine, air and ham Frequency Range: 29-54 VHF Low Band. 87.3-107.9. 108-137 Civil Aircraft Band Includes 833 kHz steps. 137-144 VHF. 144-148 Amateur Band 2 Meters 148-174 VHF High Band

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KEY SPECIFICATIONS

- Frequency: 25-54MHz, 108-136.99MHz, 137-174MHz, 216-379.97MHz, 380-512MHz, 764-781MHz, 791-796MHz, 806-960MHz (excluding cellular), 1240-1300MHz
- Simple Zip Code programming
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This 400-channel scanner lets you listen to FM radio bands and can be categorized into 10 separate memory banks. Also, it offers the convenience of one-touch searches of marine, air and ham

Key Features/Specifications: 200 Channel memory - plenty of memory to store all your favorite frequencies in 10 separate storage banks. Backlit Liquid Crystal Display - easy to read and program data even in low light situations. Data Cloning - allows transfer of the programmed data to another WS1010 scanner.

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WHISTLER

WS1040 Handheld Scanner

The WS1040 scans most common trunked radio system signalling formats, including Motorola, EDACS, LTR and P25 trunked radio networks. Talk group and individual call monitoring is supported.

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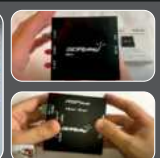
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In Part One of this article (*RadioUser*, November 2021: 34-37), I examined some examples of indigenous radio in Australia, Canada, and the USA. This month, I have selected some case studies from a wider range of countries.

There is much to celebrate around the world when it comes to radio stations for Indigenous communities. Today, many such communities are finally being supported by governments and organisations. The history of oppression of many indigenous peoples on every continent, and its legacy, is being acknowledged and confronted.

As a result, improvements in infrastructure and human rights, along with raised awareness and better cultural understanding, have led to an increase in specialised radio stations and programmes.

For instance, many people take it for granted that the first language, and therefore, the primary radio station programme content, of most Central and South American countries, is Spanish. In Africa, many countries' *lingua franca* is French or English, for instance, in Gabon, Senegal and Côte d'Ivoire, Ghana, Nigeria, and Gambia.

It should be remembered that many of the reasons for this Euro-linguistic dominance are rooted in the invasions and subjugation by European powers over the past few hundred years.

Nigeria

Although English is the official language of communication in Nigeria, it is not fully understood by the entire population. This has been evidenced in UNESCO findings on Nigerian literacy levels.

The importance of broadcasting in Indigenous languages has been highlighted in several pieces of research. In 2017, Des Wilson and Eric Ugor Ogri, of the University of Calabar, recommended that the setting up of Indigenous language broadcasters and community radio and television stations, should, "*across the length and breadth of the country [become] a reality. In addition to the current broadcasting policy which favours the establishment of public and commercial broadcasting stations, a third sub-sector, community broadcasting, should be created.*"

"*They observed that the existing arrangement favours the government and the private sectors to the detriment of common Nigerians. While public broadcasting serves the need of the government, the*



Radio & Indigenous Communities (Pt II)

Chrissy Brand concludes her examination of how the world's Indigenous communities can use the power of radio to foster collaboration, kinship, harmony, and good relations.

100 commercial broadcasting sectors serve the profit-making motives of the owners. The people are entirely left out. The proposed community radio/TV station will encourage community participation because its programme content would be generated by the people and broadcast in their native dialects."

A study by Oyero Olusola at Covenant University cited Radio Lagos 107.5 FM. Known locally as Tiwantiwa, the station broadcasts in Yoruba and Ogu, which are spoken in Lagos State, Nigeria (Fig. 1).

A conclusion was that Indigenous language offers, "*good understanding and better meaning of radio messages to the*

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CULTURAL SURVIVAL



Fig. 1: Broadcasts in Indigenous languages are vital in Nigeria.

Fig. 2: Radio Ixchel in Guatemala broadcasts in the *Kaqchikel* language.

Fig. 3: Alian 96.3 was Taiwan's first national Indigenous radio station.

Fig. 4: Indigenous Radio Amsterdam champions human rights throughout the year.

Fig. 5: Justine Murray's features and series on the history of Māori radio are exceptional.

listeners." In addition, survey results showed how the vast majority of respondents, "derive better meaning from the radio messages when the Yoruba language is used. Besides, it is also discovered that people generally have a natural liking for their native tongue and this gives them a feeling of enjoyment and sense of satisfaction when they listen to the radio."

More information on this, plus research links, can be read at the website of *Dubawa*, a non-partisan, Indigenous independent verification and fact-checking project (see references).

Guatemala

Four years ago, media channel Al Jazeera (which is funded by the Qatari government), aired a short but pertinent overview that illustrated the importance of Indigenous community radio.

Women in Guatemala showed how they are using community radio to make their voices heard. Amongst the powerful statements made were, "Through the information, we share on community radio, we wake the people up." Radio station information can also inform Indigenous people of the legal rights they have, but which are often unknown to them.

Amanda Chiquito is a host and reporter at Radio Ixchel, a station that was started in the town of Sumpango in 2003 (Fig. 2). It is one of over a hundred community radio stations in Guatemala.

Amanda concisely summarised the situation, which would doubtless apply to many similar radio stations, "Everything has to do with money and who has the frequencies and TV channels throughout the country. They



are discriminatory and racist towards our Indigenous communities.

We are used to listening to information from big media outlets that only want to scare us. They don't want us to say anything or fight for our rights. I think that the worry of both the government and mainstream media outlets is that through community radio there is constant programming to tell our communities they have rights. For me, radio has helped [me] find myself... and to value my roots."

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Indigenous people account for 40% of the population in Guatemala and most live in rural areas with little access to media. Although some legislation allows Indigenous people the right to access their own media outlets, the government has deemed some of these to be 'illegal'.

Anselmo Xunic founded Radio Ixchel in order to represent the community and the Kaqchikel language. The station is run by a team of volunteers and is named after the Mayan goddess of the harvest. Programmes are on the air for 16 hours every day and include educational content and a call-in programme for teenagers.

Peru

In October 2021, The Rainforest Action Network reported on the success and influence of radio station Axenon Ikanwe, which fills a gap in the, "robust ecosystem of other radio programs hosted by Indigenous peoples in the Peruvian Amazon, as the first Shipibo-Konibo radio station to conduct its program entirely in Shipibo-Konibo. Popular among all generations of the Shipibo-Konibo community, the charismatic and visionary hosts, Ranin Koshi, Inin Yui, and Metsa Jisbe beautifully capture the meaning of Axenon Ikanwe in Shipibo-Konibo: 'let's learn together.' The Axenon Ikanwe program gets to the root of what it takes to build resilience and is a testament to the power of Indigenous language in strengthening Indigenous communities."

Taiwan

Another good example of positive change has taken place in Taiwan, where it was only comparatively recently that the country's first nationwide Indigenous radio station took to the airwaves. President Tsai Ing-wen opened Alian 96.3 on the International Day for Indigenous People, on August 10th, 2017.

The station name translates as "good friend" in several of the sixteen aboriginal languages that the station broadcasts in. The initial priorities of Alian 96.3 included connecting the younger Indigenous population with their heritage (Fig. 3). Programme content also gives advice on disaster prevention, arts, music and culture, plus news from other Indigenous peoples globally.

Taiwan Television also runs a channel called the Indigenous Television Network. Taiwan's Council for Indigenous People stipulated that 70% per cent of the broadcast staff that are employed should be Indigenous.

Cultural Survival is an Indigenous-led NGO

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that has advocated for Indigenous Peoples' rights, self-determination, cultures, and political resilience, since 1972. It stated that, "Since many of Taiwan's indigenous people live in mountainous regions, the Council for Indigenous People is installing satellite transmitters in remote villages to promote channel access. Despite the new transmitters, many indigenous households will not be able to receive the station because they lack basic television equipment."

Formosan people, Austronesian Taiwanese, Yanzhumin or Gaoshan people and the peoples of the plains in Taiwan make up the Indigenous population of Taiwan, which totals about 800,000. Recent research suggests their ancestors may have been living on Taiwan for approximately 6,500 years.

Cultural Survival

Cultural Survival also runs a podcast series, called *Indigenous Rights Radio*.

There are over 500 episodes available, with many in English. Recent episodes have covered, amongst other topics, the role of women in the revitalisation of Indigenous languages.

During a three-day virtual conference in October 2021, on "Restoring and Protecting Our Native Languages and Landscapes", over 30 Indigenous language practitioners and experts emphasised that Indigenous women have the greatest role in the revitalisation and preservation of Indigenous languages: women being the traditional keepers of Indigenous languages and cultures.

In the early days of the pandemic, Cultural Survival helped radio stations promote prevention measures and coping mechanisms. In total, they awarded 17 grants from an Emergency Fund to 21 Indigenous community radio stations, in Mexico, Costa Rica, Belize, El Salvador, Guatemala, Honduras, Nicaragua, and Ecuador.



Stations that were recipients included Radio Cultural la Voz de Talamanca in Costa Rica; Radio Voz Lenca AM in Honduras; Radio Ximai in Mexico; and Radio Yapti Tasba Bila Baikra (*The Voice of our Mother Earth*) in Nicaragua.

Surinam in The Netherlands

There is always a day of special programming on 12th October on Indigenous Radio Amsterdam (Fig. 4), which is the date commemorated of Christopher Columbus arriving in the Americas in 1492. The context of the 2021 programming was, "529 years of contact with the European capitalist world and its dominant culture, and 529 years of Indigenous Resistance."

Other programmes are broadcast throughout the year in partnership with The Mapuche Foundation and its radio station Radio Mapuche and can be heard online, mostly in Dutch. The Mapuche people are the largest ethnic group in Chile and constitute approximately 10% (over 1.5 million people) of the Chilean population. Radio Mapuche's website is available in English.

Another partner is The Kaikoesie Foundation, which came into existence in 1986. Its main goal has been to protect the Indigenous people and heritage in Surinam by creating awareness of the dire environmental impact of gold mining in Surinam.

Also on board was Radio Mart (Multicultural Amsterdam Radio and Television). This was originally a Surinamese radio station. It promotes communication between the various ethnic groups in the Netherlands.

In 2020, the programme content included an interview with Surinamese activist, Alwien

Ligorie. He spoke of a life of Indigenous resistance, his current actions and his hope for the future.

New Zealand

The Māori population's influence is reflected in a healthy radio scene throughout New Zealand. Te Whakaruruhau o Ngā Reo Irirangi Māori (National Māori Radio Network) is a network of 21 radio stations for the Indigenous Māori population. Programmes are broadcast in Māori, Cook Islands Māori and English.

Māori language advocates have recognised radio broadcasting as having a small but significant role in bringing Māori language to New Zealand audiences for more than half a century, particularly since the establishment of radio stations under iwi (tribes) control.

State broadcaster Radio New Zealand also carries some relevant programmes. One of these, *Te Ahi Kaa*, reflects, "the diversity of Māori in the past, present and future. While bilingual in delivery, the programme incorporates Māori practices and values in its content, format and presentation."

Justine Murray's exploration of the history of Māori radio in the four-part series *Aotearoa On Air* is also a work of great importance in this field (Fig. 5). It can be heard, and read, at the Radio New Zealand website (see references).

The Decade of Indigenous Languages

It is heartening to see that Indigenous languages are being respected and promoted. The *United Nations International Decade of Indigenous Languages* Table 1) runs from 2022 to 2032, with UNESCO (the

- Indigenous communities have full control of their own language data.
- Indigenous communities have access to international research and resources for language revitalisation.
- Indigenous language access is supported by sustainable technologies.
- Indigenous language learners have access to mother-tongue based education.
- Nations and states are supporting and investing in Indigenous language revitalisation.
- States that succeed in supporting Indigenous languages are celebrated and acknowledged.
- A convention is adopted for the promotion of Indigenous languages and linguistic rights.
- Effective assessment mechanisms are implemented to demonstrate outcomes of the Decade.
- Indigenous-led language work is supported through long-term adequate funding.
- Indigenous knowledge and expertise are recognised and honoured.

Table 1. Ten Goals For The Decade Of Indigenous Languages, proposed by Canada's First People's Cultural Council.

United Nations Educational, Scientific and Cultural Organization) taking responsibility over the decade.

This initiative was created as a next step forward from the 2019 *International Year of Indigenous Languages*: "The proclamation of a decade is strongly supported by a wide range of stakeholders. There is consensus that the decade would contribute to raising global awareness about the importance of Indigenous languages for sustainable development, peace-building and reconciliation, and mobilize further resources for the support and promotion of indigenous languages worldwide. The UN invites 'Indigenous peoples, as custodians, to initiate ideas for preserving this endangered facet of their cultural and social life.'"

There are approximately 7,000 languages used worldwide and at least 40% are at some level of endangerment, with Indigenous languages being particularly vulnerable. There is a major role to be played by radio stations and podcasts to halt this trend. This can take the form of programmes being run by and for Indigenous communities.

This lead should be supported and promulgated to the wider global population, through broadcasters and information in all major languages.

[In concordance with spelling conventions in this field, the term 'Indigenous' has been left capitalised throughout this article – Ed.]

Scott Caldwell

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Leaders and organisations of the democratic world must provide information to the public so they can make significant decisions. The Bush administration too, therefore, had a responsibility, to the public, to provide it with truthful data surrounding the terrorist attacks on the World Trade Center (WTC, Fig. 1) and the government's approach to a resolution of this unprecedented crisis.

[Part One of this article is in *RadioUser*, December 2021: 52-55 – Ed.].

President Bush subsequently gave numerous speeches that directly addressed the nation; 121 in all. The first of these was made during the 9/11 attacks at *Emma Booker Elementary School* in Sarasota (Florida). The then President said, "*Ladies and gentlemen, this is a difficult moment for America. I, unfortunately, will be going back to Washington after my remarks. Secretary Rod Paige and [the] Lt. Governor will take the podium and discuss education. I do want to thank the folks here at Booker Elementary School for their hospitality.*"

Today, we've had a national tragedy. Two airplanes here crashed into the World Trade Centre in an apparent terrorist attack on our country.

"I have spoken to the Vice-President, to the Governor of New York, to the Director of the FBI, and have ordered the full resources of the federal government go to help the victims and their families and to conduct a full-scale investigation to hunt down and to find those folks who committed this act. Terrorism against our nation will not stand. And now if you [would] join me in a moment of silence [...]."

May God bless the victims their families, and America. Thank-You very much".

<https://tinyurl.com/7dbtdc5v>

Media Communications

From a very early-stage President Bush established and maintained regular communication with both the media and the public. The very nature of continuous media coverage meant that many people learnt about the terrorist attacks by listening to the radio or watching television before President Bush had made his official announcement. During the initial response to the terrorist attacks, word-of-mouth, and both print and broadcast media, were popular forms of communications.

However, the then-emerging forms of communication, in the form of social media, blogs, online resources, and smartphones,

Radio Comms and the 9/11 Terror Attacks

Scott Caldwell concludes his examination of more communications-related aspects of the attacks on the World Trade Centre 20 years ago and points to lessons learned for communications infrastructures today.

proved also vital in disseminating credible information to the public. Although the public always demands immediate news reports during a national crisis, the governmental agencies cannot monitor all visual, audio, and text information of every method of communication.

Quite remarkably, therefore, the Federal Communications Commission (FCC, Fig. 2) at the time did not actively mandate the removal of certain images and reports; however, many broadcast networks decided against airing some of the more graphic visuals and descriptions.

<https://www.fcc.gov>

Selective Censorship

A form of 'selective censorship' automatically developed in the aftermath of the 9/11 terrorist attacks, offering an unprecedented measure of compassion for readers, listeners, and viewers. There was a measure of common sense and human emotions. Many broadcasters decided not to show or describe the towers being hit, victims jumping out of windows, or the towers collapsing, as it was ultimately deemed gratuitous.

The only comparable event was the assassination of President John F. Kennedy in 1963. The government needed to work with the media to provide answers, reassurance, confirmation – even admit to a lack of accurate information. David Rosner and Gerald Markowitz (2006) in their book publication, '*Are we Ready? Public Health Since 9/11*' acknowledge the importance, for those in authority, of maintaining the channels of communication, in the form of "*an open flow of information*".

Uncertainty in the Sky

President Bush did not go directly back to Washington. The Secret Service, fearing

an imminent assassination attempt on the President, decided that their best defence was to remain airborne. However, *Air Force One*, the Presidential aircraft, had remarkably limited communications technology. Superintendent of Communications on *Air Force One* was Dana Lark who remarked in the book *The Only Plane in the Sky*: "*There were two TV tuners – worldwide television tuners – at my workplace on Air Force One. They were like old-school 'rabbits-ears' – UHF and VHF frequencies. We didn't have the ability to tune into CNN, Fox or anything else*".

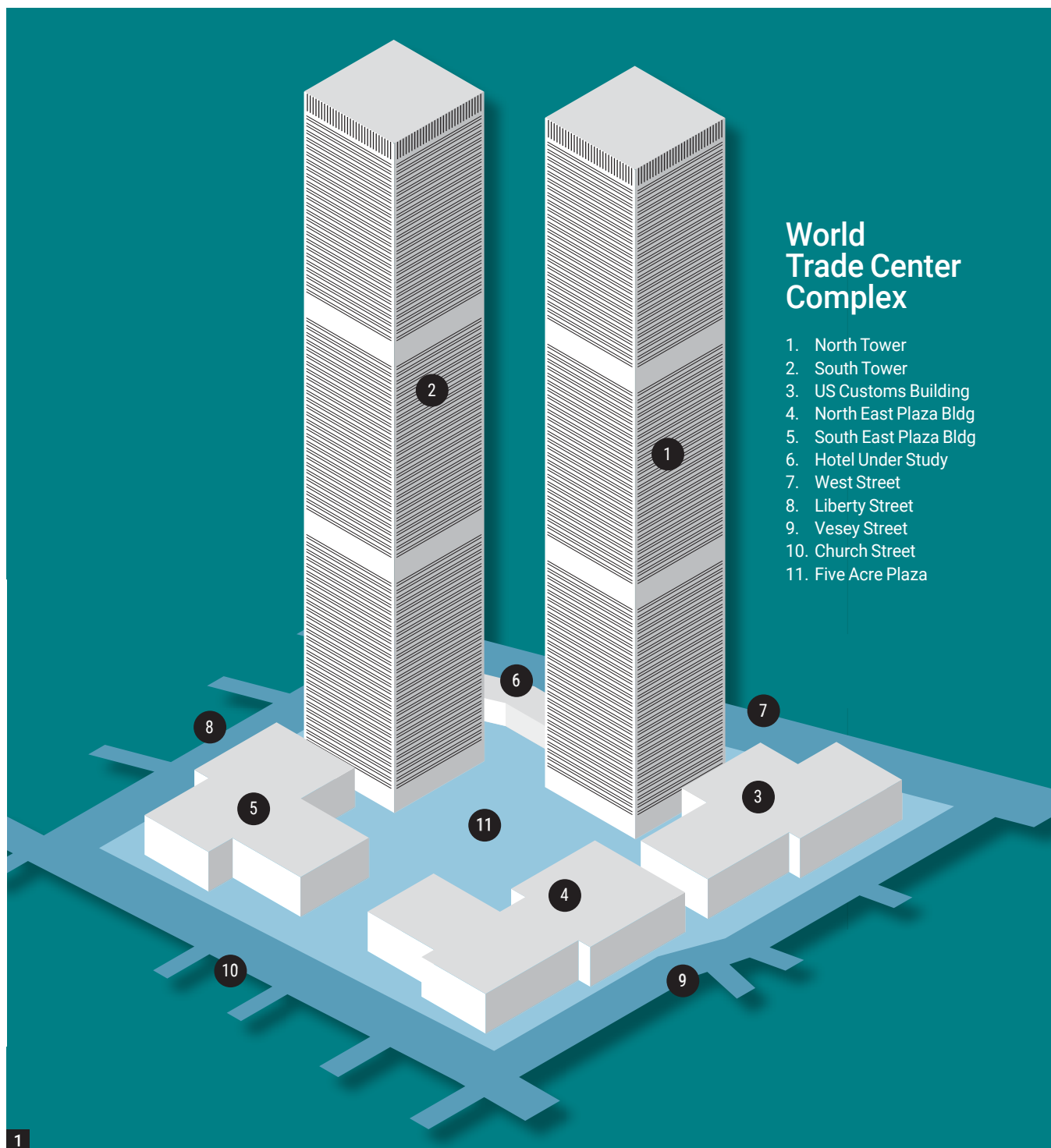
President Bush would eventually return to Washington and the safety of the White House during the evening. The frustration of President Bush in obtaining adequate intelligence in wake of the terrorist's attacks was frequently recalled in a book publication of the time, as well as in many press reports:

"*After a few minutes on any given station, the screen would dissolve into static. I caught enough of a glimpse of the coverage to understand the horror of what the American people were watching – stranded people were jumping to their deaths from the top floors of the World Trade Centre towers*".

<https://tinyurl.com/m43ku7p2>

The 'Voice of Reason'

Many New Yorkers relied on the continuous reports from radio stations WCBS 880 and 1010 WINS for updates (Fig. 3). The 1010 WINS anchor Glenn Schuck reflected: "*You talk to people who live in Battery Park, the things they saw that day, that's something that doesn't go away. It eases, you know, but it was just so much tragedy and so much catastrophe just all at once*". When the Internet and mobile phone network crashed due to excessive demands, radio remained on the air informing listeners of the latest developments.



The Real USS Enterprise

The *USS Norfolk* was at sea for a routine training exercise during the week of September 11th, 2001. The vessel cleared their morning communications and promptly submerged. Whilst submerged, she was out of communication with the outside world. They left behind a world at peace, with pleasure craft and fishing vessels in the waters off the coast of Norfolk, Virginia.

At dusk, the *USS Norfolk* surfaced once again and commenced its routine round of communications. Personnel soon received the shocking news that the United States was at war with a group of radical terrorists.

A sailor stationed in the communications room interrupted the captain's evening meal and informed him that he was urgently needed in the communications room for a series of high-level despatches.

Elsewhere, Captain James Sandy Winnefield of the *USS Enterprise* recalled the considerable amount of intelligence that was received during the summer of 2001 that indicated the likelihood of a terrorist plot against the US. On the afternoon of September 11th, Winnefield was in his sea cabin reading, when he received an urgent telephone call to turn on his radio.

The crew became angry and distressed

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when the full magnitude of the terrorist attacks was finally confirmed. They also realised that they would not be heading for home; subsequently, their course was changed north, towards Afghanistan. Approximately one week later, the USS Enterprise received orders from the US Government to commence airstrikes in Afghanistan.

The Value of Broadcast Radio in an Emergency

What conclusions are to be drawn, and what lessons can be learned from disasters such as this one?

The 2001 attacks have demonstrated that, in times of national emergency and disaster, radio broadcasting is one of the most powerful forms of media. Most recently, radio coverage has played a key role in the Australian Bushfire response.

Paul Fletcher Australia's Minister for Communications, Cyber Safety and Arts argued that: *"Our standard advice is that in an emergency people should make sure they've got a transistor radio with fresh batteries because the Australian Broadcasting Corporation, our national broadcaster, also has an emergency broadcasting role. Throughout the bushfires, they have been broadcasting regularly information about where bushfires are, where the affected areas are. They have been passing on information from the state's fire agencies, advising people as to when they should leave or whether it's too late to leave, those kinds of things".*

The Role of First Response Radio (FRR)

When it is physically difficult to access a remote area, radio can act as a bridge and help people cope with the aftermath of a disaster, until help and resources can arrive on site. First Response Radio (FRR) has a mission and vision statement that commits to putting emergency radio broadcasts on the air within 72 hours of a disaster.

First response teams are located in four major hubs in South-East Asia – the Philippines, Indonesia, India, and Pakistan – to facilitate emergency aid. FRR teams have an impressive track record and have responded to 32 disasters in the last 15 years, including major flooding in India in 2008, Typhoon Haiyan in 2013, and the 2015 Nepal earthquake.

The Importance of RAYNET (UK)

RAYNET was formed in 1953, in response to a series of East Coast floods. Radio amateurs networked together providing

Fig.1: The WTC Building Complex, September 2001. Fig. 2: The US Federal Communications Commission (FCC). Fig. 3: "1010 WINS – All News. All the Time".

emergency communications, under the administration of the Radio Society of Great Britain (RSGB). Radio amateurs who have registered to provide communications during an emergency are organised into a regional autonomous RAYNET network, facilitating continuous coverage.

There are 100 RAYNET networks around the United Kingdom. To improve on communications skills, these sections regularly practice and offer communication services to local events. RAYNET UK is a registered charity that is closely affiliated with the RSGB, enhancing its national and international identity. Membership has grown steadily over the years and currently, there are approximately 2,000 active members.

RAYNET is now regarded as a professional support organisation by both statutory and volunteer services. Under the terms of the Amateur Transmitting Licence, RAYNET operators are authorised to pass messages on behalf of the following emergency services:

<https://www.raynet-uk.net>

- Any UK Police Force, Fire & Rescue Services, or Ambulance trust.
- HM Coastguard.
- Local Authority Planning Officers.
- Any Health Authority.
- Any governmental agency/ department.
- British Red Cross.
- St John Ambulance.
- St Andrew's Ambulance Association.
- RVS.
- Salvation Army.
- Public Utility – Telecommunications, Gas and Water suppliers.

The Emergency Alert System (EAS)

The Emergency Alert System (EAS) is a US national public warning system deployed by state and local authorities to broadcast important emergency information (weather warnings and AMBER alerts to affected communities). The EAS became operational in January 1997, replacing the Emergency Broadcast System (EBS).

The EAS consists of an elastic range of broadcasters, terrestrial radio and television stations, cable networks, satellite radio and television stations, and wireline video services. The EAS operates voluntarily, yet it is required to provide the capability for the President to address the nation during a



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Further Reading

- Argenti, P. (2003) 'Crisis communication Lessons from 9/11', Harvard Business Review, 80(12): 103-109.
- Dearnstyn, B. (2007) 'The FDNY on 9/11: Information and decision making in crisis', Government Information Quarterly, 24(1): 29-46.
- Fu, L. (2011) 'Government Response to 9/11: Communications Technology & the Media', Library & Archival Security, 24(2): 103-118.
- Graff, G.M. (2020) *The Only Plane in the sky: The Oral History of 9/11*. London: Octopus Publishing Group Ltd.
- Timmons, R.P. (2007) 'Interoperability: Stop Blaming the Radio', Homeland Security Affairs, 3(1), pp. 1 – 17.
- 911 Commission Report.

national emergency.

Administration of the EAS is provided by the Federal Emergency Management Agency (FEMA), the FCC, and the National Oceanic and Atmospheric Administration's National Weather Service (NWS).

In Conclusion

The attacks of 11th September 2001 changed the world forever as the medium of radio spread the tragic news around the globe. In our time, emergency radio services now offer continuous communications coverage in the event of an emergency or disaster. The democratic and freely elected governments of the world must also ensure that the channels of communication with the public remain open to facilitate the full disclosure of information, within the confines of national and collective security.

Radio News

JAZZ FM AND SCALA RADIO TO SHARE NEW JAZZ MEETS CLASSICAL SERIES:

Jazz FM and Scala Radio are coming together with a brand-new series that will be heard across both networks on the same evening over six weeks. Scala Radio's Jack Pepper and Jazz FM's China Moses will explore the link between the two musical genres, introducing each other to the music they love, exploring the grey areas, crossovers and curious links. Special guests will include Maria Schneider and Nigel Kennedy with each episode finishing with a piece of live music, recorded especially for the series by the Jazz Meets Classical House Band, which is led by pianist Robert Mitchell, alongside a group of players from the National Youth Jazz Orchestra.

The recordings will cover everything from Beethoven to Wayne Shorter and show that the two worlds have more in common than you might think. Funded by the Audio Content Fund and produced by Folded Wing, this also marks the first time the two Bauer Media Audio brands have come together to produce and present a jointly branded series of programmes.

You can listen to Jazz meets Classical from 9th January on both Scala Radio (8 pm) and Jazz FM (9 pm).

(SOURCES: Jazz FM | Scala Radio | RadioToday)
<https://tinyurl.com/mwy6z3bb>

INFINITE DIAL 2021: PODCAST NEWS:

Forty-one per cent of UK residents age 16+ have listened to a podcast in the last month, according to *The Infinite Dial 2021 UK*. *The Infinite Dial 2021 UK* survey was undertaken by Edison Research and sponsored by Bauer Media Group UK and Spotify.

The study surveyed 1,000 UK residents age 16+ on a variety of measures including online digital audio platforms, radio, social media, smart speakers, and more. Findings from the study show several strengths in the audio space in the UK, including podcasts. Seventy-one per cent of those age 16+ are familiar with podcasts, and 59% of those age 16+ have ever listened to a podcast. The UK is on par with the US regarding monthly podcast listening, as both countries have 41% of the 16+ population who have listened in the last month. The UK is slightly behind the U.S. regarding weekly podcast listening as 25% of the UK population age 16+ has listened to a podcast in the last week versus 29% of the US population having listened in the last week. Weekly podcast listeners in the UK listen to an average of five podcast episodes per week. Seventy-five per cent of UK residents age 16+ listen to online audio each month, and 66%



of UK residents age 16+ listen to online audio each week. Facebook is the social media brand used most often, even among younger people. Fifty-five per cent of social media users age 16+ in the UK use Facebook most often, followed by Instagram (8%), Snapchat (8%) and TikTok (7%). Among those aged 16-34, the rank is the same but the proportions are different: 48% use Facebook most often followed by Instagram (14%), Snapchat (15%) and TikTok (10%). One-quarter (25%) of the UK population age 16+ owns a smart speaker.

Of those who own a smart speaker, 44% own one, 28% own two, and 28% own three or more of the devices. According to Larry Rosin, President of Edison Research, it is exciting to analyse the findings from the UK Infinite Dial in the context of other countries. It is evident that the UK is on par regarding many measures of consumption, including monthly podcast listening, and outpaces the US in areas like weekly radio reach and weekly online audio reach [...].

(SOURCES: Edison Research | *The Infinite Dial 2021 UK* | RadioToday)

<https://tinyurl.com/bdz393ym>
<https://tinyurl.com/y8hm74kc>

DATA FROM SATELLITES HELP UNCOVER

EXPLODING METEORS: Fireballs, or bolides, are intense trails of light emitted from meteoroids or asteroids that slam into Earth's atmosphere. These high-altitude objects usually explode—with energies that can exceed a 5-kiloton TNT blast, greater than some nuclear bombs—and disintegrate into a shower of small meteorites.

Each year, ground telescopes witness only about a dozen or so of these rare flashes with enough detail to extract data from them. Now, scientists have discovered that they can repurpose lightning-spotting data from two satellites, GOES 16 and 17 (Geostationary Operational Environmental Satellite), that orbit over the Western Hemisphere to shed light on these flashes. Researchers created a new database of more than 2,600 bolides that was described and presented on 13 December at AGU's Autumn Meeting 2021.

The team also presented its study and its implications for understanding asteroid threats in the 1 November issue of the journal *Icarus*. With instruments aboard GOES 16 and 17, "we can observe a class of meteoroids that the ground-based observatories cannot effectively study because they're too rare for them to see in their relatively small observational areas." [...] Using the analysis technique developed for NASA's Asteroid Threat Assessment Project, Smith and his team scoured data from the Geostationary Lightning Mapper (GLM) instruments aboard the GOES 16 and 17 satellites, operated by NOAA. They found a handful of bolides each day over North America, South America, and large parts of the Pacific and Atlantic ocean basins. The detections are posted to a publicly available database about every week [...].

(SOURCE: Moskal, E. (2021), *Eos*, No. 102)

<https://doi.org/10.1029/2021E0210655>.
<https://tinyurl.com/5n7vtr53>
<https://tinyurl.com/ycknxvt>

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Last month (*RadioUser*, January 2022: 44-47) I highlighted many of the recommendations listed in the UK's *Digital Radio and Audio Review (DRAR)*. This document aims to predict a likely path for radio up to 2035. By then, it is thought that around 52% of listening will be on DAB+, 36% via streaming to smart speakers using the Internet Protocol (IP), analogue a mere 9% and digital TV (DTV) 3%. The prediction considered many possible changes in the coming decade on how we might listen to the radio. The figures I have used are mid-way in a range of possible changes. The broadcasting industry had a big part in creating this report and they, especially the big commercial groups, are likely to stick to their plans.

<https://tinyurl.com/ycx539d3>

The DRAR Report also considered that future technology might change the predictions. I feel that, overall, politics might play a part as well. The recent *UN Climate Conference (COP26)*, held in Glasgow in November 2021, is just such an event. The conference produced its own set of agreements and initiatives on reducing energy consumption. WorldDAB and the DRM Consortium have ideas on how their technology can help.

The big question is whether or not all these predictions are broadly in agreement. Moreover, will one of these plans win out and force major changes onto the others?

COP26 Initiatives

I evaluated the various summaries of the agreements generated at the UN Climate Conference that cover areas like agriculture, forests and aviation. There was no document relating specifically to broadcasting. I did not think that there would be, because its contribution to climate change is very small. The only place where it might be covered was in an agreement on boosting the energy efficiency of electrical and electronic products.

The SEAD Initiative

SEAD means the *Super-efficient Equipment and Appliance Deployment* (Fig. 1). This has an objective to double



Green Footprints: Radio, Energy and the Environment

Kevin Ryan considers how radio affects the wider environment and how COP-26 will impact digital services, before critically evaluating the reported energy and carbon effects of various types of radio consumption.

the efficiency of key products sold globally by 2030. The report specifically mentions motors, as well as devices with motors or compressors, plus lighting, which often causes radio interference. These power-hungry devices account for 40% of global energy consumption, so they are worth looking at. It may be hard to see, at first, how radio figures in this. However, consider that each radio service has a production chain behind it, often housed in air-conditioned studios working on devices connected to servers in climate-controlled computer rooms before reaching transmitters that are often not overly efficient and probably have to be cooled.

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

The Impact of DAB+

The UK and the EU have both enacted laws covering the greater part of Europe, committing participants to a 100% reduction in CO₂ emissions by 2050, by using cleaner energy sources. Broadcasting accounts for a tiny proportion of the carbon dioxide load, but it must do its share. The WorldDAB

group has published a factsheet in April last year listing the various reports produced by its members and with links to other presentations.

<https://tinyurl.com/3fsxw4k6>

In this context, research by Bayerischer Rundfunk (BR, Fig. 2) in Germany and SRG SSR in Switzerland investigated just how much energy could be saved by switching off FM. These countries closed down AM years ago, unlike the UK. The BR report is more comprehensive; more importantly, it is available online.

<https://tinyurl.com/3x8mah8f>

Energy Consumption

Several studies are analysing the energy consumption or footprint of all manner of devices, such as PCs, video games consoles and TVs that seem to merit detailed studies. By contrast, radio devices don't seem to attract much attention. A study from the US from 2017 contained an entry for radio/clock radio that estimated the 113 million devices in the USA typically used 9kWh per year each (total 1 Terawatt hour (TWh) or 1 trillion watt-hours) that is 1%

ALL PICTURES: KEVIN RYAN

Fig. 1: The *SEAD Initiative* covers large industrial machines. Many countries already have laws aimed at reducing the energy consumption of radio and audio devices.

Fig. 2: *Bayerischer Rundfunk* thinks switching off the existing FM network in favour of DAB+ will reduce their energy bills by 90%.

Fig. 3: I tend to dispose of my old radios by recycling rather than reusing them.

Fig. 4: Many electric cars will likely have a hybrid DAB/Internet radio built-in, rather than offering a choice between one or the other.

Fig. 5: Smart speakers will dominate listening in the home; sales of DAB radios are already in decline.

of all devices analysed. A kilowatt-hour (kWh) is equivalent to the steady power consumption of one kilowatt running for one hour.

BBC Research

In addition to these, the *BBC Research Department* found that no complete studies were estimating the electricity consumption of radio broadcasting and listening. Therefore, it conducted its own research. The resulting *White Paper* is available from the BBC website. It is packed with facts including their test methods.

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

The BBC paper models the energy required to make and distribute radio to listeners now (the baseline year is 2018 data), and how that might change in the next 20 years. Its predictions were made before the *Digital Radio and Audio Review* (see above), and they, no doubt, fed into that report.

Naturally, the BBC paper only considered BBC transmitters and distribution networks. In 2018, the total power consumed was 325 GWh (gigawatt hours) equivalent to 0.1% of UK electricity use. The breakdown is interesting, in that AM's share is just 23 GWh, while FM accounts for 100 GWh; IP (Internet) uses 80, DAB 65 and DTV (digital TV) 57 GWh. Figure 1 in the White Paper shows a block diagram of the overall radio production and transmission chain.

My rough estimate is that the commercial networks use closer to 400 GWh of electricity. My 'logic' for this is that there are the equivalent of three DAB networks (D1, SDL and local), three FM networks (Classic FM and two quasi networks provided by Bauer and Global); DTV is the same, and AM is lower, at 20 GWh, because there are no longwave transmitters) and IP is the same again.



The DRAR report separates the 'transmission' element for the UK radio industry and produces a slightly different breakdown to mine. They work based on 5 national FM networks (31.3 GWh), plus the nations' and local networks (14.3 GWh); the split for AM is 4 national networks (BBC R4 and R5L, talkSPORT and Absolute Radio, 30.2 GWh); local/nations' AM adds 10.2 GWh. At the time of writing, they report that the three national DAB networks used 19.1 GWh, and local DAB radio 9.1 GWh.

Our Power Usage

The BBC report shows that our radios and smart speakers use a lot more energy than we realize. In the home, the two leading 'offenders' are smart speakers and radios set to 'standby' power. I am not that sure about car radios, other than that about 10% of the energy used is spent in the decoding of the DAB signal.

As an exercise, the BBC simulated the removal of smart speaker and radio standby power from 2021 in their model, which led to a mean energy reduction of 38.3% across scenarios. They would advocate reducing the waste by reducing standby power through regulation, manufacturers and audience education.

However, the authors warn that the whole radio industry could be damaged by taking these ideas too far. I hope that sentiment reaches – and stays with – relevant policymakers who can, at times, be deaf to the more practical side of the green agenda.

Best Device for Radio

The listening hours on FM and DAB can be up to 11 times higher than those on AM and DTV. Thus, to compare systems, we also need to know the typical power

consumption associated with each radio or device. In this context, listening to radio through *Freeview* has the largest footprint at 81 Wh/device-hour, followed by AM (29 Wh/device-hour), IP (23 Wh/device-hour), FM (13 Wh/device-hour), and lastly DAB, which had the smallest at 9 Wh/device-hour. Here the report states that, "consumer devices used around 73% of the total energy in 2018, compared to 27% for distribution, with preparation using less than 0.1% overall". I found the summary quite eye-opening when it stated that, "Despite similar findings in our television research, we were again surprised by this result, as the transmitter networks for radio services collectively use more power than that for digital terrestrial television".

Future Energy

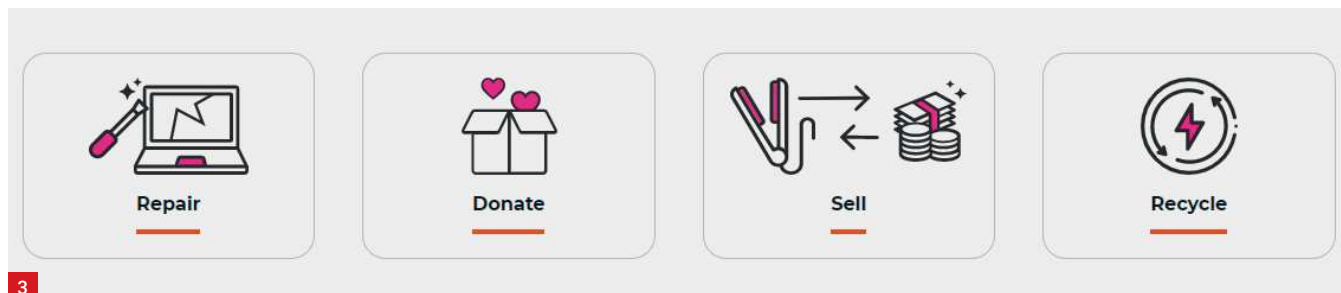
The BBC report spends a few pages looking at different possibilities generating what are usually called 'scenarios'. The scenarios span 20 years – from the baseline year of 2018 to 2037 – and are as follows:

- *Business as Usual* - All systems or platforms retained.
- *Digital-Only* - Switching off AM and FM from 2030.
- *DAB/IP Only* - Switching off AM, FM and DTV radio from 2030.
- *IP Only* - Switching off AM, FM, DAB and DTV radio from 2030.

Business as Usual

For this first scenario, the study predicts some small reduction in power consumption, due to device upgrades and listeners gradually giving up AM and Set-Top Boxes (STB). These reductions are offset by an increase in smart speaker

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usage. Our consumer devices account for 75% of the total energy used.

Digital-Only

This possibility means that all AM and FM transmitters are going to be switched off. You would think that this would bring a dramatic drop in power consumption; but apparently, this is not the case. It only results in a drop of 1.8GWh per month because listeners are using more 'power-hungry' devices. Listeners now account for 80% of the power consumed since DTV is still in the mix.

DAB and IP-Only

This is an interesting alternative because, in this model, both analogue and radio stations on DTV are closed down. The monthly power bill drops by 6.2 GWh, which is good news for the broadcasters but not for us! The listeners are still the biggest contributor at 80%.

IP-Only

Another surprise that emerged was that just having IP-only is not particularly helpful overall because of the increase in broadband network infrastructure. The monthly power bill drops by 8%, rather than by the 22% predicted by using DAB and IP together. Once again, consumer devices are the 'villains' still using 80% of all the energy! In this scenario, smart speakers consume the highest amount of energy.

Standby Power

Here I quote once again directly from the BBC report: *'Our most notable finding, demonstrated in both the baseline and scenario results, was that the biggest factor driving energy use was the standby power of radio sets and smart speakers - more so than the power of devices when they are turned on'*. There are some figures for standby power in the report's discussion section. A DAB radio connected to the mains typically uses 316 mW in standby, an analogue radio 529 mW while a TV set uses 300 mW.

Current Limits

A European Union Regulation from 2014 set the limit for standby power for new TVs and radios at 500 mW. Smart speakers and connected devices were added to the regulations in 2017 with a generous standby limit of 3 to 12W. The BBC tests found smart speakers typically used 2W in standby. Looking at just the preferred DAB/IP combination of broadcasting/internet, the BBC report estimates that smart speakers use a little more standby power than DAB radios; but taken together, this could reduce power consumption by nearly 40%. DAB+ is more spectrum-efficient, but DAB+ receivers use more energy to decode the signal. A few sentences on the paper convey the opposite view, in that newer DAB+ receivers are probably more efficient than many of the older DAB-only devices in use in the UK. In practice, this would mean people unplugging devices from their power source when not in use.

Lack of Information

Thumbing through the user manuals for my own radios, I found that none of them has any information on power usage. The BBC R&D team used a wattmeter, but I tried my Smart Meter to get some measurements! My non-scientific method estimated the Standby power of the *John Lewis Octave* hybrid radio as 3W and for both DAB and FM it was 40W when in use. I could not see any difference between DAB or DAB+ decoding.

Repeating my measurements, my confidence waned, because other appliances were switching in and out all the time, and my numbers were nothing like those found by the BBC.

Disposal of Old Radios

I take my old electrical kit to my local recycling centre and add it to the heap of devices accumulating in a large skip. This website offers several possibilities (Fig. 3) other than putting the device in the bin, which you really shouldn't do anymore. There are several websites covering

recycling on the internet, but I found these two had very clear information on what you should do:

<https://www.recycleyourelectricals.org.uk>
<https://tinyurl.com/3mbn755p>

Radio and Audio Listening in the Future

The DRAR contains an interesting prediction about how we are likely to listen to the radio in the next 15 years. Their method seems to be sound. The analysts (at *Mediatique*) assumed 2021 as their starting point, using the listening shares for different forms of audio, including live radio, on-demand music streaming and podcasts.

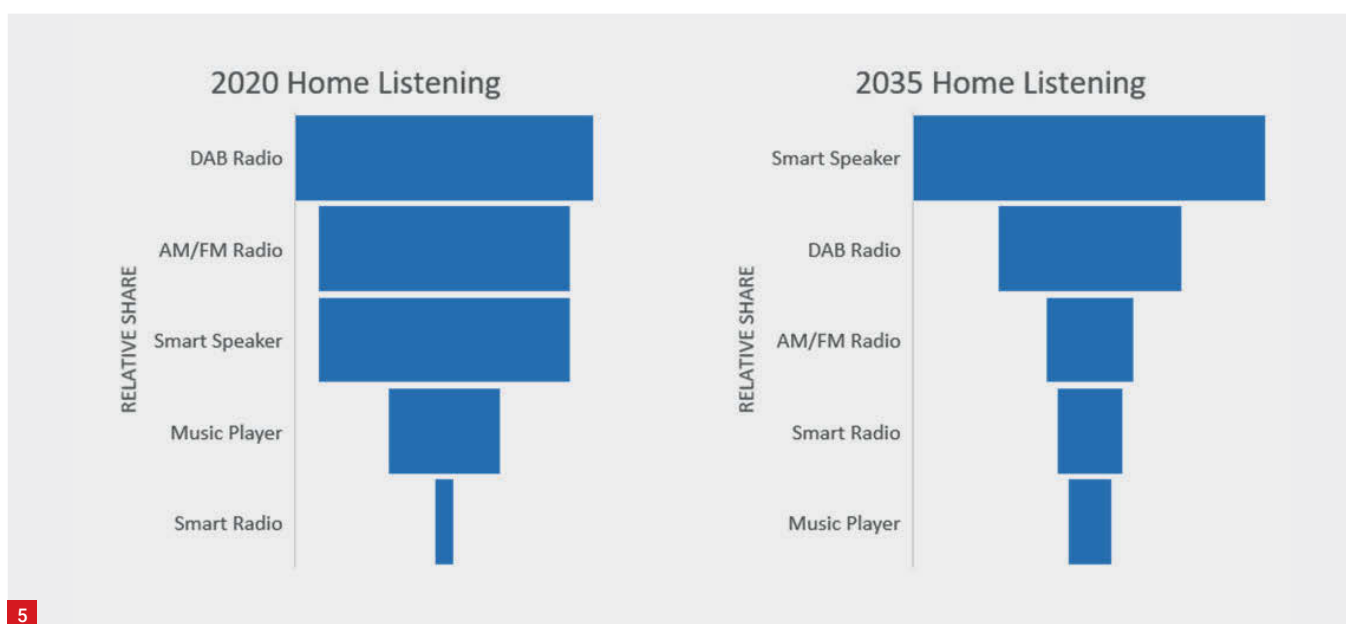
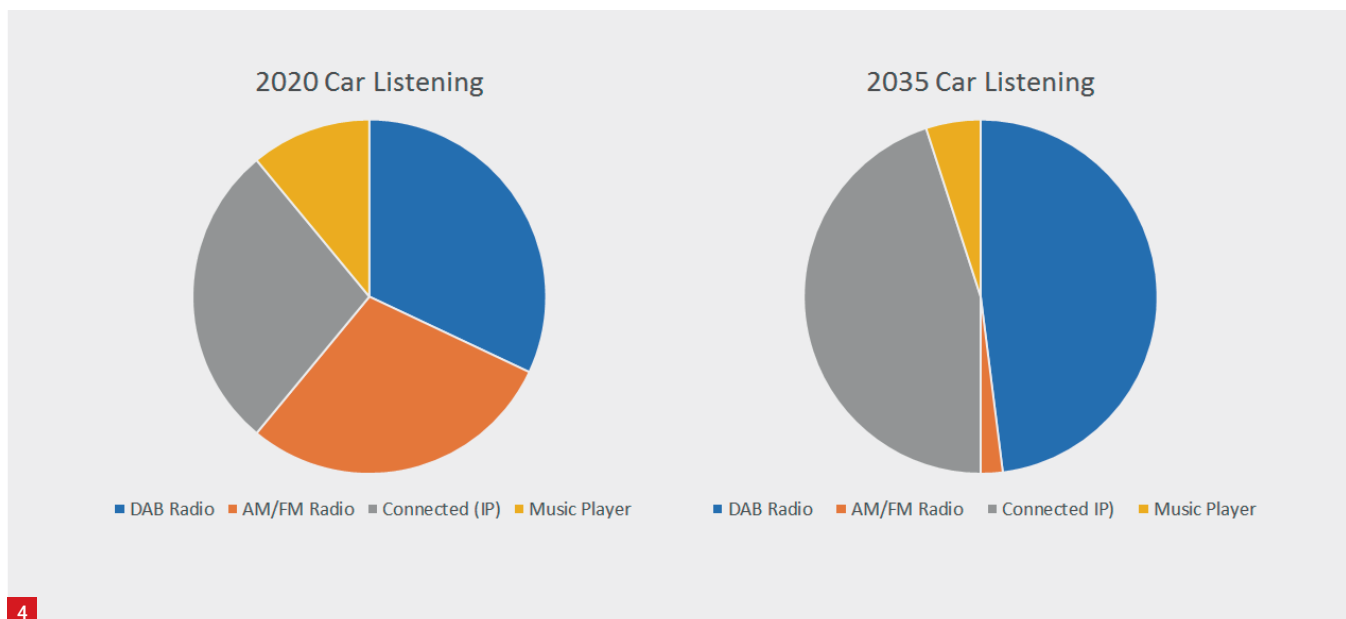
Based on a simple extrapolation method, adjusted for demographic changes, *Mediatique* estimated that live radio listening would decline from its current share of 72% of all audio listening to around 66% by 2035. It is clear from the analysis that online/IP platforms will grow in importance, but that the main radio broadcast platforms (FM and DAB) will also remain very important for listeners.

These findings underpin the ongoing importance of FM to many listeners. Even if consumer adoption of connected devices continued to grow, and listening habits changed rapidly, broadcast platforms would still be expected to account for more than half of all radio listening by 2035.

Device Take-up, 2020-2035

The predicted increase or decline of different radio devices is summarized in a neat graph in the DRAR report. For this column, I have made a version of it based on my own knowledge and experience. As you might guess, listening in the car and at home on AM/FM will see the biggest decline. The report authors predict a dramatic change, estimating that 90% of all households with cars will have models that connect to the internet (Fig. 4).

It seems to me that these cars will also have a DAB radio, although some cars will only have a DAB.



In the home, voice-activated speakers will dominate, DAB radio usage will decline and SmartRadios or hybrid radios will grow a bit but not displace DAB radios (Fig. 5).

DRM Matters

To my surprise, the DRAR report mentioned DRM, but broadcasters will not consider using it in the UK because there are so few receivers in the UK. Using DRM, instead of AM or FM, typically saves 50% on transmitter power costs while delivering the same coverage. DRM will be important in countries like India.

Final Thoughts

Here are some of the things that struck

me about all these studies and reports. The 'best' result for the broadcasters is us listeners using a combination of DAB and IP. Many of the contributors have been advocating this mix for about five years, especially the *WorldDAB* group. Overall, the calculations seem to bear this out, even though there is a lot of room for error and many assumptions.

It seems that all we can do is switch off all our devices at the mains when we are not using them.

This is not always convenient, or even the best thing for the device, being switched on and off. I have one radio on standby neatly installed in a cabinet and handy to switch on at a moment's notice, and at the moment I

am not minded changing that. Most of my DAB listening is in the car or on a Pure radio using rechargeable batteries. Is that good? If I listen to DRM via a remote SDR does that count as an 'IP-connection'?

My radio-driven energy footprint is down in the noise of the other domestic appliances in the home. Is it really worth the effort to keep switching on and off and will all this power cycling of a device shorten its life?

It seems to me that too many ideas around climate change are driven by 'ideology' rather than 'common sense' – I hope that the latter will win out and that our listening pleasure won't be lost to unnecessary rules and regulations.

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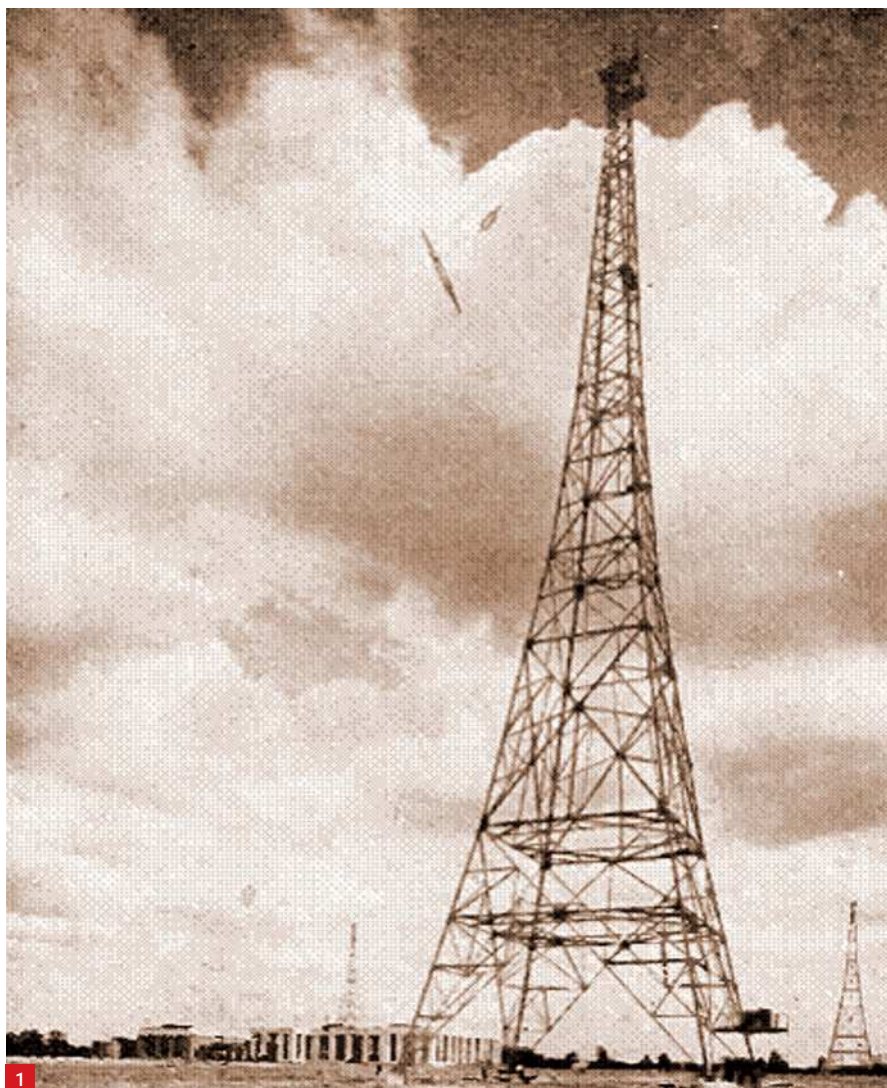
This year marks the BBC's Centenary. In this series of special reports which began with the January issue, the authors delve into their archives to present comprehensive coverage of the BBC's 100-year-old history. The aim is to cover as many engineering and programme-making achievements as possible for each of those 100 years.

In 1930, the first broadcast to the world was made via relay stations located in various countries. The event was the opening of the *London Naval Conference* by King George V. In the same year, the BBC began a huge technical project to expand their *Regional Scheme* with the opening of two co-sited transmitters in Daventry. The complete scheme consisted of the distribution of stations designed to radiate two contrasting programmes from two separate transmitters but from effectively the same geographical location.

The experimental system initially began on October 21st, 1929, with the opening of the Brookman's Park transmitter (Fig. 1). This was the BBC's first high-power regional station which was initially used on a 'single-wave' basis, rather than the later 'twin-wave' system, whereby just one transmitter was energised making only a single programme available throughout the Home Counties. By contrast, the Daventry 5XX and Daventry 5GB transmitters, located at the same forty-acre site, combined to form the world's first twin-wave broadcasting system.

The twin-wave system was brought into service on March 9th, 1930. A site was soon chosen for the next stage of the project – the installation of the northern regional transmitter. This was erected on Moorside Edge near Pole Moor, above Slaithwaite on the Pennines. The transmitter was brought into service on May 17th, 1931, radiating the *National Programme* and the *North Regional Service*. Both networks were relatively short-lived because they were replaced by the *Home Service* on September 1st, 1939.

Gardening enthusiasts were delighted in 1931 when a gentleman by the name of Mr Middleton began his series of enlightening floriculture programmes. He also became the first person on television to present a gardening programme (Fig. 2). This was on November 21st, 1936. Music lovers were also well catered for with the first broadcasts by



BBC 100 Years: 1930-1939

Keith Hamer and **Garry Smith** continue exploring 100 years of the BBC, pursue some lesser-known aspects of the story of John Logie Baird and provide the link to their online column, DX-TV & FM News.

the *BBC Theatre Orchestra* on July 27th and the *BBC Chamber Orchestra* on December 18th.

Broadcasting House

On May 1st, 1932, the BBC officially moved from their previous broadcasting headquarters at Savoy Hill to Broadcasting House -

a new building in Portland Place, London. Construction work began in 1930 (Fig. 3). Even in 1932, this new location was very noisy with traffic. The architect's initial problem was to build 22 studios which would be entirely insulated from sounds and at the same time provide a large number of day-lit offices. The solution was found in arrang-

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ALL PICTURES: THE KEITH HAMER+GARRY SMITH ARCHIVE COLLECTION.

ing the offices as an outer shell around an inner core of studios, which were planned as a separate building. The outer shell, with its cutaway roof, took on the appearance of a great ship with its prow sailing serenely towards the centre of London. Broadcasting House was officially opened on May 2nd, 1932, although the first broadcast was actually on March 12th when *Henry Hall and the BBC Dance Orchestra* took to the airwaves. Three aerial masts on the roof immediately showed the public the function of the new building.

Ariel, the invisible spirit of the air, was chosen as the personification of broadcasting. In a niche above the main entrance, a sculptured group by Eric Gill showed *Prospero*, *Ariel*'s master, sending him out into the world. It was, and still is, a 20th Century building, which has sailed seamlessly into the 21st, albeit now with a huge extension. Incidentally, *Ariel* is the title of the BBC staff newspaper. In September 2009, the authors were invited to take part in a BBC documentary about the history of television. BBC reporter and cameraman, Simon Hare, took them to Broadcasting House to meet doyen Radio 4 Continuity Announcer, David Miles. Whilst there, they took time off from filming to photograph the main entrance of Broadcasting House (Fig. 4).

Control Rooms

In the very early days of broadcasting, 'balance and control' were affected 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 and the amplifiers required to feed the programmes to the transmitters. The original Control Room at Broadcasting

Fig. 1: Brookman's Park was the BBC's first high-power regional station.

Fig. 2: C.H. Middleton (second person from the right) presented the first gardening programme on November 21st, 1936. Fig. 3: Construction work at Broadcasting House in 1930.

House was located on the top floor.

Subsequent technical developments removed the need for centralising all the amplifiers and their power supplies in the Control Room, and installations then worked on the principle of a *Control Cubicle* associated with each studio and separated from it by a sound-proof window. The cubicles worked in conjunction with *Continuity Suites*, where the programme services were, and still are, coordinated and presented. Some cubicles were equipped with special technical apparatus to broadcast music with much-enhanced audio quality. A *Central Control Room* was devoted almost entirely to the operation of the network of transmitters, the testing and equalisation of the General Post Office (GPO) cables between studio centres and transmitting stations, and the handling of all the complicated technical infrastructure.

The Central Control Room was obviously an extremely important, and vulnerable, facility. With the outbreak of war, a new Central Control Room was built in a former Variety studio in the sub-basement of Broadcasting House to replace the original which was far too susceptible to enemy attacks. This method proved so successful that future developments were based on the same principle, except that a dialling system, similar to that used in automatic *Strowger* telephone exchanges, replaced the 1930's plug-and-socket arrangements for programme selection and distribution.

Experimental Television Begins

The first *Religious Service* was broadcast on July 19th, 1932, from All Souls in Langham Place, located directly opposite the main entrance of Broadcasting House. In the same

year, on August 22nd, a landmark in the development of television occurred when the BBC completely took over the Baird process and radiated the first experimental 30-line signals to be produced at Broadcasting House. A few months later, on December 19th, the *BBC Empire Service* began from the Daventry transmitter. The first *Round-the-Empire* programme was broadcast featuring King George V's Christmas Day message.

Not a lot seems to have happened at the BBC in 1933. Music lovers swooned upon hearing the first broadcast featuring the *BBC Organ* from the Concert Hall at Broadcasting House on June 16th. Sheila Barrett became the first female radio announcer on July 28th, and the first edition of the popular series *In Town Tonight* took to the airwaves on November 18th with a rousing theme tune composed by the master of signature tunes, Eric Coates.

In 1934, the long-wave transmitter at Droitwich opened with an unprecedented power of 550kW. It replaced Daventry 5XX and took over the broadcasting of the *National Programme*. Additional medium-wave transmitters reinforced the *Regional Service*. Similar transmitters were gradually brought into service at other locations such as Burghead in north Scotland. The transmitters were remotely controlled and capable of radiating 120kW. Series-loaded mast-radiators, which gave results comparable to those of higher, simpler masts, were installed at Start Point in 1937 and Brookman's Park in 1946.

Competition Arrives

The BBC's first competitors arrived on January 15th, 1934, when *Radio Luxembourg*,

a commercially-sponsored station, suddenly began beaming their programmes towards the United Kingdom. Also in 1934, on September 18th, the BBC Broadcasting House studios in Whiteladies Road, Bristol, were officially opened by the city's mayor.

There were 3 radio studios for speech and drama, plus another which was large enough to accommodate a full orchestra. The original building, in a state of total disrepair, was personally chosen by John Reith during a visit to the city. He smashed his way into the premises, looked around, and decided that the site would be ideal for the BBC once the building had been completely renovated.

The final highlight of 1934 for the BBC was the first broadcast of a Royal wedding. The marriage ceremony between the Duke of Kent and Princess Marina on November 29th was broadcast around the world.

Outside Broadcasts

New opportunities to extend Outside Broadcasts presented themselves in 1935 during *Jubilee Year* which was full of pageantry and celebrations. In May, commentators vividly described the progress of the King and Queen to their Thanksgiving Service, from Temple Bar up Ludgate Hill and into St. Paul's Cathedral. The programme was relayed throughout the world. The *Silver Jubilee* of George V on 6th May 1935, marked 25 years of the monarch as "*King of the United Kingdom and the British Dominions, and Emperor of India*". Less solemn occasions also featured in OB's including ship launches, horse racing, country festivals, after-dinner speeches, and hotel dance bands.

Alexandra Palace Opens

The year 1936 was one of major importance for British broadcasting. It began with John Reith announcing the death of King George V on January 20th and ended with the abdication of King Edward VIII on December 11th, again announced by the Director-General. In between these two very important dates, a number of other milestone events occurred, mainly in the world of the latest technology - television. August 26th saw the first public demonstration of high-definition television at the *Radiolympia* Exhibition. The full service began from Alexandra Palace on November 2nd. Full details covering the BBC's preparations for the start of television were given in our September, October and November 2021, columns (*RadioUser*, September 2021: 37-39; October 2021: 38-40; November 2021: 48-50). On the following day at 4.01 pm, the world's first television



Fig. 4: The main entrance at Broadcasting House, depicting *Prospero and Ariel* (September 2009).



Fig. 5: A thallium sulphide (Thalofide) cell, similar to the one purchased by Baird from Cyril Frank Elwell. Fig. 6: Baird with his ventriloquist's dummies which he called *Stooky Bill* and *James*.

Fig. 7: This 'Blue Plaque' was unveiled in Frith Street in 1951 at the site of Baird's former workshop.

weather forecast was transmitted. It lasted approximately six minutes and consisted only of a weather chart with an anonymous hand drawing isobars accompanied by the forecast being read out, together with some light music in the background. A full account of BBC weather forecasts was featured in our articles dated November and December 2018.

Also in 1936, the BBC set up a staff training school to teach recruits about the policy and practice of broadcasting. The BBC also inaugurated a *Listener Research* unit to stay connected with the habits and tastes of its public. Many years later, and after a name change to the *BBC Correspondence Section*, the authors were invited to send in their views about BBC programmes and general broadcasting policy. Perhaps it is just as well that the section was closed down some years ago otherwise there would be some forthright views expressed about current BBC radio and television output! Following an inquiry by a *Parliamentary Select Committee* and subsequent discussions, the BBC's Royal Charter was renewed on

January 1st, 1937, for a further ten years. In the same year, when King George VI and Queen Elizabeth reached Hyde Park Corner in their Coronation Coach on May 12th, they were seen on television by families in the Home Counties as well as viewers in East Anglia and the South of England. Coverage of the Coronation procession was made possible by the first use of an Outside Broadcast van.

BBC Rejects Baird's System

Unfortunately for John Logie Baird, February 1937 saw the demise of his 240-line television system, as far as the BBC was concerned. Following extensive testing of the two processes, the Marconi-EMI 405-line system prevailed with 2½ hours of regular programmes being broadcast every weekday from the studios at Alexandra Palace. From the same studios came items varying from tap dancing to grand opera. From a mobile unit came the first pictures of the Wimbledon tennis championship on June 21st. The Lord Mayor's Show, the Cenotaph Ceremony on Armistice Day, and Pet's

Corner at a zoo were also televised. On July 20th, 1937, the BBC announced the death of Italian inventor and the radio pioneer, Guglielmo Marconi.

With the ever-increasing threat of War, in 1938, television brought viewers in their homes 'live' pictures of Mr Neville Chamberlain stepping from his aircraft at Heston on September 30th holding aloft the fluttering, but as it happened, worthless piece of paper which he and Hitler had signed in Munich. Although the official estimate of the range of signals was a modest 35-40 miles, there were sets in regular use in Gloucestershire and the Isle of Wight. As the international situation darkened, the government called on the BBC to begin broadcasts in foreign languages, in the interests of British prestige and influence. The first service was in Arabic on April 18th, 1938, the second was to Latin America in Spanish and Portuguese on June 4th. After Munich, daily bulletins were broadcast in French, German, and Italian. All these foreign broadcasts aimed to secure a wider audience for a news service in English, with a formidable reputation for fairness and impartiality. To keep up-to-date with the content of foreign radio programmes, as well as to listen in to any secret coded messages embedded within enemy broadcasts, the *BBC Monitoring Service* at Caversham Park was established on August 26th, 1939.

The BBC Television Service was closed down on September 1st, 1939, for reasons of national defence. When War was declared on September 3rd, broadcasts were made by King George VI and the Prime Minister, Neville Chamberlain. The first wartime broadcast by Winston Churchill was transmitted on October 1st. The BBC immediately went to battle stations. Broadcasting had to continue even if the country could be dislocated by bombing or invasion. The BBC increased the number of foreign-language services beamed towards European countries during September. These included Hungary (on the 5th), Poland (7th), Czechoslovakia (8th), Rumania and Yugoslavia (both on the 15th), and Greece (30th). The *BBC Turkish Service* began on November 20th, 1939.

Baird's Thalofide Cell Explodes

In February 1924, Baird demonstrated to the *Radio Times* that a semi-mechanical analogue television system was possible by transmitting moving silhouette images. In June of the same year, Baird bought from Cyril Frank Elwell a thallium sulphide (Thalofide) cell, developed by Theodore Case in the USA (Fig. 5). The Thalofide cell



was part of the then important recent technology of *talking pictures*. Baird's pioneering use of this cell resulted in him becoming the first person to produce a 'live', moving, television image of a Maltese Cross from reflected light over a distance of ten feet. Baird achieved this, where other inventors had failed, by applying two unique methods to the Case cell.

He accomplished this by improving the condition of the signal from the cell through temperature optimisation (cooling) and his custom-designed video amplifier. In July 1924, he received a 1000-volt electric shock but survived with only a burnt hand. The main casualty of this experiment was his prized Thalofide cell which exploded. Perhaps not too surprisingly, his landlord, Mr Tree, asked him to vacate the premises!

Beginning on March 25th, 1925, he demonstrated to the public at Selfridge's Department Store in Oxford Street, London, the transmission of basic outlines of simple objects during a three-week exhibition. He continued with his experiments and in the same year, on October 2nd, at his workshop in Frith Street, London, he transmitted the world's first true television image, the painted wooden head of a ventriloquist's dummy which he called *Stooky Bill*. The dummy was scanned vertically with a resolution of 30 lines, consisting of five pictures per second. In 1927, Baird increased the scan rate to 12.5 pictures per second. He had a second dummy, called *James* (Fig. 6). Many years later, in



1951, a blue plaque was unveiled at the site of his former workshop, later to become a pub called 'Bar Italia' (Fig. 7).

DX-TV & FM News

The latest DX news, plus details of changes to broadcast television and radio services, is available online via the *Radio Enthusiast* website:

www.radioenthusiast.co.uk

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Martín Butera

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In this article, I would like to look at the importance of free radios established and operated by indigenous organizations and peoples in Brazil (Fig. 1). To that end, I shall concentrate on the situation for Indigenous Free Radios in the state of *Bahia*, in northeast Brazil.

In the 21st Century, it seems that the vast majority of Brazilians ignore the immense diversity of indigenous peoples living in this country. It is estimated that, at the time of the 'discovery' of Brazil, more than 1,000 peoples, totalling between two to four million people, inhabited this region. The ambiguous term 'discovery' of Brazil refers to the arrival, on April 22, 1500, of the fleet commanded by the Portuguese Pedro Álvares Cabral (1467-1520), who 'conquered' the territory where Brazil is today.

Currently, 255 peoples or ethnic groups that speak more than 150 different languages survive in this Brazilian territory. Most of this population is distributed throughout thousands of villages, located in what is called 'Indigenous Lands'. These range from the north to the south of the country.

Indigenous Populations and Media

Many Indigenous peoples in Brazil have little access to public media; and in the private media, they are frequently severely constrained. There is a large concentration of media in Brazil: An investigation in recent years by *Media Ownership Monitor* (MOM), funded by the German Government and carried out jointly by the Brazilian NGO *Intervozes y Reporteros sin Fronteras* (RSF). Based in France, RSF revealed that of the 50 media with the largest audience in the country, 26 of them were controlled by only five families or business groups.

<https://www.mom-rsf.org>

<https://www.observacom.org>

The largest and most famous is the *Grupo Globo*. However, in none of these media do indigenous peoples have a place. They are not only invisible to the hegemonic media, but indigenous peoples are also constantly threatened by losing their lands in Brazil. These territories and rights are recognized and protected, in the new and innovative constitution of Brazil, dating from 1988. The document established that those lands of the indigenous people which they traditionally occupied, and continue to occupy, are of an 'original' nature. This means that they predate the formation of the



ALL PICTURES COURTESY SECRETARY OF CULTURE OF THE STATE OF BAHIA, EXCEPT FIG. 1: MARTÍN BUTERA

Actors, not Invisibles: Indigenous Radio in Brazil

Martín Butera is returning to RadioUser on a more regular basis throughout 2022. In his first exclusive article, he investigates the significance of free radio for Indigenous Communities in the Northeast of Brazil.

Brazilian State itself.

However, the law is seldom enforced, and the indigenous people of Brazil are losing more and more land.

To name just one example, a Portuguese hotel corporation recently announced that it wants to build a luxury resort with an initial investment of 2 million US \$ in an area in the south of the state of Bahia, demarcated by the National Indigenous Foundation (*Funai*) as housing traditional indigenous for the *Tupinambá* ethnic group.

The project is planned to be built in a

beautiful area of the Bahian coast. Although progress is inevitable, the right of its ancestral inhabitants must be respected.

Languages and Voices

But the struggle is not only for land, as mentioned above; it's for more than that: currently, only about 150 ancestral indigenous languages survive in Brazil. Year after year, more of them are being effectively silenced because they cannot have access to the mass media. For this reason, it is vitally important that the

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Fig. 1: The Voice of the 'Invisibles'.

Fig. 2: Radio Kiriri on the day of its inauguration, received by the head of the Kiriri Tribe.

Fig. 3: Indigenous people participating in the assembly of the antenna, using a tree trunk as a mast. Fig. 4: The Radio Kiriri low-power transmitter. Fig. 5: A live recording at Radio Kiriri. Fig. 6: Aerial construction at Radio Tupinambá. Fig. 7: A community production – Radio Tupinambá on-air. Fig. 8: Radio Tumbalalá, on-air since 2018.

phenomenon of indigenous free radios continues to grow in Brazil since it is of exceptional relevance. This is because it expresses the vitality of indigenous cultures and the struggle for the right to autonomy of their lands, resistance, and survival of indigenous and ancestral languages.

In this article, I aim to introduce you to a network of low-power free radios installed in villages of the *Kiriri*, *Tumbalalá* and *Tupinambá* peoples. All these stations – with broadcasts directly from the indigenous territories – are located in the state of Bahia in the Brazilian northeast. These stations were created thanks to young leaders who committed themselves to making visible – and giving a voice to – the indigenous peoples and communities who live in the region and work for the Secretary of Culture of the State of Bahia.

The transmitters and all their equipment were purchased through the *Bahia State Cultural Fund*.

Radio in Bahia

The state of Bahia is located in the northeast of the country. It offers a varied territory, ranging from the tropical coast to a desert region, called in Portuguese *el sertão*. Its capital, Salvador, is internationally known for its historic centre, the *Pelourinho*, which is rich in 17th Century colonial architecture.

I feel certain that many of you will have in your heads the images of the Michael Jackson video for the song *They Don't Care About Us*, from the mid-90s. The 'King of Pop' then participated in the filming in the city of Rio de Janeiro and the old neighbourhood of the *Pelourinho*

<https://tinyurl.com/muh8pfzs>

Bahia stands out for its vast coastal beaches, colonial historical sites and great natural beauty, which are a constant attraction for visitors both inside and outside of Brazil, as well as the city of Rio de Janeiro, Bahia has its own carnival that attracts visitors from around the world – about 2.7



million people in six days of non-stop celebration. Bahia is also the state with the longest coastline in Brazil, with a total of 932 km, which corresponds to 12.4% of the country's total.

The third-largest declared indigenous population in Brazil lives in the state of Bahia, with 56,381 people, according to the latest IBGE Demographic Census, which dates back approximately 10 years. In this context, Bahia is behind Amazonas (168,680) and Mato Grosso do Sul (73,295).

Currently there are more than 22 Indigenous peoples in Bahia, these tribes have the names of: *Pataxó*, *Pataxó Hãhãhãe*, *Tupinambá*, *Tumbalá*, *Kiriri*, *Tuxá*, *Atikun* and *Fulni-ô*, *Payaya* and *Kariri-Xocó-Fulni-ô*, *Kaimbé* and *Kapinawá*, *Kantaruré* and *Potiguara*, *Pankararé* and *Pankararu*, *Pankaru* and *Xacriabá*, *Truká* and *Tapuia*, *Xukuru-Kiriri* and *Kambiawá*.

A Look at Radio Kiriri

Radio Kiriri is the first Free Indigenous Radio here. It has been on the air since 2012 (Fig. 2) and broadcasts directly from a house donated by the Ministry of Culture of the State of Bahia, located in the municipality of *Banzaê*, in the interior of Bahia. Radio Kiriri, broadcasts on FM, on 88.5 MHz, and this station was the first to be part of the network of indigenous free radios (Fig. 3).

The station is 100% operated by the *Kiriris* Indians, who are today a great example of the struggle for other indigenous peoples located in the Northeast region of the country since they always resisted the destruc-



tion of their Indigenous lands. At Radio Kiriri, the microphones and equipment function as amplified boxes in a wider sense. Here, the stories, legends, knowledge, concerns, and problems of the entire community are shared and debated in a participatory and egalitarian way.

This is respectful of opinions and guarantees a space for everyone to express themselves freely (Fig. 4).

With live broadcasts and recorded programs, Radio Kiriri prioritises the use of indigenous music and soundtracks, and live recordings (Fig. 5).



Radio Tupinambá

Radio Tupinambá FM has been on the air since January 2015, transmitting at low power directly from the *Tupinambá* Indigenous territory, in the community of Itapuã, located 15km from the city of Ilhéus, in Bahia.

Radio Tupinambá was set up in the same way as Radio Kiriri (see above), thanks to the young leaders who work in the Ministry of Culture of the state of Bahia. This allowed many indigenous people to participate in the whole process of setting up a radio station. They constructed a bamboo tower, installed the antenna and connected it to the FM transmitter, which also works on the 88.5MHz frequency (Fig. 6).

This radio is 100% made by the indigenous people themselves, including the production and operation of the community's own radio programs (Fig. 7). The station is located inside a humble and peculiar house built with blocks of mud called *adobe*. Despite its low power, the station reaches eight other Tupinambá villages. In this way, it achieves regular daily communication and engagement, with numerous and diverse songs and interviews. All programming is carried out in the indigenous language.



Radio Tumbalalá

Radio Tumbalalá, is the newest station to be part of the network of free indigenous radios, its beginnings go back to April 2018. The radio is located in the village *Pambu*, in the north of Bahia, on the banks of the São Francisco River. This area on the bank of the river was already occupied in the past by several indigenous tribes; currently, it is inhabited by an indigenous people called *Tumbalalá* (Fig. 8).

Radio Tumbalalá was created with the objective of training and educating indigenous radio communicators and producing 100% original content, to integrate traditional knowledge with new communication practices, as an instrument of both resistance and cultural strengthening.

This station, like its sister radio stations, was put together, with the collaboration of a dozen indigenous people who accompanied the entire process from scratch, assembling the antenna and the transmitter.

Radio, Not Internet?

In the inhospitable regions of Brazil, many of which are inhabited by mostly indigenous populations, radio has established itself as the most effective

form of communication, as it challenges geographic isolation by reaching the most remote communities – where few mass media can penetrate.

In most indigenous territories, there is no mobile phone or internet signal; thanks to the presence of the free radio network, it is now easier to communicate with indigenous relatives, informing them about meetings and related topics, such as how to take care of the ongoing Covid-19 Pandemic.

Faced with this difficulty in connecting to the Internet, and sometimes the challenge of using technological products, the solution is the radio receivers found in almost all houses and public places; they are inexpensive and easy to use. Radio is a simple and inexpensive technology also for those who decide to operate it.

The costs of installing a radio station are acceptable for an organized community; a radio station does not require a lot of work to install. In any case, the Internet is especially advantageous for members of the communities that have had to migrate to other cities in Brazil trying to adapt to urban life in search of more job opportunities. These listeners often want to remain informed and connected with their indigenous communities.

Although these stations do not broadcast online, there are records (perhaps slightly outdated) and recordings on the *SoundCloud* platform, which I am sharing with you at the URLs below.

These recordings are in the Portuguese language and also in indigenous ancestral languages.

<https://soundcloud.com/kiriri>

<https://soundcloud.com/radio-tupinamba>

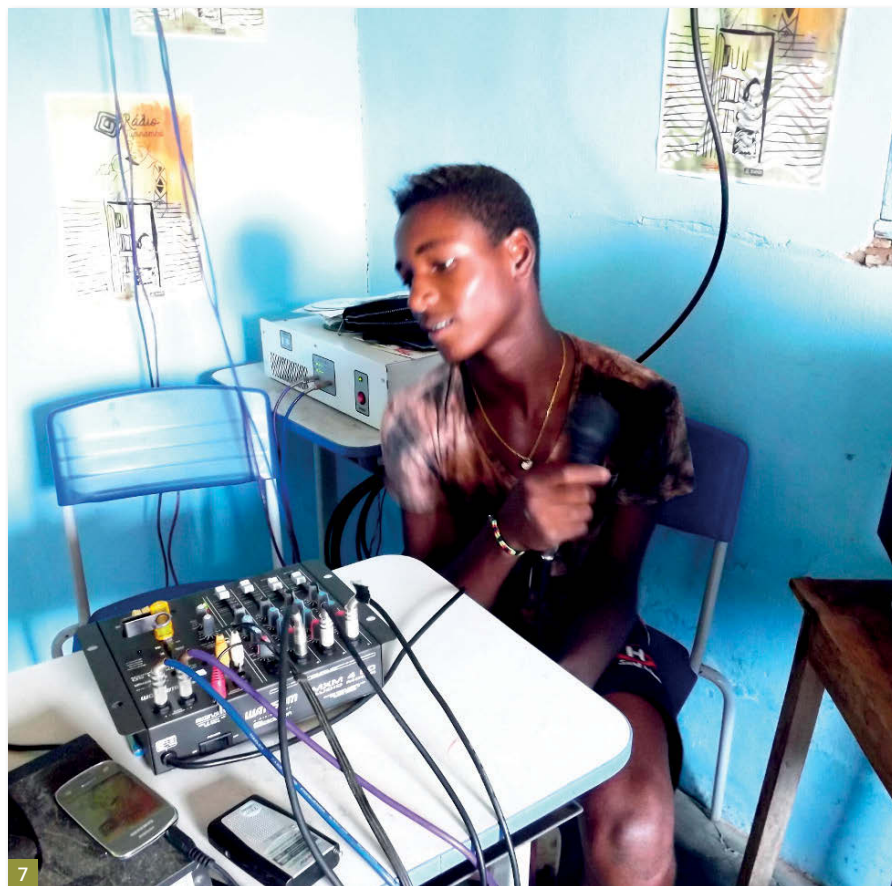
<https://tinyurl.com/y4pts95>

You may also like to watch a short documentary on YouTube, which I can recommend, it is a record of the Rádio Tumbalalá FM project delineated above.

https://youtu.be/NL_vfs6BdvY

Conclusion

The network of indigenous free radios in Brazil is today a direct and independent example of media practice that harmonises with the democratization of communication. It affirms the position of indigenous peoples as actors in the scenario of (old and new forms of) conquest, working towards the realization of their needs, especially their right to communication. The right to the media must surely be exercised by everyone – and especially by indigenous communities – to stop being 'invisible'.



For the latest news and product reviews, visit www.radioenthusiast.co.uk

Georg Wiessala

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In the December 2021 issue of this magazine (*RadioUser*, December 2021: 40-41), I took a look at the simple ATS-20 SI4732 radio, named after the chip upon which it is based. Well, Father Christmas has been kind and sent me the successor model too. The radio is constructed around the Silicon Labs Si4732 M/FMSW/LW/RDS receiver IC, like its predecessor (Table 1, Figs. 1 and 2).

Upon switch-on, the first (blue) screen on my review radio showed the following message – presumably the callsigns of the software developers and PCB builders of the device, and the software version: *AT25 RADIO DSP; SOFT PE0MGB-BD7JPY; PCB BY BD7JPY; SI4732: 63*. Our *Aerials Now* columnist **Keith Rawlings** was kind enough to lend me the review unit. Keith has been busy putting together a much more in-depth assessment for the 2022 edition of the *World Radio TV Handbook* (Vol. 75). My thanks go to him, as well as to our colleague, the WRTH editor **Nicholas Hardyman** at *WRTH Publications Limited* in Oxford.

<https://www.wrth.com>

This iteration of the SI4732 chip radio is slightly larger than the previous ATS-20, measuring 120 x 115 x 48mm – without the sizes of protruding parts and the plastic tuning dial.

Its official designation is 'ATS25 Si4732 Full-Band Radio Receiver DSP Receiver FM LW (MW And SW) And SSB With 2.4" Touch Screen'. The frequency ranges covered are 64-108MHz (FM, with RDS); 153-500kHz (LW); 520-1710kHz (MW), and 1730-30000kHz (SW). The radio offers FM (RDS), AM, SSB modes

The touch-screen, which I found to be at just the right level of sensitivity, measures 40 x 55 mm, and 6.5 cm in diameter (2.4"); once again, you might consider putting your glasses on to read and operate this.

I found that using the touchscreen pen I normally use for my laptop, works wonders here – in fact, one of those should be included in the pack as an accessory.

FM reception includes RDS, which appears in small writing under the main frequency display, flashing as it does so. On FM (only), the ATS25 offers a nifty 'search' function (go to the second screen of the user interface, under 'next').

In use, I would say that this radio was



SI4732 Radio Version 2.0: The ATS-25 Radio with Touchscreen

Having looked at the ATS20 SI4732 Radio recently, **the editor** turns his attention to its more recent successor, the ATS25 receiver. This radio comes with some useful functions and features, including a touchscreen.

pleasant and easy to operate, without recourse to the manual. The in-built Lithium-ion battery (3.7v /2000MA) offers a long battery life once charged via its TYPE-C charging interface, at a maximum 1.5A charging current.

Or you can run it off a portable (in my case, a *TalentCell* YB1203000-USB).

As in the case of the predecessor model, the ATS-20, a good external aerial is a must. On FM, your headphone wire acts as an aerial too, through the 3.5 mm audio-out jack.

I tried several telescopic ones on the BNC aerial connection, as well as my Reuter RLA-3 indoor crossed loop and the Wellbrook ALA1530. Surprisingly, the little receiver was not fazed by any of them, the Wellbrook bringing in the best results

on medium- and short wave during the day, for example on Radio Cumbria (837kHz). The (ribbed) tuning dial is larger than on the ATS-20, and it seemed to be marginally more solid.

Output via the inbuilt speaker is 1.5W, and sound on FM is, in my view, slightly worse than on the ATS-20. This may be my hearing, but several early reviewers have also commented on this.

<https://tinyurl.com/474t3c6b>

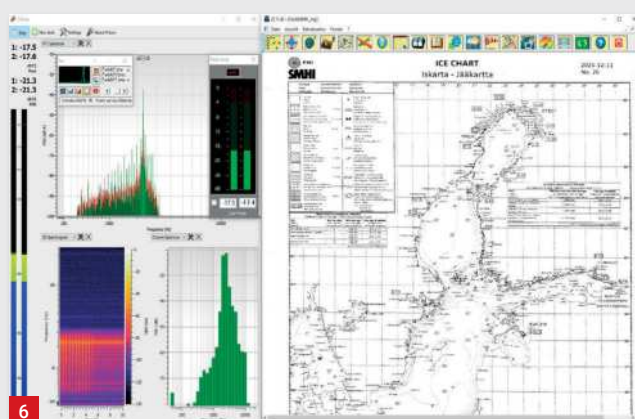
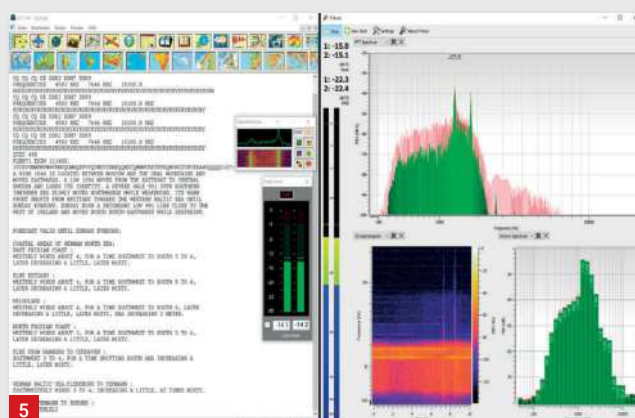
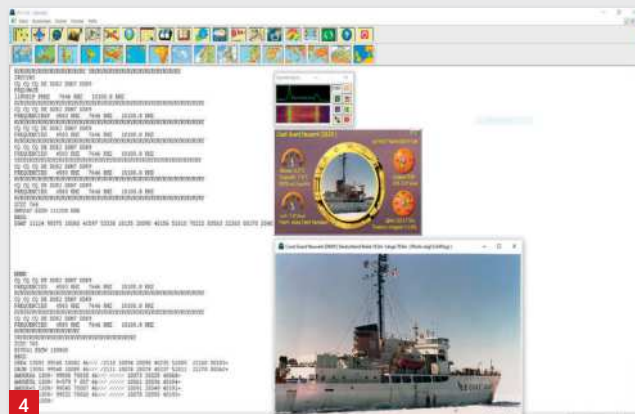
<https://tinyurl.com/2p8ddpwp>

(October/ November 2021, *YouTube*).

Data / SSB Reception

On SSB, I tried the ATS25 first – you will not be surprised to hear – on weather data, both Radio Facsimile (WXFAX) and Radio Teletype (RTTY) signals. In the case of RTTY, I was

ALL PICTURES: GEORG WIESSALA



surprised about the relative accuracy and stability this cheap device delivered to my soundcard and main PC.

The images in Figs. 3 to 5 are of RTTY signals from *Seewetterdienst Hamburg*, the German Weather Service (DWD) on 7646kHz (actual setting: 7645 USB DDH 7, 00.00 - 24.00 UTC, 1 kW F1B 50 Baud + / - 225Hz) received here in the Northwest of England on 11 December 2021; Fig. 3 shows the ATS25's (rather cumbersome, please send me more cables and adapters!) connection to my soundcard.

In terms of weather fax data reception

on USB, I was even more taken aback. The screen grabs in Figs. 6 and 7 are from a session on the same day, 11th November 2021, showing ice map data. This came from 7880kHz (actual setting 7879kHz with BFO on 525 Hz; DDK3 10,0 kW F1C; white + 425Hz, black - 425Hz). This is the European DWD weather fax frequency.

Maybe it is the fact that I have only recently started using a much better (192kHz, 24-bit resolution) sound card setting, but this is an impressively detailed result that I would otherwise only expect from much bigger receivers, such as my

Fig. 1: The SI4732 ATS-25 Radio with touchscreen. Use a stylus!

Fig. 2: The connections at the back of the SI4732 ATS-25. Fig. 3: Receiving weather-related RTTY from the DWD on 7645kHz.

Fig. 4: The Zorns Lemma 11.42 software suite 'translates' the synoptic data received into pictures of the sources of the data.

Fig. 5: Visualising the signals with Futire (right). Zorns Lemma 11.42 is on the left.

Fig. 6: A Finnish Ice Report on 7880kHz.

Fig. 7: Receiving DWD weather fax signals on 7880kHz. Fig. 8: The bandwidth selection touchscreen on the ATS25 receiver.



7



8

general workhorse AOR AR7030. From Northwood too (JOMOC, these days), I got 8040kHz (actual setting: 8040; 1500Hz BFO), and the images came in crisp and clear.

Your settings on the ATS25 will almost certainly be different; it is all a case of trial and error, especially with some of the bandwidth settings on the radio (Fig.8) – but therein lies all the fun! For RTTY and Fax reception, the little radio's longer-term stability was acceptable, yielding some useable maps and imagery.

In all cases in this section, I worked with the ATS25 connected to my Wellbrook ALA 1530 Loop or Reuter RLA-3 Indoor Crossed Loop, and the radio did not balk at this. A simple long-wire aerial will just mean that you can use this as an FM radio with a few AM/ HF catches from stronger stations.

My current soundcard is a Behringer U-Phoria UMC202HD (which I normally use for VLF experiments), and the decoders were SeaTTY (pictured) and

Zorns Lemma 11.41. I relied on Friture and the Darkwood Designs Peak Level Meter for visualisation.

<https://tinyurl.com/yfxnh25k>

<http://www.wettermonitor.de>

<https://tinyurl.com/rzhs4eby>

<https://friture.org/download.html>

In all instances, I had turned the volume up fairly high on the ATS25 and found a happy medium using the volume controls on the sound card too. In terms of the relatively simple kind of data signals I am interested in, this little radio did the job, and I could just leave it on all day.

No, it is not professional level, but it works just fine for me, as a stand-alone little setup. It keeps the weather maps coming and frees up the 'big' HF receiver for broadcast and HF Voice/ Amateur Radio listening, frequency-checking, one-frequency monitoring and other things.

See also: **Rawlings, Keith** (2021) 'ATS25 Si4732' in Hardyman, N. (ed.) *World Radio TV Handbook (WRTH)* Vol. 76 (2022); *WRTH Publications Limited*: Oxford: 22-3.

Radio News

BFBS BEST OF BRITISH: BFBS has launched its new radio Station BFBS Best of British online. Back in October BFBS gave its listeners the chance to vote for a brand-new station from one of the following options: Best of British, Chilled, Country, Gold – 70's, Kids or Soul, or even suggest one themselves. Today, BFBS has announced that Best of British took the majority vote and is available to listen to now. The station plays non-stop music, from the very best British music has to offer through the decades, 24 hours a day, seven days a week. Simon Monk, BFBS Deputy Director Radio & Live Events said: "At BFBS we don't just want to make sure that we are bringing our listeners the best music – we want to make sure it's the music they want to listen to. That's why we're so pleased to launch 'BFBS Best of British', giving them access to a station with music from a genre they have chosen all day, every day – and help them feel even more connected to home." Within its portfolio of stations, BFBS also has BFBS Beats, BFBS Edge and BFBS Rewind.

(SOURCE: RadioToday | BFBS)

<https://tinyurl.com/cv2d59vs>

BFBS2: To mark The Duchess of Cornwall's new Patronage, Her Royal Highness recorded a video message for BFBS to be played out across BFBS' global TV, radio and digital platforms. In the message, HRH thanked the armed forces for, "...responding to numerous calls for help both in this country and overseas" and for "the unseen sacrifices that you are making for us all". In the address, The Duchess also praised BFBS, commenting that, "your incredible work raises morale, forges a sense of community and lessens the distance from loved ones". The Duchess of Cornwall added: "I know a little of the importance of maintaining the connection between serving personnel and their family because, during the Second World War, my father was held as a prisoner of war in Germany. Officially, his role was to be the laundry officer. Unofficially, it fell to him and half a dozen others to create and listen to a very basic radio to glean precious news of home and share it with their fellow prisoners. Periodic Nazi raids would locate and destroy the carefully-built wireless sets, but they were always replaced as quickly as possible – the men could cope with almost anything as long as they were not deprived of some form of contact with home. In the same way, your incredible work raises morale, forges a sense of community and lessens the distance from loved ones. You live up to your inspiring motto "serving those who serve", and for this – thank you." (SOURCE: National Press | BFBS | RadioToday)

<https://tinyurl.com/2p8aw332>

Robert Connolly
gi7ivx@btinternet.com

Our editor recently sent me a news item entitled *AIS Beacons: Hit by new Law*. Many of you will be aware of the International Maritime Organisation (IMO) and its relevant communications requirements:

<https://www.imo.org>

According to those rules, all passenger vessels and cargo vessels over 300 GRT (Gross Registered Tonnage) are legally required to constantly transmit their vessel details including name, size, course, speed, and so on, via two dedicated marine VHF channels (AIS 1 on 161.975MHz and AIS 2 on 162.025MHz).

The purpose of AIS is to avoid collisions between vessels and to make it easier for ships to communicate with each other to ensure accident avoidance. As many of you will be aware, there are several ways to view VHF AIS transmissions, either by using a marine AIS-enabled transceiver, decoding your own received signals from your scanner using software such as *ShipPlotter* or using one of several freely available internet sites, such as *MarineTraffic* or *Vesselfinder*.

<https://www.marinetraffic.com/en>

<https://www.vesselfinder.com>

It is not just the radio hobbyist who may be interested in monitoring AIS traffic, but also many shipping companies who monitor their vessels in real-time.

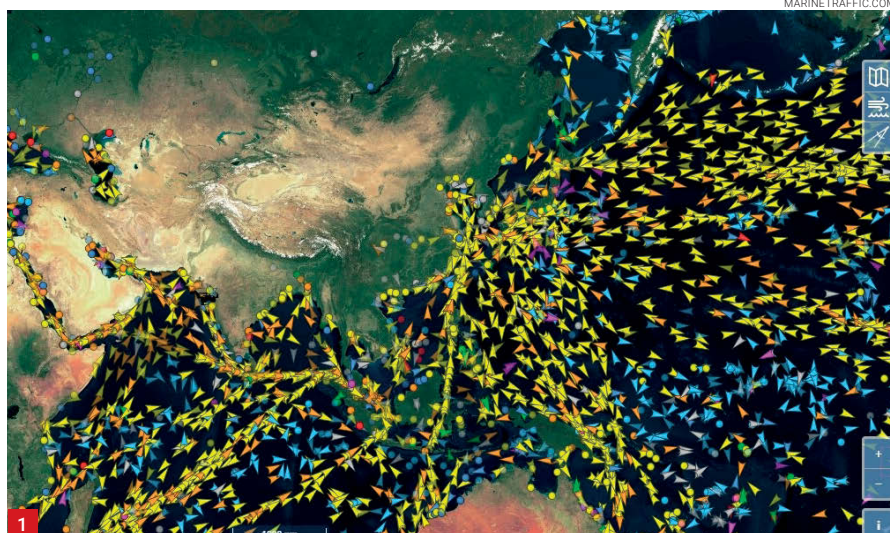
In this context China introduced a new law in November 2021 that seems to have resulted in ships turning off their automatic AIS beacons when in Chinese waters. Therefore, vessels from around the globe, have 'disappeared' from global tracking systems as they have entered some of the world's busiest shipping lanes close to Chinese ports. As the ships leave Chinese waters they reappear again.

It is estimated that AIS pings from ships near China have fallen by 90 per cent in just a few weeks.

Fig. 1 shows the number of vessels operating in Chinese waters using the long-range satellite tracking system. In theory, this should correspond closely to the number of VHF AIS returns.

However, as you can see from Fig. 2, this is not the case.

I checked out that region using the *Vesselfinder* and *MarineTraffic* websites; first with 'Sat AIS' enabled for Fig. 1, and then disabled showing just the VHF AIS returns in Fig. 2. There is a substantial difference between the two. Of course, some of this may be explained by a greatly reduced number of AIS



Chinese AIS, NDB News, and a New ICOM Transceiver

Robert Connolly reports on Chinese legislation that makes ships 'disappear' offers the very latest updates on Non-Directional Beacons previews the new ICOM IC-M804 Transceiver and finds a concrete-reinforced ship.

receiving stations that upload their data to these websites but there certainly seems to be a conspicuous variation.

Data Restrictions

Against this background, on 1st November 2021, a new law came into effect in China restricting foreign access to any data – potentially including shipping data – deemed to have a bearing on 'national or economic security'.

Moreover, state television raised concerns that foreign organisations could be plundering "valuable military and economic intelligence" via maritime tracking systems.

On the same day, a report on the government-controlled China Central Television (CCTV) stated that "suspicious radio equipment" had been found in the home of a radio enthusiast close to a military base and commercial port in Zhanjiang in the country's south, west of Hong Kong. The broadcast said the radio ham had installed equipment, which would aid in the global tracking of ships "in

real-time via the internet".

There are now fears that China's newfound reluctance to share information on vessels in its waters could impact global supply chains, as shipping companies have less visibility on where their boats are.

China has long hosted AIS base stations. The more AIS base stations, the more accurate the information on a ship's location. But authorities have become concerned about more compact AIS base stations, such as the one in Zhanjiang, popping up on people's balconies.

The report suggested the information they could pick up was a "hidden mystery" that could be exploited by nefarious overseas governments. There are now hundreds of base stations dotted around China's coastline and near navigable inland waterways and Beijing doesn't know where they all are or who is paying for them.

The report went on to say that some maritime data firms "have long served overseas spy agencies" and that, "Foreign institutions,

enterprises, and even spy intelligence agencies wantonly grabbing important data resources in related fields of our country have brought serious harm to national security."

The shutting down of many of these base stations looks to have been one consequence of the new data privacy legislation. The laws mean that data firms are now required to receive Beijing's approval before personal or sensitive information leaves the country.

A combination of the removal of many of the hundreds of (now possibly illegal) base stations – which may in future need government approval – and concern from data providers that they might fall foul of the new laws should they transmit data overseas – appears to have led the AIS coverage of China's shoreline to suddenly reduce (Figs. 1 and 2). China has insisted that AIS base stations are still operating in China, but only those that it deems to be legally constructed. It is thought that Beijing could be uncomfortable with the level of information AIS systems collect and worries it may give an insight into the number of ships and cargo volume at its ports.

Local Laws, Global Impact

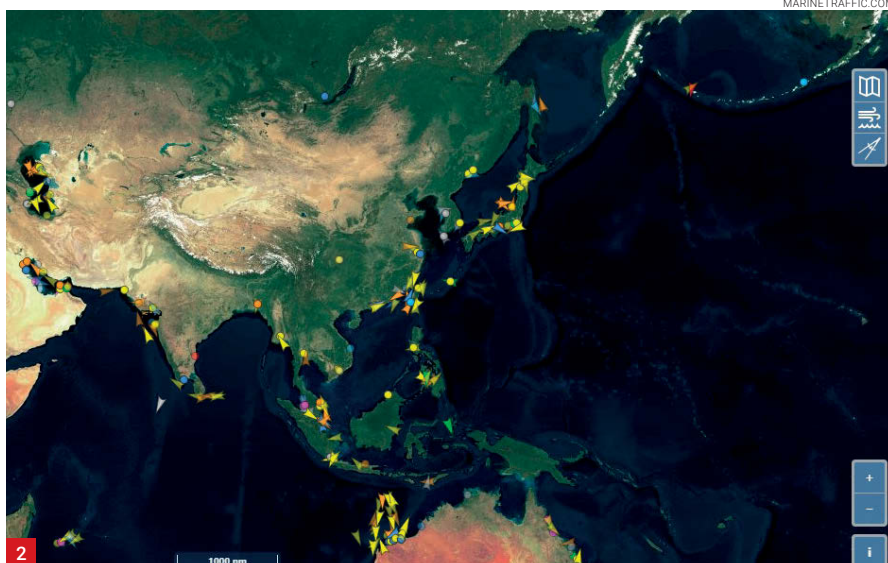
There are wider fears that China's newfound reluctance to share information on vessels in its waters could impact global supply chains, as shipping companies have less visibility on where their boats are. Only China seems to have an issue with the collection and dissemination of AIS data. Other nations seem relatively unruffled by information on ships in their waters being freely available or even having base stations located on residential balconies.

While satellite tracking is still being used by ships in the region, this is not as accurate. The marine VHF AIS system, as a long-range satellite system, only uploads data every few hours, unlike the VHF AIS system, which is constantly updating. As a result, vessels switching off their VHF AIS in busy Chinese waters risk being involved in a potential collision, especially in poor weather conditions.

Certainly, they still have radar to work with but identifying and communicating with vessels on a potential collision course becomes much more inaccurate and difficult. With VHF AIS you have a display of the other vessel's name/callsign making direct communications easy. Without AIS data a ship would be making a call along the lines "vessel on my port bow" and hope that the vessel concerned realises it is the vessel of concern.

NDB Update

Those of you who enjoy DXing Non-Directional Beacons (NDBs) may have noticed some Norwegian regulars missing. The most obvi-



ous is probably on 372 kHz where OZN Prins Christian Sund Greenland is no longer competing against ODR Oddeøya Norway on the same frequency; ODR has now closed down.

Another beacon to have recently closed down is 319 kHz VAR Stavanger; some of you may recall this as LEC, the *Consol* station before *Consol* was closed and the callsign changed to VAR.

I was rather sad to see this one go, as I had fond memories of receiving its predecessor and seeing how *Consol* worked. Another Norwegian NDB no longer with us is BN Kristiansand on 345 kHz.

An NDB that is not on the air at the end of 2021 is GMN 334 kHz Gormanstown in Ireland. It is on long-term maintenance and due back on air in early January 2022.

On the plus side, the loss of some beacons can open up the frequency to the reception of other, weaker, ones operating on the same frequency. I will be producing a full list of NDBs logged in the next couple of months. Despite beacons closing down, there are still plenty around to listen for.

<https://www.kilkeel.org.uk>

ICOM IC-M804 MF/HF Marine SSB Transceiver

Icom has recently announced a new marine HF transceiver, IC-M804 MF/HF Marine SSB Transceiver (Fig. 3).

[See also our News and Products section this month – Ed.]

This radio is a new, long-range, MF/HF Class-E DSC radio for ocean-going sailors and commercial non-GMDSS operators. It is packed with features to keep users safe, including an intuitive user interface, colour TFT LCD, audio replay, GPS, and much more. The IC-M804 features a remote head that can

be neatly installed near a chart table or NAV station while the control box can mount discreetly out of the way and out of sight. The controller can be interfaced with a computer or email modem to make a complete communication system. Connections are also available for an external loudspeaker.

The IC-M804E features a user-friendly interface with a 4.3-inch colour TFT LCD, allowing for relatively simple operation. With the near-180° wide viewing angle, the screen allows various installation possibilities. The large control knob and keys provide easy access to functions such as accessing MMSI numbers, ITU channel numbers and keying individual frequencies via the easy-to-use keypad. The IC-M804 uses NMEA 200 connectivity, enabling it to exchange GNSS, DSC call information, radio information and PGN list data on the network. NMEA 0183/-HS GNSS position data can also be converted to NMEA 200 data for other equipment. Other features of the transceiver include a distress call button, dedicated DSC receiver scanning, and an integrated GNSS receiver. The radio comes supplied with a 5-metre cable and GNSS antenna.

Interestingly, it offers a two-minute 'instant-replay' audio function that automatically records the last 2 minutes of receiving audio. The IC-M804 features an advanced RF direct simple sampling system that improves receiver sensitivity and delivers high-quality audio. In addition, the IC-M804 has HF e-mail capabilities and can be set to 'memorise' your

HF e-mail access frequency, mode and filter settings into the e-mail channels, which can be selected with a simple operation. Up to 160 e-mail frequency channels and connection terminals for a PC and e-mail modem are available.

The AT-141 automatic antenna tuner matches all bands to your antenna. If due to a fault, the automatic tuner cannot tune the antenna, the IC-M804 bypasses the tuner and will display an alert on the display.

The IC-M804 125 W (PEP) of RF output at AT-141 output power, continuous receiver coverage from 0.5 - 29.999MHz, along with programmable microphone buttons for quick function access. The IC-M804E is designed to provide reliable operation and corrosion-resistant durability under harsh maritime environments.

The controller has IPX7 protection (1 m depth of water for 30 minutes). There are several accessories available including the Icom MB-108 heavy-duty mounting bracket, MB-75 Marine Flush Mount Kit, OPC-478UC USB Cloning Cable - 3.5mm plug type, and SP-24/E standard external speaker.

Unfortunately, I am not able to provide an operational review of this transceiver as our boat is out of the water for winter maintenance and we only hold a VHF marine radio license.

However, my thanks go to Icom UK for the product information they kindly supplied.

<https://tinyurl.com/2p8z3nec>

An Incident on Carlingford Lough

Occasionally you come across an interesting maritime incident you have not heard on the marine radio channels. In this case around mid-November 2021, I was driving along the shoreline of Carlingford Lough when I noticed a small container feeder ship, *Anna G*, at anchor.

This vessel normally operated a regular container shuttle service between Avonmouth and the port of Warrenpoint (Carlingford Lough). It was, therefore, strange to see this ship anchored outside the port and empty of its usual container load.

This prompted me to make some further investigations. The vessel had suffered an engine failure; after a couple of days at anchor, it was towed by the local pilots, who own two tugs, to the port of Dun Laoghaire, a former ferry port just south of Dublin to undergo engine repairs.

According to [Afloat.ie](https://afloat.ie) (see URL below), where I came across information regarding this vessel, the tug had to tow the ship around in circles off Dun Laoghaire until a pilot from nearby Dublin port became available via a



3

ICOM UK (IAN LOCKYER)



4

ROBERT CONNOLLY

Dublin pilot cutter to direct entry and docking at Dun Laoghaire.

To assist the Carlingford Lough tug with port entry and berthing of the ship the only privately owned tug in Dublin, *Giano*, took up a position at the stern of the ship.

At the time of writing this column, regular checks via *MarineTraffic* (see above) have shown that *Anna G* was

still in Dun Laoghaire some three weeks later; initial reports stated that it would take a couple of days to repair the vessel's engine.

<https://afloat.ie>

Ships Made of Concrete

Finally, take a look at this month's picture (Fig. 4). The photograph was taken at *Carlingford Marina* in Co Louth, Ireland. If you look carefully at the centre of the picture you will

see the hulk of a ship.

This is no ordinary boat – it was constructed with concrete built by *J&R Thompson* on the opposite side of Carlingford Lough. This ship (*The Cretefarm*) was launched broadside into Carlingford Lough on 18 December 1918. In 1917, due to large shipping losses, the British Government contracted 21 new shipyards to construct 154 reinforced concrete ships – 24 steam tugs and 130 barges. The Warrenpoint firm was contracted to construct ten barges of which *Cretefarm* was one and remains as one of the few surviving examples.

A piece of history on my doorstep, indeed.

For more information on concrete ships, you may visit this resource:

www.mariner.ie/concrete-ships#

Until next time "Fair Winds".

Enter our competitions at www.radioenthusiast.co.uk/competitions

ALL PICTURES: TIM KIRBY



Tim Kirby
tim@livingland.wales

On 2nd November 2021, legal CB radio in the UK was forty years old! Of course, CB Radio had been around in the UK for a long while before November 1981, and it had taken a huge amount of lobbying and discussion before the Government would agree to a legal CB service.

Before legalisation, CBers, 'breakers' as they were known, used CB sets, generally imported from the USA, which used the Amplitude Modulation (AM) system. The sets which were legalised used a different set of channels and the Frequency Modulation (FM) system, the authorities arguing that FM sets were less likely to interfere with other services than AM.

It is hard to imagine now, but the legalisation of CB Radio was a huge issue! Take-up was incredible. CB Radios were widely available in the High Street in stores like Currys, Rumbelows, and even Woolworths. Of course, you had to go to the Post Office to buy a CB licence, which was renewable annually. The licence was dropped in 2006 when it cost £15 a year.

From CB at 40 to VoIP Radio Apps

This month **Tim Kirby** reflects on 40 years of legal CB radio and revisits some previous review equipment. He then offers an update on the Senhaix 8600 and 8800, the RFinder B-1 plus, and some great VoIP Radio apps.

CBers seemed to come from all ages, all walks of life and social backgrounds. For the first few years, the channels were very busy indeed. CB Radio gave many people a voice and perhaps widened their horizons in all sorts of ways. For radio enthusiasts like myself, it was a first step in transmitting over the air and gave me the impetus to pursue my radio interest further. For people of that generation, it is quite common to talk to them about radio and very many of them remember, often quite wistfully, using CB radio at some point.

The CB Radio boom translated into

record numbers of users taking up licenced Amateur Radio, by passing what was then the *City and Guilds Radio Amateur's Examination*.

934MHz and Multi-Norm Sets

Although CB Radio was mostly all about the 27/81 System (27MHz FM), it is worth remembering that November 1981 also brought into being the short-lived UHF CB system on 934MHz. Have a look at Ringway Manchester's video all about 934MHz at this URL:

<https://tinyurl.com/32dbjnjr>

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The 934MHz CB equipment was more expensive, and the service was generally less popular. However, amongst enthusiasts, it had a great following and some excellent contacts were made, in good conditions. I always wished that I had tried some 934MHz FM equipment, but I did not get around to it. From time to time, you will see 934MHz CB equipment appear on eBay, but sadly, it is not legal to use this now.

In 1987, a further 40 (27MHz) channels were released, this time using the CEPT (European) channels, which made it easier for drivers coming into the UK from Europe to use their existing CB radios while they were here. This and the differing CB standards around Europe led to the introduction of the 'multi-norm' CB sets, which allow you to switch between the CB systems in use by different countries across Europe, on a single set.

Here in the UK, it is legal to use either the original UK 40 channels or the 40 CEPT channels.

SSB Operation and Legalities

Over time, CB radio became less popular to the masses, but dedicated enthusiasts continued to plough their furrows and took to campaigning again, this time to expand legal CB to encompass AM and Single Sideband (SSB) operation. More lobbying was required – a lot more lobbying – but in June 2014, AM and SSB CB was legalised in the UK, on the CEPT channels.

On 'legalisation-day', I well remember making an SSB contact into Sweden on my drive to the station.

Parallel to the legal AM/SSB CB talk, activity on channels not permitted by OFCOM, such as 27.555MHz continues on SSB, with enthusiasts often using equipment designed for amateur radio.

This is, of course, illegal. It is not illegal to *listen* there though, and you may find it interesting to do that and hear what is coming through. In recent weeks, there have been very good signals in the afternoon from both North and South America and occasionally, in the mornings, from the Far East.

Although less popular than it was, CB Radio has seen a renaissance during recent lockdowns, allowing those isolating or isolated, to communicate across the air. Farmers, 4x4 clubs and radio enthusiasts still use CB Radio, and they are now joined by schools and hospitals, delivery companies, event organisers and a host of new and traditional users.



The shape of CB radios has changed considerably over the years, with much smaller units with various 'bells and whistles' now being produced. But do they work any better than the 1980s sets?

Some of the 1980s vintage sets still work well. If you have happy memories of the 1980s era CB transceivers, you might well enjoy the *UK CB Radio Servicing Channel* on YouTube, run by Richard Shireby:

<https://tinyurl.com/34mp6m33>

Richard does a wonderful job of breathing new life into old sets as well as looking at the performance of some of the newer sets. I was thrilled when Richard serviced a Cybernet Beta 1000, similar to my very first CB radio (the Cybernet Beta 2000) and found that it worked better than some of the modern sets (Fig. 1).

On the evening of 2nd November 2021, a '40th Anniversary' net was held to celebrate 40 years since the legalisation. Many areas saw plenty of activity; and, true to form, one or two areas reported interference from 'mike keyers' and music players.

Nothing changes in 40 years, really!

Senhaix 8600 & 8800 2m/70cm Handhelds – An Update

Some readers may remember the Senhaix 8600 and 8800 2m/70cm dual-band

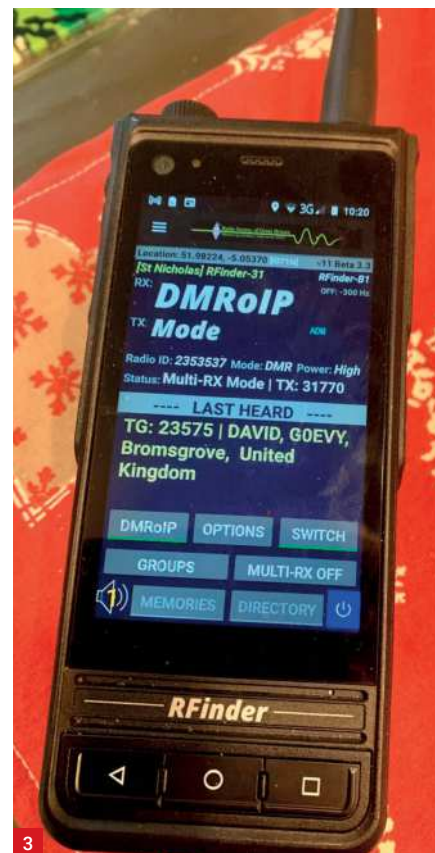


Fig. 1: A Cybernet Beta 2000 radio from the 1980s. This model still performs very well compared to newer radios.

Fig. 2: The Senhaix 8800 receiving on the Civil Airband.

Fig. 3: The RFinder B-1 showing off its' new DMR over IP (DMROIIP) capabilities.

handhelds from previous press coverage. I was interested to learn from Chris Taylor at Moonraker recently that Lewis of the Ringway Manchester YouTube channel had made a very interesting discovery regarding both of these handhelds.

What Lewis discovered was that they will both cover the Civil and Military Airband frequencies on AM.

I have a Senhaix 8800 here (Fig. 2). It is a rugged and colourful little handheld, which is great for taking out on dog walks or similar outdoor adventures. Amongst other things, it has a good torch!

Anyway, I tried it on airband and, sure enough, it works. The first impression was that perhaps it was not working, because defeating the squelch in the same way that you would on FM did not work, so there was no band noise.

A little while later, though, while tuned to one of the local airband frequencies, the radio sprang into life.

Although the radios are probably not at their most sensitive on airband, if you have already got one of these sets, do give this a try – and, if you are in the market for a budget-handheld which covers airband as well, it may well be worth looking at the Senhaix 8600 and 8800 again.

More on Amplitude Modulation

After the last *Push To Talk* column (*RadioUser*, December 2021: 56-58) – which featured AM activity across both the amateur bands and CB – it was really good to hear from an old friend of *RadioUser*, Andy Howlett.

Andy wrote, “You may be interested to know that here in Manchester we have a small AM net on 1963kHz every Friday and Sunday evenings at 8:30 pm local time. The net began in the 1990s with a good number of members at locations right across the Greater Manchester area but rising noise levels and other interests have thinned out our numbers considerably.

“I joined the net in 2003 when there were still about half a dozen participants but we are currently down to just three regulars with a couple of occasional callers-in. The equipment in use includes an older Yaesu transceiver, a home-brew AM-only TX with a separate receiver and in my case a home-brew SSB/AM superhet transceiver. Aerials for transmitting are verticals around the 40 to 50 ft mark and we all have loop aerials (two of us with Wellbrooks and one with home-brew tuned loop) for receive as a way to combat the dreaded noise, which can be very high on the verticals.

“I use my ‘DynaMod’ modulation system, which uses a standing carrier of just 5W; but under modulation, the power is raised in proportion to the speech level, so there is always room for 100% modulation without distortion up to the limit at 35 watts PEP. The power amplifier uses a pair of BUZ901 power MOSFETS, running from a 50V supply and seems to coast along even at maximum power.

“We always leave pauses between overs just in case someone is waiting to call in.”

[N.B.: A ‘MOSFET’ is a metal-oxide-semiconductor field-effect transistor – Ed.].
<https://tinyurl.com/3e6vemcz>

If you are active on top band AM, then why not give Andy and the other participants a call – or at least have a listen and see if you can hear them.

It was also good to hear from Dave Woody near Cambridge, who uses the SGC2020 radio for listening and says there are no digital filters for him!

VoIP Radio for Radio Amateurs

It was also very good to hear from Ian Abel G3ZHI who wrote, “There are many free Voice over IP (VoIP) apps for licensed radio hams using either a mobile phone or a computer. The apps also work on Android and Apple phones (apart from Peanut, which is Android-only). They also work on any recent version of Windows, with some applications available for Macs.

“As these applications are for licensed radio amateurs only, you must submit a copy of your ham licence to get registered. You can use the PDF copy of your licence, available from the OFCOM licencing portal to do this. VoIP is ideal if you like to have long chats and get to know your fellow hams around the world, as the contacts are not affected by radio propagation. The apps are also ideal if you are unable to put up big antennas. VoIP is a good place to find activity and to enjoy more lengthy contacts.”

Ian goes on to list some of the apps and programs which are available (Table 1)

Update on the RFinder B-1 2m/70cm Smartphone

Readers may remember that I reviewed the RFinder B-1 device a few months ago (*RadioUser*, June 2021: 40-43).

This device is a 2m/70cm handheld which is also an Android smartphone, making it capable of running Android applications. At the time of the review, I mentioned that the functionality had just been added, via a beta release, to include the capability to connect to the Brandmeister DMR network using a Wi-Fi or cellular connection, if a DMR repeater is out of range. The functionality is known as DMR over IP (DMRoIP).

Since the review, RFinder has been working tirelessly to get the functionality working reliably and it’s taken longer than I think had been anticipated.

Nevertheless, it is great to be able to report that there are now versions of the RFinder app in the Google Play Store, which include the DMRoIP functionality. There is still the odd issue, but in general, it works very well and, if you have not tried installing it, it will be well worth you doing so.

During a recent drive from Gloucestershire to Pembrokeshire, I was able to use the RFinder B-1, in DMRoIP mode, using a cellular connection, to make QSOs on the Brandmeister DMR network.

This worked very well, in terms of both connectivity and audio quality.

AllStar is using a web transceiver and takes a special browser called *Pale Moon*. Ian is happy to guide anyone who would like help. There is also a video by Andreas, M0FXB on setting up AllStar.

<https://www.allstarlink.org>
<https://tinyurl.com/2jr8vex5>

DUDE-Star / DROID-Star: This works on Windows PC and Android devices, with an Apple iOS version under test.

<https://tinyurl.com/3zb4mjpc>

EchoLink: EchoLink was one of the first internet linking systems and continues to be popular now, over 20 years later. You can use EchoLink on your phone (both Android and iOS devices) to connect to EchoLink enabled nodes and repeaters worldwide.

<http://secure.echolink.org>

Mac users may want to also consider **TRANSCIVE**. This is a native macOS application that let you administer linked nodes, monitor traffic and transmit audio on your AllStar node. It also supports the AllStar Public Authentication used by the web transceiver so you can connect directly to public nodes with your AllStar account. Experience the AllStarLink network without the complexity of setting up a node. I was quite interested in this until I saw that the application costs £17.99!

<https://transceive.app>

Peanut:
www.pa7lim.nl/peanut
(Android devices only).

Table 1: Apps for Voice-over-Internet Protocol (VoIP) Use.

In more recent news from RFinder, the B-1 plus device has now been released (Fig. 3). It runs Android version 9 and features enhanced charging capability through the USB port (the B-1 device did not support this).

Following some development work required because of the upgrade from Android 8 to Android 9, DMRoIP capability is now also available for the B-1 plus.

<https://tinyurl.com/2jen5dmp>

Get in Touch

Many thanks to those of you who have taken the trouble to write in. I am always pleased to hear from anyone using any of the radio systems covered in this Push-to-Talk (simple amateur radio, CB radio, PMR446, as well as Network and VoIP radio). Moreover, any pictures of your station equipment and details of any interesting contacts or recollections will always be very welcome.

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AOR SA7000

Super wide band base aerial system.

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DA1500 is a multi-purpose wideband antenna that receives 70 to 1500MHz continuous whilst being small in size and lightweight. The antenna is only 92cm high and attaches to any (non-supplied) mast from 25 to 50mm in diameter with the two supplied V-bolts. It is recommended for places where space is limited.

ML&S ONLY: £149.95

AOR LA400

10kHz-500MHz,

Receive only Magnetic Loop

Since the invention of this revolutionary concept by KOLSTER in 1915, loop antennas, especially of the active type, have also been widely used by the military in the 70s, before becoming very popular among hobby listeners.



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VHF/UHF air band receiving antenna, not for transmitting. 3.4dB on VHF (120MHz) and 5.5dB UHF (300MHz) with an approximate length of 1.7 metres. The antenna is constructed from fibre glass materials and it is pre-tuned and fully weatherproofed. Mounting components are included. It's fitted with an SO239 connector, so can be connected to a PL-259 without the need of an adaptor. Tuned to receive 108-137.975MHz civilian air band, 225-400MHz military air band.



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Super Discone Antenna covering 100 to 1500MHz for receiving and 144/430/904/1200MHz for transmitting. Rust-free stainless steel is employed in major component parts making the antenna rust resistant and durable with 10m cable included.



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UNIDEN UBDC3600XLT



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The TruckTracker V operation allows this scanner to scan APCO 25 Phase 1 and Phase 2, DMR, Motorola, EDACS, LTR Trunked Systems as well as conventional analog and P25 digital channels.

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The ULTIMATE all mode digital handheld scanning receiver.

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ELAD FDM-DUO

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10kHz-54MHz Direct Conversion SDR Receiver.

SDR receiver that offers the possibility to operate stand-alone like traditional radio or attached to a Personal Computer discovering the possibilities offered by the SDR technologies. After the great success of the FDM-DUO transceiver the manufacturer now offers the "R" as a receiver - as to be expected by Elad in a sleek Italian design and equipped with top-notch technology.

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- Stand-alone Modes: CW CW+ CW- LSB USB AM
- ADC Linear LTC2165, 16bit clocked @122.88MHz
- DDC FPGA Spartan 6 XC6SLX25 + Serial Flash for stand-alone mode
- Stand-alone RX demodulator with STM32F4 ARM floating point µController
- LPC1114 Cortex M3 for LCD & Keyboard control
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- CAT USB interface with FTDI controller
- Fully managed by FDM-SW2 software included

ML&S: £759.95

Elad Companion Speaker SP1 for FDM-Duo. £134.95



AOR AR-DV1

Communications Receiver



Covers 100kHz to 1300MHz in traditional analogue modes (SSB, CW, AM, FM, S-FM, W-FM) as well as various digital modes. In fact, we know of no other radio in this category that can decode Icom's D-STAR mode, Yaesu's new C4FM mode, Alinco's digital mode, NXDN (note: 6.25kHz only), P25 Phase 1, etc. Plus lots of interesting features!

www.HamRadio.co.uk/ardv1

ML&S: £1249.95

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100kHz-3GHz Receiver with SDR Technology from IC-7300.



The IC-R8600 replaces the IC-R8500 wideband receiver and features technology incorporated into Icom's best selling IC-7300. The IC-R8600 receives a wide frequency range from 0.01-3000MHz frequency in analogue and various digital modes (D-STAR, P25, NXDN and dPMR). The IC-R8600 also features a larger 4.3 inch touch screen display which displays a fast moving spectrum scope and waterfall display.

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Includes an Icom AD-55 PSU worth £49.95!

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The Battle of Britain

IN COLOUR



“Praise where due. This is the best magazine available which I have read - I am very impressed. I thoroughly enjoyed reading each chapter and it was written in such an easy style. It covered every aspect and I was saddened when I reached the end.”

This 164-page special collector's edition commemorates the 80th Anniversary of the momentous Battle of Britain, making it the perfect gift for any aviation or Battle of Britain enthusiast.

THE BATTLE OF BRITAIN IN COLOUR



The Battle Looms

The Battle of Britain was one of the most iconic battles of the Second World War, embedding itself indelibly into the nation's consciousness. Earlier, the Battle of France could easily have spelled defeat before the air battles got underway in July 1940.

As for the outbreak of war in September 1939, there followed eight months of what became known as the 'Phoney War'. It was clear that large-scale fighting would ultimately follow, and a British Expeditionary Force was sent to France before the end of that year. As part of the BEF, a large Air Component was supplemented by an Advanced Air Brigade. In total, there are forces amounted to six squadrons, six of which were Fighter Squadrons, and the remainder of the RAF force in France comprised largely light bombers and Army Co-operation squadrons. Eventually, however, the 'sitting' became the 'fighting'.

On 10 May 1940, German forces launched their all-out assault on France and the Low Countries and what followed in Belgium, the Netherlands etc, was the complete collapse of these countries under the overwhelming might of German military power. Across France, German forces rolled inexorably towards the English Channel and while the French and British tried desperately to stem the advance, the situation became ever more desperate.

Predicted Catastrophe
When the fighting had broken out in France, the BEF's Air Component were in almost certain trouble, and it was not to be long before they were to be sent to the Channel, and then to the English Channel, and then to the English Channel.

BACKGROUND TO BATTLE

Left: A Hurricane of 501 Squadron, sent to France for an operational sortie at Bethune, France, May 1940. An RAF Hurricane High Dive bomber, sent to France for an operational sortie, was shot down by German fighters. Right: As the strategic picture of Europe, the steady advance of German forces was evident. The RAF's Fighter Command was in a desperate situation, and the Battle of Britain was about to begin.



THE RAF FIGHTER PILOT



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