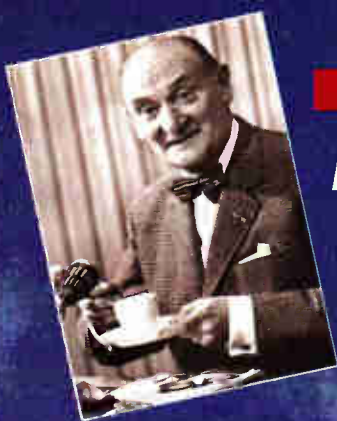


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10 >

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October 1998 Issue

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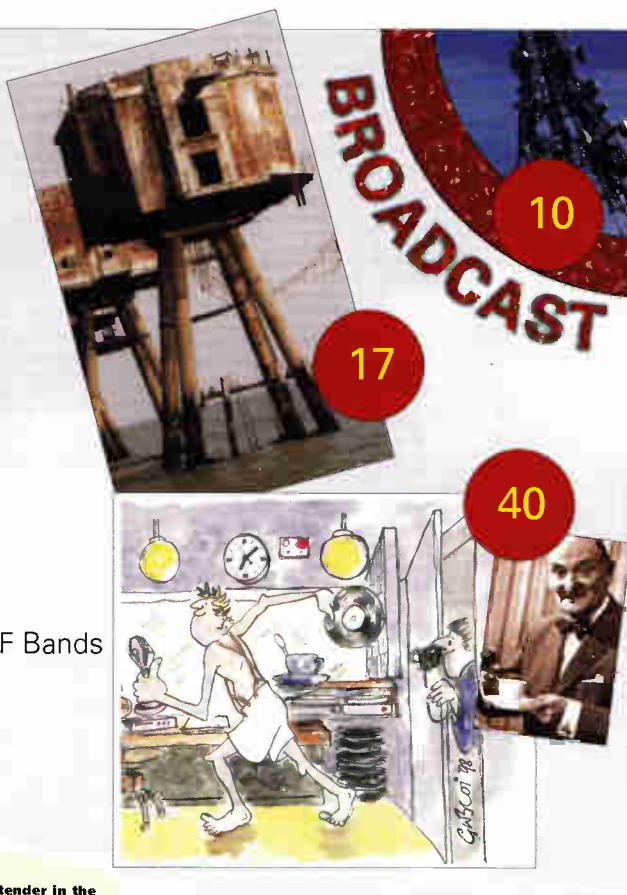
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SILK FM

Silk FM is a local f.m. station with an international short wave style QSL policy! Silk FM commenced its full service on 106.9MHz at 1200UTC back on Monday 25th May. The station welcomes reports, giving details of



date, time, reception, QTH and programme contents.

Correct reception reports are verified with a full data QSL card, plus a personal letter, schedule and sticker! The QSL Manager is Tom Read G-20843,

RA ROADSHOW '98

The Radiocommunications Agency's 'Roadshow 98', taking place between 25 September - 4th December, represents the first opportunity for radio users to assess, in a forum environment, the full implications of the new Wireless Telegraphy Act, which reached the statute book in March of this year.

An eight-stop tour, the events will enable businesses and organisations whose livelihoods depend on radio to raise concerns pertinent to their sectors and, in a frank exchange of views, to question the Agency's Chief Executive and senior staff on the radical changes the Act will create.

The Roadshow will visit the following locations: Manchester (25 September, Belfast (2 October), Gatwick (9 October), Milton Keynes (30 October), Perth (6 November), Leeds (13 November), Bath (27 November) and Cardiff (4 December). Whilst there is no charge for attendance, reservations for Roadshow '98 should be made direct with the Event Office by ringing the Reservations Hotline on **0171-223 9006**, by FAX on **0171-924 3964** or via E-mail at: **Abra102092@aol.com**

TRANSMISSION TIME

There are over 180000 blind people living in Britain today to whom, like you, radio is an essential part of life. For those who cannot see, radio provides far more than entertainment, it is a vital means of keeping in touch with the world and the sound of another human voice can be very comforting when you live alone.

The British Wireless for the Blind Fund is a registered charity that provides radios, radio/cassette recorders and TV sound receivers to the registered blind in need throughout the UK. They also organise 'Transmission', an annual fund-raising event, involving radio amateurs from all over the world who want to help the blind hear.

The Fund are now appealing to all Amateur Radio Clubs, their members and individuals to take part in Transmission. Simply get as many people as you can to sponsor you for every contact you make on air, during the weekend of **26/27th September 1998**. The Fund will supply participants with special sponsorship forms and will also have QSL cards available on request.

If you would like to join in the fun, contact the Fund at **Gabriel House, 34 New Road, Chatham, Kent ME4 4QR, Tel: (01634) 832501, FAX: (01634) 817485** or E-mail at **Lin@blind.org.uk**

NOVEMBER FAIR

Held in Hall 11 at the National Exhibition Centre (NEC) in Birmingham on **Sunday 11th October 1998** is the **National Vintage Communications Fair**. Doors open at 1030 until 1600 and the

LOW LOSS CABLES!

Nevada have announced that they are now distributing a new range of low loss coaxial cables from the Italian manufacturer SIVA. Amongst the range is an economical very low loss cable, the RH100.

The RH100 is a 9.77mm diameter semi airspaced



The new range of low loss cables available from Nevada.

double screened cable that gives a screening efficiency of greater than 80%. The RH100 is also suitable for frequencies up to 1GHz and may be used with standard connectors.

Priced at just 80p/metre (plus VAT) it represents outstanding value for money. If you would like more details of the full range of SIVA cables, contact **Nevada at 189 London Road, North End, Portsmouth, Hants PO2 9AE, Tel: (01705) 698113, FAX: (01705) 690626**.

entrance fee is only £5.

For those of you unsure of what the fair is all about, I can tell you that it is an antique-type collectors fair specialising in early technology and featuring thousands of rare and collectable items such as early radios, television receivers, gramophones, telephones, classic valve hi-fi and all manner of electrical and mechanical antiques and collectables.

Established back in 1992, the Fair is actually now held twice a year, in May and October, at the NEC in Birmingham and is supported by a pool of over 300 specialist dealers from the UK, the Continent and the USA. For the seasoned collector, attending the fair is a definite must, and not only useful for seeking out that elusive item, but also for buying materials, circuit diagrams or spare parts to complete a restoration project.

Being a high-profile, well-established national event, the Fair is recognised as an ideal platform for collecting organisations and groups involved in vintage sound and vision hobbies to promote and publicise their activities, and also to capture new members, so help and advice is also on hand.

For further information and booking/advertising forms, contact **Sunrise Press, Spice House, 13 Belmont Road, Exeter, Devon EX1 2HF** enclosing an s.a.e., or alternatively ring **(01392) 411565**.

himself a keen broadcast band and amateur band s.w.l.

So, for all those interested, send your detailed reception reports to: **Tom Read G-20843, QSL Manager, Silk FM, Radio House, Bridge Street, Macclesfield, Cheshire SK11 6DJ**, remembering to enclose an s.a.e.

OOPS!

Back in the 'Decode' pages of the August 1998 issue of *SWM*, the E-mail address of **Brown Bear Software** was incorrectly printed. Their correct E-mail address should read: **http://members.aol.com/btf1** We apologise for any inconvenience caused by this mistake.

WEEKEND ON THE AIR

The **Bury St Edmunds Amateur Radio Society** are once again indebted to the National Trust at Ickworth House, near Bury St Edmunds, for providing the Society with excellent facilities for their annual Special Event Station (now in its fourth year), which was held this year over the weekend of 8/9th August.

Immediately following last year's event, the Society started thinking how they might improve the weekend and make it more appealing to the visiting public. It was apparent from the interest shown in the exhibition of vintage wireless and memorabilia from the 1920s onwards, provided by **Chris Brown G0JRM**, that visual displays are more appealing than the difficult to understand s.s.b. QSOs on h.f.

Packet was successful at the 1997 event, so was repeated this year, SSTV was put on along with two members of the Remote Imaging Group doing a demonstration of weather satellite reception. With all this in mind, **David Riches G0XEG** approached the National Trust in his capacity of Volunteer Room Warden at Ickworth House, for permission to put a v.h.f. antenna on the roof of the Lecture Theatre, and also to site a 1m diameter satellite receiving dish for *Meteosat 7* on 1691MHz.

Fortunately, this was agreed to, subject to the usual insurance indemnities being in place and for security reasons. The Trust also very kindly agreed to provide the Society with a supply of colour postcards and have them overprinted to use as QSL cards.

Setting up commenced on Friday evening with ropes being hung from the Rotunda for the G5RV. The v.h.f. co-linear was carried up on the roof and mounted on a short pole, which in turn was placed on one of those plastic bases, used for sunshades over garden furniture! The roof was more or less flat and mainly covered in lead, which made an excellent ground plane!

The dish had to be on the other side of the building from the operating position as it needed to face due south at an elevation of 30° - unobstructed. This meant that the feeder had to be run just under 30m carrying a



signal at 137MHz. On test it proved fine and there was enough signal to leave the dish inside the building looking through a window!

The Station Manager **Derek Spender G4DHU** set up the h.f. station, which was the club FT-102, **George Woods G3LPT** opened proceedings on the key, **Jim Binnington G0SCM** arrived with his computer and he and David G0XEG set up the weather receiving station. Last of all, the packet station was set up, also run by David G0XEG. All of this was accompanied by **Charlie Kunz, Harry Roy** and the Savoy Hotel Orpheans, etc., from the original recordings relayed through a 1920s Cossor Melody Maker and horn speaker!

All was fine up to a point, until the computer monitor played havoc with the h.f. and the h.f. station got into the v.h.f. and Packet! A quick decision was made to concentrate on h.f. operating before the public arrived and to show more of the visual computer based activities during the afternoon when the house was open. It worked out well!

The equipment behaved itself in the end and an overall interest was shown and nostalgia shared. The Society did not work any exotic DX, but enjoyed working many stations, mainly within western Europe - not forgetting a mobile in Iceland!

Once again, the Society would like to extend thanks to all management and staff of the National Trust at Ickworth House for what they have done for them over the last few years. Thanks also go to the members and s.w.l. visitors who came along to help set up and pack up - not forgetting the operators and those who supplied refreshments.

Due to building alterations, it may not be possible to repeat this exercise in its present form, but who knows what someone else might dream up in the future?

rallies

***September 25/26:** Leicester Amateur Radio Show will this year be held at the Donington International Exhibition Centre at Donington Park, Castle Donington, Leicestershire. Many traders have already reserved space at what will be the biggest UK Amateur Radio event this year. The hall itself is purpose built and features a floor area approximately one third larger than the two Granby Halls combined and the car parking is unlimited and free. There will be 150 stands and many new features such as camping and caravanning on site, a meeting room for clubs and societies and a convention. **Geoff G4AFJ** on (01455) 823344, FAX: (01455) 828273.

October 4: The Blackwood & DARS are holding their Radio, Computer and Electronics Rally at The Community College, Oakdale, near Blackwood, Gwent, South Wales. Doors open at 1000. There will be traders, a Bring & Buy sale with a talk-in on 145.550MHz **MW0ATF** on (01495) 246594.

October 4: The Great Lumley Amateur Radio & Electronic Society are holding their rally at the Great Lumley Community Centre near Chester le Street. Good parking facilities with easy access. There will be good, inexpensive food and drink also. There will be a Bring & Buy stall in two sections, junk and good buys, with radio, electronics, computer, satellite and components stalls also. Doors open 1100 (1030 for any disabled visitors). **0191-384 2803** or **0191-388 6865**.

October 10: The Ballymena Amateur Radio Club G13FFF will hold its Annual Rally at the Ballee High School from 1200 until 1700. More information from **Jeffrey Clarke G14HCN** on (01266) 659769.

October 18: The North Monaghan Hobby Radio & Computer Exhibition will be held in the Four Seasons Hotel, Monaghan (function room and not the disco), Ireland. Doors open at 1130 and the rally finishes at 1630. All the usual retailers will be in attendance including large displays of computer equipment and a Bring & Buy. Refreshments are available in the hotel along with full facilities for QSLing via the bureau. **Stephen Hand** on (Irish Republic number) (01365) 751479 evenings or E-mail: **Stephen.hand@virgin.net** or **Ken O'Reilly** on (01365) 738981 or E-mail: **kenoreilly@enterprise.net**

October 18: The Hornsea Amateur Radio Club Rally is to be held at the Floral Hall, Hornsea, East Yorkshire at 1100 (1030 for disabled visitors). There will be trade stands, B&B, restaurant and a licensed bar, entrance £1, talk-in, S22. Tel: (01964) 532588.

October 24: The Carrickfergus Amateur Radio Group welcome everyone to their annual rally, which takes place at 1200 at the usual venue which is Downshire School, Carrickfergus, Northern Ireland. Talk-in on 145.550MHz (V44 (S22)).

November 1: The Tir Conail Amateur Radio Society Annual Radio Rally. Attractions will include trade stalls and a Bring & Buy. There will be refreshments available all day with a bar in the hall. Doors open at 1200 and will end at about 1600 with an auction

NEW LOOP

Wellbrook Communications have announced the launch of a new product for the s.w.l. The large Aperture Loop Antenna Model ALA 100 is a new broadband antenna designed to provide improved performance compared to traditional active antennas.

This new untuned loop antenna has a frequency range from 50kHz to 30MHz and has two modes of operation. At medium and low frequencies the antenna is a high efficiency broadband loop. For high frequencies the antenna has a response similar to a longwire.

The loop only requires a small erection space, making it ideally suited to users with small gardens. At medium and low frequencies the antenna is a balanced loop that will significantly reduce the effect of locally radiated electric-field interference.

As the loop's aperture is large in comparison to much smaller active antennas, then the efficiency is much higher. Thus the loop is also ideally suited for l.w., m.w. and tropical band DX. Furthermore, the fading of short wave signals is reduced due to the simultaneous reception of both vertically and horizontally polarised signals.

The loop antenna is isolated from the ground so that ground and feeder induced noise is rejected. Very high rejection of mains borne noise is assured by the integral feeder isolation transformer. Also the antenna is immune to static build up.

The excellent intermodulation performance (IP2 +77dBm) and (IP3 +40dBm) ensures that reception is free from spurious signals. The antenna uses a thin wire loop, between 8 and 18m in circumference, mounted near ground level and therefore has a negligible visual impact, so there is no problem with planning regulations.

The loop can be easily supported by a tree or a fence. Alternatively, the loop can be loft mounted. Furthermore, the user has the option of adjusting the size of the loop, to either increase or reduce the gain to match the receiver's performance. Thus the loop can be used with medium priced receivers without overload and intermodulation problems.

The electronics are encapsulated in synthetic resin to form a weather proof construction. Comprehensive operating and installation instructions guide the user to a easy and safe erection.

The loop antenna is supplied complete with an antenna interface and a 12V regulated power supply. The ALA 100 costs £79.95 including P&P. For further details of the ALA 100 and other antenna products, contact

Wellbrook Communications, Wellbrook House, Brookside Road, Bransgore, Christchurch BH23 8NA, Tel: (01425) 674174

Send your news to Zoë Crabb at the Editorial Offices

RIAT Report

Feedback from distinguished visitors and the general public has been very positive indeed regarding the Royal International Air Tattoo held back on the 25/26th July. It is estimated that over 180000 people visited the Tattoo and there were over



440

aeroplanes taking part from 27 nations, which shows the popularity and international appeal of the event.

Looking ahead to next year, the dates for your diary are **24/25th July 1999** when the RIAT will be staged at RAF Fairford. The themes are the

50th Anniversary of the North Atlantic Treaty Organisation and the 75th Anniversary of the Royal Auxiliary Air Force. These powerful themes augur well for yet another successful Tattoo!

Renewed Homepage

AirNav, the Aircraft Tracking Software, now has a completely renewed Homepage. Using the most recent HTML concepts, it's now much easier to get in touch with the program. The homepage doesn't use frames, JAVA or background images (faster download) and the main objective is its user-friendliness. It is also possible to follow a suggested Homepage Tour. Just go to <http://fly.to/airnav> to begin the tour. Via the homepage, you can read detailed program information/system requirements, see screen shots made with Real World Navigation, download the latest program version from more than 94 ftp sites, download AirNav maps and translated Help files and register the program online and receive your Registration Codes within 12 hours.

RADIO & TVDX NEWS

The BBC is now radiating test transmissions from Crystal Palace ch.E28 demonstrating digital terrestrial TV, there is a continuous video sequence including several shots of the old 'Ally Pally' 1936 405-line transmissions and modern computerised effects. You won't see anything if you tune into ch.28 with a 'normal' analogue TV receiver other than perhaps the screen will darken!

The 50MHz (6m) amateur band within the European Band 1 TV broadcast band now carries several beacon transmitters around the UK. But the RSGB 50.050MHz G83NHQ beacon has ceased following a serious fault in the PA stage. The Czech beacon 9A1CAL at 50.011 MHz has been heard all over Europe in recent Sporadic-E events. Beacon 10JX operates on a 24-hour basis pointing NW from Rome at 50.004MHz. And the RSGB has been issued with an experimental 1kW permit for the 50MHz band (news from *Six News*).

The Belgian RTBF-2 network carries in its PM5544 test card at the top the transmitter detail (e.g. 'Tournai' and 'Canal 63') and at the bottom the ident 'La Deux'. And in neighbouring Holland there are many new DX catches coming on-stream by the end of 1998. The following local/regional channels are advised...TV Noord (Hoogezand TX) ch.E36 @ 100kW, Omrop Fryslan (Irnsrum) ch.E28 @ 150kW, TV Drenthe (Smilde) ch.E25 250kW, TV Oost (Hengelo) ch.E36 200kW, (Zwollerkerspel) ch.E22 200kW and (Markelo) ch.E22 200kW, TV Gelderland (Arnhem) ch.E58 32kW, (Ruurlo) ch.E40 50kW, (Apeldoorn) ch.E32 100kW and (Tiel) ch.E24 50kW, Omroep Flevoland (Lelystad) ch.E26 50kW, Omroep Zeeland (Goes) ch.E54 50kW.

George Gaskin (Gibraltar) is receiving (in analogue) from the Spanish mainland on ch.E29, a colour bar test card with ident 'Emission experimental Prueba DTT' which means experimental test

IMPROVED WEB SITE

Svetlana Electron Devices Inc. invite you to have a browse at their new web site, The Svetlana Tube Zone at www.svetlana.com Once there, you will find a wealth of information on the tube industry with access to vast amounts of specific technical information. So, check it out, you won't find more complete tube information anywhere!



Svetlana's Factory, St. Petersburg, Russia.

transmission DTT - the DTT we assume is digital terrestrial transmission. As of mid July, there's no audio and only the test pattern is seen.

There are two transmitters operating ch.E2 in Iran, both relay IRIB-2 and measured via an Icom R-7000 with offsets at 8M (4.2401MHz video) and 8P (48.2606MHz video). One transmitter is located in Teheran - IRIB-2 transmits ch.E2 and IRIB-1 ch.E4.

The Sri Lankan commercial TV channel ITN (Independent Television Network) is now transmitting on their terrestrial transmitters over six hours weekly of the satellite programme from Deutsches Welle International in the English language. ITN used the *AsiaSat-2* digital downlink as the programme source. ITN is based at Battaramulla and covers a third of the Sri Lankan population.

For medium wave DXers, be aware that both Radio Jersey and Radio Guernsey transmit local news in 'Jersey French' and 'Guernsey French' at certain times. Jersey has been heard at 1850UTC on a Friday and Guernsey at 0850UTC on a Saturday via their respective medium wave outlets at 1026 and 1116kHz.

Weekday afternoons both radio stations normally transmit a common programme ex St. Helier though opt-

outs can occur if a special event on either island merits localised programming e.g. island sports, a meeting of The States Government, etc.



BBC Digital, The Adventure starts here.



Vintage 405-line lady in Alexandra Palace, circa 1936.

BRIGHT SPARKS

FEBA Radio is holding a very special event on **Saturday 24th October 1998** - it's the Bright Sparks Quiz Extravaganza! Enthusiastic teams throughout the UK will be taking part in locally-run quiz events. Team members will be sponsored for every point their team scores, in response to questions on a range of topics, supplied by Feba. Their aim is to use their brain power to generate as much money as they can for the Bright Sparks event.

But what is Bright Sparks? Feba's electricity costs for broadcasting Christian radio programmes from their transmitting station in Seychelles are enormous! Three powerful transmitters beam out 500 programmes each week, and this uses lots of electricity - amounting to a

shocking £255 000 every year.

So, the aim of this event is to raise £21 000 to cover the electricity costs for a whole month. Every £35 of sponsorship generated will cover the electricity costs of one hour of Christian broadcasting. As well as raising funds, the event also provides the opportunity to interest youth groups in Christian mission.

So far, as many as 200 groups throughout the UK have expressed an interest in taking part, so why not get plugged in to this exciting event yourself. Feba will award prizes to the winning teams, plus special prizes to the team with the highest national score!

Find out more from **Val Goldthorpe**, Competition Organiser, on (01903) 237281 (office) or (01903) 219574 (home). Alternatively, E-mail Val at vgoldthorpe@feba.org.uk

FAST CARD

Brain Boxes have released the fastest PCI RS-422/485 serial communications card with a winning combination of features, including increased speed, deeper FIFOs and Win '98 support. Improved performance is also provided through the addition of autogating on the board. This allows low level, low cost, RS-485 half duplex (2 wire) control, without the need for special drivers, thus permitting multitasking operating systems such as Windows 95, Windows NT, Windows 98, OS/2 and SCADA packages to see the card as if it was an RS-232 interface.

The Velocity RS-422 card provides two RS-422/485 Serial Ports, each with a top speed of one megabaud providing huge 64 byte FIFO buffers. The transfer rate is typically eight times faster and the FIFO is four times deeper than competing cards, giving maximum performance with the latest computers. This increased data rate, coupled with the deep FIFO and the automatic RTS gating, guarantees fast data transfer without the risk of data loss.

Not only is Brain Boxes' Velocity 422 the fastest card available, but it is also highly flexible. Each port is configurable as either RS-422 or 485 for full, or half duplex, operation. PCI bus allows faster throughput to the I/O card, thus freeing the processor for other multitasking operations. Automatic configuration via true plug and play capability is combined with all the advantages of shared interrupt. Manufactured using surface mount technology this card is also available, from Brain Boxes, in ISA and PCI Opto isolated versions.

Find out more from Brain Boxes, Unit 3F Wavertree Boulevard South, Wavertree Technology Park, Liverpool L7 9PF, Tel: 00 44 151 220 2500, FAX: 00 44 151 252 0446, E-mail: ian@brainboxes.com or visit the web site at www.brainboxes.com

CONTROL PACKAGE

A new version of *VisualRadio* has been released, which now supports the Icom PCR1000. *VisualRadio* is an exciting and sophisticated RS-232 control package which offers an extensive range of features while supporting a wide range of popular radios and is available in this country through Simon Collings G4SGI, Radio Communications Consultant, as UK distributor.

The software is supplied on two 3.5in floppy disks (no manual necessary), priced at £69 + £2.50 P&P in the UK or £5 P&P airmail anywhere. A demonstration is available via ftp as <ftp://www.demon.co.uk/pub/ham/swl/radio204.zip>

PARTY TIME!

Back on Saturday 25th July, **Waters & Stanton PLC** celebrated 25 years trading, with a party and dance, (a live four-piece band played 60s music until midnight), near to their offices in Hockley, Essex, attended by around 150 guests. These included customers old and new, staff old and new (!) together with suppliers and business associates. Icom, Kenwood and Yaesu were all represented.



Jeff Stanton G6XYU on the left with Peter Waters G3OJV after a hard evening's dancing!

while details of the software are available on Simon's website, so check out <http://wkweb4.cableinet.co.uk/simon.collings>

Alternatively, Simon can be contacted at 46 St Michaels Road, Cheltenham, Gloucestershire GL51 5RR, Tel/FAX: (01242) 514429, E-mail: simon.collings@cableinet.co.uk

NEW BUSINESS

The last ten years has seen a steady decline in Amateur Radio equipment, a trend that seems to have copied the USA market. Therefore it is refreshing to hear about a new business opening in Kent.

Dennis Goodwin G4SOT and Andy Rudd G6MRI have teamed up to form **Universal Radio Communications**, trading as **UniCom**. They have over twenty five years experience between them working for one of the major amateur radio importers. Their names and faces will be familiar with nearly every amateur operator in the UK who has visited any large rally or exhibition.

UniCom officially opened on September 1st at 112 Reculver Road, Beltinge, Herne Bay, Kent. This new company will mainly deal in all brands of amateur radio



equipment, but will also be able to offer products, service and advice on Marine, Commercial, Air and CB. Dennis has enormous experience on h.f., Marine and p.m.r. products, whilst Andy's knowledge is in scanners, s.w.l. receivers and CB.

Even if you're not ready to make a purchase at this time, why not just give them a call on (01227) 749352 and say hello, or try their web site at www.cqdx.co.uk/unicom I am sure it would be appreciated and they will be pleased to see old friends and new at their shop.

Send your news to Zoë Crabb at the Editorial Offices

rallies

at the Bring & Buy stall. Tel: (072) 52598 (Irish republic calls) or from Northern Ireland by calling 01035372 52598.

***November 7/8:** The Twelfth Wales Radio & Electronics Show is to be held at Aberconwy Conference Centre & New Theatre, Llandudno Promenade. The shows opens at 1000 each day and the entrance fee is £1.50 for adults, children under 14 free. **M. Mee GW7NFY** on Tel/FAX: (01745) 591704 or the Secretary **Greg Robbins GW7NAU** on (01492) 878288.

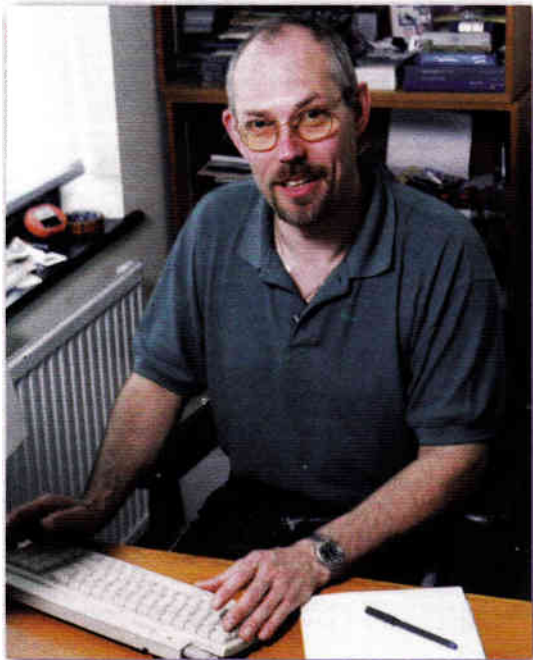
November 8: The Midland Amateur Radio Society (MARS - Birmingham) are holding their 10th Radio & Computer Rally at Stockland Green Leisure Centre, Slade Road, Erdington. Birmingham Doors open at 1000 and admission is £1. There will be a large free car park, a free hampers draw plus many trade stands, local clubs and special interest exhibits. For trader details contact **Norman G8BHE** on 0121-422 9787 or for general information, contact **Peter G6DRN** on 0121-443 1189.

November 14: The SAMS '98 Computer & Electronics Show is to be held in the Bingley Hall, Staffordshire Showground, Weston Road, Stafford (A518 Stafford-Utttoxeter Road), signposted from junction 14 on M6, (bus shuttle from Stafford Railway Station). Doors open 1000 to 1600. Admission for adults is £3, children under 14, 50p, Concessions, OAPs, RSGB Members, Student Card, UB40, £2, (Advance Tickets £2 plus s.a.e.). There will be masses of free parking, a licensed bar from 1100 and refreshments, meals and a cafeteria. A great day out! **Sharon Alward, Sharward Promotions, Knightsdale Business Centre, 30 Knightsdale Road, Ipswich, Suffolk IP1 4JJ, Tel: (01473) 741533, FAX: (01473) 741361** or E-mail: services@sharward.co.uk

November 22: The Bishop Auckland Radio Amateurs Club (BARAC) Rally will take place at Spennymoor Leisure Centre. **Please note that this is a new venue**, ideally suited for both trader and disabled as it boasts good parking and easy access to large ground floor hall. There will be the usual radio, computer, electronics and Bring & Buy stalls as well as catering and bar facilities. Morse tests will be available on demand. As you can imagine, there is lots to do for all the family within the confines of the leisure centre for those of the family not quite interested in radio. Doors open at 1100 (1030 for any disabled visitors). Admission is £1, and under 14s go free of charge, if accompanied by an adult. Talk-in on S22. **Keith M0BLN** on (01388) 601401 or (0374) 417660.

November 28/29: The London Amateur Radio & Computer Show is to be held at the Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London N9 0AS. Doors open 1000 until 1700 each day. Admission is £3 for adults, £2 for OAPs and under 14s. There will be free parking for 2000 cars, a large trade show, Bring & Buy, catering, licensed bar, on-site camping, special interest groups, disabled facilities, cloakroom, Morse tests on demand, a talk in on 2m and 70cm and family attractions. **Steve Blayer G4UKR**.

ed's comments



Hello, it is somehow hard to reconcile the fact that this is the October issue of *Short Wave Magazine*. I know it's on sale in the newsagents in September, but still there is that word October on the cover. I have very mixed feelings about October, on one hand there is the return to GMT - oops, meant to say UTC - which as an event too is somewhat mixed for me. On one hand there is the beginning of winter, the lack of light in the evening, the death of summer. But at least the DX comes rolling in. On the other, Christmas is around the corner and a new year is in sight.

You may actually be reading this at the Leicester Rally, at Castle Donnington, if so I may meet you there, especially if you bought your copy from our stand.

Newsagents

I have recently had cause to personally follow-up some readers' reports of not being able to obtain their monthly copy of *SWM*. The complaints were confined to one specific area of the UK - East Anglia. One reader even had a regular order with his newsagent and still was unable to get a copy over a week after we were 'on sale'. This is not acceptable, both we at *SWM* and our distributors Seymour were very unimpressed. What had happened was this. The wholesaler for the area, had apparently, forgotten to send the copies of your favourite radio magazine to the retail outlets - net result, hundreds of readers not able to obtain their magazine. At least I found out that there was a problem - unfortunately only approximately

1% of those disappointed readers contacted the *SWM* offices. I find that worrying. Please don't accept 'fob off' type excuses from newsagents if you can buy *SWM* at your regular outlet - or any outlet for that matter. It is unacceptable for *Short Wave Magazine* not to be available on the fourth Thursday of the month. If you are having trouble let us know and we'll address the problem.

FM DXing

This month after a fair few letters and E-mails on the subject, we are carrying an article on Band II FM DXing, I have been asked to provide a regular column to service the needs of our readers interested in this facet of SWLing. I would be very interested to hear any views on the matter.

World-Wide Radio Guide

Last month's pull out which was included free in your *SWM*, was compiled by the **Association of International Broadcasting**, the AIB. Due to space constraints, we omitted their contact details. So here they are for any of you who are interested in the other publications and services that the AIB provide. **AIB, PO Box 4440, Walton CO14 8BX.**

SWM List Server

Some time ago I posed the question of having an electronic forum for the *SWM* readers and contributors. I have had no negative feedback related to this issue and lots of positive response. As a result I have decided that we should indeed go ahead and get things rolling.

I am presently experimenting with various solutions to providing a mechanism, I am postmaster for our current LAN and Internet mail system and I expect to have a workable arrangement by the next publication date at the latest. However, keep an eye on our website www.pwpublishing.ltd.uk/swm for any earlier news.

Goodbye & Good Luck

Just as our very efficient Editorial Assistant, Jo Williams, had proved to be worth her weight in gold, Donna Vincent, *Practical Wireless*' News and Production Editor, decided it was time to further her career, leave and become Editor of another locally based Magazine. Well good luck to Donna with her new post and good luck to Jo who successfully applied for Donna's old job on *PW*. So, back to square one for me and Zoë.

73 Kevin Nice

Dear Sir

I am pleased to be a *Short Wave Magazine* reader for the past eight or so months and have found your magazine quite insightful for its news on the radio hobby. My sincerest hope is that you continue to publish your fine magazine devoted to the radio monitors of the world. As you can see, your magazine finds its way across the Atlantic to many of us here in the states, so your influence is far ranging.

In the last few issues, I have been delighted to see that some of your readers have found my *MVT-9000 Owner's Guide!* Not only that, but they appear to enjoy it and by putting it to use, have got more pleasure from their 'Yupiterus'. I am pleased to hear it.

Thanks go to Mr. Deepak Data who has taken my guide and was kind enough to format it in *Acrobat versions 2.1* and *3.0* and both reside on my site for all to download and print out.

I have had quite a number of E-mail messages from your side of the pond from users in England, Finland, Sweden, Norway, Denmark, Germany, France, etc. who have found my *Owners Guide* useful and since your recent QSL column (June '98), where it was given exposure along with my web site, I have enjoyed even more contacts and for that I thank you and your write-in readers!

My site has recently moved to **www.strongsignals.net** but still enjoys the same contents which has made it very popular. I host a large number of reviews on both new radios and old as well as some of the latest news about the radio monitoring hobby.

There are also several pages devoted to the submissions of reviews on radios, antennas, books, software and accessories so I urge everyone to take part and contribute for the well being of our hobby. Thanks to the donations from users around the world, my site is currently 135 pages strong and growing all the time!

With that said, I'll let you get back to your fine magazine. Thank you for your time and attention! Happy monitoring and keep up the great work!

**Rich Wells N2MCA
North Carolina, USA
Scanning USA Columnist**

Rich, thanks for the feedback. Having personally pointed my browser at your site, I can indeed recommend it as an excellent resource for the scanner enthusiast

Dear Sir

I have just picked up September's edition of *Short Wave Magazine*, and it seems a lot of people only want you to print the articles that will be of interest to them. I for one, am happy to see a large range of different articles, the reason why, is this. For over ten years I had been listening to various v.h.f. communications on a old £15.00 airband radio, then three years ago, I picked up my first copy of *SWM*.

Since reading my first issue, I have owned and sold around twelve different hand-held scanners, also had about five different homebase scanners, and three or four short wave receivers. I have finally settled on an Icom R7100, AOR AR7030 and a Yupiteru MVT-7100.

I now listen to a massive range of h.f., v.h.f. and u.h.f. communications including Amateurs, maritime, aeronautical, world-wide broadcast plus many more. I decode RTTY, Morse, TOR and ARQ. I have a much greater knowledge of my hobby, gleaned from *SWM* and my collection of radio related books.

I now have a well fitted out radio shack, with a PC to keep it all under control (well at least some of the time, when its not controlling me!). My point is this, had I not picked up that copy of *SWM*, I would never of known about h.f. aeronautical, maritime and amateur bands, nor would I have known about decoding data signals, and I would still be listening on a £15.00 airband radio.

The wider your selection of radio related subjects, the wider my knowledge becomes. Thanks for an excellent magazine.

Nigel Craig

As always, it is impossible to please all the people all the time. But I do welcome all forms of criticism. Here at SWM we do our very best to strike a good balance. The topics that we cover and the depth and level of coverage is down to what we judge to be appropriate. Without your feedback it's impossible to know how well we perform. Unfortunately, due to the volume of correspondence we will never be in a position to reply to all input from readers, but all letters are read and noted! Thanks for your kind comments Nigel, let's have more from other readers with opinions. - KN.

Is there something you want to get off your chest? Do you have a problem fellow readers can solve? If so then drop a line to the Editor at QSL, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

THE BEST LETTER WILL RECEIVE A £20 VOUCHER TO SPEND ON ANY SWM SERVICE.

identical to the one mentioned.

Although I almost had to re-mortgage my house to purchase the R8500, it has proved a very worthwhile investment. I am really delighted with the performance.

I now have a collection of QSL cards from many countries, thanks to the Icom. I would like to ask Peter Bond if he found any difference with the h.f. antennas as I find the reception just about equal with longwire and balun or longwire

and a.t.u. via the 50Ω connector. I love *SWM*, keep up the good work!

**D. F. Bond
Cornwall**

Well from personal experience with my own R8500, h.f. antenna performance is down to having a good earth system, just like most set-ups. - KN.

Dear Sir

The September issue - 'Decode Special' - made the year's subscription worthwhile!

**Lee Reynolds
Software Release Engineer**

TOP
QSL

Dear Sir

I would be extremely grateful if you would help me with a radio-related problem - not your usual sort of thing, I'm sure.

Older people living alone in the countryside here are sometimes visited by a car load of thugs late at night. Such violent crime is on the increase and the authorities are helpless.

I would like to monitor, by radio, the traffic through a gateway on my approach road, half a mile from my house. A receiver in the house could relay quiet country sounds 24 hours a day, and any cars approaching would make themselves plain.

How can I do this? There is no one I can find in Cork City or hereabouts who can tell me how, or event point me in the right direction. I do not want to break any laws and am perfectly willing to pay any licence fees required for any equipment.

This project would make my life a lot less stressed and I would be very glad if you can help at all. Thank you for the excellent magazine, which is unfortunately not available outside Cork City. We really are well behind the times in West Cork, but then that has its advantages too.

I look forward to your reply.

**Tim Duggan
Ireland**

I'm not sure of what equipment is commercially available for this kind of activity. But it wouldn't be too difficult to utilise a cheap l.c.d. toned door entry system, this would mean laying a run of cable though. Perhaps one of our readers has a solution? - KN.

Dear Sir

I thought that I ought to put a piece of paper in the printer and write a letter to you.

I have attended two Rallies of late. One was the Truck Stop at Rugby. I am quick to say that, in my own view, this was not a Radio Rally but a computer junk Rally.

The other Rally I visited was the RSGB Mobile Rally at Woburn. What a shame that what was a good Rally seems to be going down hill at a fast rate of knots.

Can this be the end of Rallies as we know them? I do hope not. If nothing else, you can meet old friends there!

**Keith Goodchild
Tring
Herts**



Bandscan Europe

The short wave bands in Europe have been a little less crowded following the disappearance of broadcasts in three languages by one of the continent's major broadcasters. At the end of June, BBC World Service stopped using short wave to reach listeners in Czech, Polish and Slovak. At the same time, some European frequencies for English-language programmes from Bush House also stopped.

From now on, anyone wanting to hear programmes in the three East European languages has to rely on local radio stations which carry BBC programmes, in particular the main news bulletins. These local stations usually operate on f.m., which clearly restricts the number of people who can listen. For example, if you live in the middle of the Czech countryside, it may be that there is no local f.m. station which carries BBC Czech programmes.

This move is clearly going to cut out a proportion of BBC listeners. I can only assume that the financial problems affecting World Service are the cause, or that the BBC believes that its main audience is in the town and city environment rather than the countryside.

The British government announced in July that it would increase the World Service's budget by £30 million - less than the £49 million the BBC had asked for. This means that it will not have the cash available to launch a small television service in foreign languages, although it is receiving £1.5 million to increase the online service it offers.

There is still a question mark over some of the low priority language services, including German, which I reported in my last column. A decision is likely to be made in mid to late October.

New Broadcasting Centre

At the other end of the funding spectrum is Deutsche Welle. With plans to move to a new broadcasting centre in Bonn by 2002, it is well placed for broadcasting in the 21st century.

The organisation has now taken over TransTel which distributes German public television programmes overseas, and in future this will be expanded to include 'versioning' of programmes into foreign languages for specific overseas markets.

Deutsche Welle is also increasing its efforts in eastern Europe with a foray into Ukraine with programmes in the Ukrainian language which will be delivered by satellite to local f.m. stations, rather like the BBC's Czech, Polish and Slovak services. The Cologne-based station is also increasing its Albanian and Serbian language services, with a total of 95 minutes daily in Albanian and 120 minutes daily of Serbian.

Medium Wave Suffers

Just as short wave broadcasts ebb and flow, medium wave is suffering similar consequences. Estonia has stopped using medium wave for domestic broadcasts, along with the old Soviet FM band (66 to 73MHz). This means that channels like 612 and 1035kHz,

which have reasonably high-powered transmitters, are now clear in the Baltic region.

Estonia has now put English and Russian programmes onto Internet audio, so if you have access to the Web, check out www.er.ee and see if you can boost the number of visitors from the 18000 or so recorded when I logged on as I wrote this article!

Greek international radio programmes are now apparently on medium wave, instead of locally produced material. Check out 765, 927, 1008, 1404, 1494 and 1512kHz when you are in Greece or the surrounding area to hear ERA in languages including English.

Station News

Swiss Radio International is the latest broadcaster to join World Radio Network's satellite and cable service around the world. Programmes from the Bern-based broadcaster are on the air at 0500UTC every day via WRN1 for Europe. This is available on the Astra satellite (transponder 22) and on cable in places like South London and Birmingham, plus a number of cities across Europe.

An hour long digest of news, current affairs and politics and the arts from Switzerland makes up the morning programme which has been redesigned as part of the station's revamp of all its English-language output.

RTE in Dublin is using more short wave facilities to beam its programmes to expatriates, with transmissions from BBC/Merlin sites on Ascension and Singapore and WWCR in the USA. The current transmission schedule is 0900-0930 weekdays on 5.070MHz from WWCR for Australasia, 1000-1030 daily from Singapore on 11.740 for Asia and Australasia, 1000-1030 weekends on 5.07MHz from WWCR for Australasia, 1730-1800 daily from Ascension for Africa on 17.885MHz, 1830-1900 on weekdays for Europe, Africa and the Americas on 12.160MHz from WWCR and 1900-1930 at weekends on 12.160MHz from WWCR.

DAB Digital Radio

Finally, news of the digital revolution sweeping broadcasting - a revolution that seems to be detailed in the press in Britain almost daily. With Sky TV about to launch its digital bouquet of channels, we must not forget radio. DAB Digital Radio is on the air in the UK, Sweden, Germany, the Netherlands and parts of France, plus trials in Poland and Italy.

By the time this magazine reaches you, Britain's Radio Authority will have announced whether it has awarded the national commercial DAB licence to the single applicant, Digital One. Receivers will also be in the shops.

At a launch ceremony at Broadcasting House in July, the BBC helped five manufacturers to meet the press. Kenwood, Grundig, Clarion, Pioneer and Blaupunkt all have car DAB receivers on the market, starting at around £500.

The price is expected to fall, and the first hi-fi tuners will be available in a few weeks time. It is the first step into radio's digital future - a future which will mean better sound and more stations. Watch this magazine for the latest digital news!

■ BRIAN ODDY G3FEX, THREE CORNERS, MERRYFIELD WAY, STORRINGTON, WEST SUSSEX RH20 4NS

LM&S

The changeover from British Summer Time (BST) to Greenwich Mean Time (GMT) on October 25 will signal the arrival of the winter months and longer hours of darkness. No doubt it will disappoint those who enjoy the outdoor life but it may well be good news for the listeners who enjoy searching the lower frequency broadcast bands at night!

The international s.w. broadcasters will continue to refer to Universal Time Co-Ordinated (UTC) in their schedules, which can be regarded as similar to GMT. If you have a clock by your receiver which displays UTC do not alter it on October 25.

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz, s.w. in MHz, Time in UTC (=GMT).

Unless otherwise stated, all logs were compiled during July.

Over in E.Canada **Alan Roberts** (Quebec) kept a careful check on the band at night during June and July for what has now become the expected mid-summer improvement in l.w. propagation over transatlantic paths. His efforts were rewarded at 0335UTC on July 9, when he picked up on **162kHz** a World Cup talk and interviews from Fabian Bathy's home village. The transmission rated SINPO 34433. He says "By the 13th of July, the night following France's final victory, I think the France Inter personnel must have been fed up with football, as **162kHz** at 0230UTC, was carrying a sound picture of the Brittany coast - wind, waves gulls and the views of local people - with a SINPO of 33443. That same night, the 13th, Europe 1 on **183kHz** kept faith with football and at 0240 there was a lady reporting on the all-night World Cup celebrations". He rated Europe 1 as 23442.

Following reports that the transmitter at Burg, Germany, on **261** is being used to relay BBC World Service programmes (LM&S, *SWM* July'98) I received some information from **Andreas Erbe** in Landsberg, Saxony-Anholt province which has clarified the situation. Apparently the relays commenced in February '98, when Radioropa split its programming, with one on v.h.f. (f.m.) for Saxony and the other on l.w. (a.m.) via Burg on 261, which is also on Astra.

Radioropa 261 carries mainly programmes produced by other broadcasters - the BBC WS, YLE R.Finland, R.France Int and R.Austria Int. The original 200kW transmitter from Tesla, Czechoslovakia, has been replaced by a modern solid state unit running 85kW.

Medium Wave Reports

There were no reports of m.w. reception over transatlantic paths during the nights in July.

The broadcasts from a number of m.w. stations in the Middle East, N.Africa, Europe and Scandinavia did reach the UK at night - see chart. Good reception from Saudi Arabia was noted on July 21 by **Simon Hockenhill** in E.Bristol - the 1600kW transmission from Dammam on **1440kHz** rated 35444 at 2210UTC.

Back in March BBC Isle of Wight Radio informed local residents of their intention to transfer their service to v.h.f. on **107MHz** f.m. (**102MHz** f.m. in the Ventnor area) and close the m.w. outlet on **1242kHz**. However, the 0.5kW m.w. transmitter at Bridesford Farm is still in use, so perhaps the decision to close it has been reversed.

Short Wave Reports

The **25MHz (11m)** band remained unused during July.

R.Australia's return to the **21MHz (13m)** band will be welcomed by many listeners. Their daily broadcasts to Pacific areas on **21.725** ceased with the closure of their Darwin station and they were sadly missed.

The latest reports indicate that they are now using that frequency again in the early morning, presumably from Shepparton and their transmissions have been reaching the UK! They were rated 25432 at 0555 in E.Bristol and

33323 at 0830 by **Bernard Curtis** in Stalbridge, who heard them for the first time on August 4. He found reception quite good until 0855 when R.Portugal came on **21.720** - see below.

Also received during the morning were DW via Sri Lanka? **21.680** (Eng to Africa 0600-0650?), rated 33333 at 0600 by **Ernest Wiles** in NE.Bedford; Voice of Turkey **21.715** (Tur to W.Asia, Australia 0500-1000) SIO444 at 0617 by **John Eaton** in Woking; Voice of Russia **21.790** (Eng to Australasia 0500-0900) 34133 at 0832 by **Vera Brindley** in Woodhall Spa; R.Portugal Int via Sines **21.720** (Port to Africa 0900-1100) 43332 at 1018 by **Rhoderick Illman** in Oxted; UAER, Dubai **21.605** (Eng to Eur 1030-1100) 45444 at 1032 by **Tony Hall** in Freshwater Bay, IoW; BSKSA Saudi Arabia **21.495** (Ar [Holy Quran] to SE.Asia 0900-1200) 34344 at 1100 by **Norman Thompson** in Oadby; BBC via Ascension Is **21.660** (Eng to Africa 1100-1700) 44333 at 1125 by **Stan Evans** in Herstmonceux; R.Portugal Int via Sines **21.655** (Port to Brazil 0800-2100) 34443 at 1135 by **Robert Connolly** in Kilkeel.

After mid-day, RAI Rome **21.520** (It to Africa 0600-1300) was rated 32232 at 1250 **Robert Hughes** in Liverpool; R.Prague via Rimavska Sobota **21.745** (Eng to E.Africa, M.East 1300-1330) 35333 at 1327 by **Darren Beasley** in Bridgwater; RFI via Issoudun? **21.580** (Fr to S.Africa 0900-1600) 25122 at 1435 by **Eddie McKeown** in Newry; UAER, Dubai **21.605** (Eng to Eur 1600-1640) 44444 at 1630 by **Vic Prier** in Colyton; HCJB Quito, Ecuador **21.455** (Eng, Sp, Ger [u.s.b. + p.c.] to Eur 1900-2200) 44333 at 2100 by **Thomas Williams** in Truro.

The new **18MHz (15m)** band is being used by R.Norway Int to reach listeners in E/C.Africa. Their transmission on **18.950** (Norw [Eng Sun] 1600-1630) was rated 24343 at 1620 by **Michael Casey** in Manchester.

Broadcasts from a number of countries may be received in the **17MHz (16m)** band during the day. In the morning R.Australia via Shepparton on **17.750** (Eng 0600-0900) rated 33333 at 0650 in Herstmonceux; AIR via Bangalore **17.387** (Eng to Pacific areas 1000-1100) was 25122 at 1000 in Newry; REE via Noblejas?

17.755/17.715 (Sp to S.America 0900-1900) 44444 at 1052 in Oxted; Africa No.1, Gabon **17.630** (Fr to W.Africa 0700-1100, 1200-1600) 33333 at 1100 by **Bill Griffith** in W.London; R.Pakistan, Islamabad **17.835** (Eng to Eur 1100-1120) 44434 at 1113 in Freshwater Bay; R.Bulgaria, Sofia **17.585** (Eng to Eur 1100-1200) 54444 at 1147 by **Tom Winzor** in Plymouth; R.Sweden, Stockholm **17.870** (Eng to USA 1130-1200) SIO555 at 1150 by **Philip Rambaut** in Macclesfield.

During the afternoon R.Cairo via Abis **17.595** (Eng to S.Asia 1215-1330) was 25343 at 1328 in Manchester; RCI via Sackville, Canada **17.820** (Eng, Fr to Eur, Africa 1330-1500 Mon-Sat) was rated 44444 at 1340 by **Martin Venner** in St.Austell; Israel R, Jerusalem **17.535** (Eng to Eur, N.America 1400-1430) 33333 at 1400 by **Clare Pinder** in Appleby; RFI via Moyabi, Gabon **17.560** (Eng to E.Africa, M.East 1400-1455) 43333 at 1405 by **Sheila Hughes** in Morden; Israel R, Jerusalem **17.545** (Heb [Home Sce rly] to W.Eur, N.America 0500-1855) 54454 at 1420 in Liverpool; R.Prague, Czech Rep **17.485** (Eng to Eur, E.Africa 1700-1727) 42343 at 1700 in Colyton; VOA via Morocco **17.895** (Eng to Africa 1600-1900) was 43343 at 1709 in Woking.

Later, HCJB Quito, Ecuador **17.795** (Russ, Ger, Fr, Sp to Eur?



LONG WAVE CHART

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	F*
153	Donebach DLF	Germany	500	A,C*,D,E*,F*,G,H,I*
153	Bod	Romania	1200	C
162	Alloouis	France	2000	A,C*,D,E*,F*,G,H,I
171	Nador Medi-1	Morocco	2000	A
171	B'shakovo etc	Russia	1200	A*,D,E*,G*,I*
171	Lvov	Ukraine	500	C*
177	Dranienburg	Germany	500	A,C*,D,E*,G*,H,I*
183	Saarloouis	Germany	2000	A,C*,D,E*,F*,G,H,I*
198	Droitwich BBC	UK	500	A,C,D,G,H,I
207	Munich DLF	Germany	500	A,B*,C*,D,E*,G,I*
216	Roumoules RMC	S.France	1400	A,C*,D,E*,G*,H
225	Raszyn Resv	Poland	?	A,B*,C*,D*,E*,G*,I*
234	Beidweiler	Luxembourg	2000	A,C*,D,E*,G
243	Kalundborg	Denmark	300	A,C,D,E*,G
252	Tigaza	Algeria	1500	C*,D*
252	Atlantic 252	S.Ireland	500	A,C*,D,E*,G,H,I
261	Burg (R.Ropa)	Germany	85	A,B*,D,G*
270	Topolna	Czech Rep	1500	A,B*,C*,D*,E*,G*
279	Sasnovy	Belarus	500	C*,D*,G*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-

- (A) John Eaton, Woking.
- (B) Simon Hockenhill, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) George Millmore, Wootton, IoW.
- (E) Fred Pallant, Storrington.
- (F) Alan Roberts, Quebec, Canada.
- (G) Robert Shacklock, Westwood, Notts.
- (H) Tom Smyth, Co.Fermanagh.
- (I) David Stevenson, Swansea.



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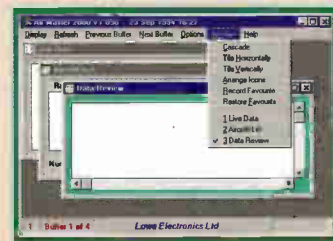
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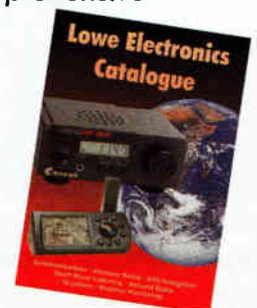
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1800-?) was 4444 at 1829 in NE.Bedford; DW via Kigali, Rwanda **17.860** (Ger to W.Africa, N.America 1800-2200) 44344 at 1852 by **Peter Pollard** in Rugby; R.Nederlands via Bonaire, Ned Antilles **17.605** (Eng to Africa 1830-2025) 55545 at 1856 by **Martin Cowin** in Kirkby Stephen; WHRI South Bend, USA **17.655** (Eng to E.USA, Eur 1500-2300) 35433 at 1907 by **Fred Pallant** in Storrington; HCJB Quito, Ecuador **17.735** (Eng to Eur 1900-2300?) 45544 at 2005 in Bridgwater; BBC via Ascension Is **17.830** (Eng to W/C.Africa 0730-2100) 35433 at 2035 in E.Bristol; RCI via Sackville **17.820** (Eng, Fr to Eur, Africa 1900-2200) 33323 at 2130 in Stalbridge; R.Taipei Int via WYFR **17.750** (Eng to Eur 2200-2300) 44444 at 2210 in Truro; R.Cultura, Sao Paulo, Brazil **17.815** (Port 0800-0300) 22222 at 0005 in Kilkeel.

The **15MHz (19m)** band is regarded by many listeners as the hub of their activity. Good reception was noted during the morning from Israel R, Jerusalem **15.615** (Heb to W.Eur, N.America 0300-2055), rated 55445 at 0445 by **Frank Miles** in SW.London; Voice of Nigeria via Ikorodu **15.120** (Eng 0500-0700) 44444 at 0615 in St.Austell; RFO Tahiti, Fr.Polynesia **15.169** (Fr to SE.Pacific) SIO422 at 0634 in Woking; R.Norway Int. **15.640** (Norw to Eur, W.Africa 0700-0730) 54434 at 0700 in Colyton; Voice of Armenia, Yerevan **15.270** (Eng to Eur 0900-0930 Sun) 34433 at 0900 by **Ross Lockley** in Galashiels; BBC via Cyprus **15.575** (Eng to M.East, E.Eur 0400-1500) SIO333 at 0920 in Macclesfield; BBC via Skelton & Rampisham, UK **15.565** (Eng to Eur, M.East, Africa 0600-1500) 44433 at 0947 in Oxted; R.Pakistan, Islamabad **15.530** (Eng to Eur 1100-1120) 44434 at 1118 in Freshwater Bay.

After mid-day VOIRI Tehran, Iran **15.084** (Home Sce relay) was a potent 55555 at 1255 in Liverpool; WEWN via Vandiver, USA **15.745** (Eng to Eur 1000-2200) 44444 at 1429 in Plymouth; Israel R, Jerusalem **15.650** (Eng to W.Eur, M.America 1545-1557) 44444 at 1545 in Morden; VOA via Morocco **15.410** (Eng to Africa 1600-2000) 54454 at 1730 in Kirkby Stephen; R.Sweden via Horby **15.735** (Eng to Eur 1730-1758) 44344 at 1731 in Woodhall Spa; R.Cairo, Egypt **15.255** (Eng to C/S.Africa 1800-1900) 33233 at 1800 by **Gerald Guest** in Dudley; WWCR Nashville, USA **15.685** (Eng to N.America, Eur 1100-2200) 55555 at 1800 in NE.Bedford; Africa No.1, Gabon **15.475** (Fr to W.Africa 1600-1900) 32432 at 1805 by **Robert Shacklock** in Westwood, Notts; Channel Africa via Meyerton **15.240** (Eng to W.Africa 1800-1830) 34243 at 1820 in Newry; Israel R, Jerusalem **15.650** (Eng to W.Eur, N.America 1900-1925) 44444 at 1903 in Rugby; Voice of Nigeria via Ikorodu **15.120** (Eng 1900-2100) 45444 at 1930 in Bridgwater; R.Nederlands via Bonaire, Ned. Antilles **15.315** (Eng to Africa 1830-2025) 33443 at 2020 in Manchester; RCI via Sackville **15.325** (Fr, Eng to Eur, Africa 1900-2129) 55445 at 2035 in E.Bristol; R.Korea, Seoul **15.575** (Eng to Eur 2100-2200) 33222 at 2115 in Truro; AWR-Asia via KSDA Guam **15.310** (Eng to NE.Asia 2130-2200) 32222 at 2130 in Appleby; VOA via Botswana **15.445** (Eng to Africa 1900-2200) 43333 at 2135 in Stalbridge; RCI via Sackville **15.305** (Eng to USA, Caribbean 2200-2230) SIO222 at 2229 by **Francis Hearne** in N.Bristol; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 54433 at 2240 in Herstmonceux; R.For Peace Int, Costa Rica **15.050** (Eng to N.America 1700-0000) 33333 at 2330 in Kilkeel.

Reception in the **13MHz (22m)** band has also been good from some areas during the day. Noted during the morning were SRI via Sottens? **13.635** (Fr, It, Eng Ger to Africa 0600-0815), rated SIO444 at 0733 in N.Bristol; R.Denmark via R.Norway **13.800** (Da to Eur 0730-0800) 24333 at 0755 in Oxted; SRI via Sottens? **13.685** (Eng, It, Ger, Fr to Australasia 0830-1030) 44444 at 0841 in Woodhall Spa; KAJJ Denton, USA **13.810** (Eng to N/C.America ?-0930) SIO322 at 0910 in Macclesfield.

During the afternoon R.Austria Int via Moosbrunn **13.730** (Eng to Eur, N.America 1230-1300) was 44544 at 1230 in Galashiels; DW via Wertachtal **13.780** (Ger to S.Eur 0600-2000) 45444 at 1300 in Woking; UAER, Dubai **13.675** (Eng to Eur 1330-1355) 44333 at 1330 in Morden; WHRI via Noblesville, USA **13.760** (Eng to E.USA, Eur 1500-2100) 44444 at 1554 in Plymouth; R.Austria Int via Moosbrunn **13.730** (Eng to Eur, Africa 1630-1700) 54545 at 1645 in E.Bristol; R.Ukraine Int, Kiev **13.590** (Ger to Eur 1700-1800) 34423 at 1725 in Colyton; Vatican R, Italy **13.765** (Eng to Africa 1730-1800) 54444 at 1732 in Freshwater Bay.

LOCAL RADIO CHART

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
1260	Marcher G, Wrexham	I	0.64	I*	1260	SabrasSnd, Leicester	I	0.29	K
1260	Capital G, Litt'bme	I	0.10	A,E,F,G,H	1296	Radio XL, Birmingham	I	5.00	E,G,K
603	Cheltenham R.	I	0.10	B,E,G,J,K*	1305	Premier via ?	I	0.50	A,E,G,J
630	R.Bedfordshire(3CR)	B	0.20	A,C,E,F,G,K	1305	Touch AM, Newport	I	0.20	G,J
630	R.Cornwall	B	2.00	G,E,I,J	1323	Capital G, Southwick	I	0.50	E,G,H
657	R.Clywd	B	2.00	E,G,K*	1332	SomerserSnd, Bristol	B	0.63	J
657	R.Cornwall	B	0.50	E,G,J	1332	Premier, Battersea	I	1.00	A,E,G
666	Gemini AM, Exeter	I	0.34	E,G,J	1332	Cl.Gold 1332, Pt'bo	I	0.60	K
666	R.York	B	0.80	E	1332	Wiltshire Sound	B	0.30	G
729	BBC Essex	B	0.20	A,E,G,H,K*	1359	The Breeze, Chelms'd	I	0.28	C,E,K*
738	Hereford/Worcester	B	0.037	E,K	1359	Cl.Gold A9, C'try	I	0.27	E
756	R.Cumbria	B	1.00	E	1359	R.Solent	B	0.85	E,G
756	R.Maldwyn, Powys	I	0.63	E,G,K*	1359	Touch AM, Cardiff	I	0.20	J
765	BBC Essex	B	0.50	A,E,G,H,K*	1368	Southern Counties R	B	0.50	A,C*,E,F,G,H
774	R.Kent	B	0.70	A,C,D,E,G,K*	1368	Wiltshire Sound	B	0.10	G
774	Cl.Gold 774, Glos	I	0.14	E,G	1413	R.Gloucester, Bolton	B	0.50	B
792	Cl.Gold 792, Bedford	I	0.27	C*,D,E,G,K	1413	Premier via ?	I	0.50	A,E,G
792	R.Foyle	B	1.00	I	1431	The Breeze, Southend	I	0.35	E,F
801	R.Devon & Dorset	B	2.00	B,C,E,G,J	1431	Cl.Gold, Reading	I	0.14	C*,E,G
828	Cl.Gold 828, Luton	I	0.20	E	1449	R.Peterboro/Cambs	B	0.15	K
828	2CR CG, Bournemouth	I	0.27	A,G,H	1458	R.Devon & Dorset	B	2.00	G,J
837	Asian Netwk Leics	B	0.45	E,G,K	1458	Sunrise, London	I	50.00	A,E,G,H,K*
855	R.Devon & Dorset	B	1.00	E,G,J	1476	CountySnd, Guildford	I	0.50	A,C,E,G
855	R.Norfolk, Postwick	B	1.50	E	1485	Cl.Gold, Newbury	I	1.00	E
855	Sunshine 855, Ludlow	I	0.15	E,J*	1485	R.Merseyside	B	1.20	G,I
873	R.Norfolk, W.Lynn	B	0.30	E,F,G,K	1485	Southern Counties R	B	1.00	A,C,E,F,G,H
936	Brunel CG, W.Wilts	I	0.18	E,G	1503	R.Stoke-on-Trent	B	1.00	E,G
936	Yks Dales R, Hawes	I	1.00	E	1521	Heartbeat 1521AM,NI	I	0.50	I
945	Cl.Gold GEM, Derby	I	0.20	K	1521	Fame 1521, Reigate	I	0.64	A,C,E,G,H
945	Capital G, Bexhill	I	0.75	A,E,G,H	1530	R.Essex	B	0.15	A,E,G
954	Gemini AM, Torquay	I	0.32	E,G,J	1530	Cl.Gold W/ Yorks	I	0.74	E,I*
954	Cl.Gold 954, H'ford	I	0.16	E	1530	Cl.Gold Worcester	I	0.52	E,G
963	Liberty R, Hackney	I	1.00	A,C*,E,F,G,H	1548	R.Bristol	B	5.00	E,G,J
972	Liberty R, Southall	I	1.00	A,C*,E,F,H	1548	Capital G, London	I	97.50	A,E,G,H
990	R.Devon & Dorset	B	1.00	C,E,G,H,J	1548	Forth AM, Edinburgh	I	2.20	E*
990	Cl.G.WABC, Wolv'ton	I	0.09	E,K	1557	Mellow, Clacton	I	0.125	E
999	C.Gold GEM Nott'ham	I	0.25	E,K	1557	Cl.Gold 1557, N.hant	I	0.76	E,K
999	R.Solent	B	1.00	A,E,F,G,H	1584	Capital G, So'ton	I	0.50	A,E,G,H
999	Valleys R, Aberdare	I	0.300	E,J	1584	London Turkish R	I	0.20	A,E,G
1017	Cl.G.WABC, Shrewsb'y	I	0.70	E	1584	R.Nottingham	B	1.00	E,H
1026	R.Cambridgeshire	B	0.50	E,K*	1584	R.Shropshire	B	0.50	E
1026	Downtown, Belfast	I	1.70	I	1602	R.Kent	B	0.25	A,C,E,F,G
1026	R.Jersey	B	1.00	E,G,H,J					
1035	RTL Country 1035	I	1.00	A,E,G,J*					
1035	N.Sound 2, Aberdeen	I	0.78	E*					
1116	R.Derby	B	1.20	E,K					
1116	R.Guernsey	B	0.50	E,G,H					
1116	Valleys R, Ebbw Vale	I	0.50	J					
1152	LBC 1152 AM	I	23.50	E,G,H,K*					
1161	R.Bedfordshire(3CR)	B	0.10	C,E,K					
1161	Brunel CG, Swindon	I	0.16	E,G					
1161	Southern Counties R	B	1.00	E,G,H					
1170	Capital G, Portsm'th	I	0.50	E,G,H					
1170	Swansea Snd, Swansea	I	0.58	J					
1170	1170AM, High Wycombe	I	0.25	C,E					
1242	Capital G, Maidstone	I	0.32	E					
1242	IoW Radio, Wootton	I	0.50	G,H					
1251	C.G Amber, Bury StEd	I	0.76	E,K*					
1260	Brunel CG, Bristol	I	1.60	J					

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-

- (A) John Eaton, Woking.
- (B) Simon Hockenhill, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) Rhoderick Illman, Oxted.
- (E) Brian Keyte, Bookham.
- (F) Frank Miles, SW London.
- (G) George Millmore, Wootton, IoW.
- (H) Harry Richards, while in Worthing.
- (I) Tom Smyth, Co.Fermanagh.
- (J) David Stevenson, Swansea.
- (K) Norman Thompson, Dadby.

Later, DW via Sines? **13.790** (Eng to W.Africa 1900-1950) was 43433 at 1921 in St.Austell; Vatican R, Italy **13.765** (Eng to W.Africa 2000-2030) 55455 at 2014 in Manchester; R.Havana Cuba **13.715** (Eng to Eur 2030-2130) 32222 at 2040 in Truro; WWCR Nashville, USA **13.845** (Eng to Africa 1400-0000) 34433 at 2047 in Bridgwater; R.Ukraine Int, Kiev **13.590** (Eng to Eur 2100-2158) 33233 at 2100 in Appleby; Christian Science SWB via WSHB Cyprus Creek, USA **13.770** (Eng to Eur 2000-2100 Wed & Sun) 44344 at 2144 in Newry; Christian Science SWB via WSHB Cyprus Creek, USA **13.770** (Eng to S.Eur, W.Africa 2300-0000 Wed & Sun) 43333 at 2300 in Stalbridge; R.Pyongyang, Korea **13.760** (Eng to N.America 2300-0000) 34443 at 2335 in Kilkeel.

R.New Zealand has been reaching the UK in the **11MHz (25m)** band during the early morning. Their 100kW transmission on **11.690** (Eng to Pacific areas 0459-0759) was rated 34543 at 0511 by **David Edwardson** in Wallsend and 23232 at 0712 in Woodhall Spa. Also noted in the morning were the BBC via Masirah Is **11.760** (Eng to M.East 0300-0800, 0900-1400) rated 43343 at 0355 by **David Hall** in Morpeth; WYFR Okeechobee, USA **11.580** (Eng to Eur, Africa 0500-0600) 55545 at 0545 in SW.London; HCJB Quito **11.960** (Eng to Eur 0700-0900) 54544 at 0750 in Herstmonceux; DW via Wertachtal **11.615** (Bul to Eur 0930-1050) 44443 at 1026 in Oxted; R.Korea Int via Sackville, Canada **11.715** (Eng to S.America 1030-1100) 44444 at 1046 in St.Austell.

During the afternoon RCI via Skelton, UK **11.935** (Eng to Eur 1330-1400) was 33333 at 1330 in Appleby; BBC via Skelton & Woofferton, UK **12.095** (Eng to Eur, N/W.Africa 0400-2000) 44333 at 1430 in Morden; R.Japan via Sri Lanka **11.880** (Eng to Asia 1400-1500) SIO222 at 1500 in Macclesfield; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1000-1630) 54444 at 1523 in Kirkby Stephen; Israel R, Jerusalem **11.605** (Eng to C.Eur 1545-

1600) 54444 at 1557 in Plymouth; R.Pakistan, Islamabad **11.570** (Eng to M.East 1600-1630) 32332 at 1611 in Bridgwater; R.Australia via Shepparton **11.660** (Eng to Asia 1330-1700) 34333 at 1654 in Woking; R.Australia via Shepparton **11.880** (Eng to Pacific areas 1700-2130) 23433 at 1705 in E.Bristol.

In the evening China R.Int **11.515** (Pers to M.East 1800-1827) was 33323 at 1810 in Colyton; Voice of Vietnam, Hanoi **12.020** (Eng to Eur 1900-1930) SIO222 at 1900 by **Tom Smyth** in Co.Fermanagh; Voice of the Mediterranean, Malta via Russia **12.060** (Eng to Eur 1900-2000 [Not Fridays]) 44444 at 1903 in W.London; R.Cairo, Egypt **12.050** (Ar [Home Sce relay] to Eur, N.America) 53443 at 1935 in Liverpool; Voice of Hope via Georgia **12.125** (Eng to Eur 1900-2000) 33323 at 1947 in Rugby; R.Algiers Int via Bouchaoui **11.715** (Eng to Eur, M.East, Africa 2000-2100) 54444 at 2000 in Galashiels; WWCR Nashville, USA **12.160** (Eng to N.America, Eur 1400-2200) 33323 at 2000 in Stalbridge; R.Bulgaria, Sofia **11.720** (Fr, Eng to Eur 2000-2200) 54444 at 2009 in Westwood, Notts; Voice of Russia **11.675** (Eng [WS]) 54444 at 2011 in Freshwater Bay; Vatican R, Italy **11.625** (Eng to W.Africa 2000-2030) 44344 at 2024 in Manchester; VOA via Botswana? **12.080** (Fr to Africa 1830-2130) 33453 at 2025 in Storrington.

Later, R.Kuwait via Kabd **11.990** (Eng to Eur,

N.America 1800-2100) was 22222 at 2058 in Truro; R.Budapest, Hungary **11.700** (Eng to Eur 2100-2130) 44444 at 2111 in Newry; AIR via Bangalore **11.620** (Eng, Hi to Eur 1745-2230) 32323 at 2145 in Oadby; BBC via Kranji, Singapore **11.955** (Eng to S.Asia 2200-0000) 34433 at 2335 in Kilkeel; R.Bulgaria, Sofia **11.720** (Eng to N.America 2300-0000) SIO333 at 2349 in N.Bristol.

In the **9MHz (31m)** band HCJB Quito, Ecuador 9.745 (Eng to N.America 0000-0700) was rated 43343 at 0410 in Morpeth; RFI via Allouis? **9.790** (Fr to Africa, M.East 0430-0800) 55555 at 0645 in SW.London; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) SIO433 at 0950 in Macclesfield; R.Nederlands via Wertachtal **9.860** (Eng to Eur 1030-1225) SIO444 at 1000 in Co.Fermanagh; R.Vlaanderen Int, Belgium **9.925** (Eng to Eur, M.East 1030-1055) 44433 at 1048 in Bridgwater; RFI via Allouis? **9.805** (Fr, Eng to Eur, M.East, N.Africa 0600-1500) 54445 at 1240 in Stalbridge; R.Denmark via R.Norway Int **9.590** (Da to Eur 1330-1400) 55555 at 1330 in Kirkby Stephen.

Later, Voice of Vietnam, Hanoi **9.840** (Eng to Eur 1800-1830) was 33443 at 1805 in Manchester; TWR via Meyerton, S.Africa **9.510** (Yoruba to W.Africa 1900-1930) 43444 at 1900 in NE.Bedford; Africa No.1, Gabon **9.580** (Fr to C.Africa 0500-2300) 45444 at 1900 in Storrington; Israel R, Jerusalem **9.435** (Eng to Eur, N.America 1900-1930) 54444 at 1923 in Freshwater Bay; R.Bulgaria, Sofia **9.700** (Eng to



MEDIUM WAVE CHART

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener
819	Warsaw	Poland	300	F*,H*	1242	Marseille	France	150	F*
828	Rotterdam	Holland	20	F*	1242	Virgin via ?	UK	?	A,J,M
837	Nancy	France	200	M*	1251	Huisberg	Netherlands	10	F*
837	COPE via ?	Spain	?	F*,H*,L*	1260	SER via ?	Spain	?	F*,L*
846	Rome	Italy	540	H*	1260	Guildford (V)	UK	0.5	A
855	Berlin	Germany	100	F*	1269	Neumunster(DLF)	Germany	600	F*,H*,M*
855	RNE1 via ?	Spain	?	F*,H*,L*	1278	Dublin/Cork(RTE2)	Ireland (S)	10	B*,E*,J,K,L,M*
864	Sainta ?	Egypt	500	C*,H*,J*	1287	RFE via ?	Czech Rep.	400	F*,H*
864	Paris	France	300	A,C,G,H	1296	Valencia(COPE)	Spain	10	F*
864	Socuellamos(RNE1)	Spain	2	H*	1296	Orfordness(BBC)	UK	500	E,M
873	Frankfurt(AFN)	Germany	150	F*	1305	Rzeszow	Poland	100	F*
873	Zaragoza(SER)	Spain	20	F*,H*	1305	RNE5 via ?	Spain	?	F*
873	Enniskillen(R.U.I)	UK	1	K	1314	Kvitsoy	Norway	1200	C*,F*,H*,J,M*
882	COPE via ?	Spain	?	F*,H*	1323	W'brunn (V.Russia)	Germany	1000/150	F*
882	Washford(BBCWales)	UK	100	A,E,G,H,J,K,L,M	1332	Rome	Italy	300	F*,H*
891	Algiers	Algeria	600/300	B*,H*	1341	Lisnagarvey(BBC)	Ireland (N)	100	B*,E*,H*,J,K,L*
891	Huisberg	Netherlands	20	F*	1341	Tarrasa(SER)	Spain	2	H*
900	Bmo(CRo2)	Czech Rep	25	H*	1350	Cesvaine/Kuldiga	Latvia	50	F*,H*
900	Milan	Italy	600	B*,F*,M*	1359	Madrid(RNE)	Spain	600	L*
900	COPE via ?	Spain	?	H*	1368	Foxdale(Marx R)	IoM	20	C*,E*,K
909	B mans PK(BBC5)	UK	140	A,G,H,K,L,M	1377	Lille	France	300	A,F*,G,H,J
918	Madrid(R.Int)	Spain	20	F*,H*	1386	Boishakovo	Russia	2500	C*,F*,H*
927	Volvertem	Belgium	300	A,F*,H*,J,M*,L*	1395	TWR via Filake	Albania	500	F*
936	Bremen	Germany	100	F*,H*	1395	Lopic	Netherlands	120/40	A,F*,H*,J,L*,M
945	Toulouse	France	300	F*,H*	1404	Brest	France	20	F*,H*
954	Brno (CRo2)	Czech Rep.	200	F*,H*	1413	RNE5 via ?	Spain	?	F*,H*
954	Madrid(CI)	Spain	20	F*,H*	1422	Heusweiler(DLF)	Germany	1200/600	F*,H*,J*,M*
963	Pori	Finland	600	F*,H*,L*	1431	Kopani	Ukraine	500	F*
963	Tr Chonail	Ireland (S)	10	K	1440	Marnacht(RTL)	Luxembourg	1200	F,H,L*
972	Hamburg(NDR)	Germany	300	F*,H*,M*	1440	Damman	Saudi Arabia	1600	B*
981	Alger	Algeria	600/300	H*	1449	Redmoss(BBC)	UK	2	B*
990	Berlin	Germany	300	F*,H*	1467	Monte Carlo(TWR)	Monaco	1000/400	C*,F*,H*,J*,L*
990	R.Bilbao(SER)	Spain	10	H*	1476	Wien-Bisamberg	Austria	600	B*,F*,J*
990	Redmoss(BBC)	UK	1	E*,K	1485	SER via ?	Spain	?	L*
990	Twynn(BBC)	UK	1	E	1494	St.Petersburg	Russia	1000	H*
999	Schwarin (RIAS)	Germany	20	F*	1512	Volvertem	Belgium	300	A,C,F*,H*,J*,L*
1008	Flevo(Hiv-5)	Holland	400	F*,H	1521	Kosice(Cizaitce)	Slovakia	600	H*
1017	Rheinsender(SWF)	Germany	600	F*,H*	1521	Duba	Saudi Arabia	2000	H*,K*
1026	SER via ?	Spain	?	L*	1530	Vaticin R	Italy	150/450	C*,F*,H*,J*,K*
1035	Jallinn	Estonia	500	K*	1539	Mantlingen(ERF)	Germany	350(700)	F*,H*,K*
1035	Lisbon(Prog3)	Portugal	120	F*	1539	Valladolid(SER)	Spain	5	J*
1044	Dresden(MDR)	Germany	20	F*	1557	Kaunas (R.Vilnius)	Lithuania	75	J*
1044	Sebaa-Aiouan	Morocco	300	H*	1566	Sarnen	Switzerland	300	H*
1044	SER via ?	Spain	?	H*	1575	SER via ?	Spain	5	H*,J*
1053	Zaragoza(COPE)	Spain	10	F*	1584	SER via ?	Spain	2	L*
1053	Talk R.U.K via ?	UK	?	A,H,J,K,L,M	1593	Holzkirchen(VOA)	Germany	150	C*,F*,H*,J*,M*
1062	Kalundborg	Denmark	250	F*,H*	1602	SER via ?	Spain	?	H*
1062	R.U.no via ?	Italy	?	H*	1602	Vitoria(EI)	Spain	10	H*
1071	R.France via ?	France	?	F*,H*,K,M*	1602	R.Beograd	Yugoslavia	1	L*
1071	Bilbao(EI)	Spain	5	H*					
1071	Talk Radio UK via ?	UK	?	A,J					
1071	SER via ?	Spain	?	H*					
1089	Talk Radio UK via ?	UK	?	A,G,H,J,L					
1089	Nitra(Jarok)	Slovakia	1500	F*,H*,M*					
1107	AFN via ?	Germany	10	F*					
1107	Talk R.U.K via ?	UK	?	A,G,H,J,M					
1125	La Louviere	Belgium	20	F*,H*					
1125	RNE5 via ?	Spain	?	H*					
1125	Llandrindod Wells	UK	1	E,L					
1134	COPE via ?	Spain	2	H*,L*					
1134	Zadar(Croatian R)	Yugoslavia	600/1200	A,B,F*,H*,M*					
1143	AFN via ?	Germany	1	A,F*					
1143	COPE via ?	Spain	2	H*					
1161	Ain-Salah	Algeria	5	H*					
1161	Strasbourg(Flnt)	France	200	M*					
1179	SER via ?	Spain	?	L*					
1179	Solvsberg	Sweden	600	A,F*,H*,J*,M*					
1188	Kuurne	Belgium	5	F*					
1188	Szolnok	Hungary	135	H*					
1197	Munich(VOA)	Germany	300	F*					
1197	Virgin via ?	UK	?	A,H,K,M					
1215	Virgin via ?	UK	?	A,H,J,K,L					
1224	Lelystad	Holland	50	F*					
1224	COPE via ?	Spain	?	L*					
1233	Liege	Belgium	5	F*					
1233	Virgin via ?	UK	?	A,J					

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

Listeners:-

- (A) John Eaton, Woking.
- (B) Simon Hockenhill, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) Rhoderick Illman, Oxted.
- (E) Brian Keyte, Gt.Bookham.
- (F) Eddie McKeown, Newry.
- (G) Frank Miles, SW London.
- (H) George Millmore, Wootton IoW.
- (I) Clare Pinder, while in Appleby.
- (J) Robert Shacklock, Westwood, Notts.
- (K) Tom Smyth, Co.Fermanagh.
- (L) David Stevenson, Swansea.
- (M) Norman Thompson, Oadby.

TROPICAL BANDS CHART

Freq (MHz)	Station	Country	UTC	DXer	Freq (MHz)	Station	Country	UTC	DXer
4.820	R.Botswana, Gaborone	Botswana	2020	H,L	5.011	R.Zimbabwe (R-2)	Zimbabwe	2140	R
4.828	ZBC R-4	Zimbabwe	1842	M	5.015	R.Brazil Tropical	Brazil	0035	B
4.830	R.Tachira	Venezuela	0352	B,L	5.020	La V du Sahel/Niamey	Niger	2154	B,L
4.835	ABC-Alice Springs	Australia	2137	D	5.025	R.Parakou	Benin	2150	B,G
4.835	R.Tezulutlan, Coban	Guatemala	0340	G	5.025	R.Rebelle, Habana	Cuba	0345	B,G
4.835	RTM Bamako	Mali	2010	B,M,D	5.025	R.Uganda, Kampala	Uganda	1849	L,M
4.845	DRTM Nouakchott	Mauritania	1935	B,M	5.030	AWR Latin America	Costa Rica	0445	B,G,L
4.850	R.Yaounde	Cameroon	2150	B,L,D,P	5.035	R.Bangui	C.Africa	0408	L
4.870	R.Cotonou	Benin	1932	B,G,H,M,D,P	5.047	R.Togo, Lome	Togo	2015	B,G,J,L,M
4.879	R.Bangladesh	Bangladesh	2355	B	5.050	R.Tanzania	Tanzania	2023	L,M
4.885	R.Difusora Acreana	Brazil	2350	B	5.060	PBS Xinjiang, Urumqi	China	0003	B,L
4.885	KBC East Side Nairobi	Kenya	1941	L,M,D	5.075	Caracol Bogota	Colombia	0350	A,B,G,J,S
4.890	RFI Paris	via Gabon	0359	G,L	5.100	R.Liberia, Totota	Liberia	2006	E,H,J,M
4.890	R.Port Moresby	New Guinea	2003	M					
4.900	SLBC Colombo	Sri Lanka	0005	B					
4.910	Tennant Creek	Australia	2137	D					
4.910	R.Zambia, Lusaka	Zambia	2150	B					
4.915	GBC-1, Accra	Ghana	2013	B,E,G,H,J,L,M,PR					
4.915	KBC Cent Side Nairobi	Kenya	1930	M					
4.915	R.Cora de Peru, Lima	Peru	0428	G					
4.920	R.Quito, Quito	Ecuador	0420	G					
4.935	KBC Gen Sce Nairobi	Kenya	1930	D,G,K,L,M,N,P					
4.935	R.Tropical, Tarapoto	Peru	2355	B					
4.940	SLBC (Eng.Comm.Svce)	Sri Lanka	0010	B					
4.945	R.Ilimani, La Paz	Bolivia	0045	B					
4.950	VOA via Sao Tome	Sao Tome	2014	G,H,L,M,N					
4.955	R.Nac. de Colombia	Colombia	0435	B,G					
4.960	VOA via Sao Tome	Sao Tome	2000	A,L,M					
4.965	R.Alvorada	Brazil	0020	B					
4.965	Christian Voice	Zambia	1858	B,G,L,M,P					
4.975	R.Uganda, Kampala	Uganda	1928	A,G,J,K,L,M,P					
4.980	Ecos del Torbes	Venezuela	0314	B,D,G,J,L					
4.985	R.Brazil Central	Brazil	2300	B,E					
5.005	R.National, Bata	Eq.Guinea	1855	M					
5.009	R.TV Malagasy	Madagascar	1853	M					
5.010	R.Garoua	Cameroon	2109	P					

DXers:-

- (A) Michael Casey, Manchester.
 (B) Robert Connolly, Kilkree.
 (C) Bernard Curtis, Stalbridge.
 (D) David Edwardson, Wallsend.
 (E) Bill Griffith, SW.London.
 (F) Gerald Guest, Dudley.
 (G) David Hall, Morpeth.
 (H) Simon Hockenhuil, E.Bristol.
 (I) Robert Hughes, Liverpool.
 (J) Sheila Hughes, Morden.
 (K) Rhoderick Illman, Oxted.
 (L) Eddie McKeown, Newry.
 (M) Fred Pallant, Storrington.
 (N) Clare Pinder, while in Appleby.
 (O) Vic Prier, Colyton.
 (P) Robert Shacklock, Westwood, Notts.
 (Q) Tom Smyth, Co.Fermanagh.
 (R) Norman Thompson, Dadby.
 (S) Ernest Wiles, N.E.Bedford.
 (T) Thomas Williams, Truro.

Eur 1900-2000) 43344 at 1930 in Dudley; VOIRI Tehran, Iran **9.022** (Eng to Eur 1930-2030) 44544 at 1930 in Galashiels; R.Australia via Shepparton **9.500** (Eng to Asia, Pacific 1430-2200) 44544 at 2001 in Wallsend; R.Mediterranee Int via Nador, Morocco **9.575** (Fr, Ar to N.Africa, S.Eur 0500-0100) 54454 at 2015 in Liverpool; Voice of Armenia, Yerevan **9.965** (Eng to Eur, USA 2015-2045) 54444 at 2015 in Morden; R.Jordan via Al Karanah **9.830** (Ar to W.Eur 1700-2100) 32322 at 2025 in Oadby; China R.Int, Beijing **9.920** (Eng to Eur 2000-2157) 53433 at 2155 in Herstmonceux; R.Prague, Czech Rep **9.435** (Eng to N.America 2230-2257) SIO444 at 2236 in N.Bristol.

Noted in the **7MHz (41m)** band early in the morning were R.Japan via Woofferton, UK **7.230** (Jap, Eng to Eur 0500-0700), rated 44444 at 0540 in St.Austell; KTBN via Salt Lake City **7.510** (Eng to N.America 0000-1600) 33323 at 0550 in Stalbridge; VOA via Woofferton, UK **7.170** (Eng to Eur, N.Africa 0400-0700) SIO322 at 0600 in Co.Fermanagh; WYFR via Okeechobee **7.355** (Eng to Eur, Africa 0600-0800) 45343 at 0615 in Newry; R.Prague, Czech Rep **7.345** (Eng to Eur 0700-0727) 42433 at 0720 in Colyton; R.Vlaanderen Int, Belgium **7.290** (Eng to Eur, Australia, S.America 0730-0755) 44333 at 0730 in Appleby; Sudwestfunk via Rohrdorf **7.265** (Ger to Eur 24hrs) 45544 at 0943 in Bridgwater.

Later, AIR via Aligarh? **7.410** (Hi, Eng 1745-2230) was 22332 at 1759 in Woodhall Spa; VOA via Selebi-Phikwe, Botswana **7.415** (Eng to Africa 1800-2230) 44333 at 1800 in Morden; Voice of Nigeria, Ikorodu **7.255** (Eng to W.Africa 1900-2100) 33343 at 1936 in Storrington; R.Thailand via Udorn Thani **7.210** (Eng to Eur 1900-1958) 21111 at 1957 in Truro; R.Netherlands via Madagascar **7.120** (Eng to S/E.W.Africa 1730-2025) 43443 at 2012 in Oxted; VOIRI Tehran **7.260** (Eng to Eur 1930-2028) 54544 at 2015 in Manchester; R.Moldova Int **7.520** (Eng to Eur 2130-2155) 34433 at 2030 in Galashiels; Voice of Turkey, Ankara **7.190** (Eng to Eur, USA 2200-2300) 34434 at 2206 in Woking; R.Ukraine via Mykolajiv? **7.150** (Eng to Eur 2230-2300) 23223 at 2230 in Oadby; BBC via Kranji, Singapore **7.110** (Eng to Asia 2200-0045) 44444 at 2300 in Kilkree; DW via ? **7.285** (Eng to S.Asia 0200-0250) 44344 at 0159 in Rugby.

The early morning occupants of the **6MHz (49m)** band include R.Havana, Cuba **6.000** (Eng to N.America 0100-0500), rated 44444 at 0405 in Morpeth; R.Netherlands via Ned.Antilles **6.165** (Eng to N.America 0430-0525) SIO222 at 0430 in Co.Fermanagh; DW via Sackville, Canada **6.085** (Ger to N.C.America 0400-0600) 45444 at 0435 in Woking; REE via Noblejas **6.055** (Eng to N.America 0500-0600) 44333 at 0500 in Appleby; R.Japan via Skelton, UK **5.975** (Eng to Eur 0600-0700) 55544 at 0600 in SW London; WEWN Birmingham, USA **5.825** (Eng to USA, Eur 0000-1000) 43333 at 0625 in Stalbridge; WHRI South Bend, USA **5.745** (Eng to E.USA, Eur 22007-

1000) 33333 at 0700 in Morden; Deutschland R, Berlin

6.005 (Ger to Eur 24hrs) 34433 at 0731 in Oxted.

Noted later were R.Netherlands via Julich **6.045** (Eng to Eur 1030-1225), rated 54444 at 1055 in Herstmonceux; R.Prague, Czech Rep **5.930** (Eng to Eur 1600-1627) 35434 at 1625 in E.Bristol; R.Sweden via Horby **6.065** (Eng to Eur 1930-2000) 54544 at 1930 in Galashiels; China R.Int via Russia? **6.950** (Ger, Eng to Eur 1900-2157) 33333 at 1956 in Rugby; R.Prague, Czech Rep. **5.930** (Eng to Eur, USA 2000-2030) 34344 at 2000 in Oadby; RCI via Skelton, UK **5.995** (Fr, Eng to Eur, M.East, N.Africa 1900-2100) 44554 at 2002 in Bridgwater; R.Finland via Pori **6.135** (Eng to Eur 2000-2030) 55555 at 2010 in NE.Bedford; R.Austria Int via Moosbrunn **6.155** (Eng to Eur 2130-2200) 22222 at 2130 in Truro; R.Sweden via Horby **6.065** (Eng to Eur 2130-2158) SIO444 at 2138 in N.Bristol.

LIST OF EQUIPMENT USED LM&S for \$August, #September, *October '98

- \$* Darren Beasley, Bridgwater: Yaesu FRG-100 + a.t.u. + 15m wire.
- \$* Vera Brindley, Woodhall Spa: Sangean ATS-803A + r.w.
- * Michael Casey, Manchester: Roberts RC828 + Howes CTU9 a.t.u. + 60m helical loop.
- \$* Robert Connolly, Kilkree: JRC NRD-525 + Timewave DSP+ filter + Datong AD-370 or Sangean ATS-803A.
- * John Court, Birmingham: Philips AE 3750 portable.
- \$* Martin Cowin, Kirby Stephen: Hitachi TRK-5854E + built-in whip.
- \$* Bernard Curtis, Stalbridge: Realistic DX400 or Grundig Satellit-2100 or Grundig Ocean Boy or Tatung TMR 7602 + whip or i.r.w.
- \$* Martin Dale, Stockport: Grundig Satellit 3000 or Sangean ATS-803A or Codar CR70A + a.t.u. + r.w. or Capco loop.
- \$* John Eaton, Woking: JRC NRD-345 + Datong AD-270 or a.t.u. + r.w.
- \$* David Edwardson, Wallsend: Trio R-600 + 2.5m x 2.5m fixed loop or 22m long trap dipole.
- \$* Stan Evans, Herstmonceux: Kenwood R-2000 + Balun + 11m wire in loft.
- \$* Adam Farnsworth, Bridgnorth: Sangean ATS-818 + built-in whip.
- * Martin Goodey, St.Mary's, Isles of Scilly: ADR AR7030 + 25m wire.
- * Bill Griffith, W.London: JRC NRD-535 + 25m wire.
- \$* Gerald Guest, Dudley: Roberts RC818 + r.w. (location 300m a.s.l.)
- \$* David Hall, Morpeth: ADR AR7030 + Global AT-2000 + 13m wire.
- \$* Tony Hall, Freshwater Bay, IoW: Yaesu FRG-7 + 13m wire or RF.B45
- \$* Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
- \$* Simon Hockenhuil, E.Bristol: Roberts R817 or Bush TR130 or ITT Colt.
- \$* Robert Hughes, Liverpool: Lowe HF-225 Europa + PR-150 or ADR AR7030 + 15m indoor wire or Drake RBE + RF Systems MTA on roof.
- \$* Sheila Hughes, Morden: Sony ICF-7600DS + loop or Panasonic OR48 + 15m invert L.
- \$* Rhoderick Illman, Oxted: Kenwood R-5000 + r.w. or AN-1, Sony ICF-7600DS.
- * Brian Keyte, Bookham: ADR AR7030 + loop or i.r.w.
- * Brian Keyte, while near Inverness: ADR AR7030 + r.w. (top strand of roadside fence).
- \$* Ross Lockley, Galashiels: Realistic DX-300 + a.t.u. + 40m wire or Sangean ATS-803A.
- \$* Eddie McKeown, Newry: Tatung TMR 7602.
- * Frank Miles, SW.London: Kenwood R-5000 + Balun + 30m wire.
- \$* George Millmore, Wootton, IoW: Sangean ATS-803A + loop or RACAL RA17L + v.l.f. converter + loop.
- \$* Fred Pallant, Storrington: Trio R2000 + Howes CTU8 a.t.u. + r.w.
- * John Parry, Lamaca, Cyprus: Realistic DX394 + r.w.
- \$* Clair Pinder, while in Appleby: JRC NRD-525 + a.t.u. + r.w. or Sony ICF-SW55.
- \$* Peter Pollard, Rugby: Sony ICF-2001D + r.w.
- \$* Vic Prier, Colyton: RACAL RA17L or RCA AR88LF or Redifon R551N + a.t.u. + r.w. or active vertical in loft or Capco RMA1, RMA2 active loops.
- \$* Philip Rambaut, Macclesfield: Int. Marine Radio R700M + r.w.
- \$* Richard Reynolds, Guildford: Sangean ATS-803A + i.w./m.w. loop or a.t.u. + 30m coil in loft or 60m dipole.
- * Harry Richards, Barton-on-Humber: Grundig Satellit 700 + AD270 or r.w. or Grundig Yacht Boy 400 or Matsui MR409S.
- * Alan Roberts, Quebec, Canada: Lowe HF-225 + 49m or 31m dipole or 11m vertical dipole.
- * Robert Shacklock, Westwood, Notts: Realistic DX394 + a.t.u. + 30m wire in loft.
- * Chris Shorten, Norwich: Matsui MR4099 + 10m wire.
- \$* Tom Smyth, Co.Fermanagh: Sangean ATS-803A or Morphy Richards R191.
- \$* David Stevenson, Swansea: Steepletone MBR-7 or Yaesu FRG-100 + r.w.
- * Norman Thompson, Dadby: Not stated.
- * Phil Townsend, London: Lowe HF-225 + preselector + r.w. or loop.
- * Martin Venner, St.Austell: Philips D-2999 or Heathkit GR-78 or ADR AR2700 + 33m wire.
- \$* Ernest Wiles, NE.Bedford: Lowe HF-125 + 19m inverted L with Balun + a.t.u. or AKO Target HF3 + a.t.u. + 10m Windom.
- \$* Thomas Williams, Truro: Gundig Yacht Boy 206 or Sharp 5454 + r.w.
- \$* Tom Winzor, Plymouth: Kenwood R-2000 or Trio 9R590 or Trio 5909RS + Miller ant.

■ ANDY CADIER, 28 ROMNEY AVENUE, FOLKESTONE, KENT CT20 3QJ

Off The Record

The Offshore Echo's annual convention 'Euro Radio 98' was held on Saturday 4 July in France at the Calais Ferry Terminal Restaurant. Guest speakers, other than myself, were radio presenter Alan West and historian Frank Turner. Alan gave an account of his interesting radio career which has taken him to Holland, Belgium, Luxembourg, Italy, France, Monaco and Israel. He said that he found ship-based 'Radio North Sea' to be both the most satisfying and the most scary to work on. The scary bit was when the vessel was on fire and he was aboard making a Mayday broadcast with smoke billowing around him. At the time he was totally unaware that the ship's main diesel storage tanks were just a metre or so below the studio floor where he was standing!

Frank Turner has researched the construction and history of the sea forts in the Thames and the Mersey estuaries. His investigations have uncovered a whole host of interesting facts about their wartime use. He has also unearthed details concerning the dilemma faced by the Ministry of Defence when several of the abandoned Thames forts were occupied by radio pirates during the 60s.

The Royal Navy were all set to repossess the towers but backed off. The government even obtained an estimate for their demolition. Another suggestion was to place a noxious substance on the forts in order to make them uninhabitable. Curiously enough, none of these things happened.

Frank Turner's audio/video presentation went a long way in explaining the government's predicament surrounding these old fortifications which had been illegally abandoned on the high seas and had been regarded by the Ministry in 1954, as being beyond British territorial limits.

New CD

Offshore Echo have re-mastered their *Radio Forts* album, which is now available on a double CD pack. Narrated by Greg Bance, (Roger Scott on Radio Essex) it includes the stories of Radios Sutch, City, Tower, Invicta, King, 390, Essex and BBMS.

Roy and Joan Bates comment on Radio Essex and the Principality of Sealand that they established on Roughs Tower. The *Radio Forts* is available now on CD for £21.99 including postage from **Offshore Echo's PO Box 1514, London W7 2LL**. There is an added bonus for readers as the inlay booklet in the double CD box includes a picture of a very much younger me wearing a white jumper and a false name to preserve my somewhat dubious anonymity.

Frank Turner has published a number of books, mainly on military engineering projects. However, due to the interest in the sea forts and the part they played in pirate radio, he has written three new booklets on this topic. *The Radio Pirate Forts* contains lots of fascinating information and some excellent colour photographs of the towers as they are now.

The Sealand Story relates to Roughs naval fort which has become The Principality of Sealand. Amongst strong government opposition, the Bates family still reign over this small territory and issue their own stamps and passports.

The third booklet is *The Maunsell Sea Forts*. It covers their construction, deployment and wartime activities. Sadly, several people lost their lives in circumstances completely unrelated to enemy action. However militarily the Thames forts were successful, if not perhaps a little expensive.

On the other hand, the Mersey army forts had something of a much less illustrious history. These booklets are just £4.50 each, including postage in Britain, or for an early Christmas present have all three for £11.00. Full information is available from Frank Turner, **Glendale House, Marling Cross, Gravesend, Kent DA12 5UE**.



The sea forts in the Thames and Mersey estuaries - wartime fortifications which were then put to use as pirate radio stations.

Thirty Years After

Adrian Hogg sent me a report relating to some recently released Whithall papers. These reveal several startling revelations into the government's intended action against the pirates during the 1960s. This shows that BBC Radio One was only originally intended as a temporary substitute for the pirates to fill the void left by the offshore stations closure.

Ministers did not believe that a pop music channel should be financed by licence payers. The Chairman of EMI, who was so upset by the lack of action against Radio Caroline, told the Postmaster General that the 'gramophone industry' was ready to send out a ship to jam the pirate station. Records show that the Post Office were consulted on several occasions about the possibility of jamming the pirate stations.

A technical report said that their radio jamming apparatus was so advanced it could be used to block out the advertising but leave the programmes intact. This, unsurprisingly, never happened but Tony Benn, the Postmaster General of the day, was not averse to actually encouraging foreign diplomats to complain about radio reception difficulties.

These subsequent complaints, it is reported, were then used to put pressure on his cabinet colleagues to take action against the radio pop pirates. Even in 1967, plans were afoot for a massive government publicity campaign, managed by public relations consultants, to discredit the pirates and swing public opinion behind the government. Civil servants feared this would have started a bitter summer-long publicity battle between the pirates and the Post Office who, at the time, were responsible for communications. Fearing a fiasco, they shelved the idea.

On The Air

A letter from **Derek Taylor** says that owing to recent price increases in Holland for PO Box numbers many stations have ceased using this facility. Derek does have updated address lists for Dutch m.w. and s.w. pirates. For just £1.00 he will send you a print-out. He also operates a QSL service for many stations too. For further information write to **12 Dorman Road, Preston PR2 6AS**.

The Radio Caroline RSL from 14 June to 11 July at the Isle of Sheppey went off well and was mainly sponsored by a construction company. There is speculation as to whether the Radio Authority would grant Radio Caroline a weekend RSL licence rather than the usual 28 day licence. The idea being that you are normally allowed up to four 28 day licences per year making a total of 112 days.

A station broadcasting at weekends and possibly bank holidays too would reach, over the year, about the same annual total. Do you think opening the door to part-time stations on m.w. would give listeners more choice, considering that most professional stations sound so remarkably similar?

Pirates Log Book

Radio Free London has been very active with separate programming on both 3.945 and 5.805MHz. Reception here in Folkestone has been good during the daytime with 3.945 booming in at night. They have a new QSL address **RFL, 101B King's Cross Road, London WC1X 9LP**. They prefer E-mails to be sent to **rflsw@usa.net**

Radio Argus say that they have been testing on 1593kHz during the night, however no reports have been received here yet. **Radio Pandora** have been received with good strength signals on 6.275MHz with a mail drop at **Ostra Porten 29, 442 54 Ytterby, Sweden**.

One of the most consistent pirates has to be **Laser Hot Hits** on 3.930 and 6.220MHz who have a surprisingly good signal most of the time. They broadcast a European 'phone number and have a mailing address **PO Box 293, Merlin, Ontario NOP 1W0, Canada**.

Steve Black of Hoddesdon in Hertfordshire is seeking the address of the publication that publishes a pirate radio feature called *Alternative Airwaves?* These articles are written by Alan Pennington and are contained in the British DX Club monthly magazine. Membership is £11.00 per year from **BDX Club, 10 Hemdean Hill, Caversham, Reading, RG4 7SB**. They also have an audio round-robin covering all aspects of radio, known as the *BDX Tape Circle*, there is an extra nominal charge for this unique innovative service.

BROADCAST

One For The Road

Radio DJs say they play music back-to-back. What does this mean and how did this saying originate? It's OK to cheat, ask anyone you like. No prizes, just the fame or embarrassment of seeing your name here in bold type in January. All suggestions to my Folkestone abode, address at the head of this page...see you soon.



New Horizons

When I started subscribing to SWM over 10 years ago I had little more than a passing interest in amateur radio. Strangely enough, through reading those pages each month my enthusiasm has spread sufficiently for me to take the Novice Amateur Radio Course. My thanks to **Brian G8ZYZ, Fred G4GAN** and **Dave G0DQI** of the Dover Radio Club for their excellent tuition that enabled me to pass the City and Guilds novice radio amateur examination.

If you have toyed with the idea of becoming a radio amateur, the novice route is the easiest and cheapest way to get started. Your age is irrelevant and if you are a reasonably competent short wave listener and understand about half of what you read in this magazine, you will have little difficulty in getting your licence.

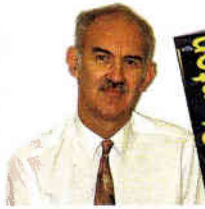


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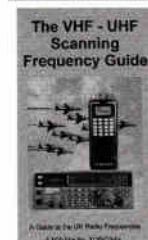
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SMA Antenn connector
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Size 58 x 86 x 27mm

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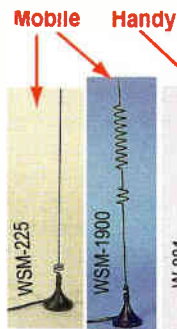
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Broadcast In Ireland

Robert Connolly GI7IVX our man in Ireland, takes an in-depth look at Irish radio and television broadcasting, national and regional.

The island of Ireland, as we all know only too well, is divided into two countries, Northern Ireland (part of the United Kingdom) and the Republic of Ireland, or Eire as it is sometimes called. As a result there are some marked differences in the broadcasting set-ups of the two countries within the island and some hidden benefits to the public.

This article outlines some of these differences in the television and radio broadcasting between the two countries and even to a degree the differences between Northern Ireland and the rest of the UK.

Television

In Northern Ireland we have the usual UK terrestrial television stations, BBC 1 & 2, ITV (Ulster Television), Channel 4 and the new Channel 5, the latter being available in only some areas of the Province. However, television reception from the three main television stations in the Republic of Ireland is also possible in many areas, giving a total of seven terrestrial channels available to many viewers. Who needs satellite TV with this number of terrestrial channels available!

In the Republic of Ireland there are the three main television broadcast stations: Radio Telefis Eirann (RTE) 1 & 2 and the fairly new dedicated Irish Language Station. However,

many residents within the border areas and the East coast also benefit from reception of television broadcast stations based in Northern Ireland or Wales.

It is interesting to note that some very tall and high gain antenna systems are used to receive UK/Northern Ireland based television in these areas. I have seen some domestic TV antenna masts well over 10m high, complete with stays to prevent them from being blown over by high winds.

Unlike the UK, which solely uses a 625-line u.h.f. system, the Republic of Ireland uses a dual standard 625-line set-up, involving both v.h.f. and u.h.f. frequencies. The u.h.f. system is mainly for

Table 1: Current Optional Frequencies For RTE 1 & 2.

RTE 1		
Channel	Frequency	Remarks
B	53.75	Band 1
D	175.25	Band 3
F	191.25	Band 3
I	215.25	Band 3
23	487.25	u.h.f.
29	535.25	u.h.f.
40	623.25	u.h.f.
52	719.25	u.h.f.
RTE 2		
Channel	Frequency	Remarks
H	207.25	Band 3
G	199.25	Band 3
I	215.25	Band 3
J	223.25	Band 3
26	511.25	u.h.f.
33	567.25	u.h.f.
43	647.25	u.h.f.
56	751.25	u.h.f.

(All frequencies in MHz).

ting

UK mainland. However, in practice, it has much greater coverage than that and I am reliably informed that this station has even been received in the middle of Kansas, USA, for the first time last year!

Medium Wave

The Irish Republic State broadcaster (RTE) uses m.w. for its mainstay broadcasts of its Radio 1 & 2 networks along with the Irish Language Service, Radio Na Gaeltachta. In Northern Ireland, m.w. is used by the BBC and the independent radio stations

Downtown

Radio, Radio

1521 and

Townland

Radio.

Table 2 shows the medium wave frequencies currently in use in Ireland. In addition there are still some pirate radio stations operating, particularly in the border areas between the Republic of Ireland and Northern Ireland. Some of these have been operating for several years without any official interference and a few currently have applications lodged with the authorities in Eire for broadcast licenses.



Radio Foyle's Station Logo.

coverage in the Dublin/East coast area, and the North West of the country. The remainder of the country is covered by the v.h.f. system which has frequencies in Band 1 and Band 3. **Table 1** shows the current operational frequencies for RTE 1 & 2. (See below left.)

The v.h.f. television was the original system used in Eire due to the terrain and the lower cost of installing television relays, as the transmit range was greater and therefore fewer relays were needed. The introduction of a u.h.f. system came much later in an attempt to reduce interference from other communication systems used in the cities.

A recent new development in television in the Republic of Ireland is the decision of their government to allow the setting up of community television broadcasting systems for some areas within the country. This operates on a similar principle to local community radio. This is a system which the UK does not have as yet, and it will be interesting to see how the system develops in Eire and if perhaps at some stage it will be introduced into the UK in the near future.

It is interesting to note that unlike the UK, Eire television stations do not broadcast their programmes on a twenty four hours per day basis. However before their programme schedules come on line in the mornings they transmit relays of some of the satellite broadcasting stations from Astra, such as EBN and QVC.

RADIO BROADCASTING BANDS

Long Wave

There are no long wave transmitters in Northern Ireland, however several years ago, and as a result of a joint agreement between RTE and Radio Luxembourg, a long wave transmitter and antenna system was built in the Republic of Ireland, near Trim, for what was then a new radio station called Atlantic 252 using a 500KW output (see *SWM* August 1995).

The broadcast target area was Ireland and the

VHF FM

Band II is used by the State Broadcasters both North and South. It is also used for independent local radio stations in both countries. It should be borne in mind that, until only a few years ago,

Table 2
Medium Wave Frequencies in Ireland

Frequency (kHz)	Station	Country
540	R.Na Gaeltachta	Eire
567	Radio	Eire
612	Radio 2	Eire
693	BBC Radio 5	N. Ireland
720	BBC Radio 4	N. Ireland
729	Radio 1	Eire
774	BBC Radio 4	N. Ireland
792	BBC Radio Foyle	N. Ireland
828	R.Na Gaeltachta	Eire
828	Townland Radio	N. Ireland
873	BBC Radio Ulster	N. Ireland
909	BBC Radio 5	N. Ireland
963	R.Na Gaeltachta	Eire
1026	Downtown Radio	N. Ireland
1053	BBC Radio 1	N. Ireland
1089	BBC Radio 1	N. Ireland
1278	Radio 2	Eire
1521	Radio 152	N. Ireland

independent/community radio was not allowed in the Republic of Ireland. As a result, this generated a very large number of pirate local radio stations which forced the Irish Government to change its

Continued on page 22...



S

P

E

Ulster Television's
Station Logo.

I

A

E

regulations and permit independent radio.

Nearly every major town in Eire now has its own local independent radio, while there are several in Dublin. There are currently in excess of 48 local independent radio stations operating on v.h.f. f.m. in the Republic of Ireland. In addition, a national independent radio station, Radio Ireland, was launched. The majority of these local radio stations use a power output of around 5W.

Due to the large number of local and community radio stations operating in the Republic of Ireland, it is noticeable that when one tunes around the f.m. band on the radio that these stations broadcast on frequencies as high as 106.9MHz. In comparison with the UK, there is a lot more usage of the upper end of this band. Most of these stations also make full use of the Internet in order to receive requests, etc. and those in the border areas are very aware of the audience from the North.

In stark contrast, v.h.f. f.m. independent local radio in Northern Ireland is very limited with only three stations, Cool FM, City Beat and Downtown Radio; the latter has several v.h.f. f.m. relays of its medium wave service operating across the Province.

For those of us who live in the border areas of Northern Ireland, particularly the east coast of Down, there is the benefit of reception from many of the local independent radio stations from Eire giving a greater listening diversity. However, there is also a draw back in that some of these stations from the Irish Republic, including the state broadcaster, RTE, tend to overpower some of the local relays of Northern Ireland stations.

In my local area, f.m. reception from any of the Northern Ireland independent radio stations is either non-existent or very poor due to a mountain range between my area and the transmitters. Fortunately, reception from the local radio stations on the east coast of Eire is very good here so that makes up for it in some way.

Due to the significant number of local radio stations in Eire, I do not intend to give a detailed table. However, frequency and station information, etc. can be obtained from a publication such as the *World Radio & TV Handbook*.

Short Wave

There are no official short wave broadcast stations in Ireland. However, RTE has recently taken some air time for special events from Deutsche Welle using its transmitters. RTE can see the benefits of using short wave transmissions but cannot financially support its own short wave transmitters. Again, there are a couple of pirate

short wave stations which operate for limited periods.

Satellite Radio

No Northern Ireland broadcaster uses satellite radio, however RTE has a permanent transmission slot on the Astra system relaying their Radio 2 transmissions. Also on that system, again on a permanent basis, is the independent station, Radio Limerick, who relay their local f.m. broadcasts via an Astra sub carrier.

It can be seen that in many ways the Irish Republic is well ahead of Northern Ireland when it comes to radio broadcasting, and even ahead of the UK when it comes to community television stations. Despite having fewer terrestrial TV stations, Eire has certainly developed good use of its v.h.f. f.m. local radio network, even though their Government was forced down this road a few years ago due to the proliferation of pirate radio stations at the time.

The quality and professionalism of these local commercial radio stations is excellent and their proliferation ensures a very competitive market for listeners and advertisers, particularly in the Dublin area. Several Dublin based stations frequently run competitions for listeners in that area with valuable prizes such as cars, holidays, and even cash prizes in excess of £1000. RTE also runs frequent competitions, again sometimes with valuable prizes, but on a national basis, including Northern Ireland listeners.

Almost all the local independent radio stations in Eire, and the RTE, are linked up to the Internet with details of their station and E-mail facilities. Revenue for the radio stations, including RTE, is obtained from advertising, whereas revenue for the State controlled television stations is obtained by a combination of

advertising and license fees.

Another interesting point is that some programmes are produced jointly by both RTE in Eire and Ulster Television, the independent station in Northern Ireland, and also broadcast on both stations. RTE also has a regular feed from Granada Television to transmit their main soap opera, *Coronation Street*.

Finally, if you ever visit Ireland as a radio amateur and bring your 2m or 6m equipment with you, a word of caution, be careful when you transmit. I was on holiday a couple of years ago and was spending a couple of nights on a caravan site in the west of Ireland with my 2m rig installed in the car. Behind my car was a fairly big TV antenna for the next caravan mounted on a pole about 2m off the ground. I had forgotten that this area was a v.h.f. TV area and put out a couple of CQ calls. It was only on my fourth cq call that I noticed, out of the corner of my eye, that the TV in the caravan next door was going crazy. It was only when I hit the PTT that I realised that this was a v.h.f. antenna behind me and I was causing severe interference. I quickly stopped transmitting and went to apologise to the occupants of the caravan, who were, thankfully, very understanding.

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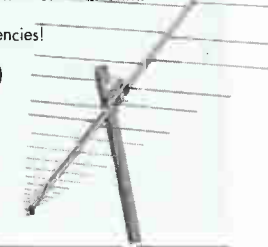
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Receiving Loop A

Andy Ikin looks at the practical differences between loop, active and passive antennas.

Recently, loop antennas (small in terms of wavelength) have appeared on the market offering performance that is different to the more traditional passive wire and active antennas. Loop antennas are generally divided into three types: passive, active and active broadband.

The passive loop antenna usually consist of either a manually tuned capacitor or a servo driven capacitor to tune the loop and a simple impedance matching transformer for the feeder. The active loop is similar to the passive loop but uses a Differential Matching Amplifier (DMA) to drive the feeder. Both the passive and active loops rely on maximising the P.d. across the loop to achieve efficient operation.

The broadband active loop uses a different principle. The current induced by the magnetic flux is amplified and matched to the feeder. Historically, loop antennas have been used since the beginning of radio, and for the hobbyist, periodical constructional articles have appeared in various magazines, including sister magazine *PWW*.

Unfortunately, the loop antenna has not been readily available commercially compared to other antenna types, probably due to the restricted bandwidth and cost. Also, up to fairly recently, broadband active loops were only available at very high cost or restricted to professional and military users. This situation has changed recently, now that broadband active loop antennas are available at similar prices to traditional active antennas.

Loop Behaviour

Now we can consider the differences between the behaviour of loop and traditional antennas to the electro-magnetic wave. The electro-magnetic wave conceptually consists of an electric-field and a magnetic-field. These two fields are mutually dependant to each other, i.e. at the far field there is a constant relationship between them.

The first consideration is to look at the antennas in what is termed the far field, i.e. several wavelengths from the signal source. If we assume that the loop and the active/passive wire antenna have the same efficiency, then both antennas will deliver the same voltage to the receiver.

However, there are some differences to consider, there is a 90° phase difference between the voltage of the loop and the active/passive wire antenna. This is only of concern when both antenna types are used for direction finding (sense finding) or where a cardioid response is required for interference reduction.

The only other significant difference is that the loop (if balanced) has well defined nulls that can be used to reduce interference. It is important to note that the loop has to be balanced in respect to ground to reject electric-field interference. Furthermore, it is also possible to achieve two nulls using a balanced dipole antenna, but in practice it is difficult to maintain balance due to the presence of nearby objects and buildings.

Now let's consider how the loop antenna and the active/passive wire antenna behave in the near field (sometimes referred to as the induction field), i.e. close to the signal source. This is a typical case for most listeners where the signal source is likely to be interference from

mains wiring and other sources of noise, such as TVs, satellite receivers, fluorescent lights and computers.

Figures 1 and 2 show a conceptual illustration of the field intensities for mono-pole (E electric-field source) and loop (H magnetic-field source). Figure 3 shows the field impedance as a function of source distance.

Local Interference

Within the local interference environment that most listeners are exposed to, the electric-field radiated by the mains wiring is far more intense than the magnetic-field. The radiation of the magnetic-field is dependant on a low impedance r.f. current passing through a loop, such as a winding of a switch-mode power supply transformer or a TV Line scan transformer, i.e. the near field radiation of the loop is predominantly magnetic. However, this source of interference is usually conducted to the mains wiring, resulting in radiation of the electric-field.

Having established that the local interference is predominately the electric-field, a comparison of the loop and active/passive wire antenna can be made by referring back to Fig. 1. It is easy to see from this figure, that if a receiving mono-pole (active/passive wire antenna) and a receiving loop antenna were placed near to the mono-pole (electric-field source), then the loop antenna would receive a far lower signal than the active/passive wire antenna.

In the near field, the loop responds mainly to the magnetic-field of the electro-magnetic wave, whereas the active/passive wire antenna responds predominately to the electric-field. Because the loop antenna's response is primarily to the magnetic-field, then this antenna will be less susceptible to the local electric-field interference.

Conversely an active/passive wire antenna will be very susceptible to the electric-field of the local interference source including electric-field radiation of mains borne noise by the antenna feeder. Another important feature to be considered is that a balanced loop antenna is less susceptible to mains borne noise being coupled from the feeder.

Moreover, interference reduction is further enhanced by the deep nulls of the 'Figure-of-Eight' directivity pattern of the loop antenna. See Fig. 4.

Later in this article a comparison of interference susceptibility (near field and mains borne) will be made between an active dipole (electric-field) and a broadband active (magnetic-field) loop antenna.

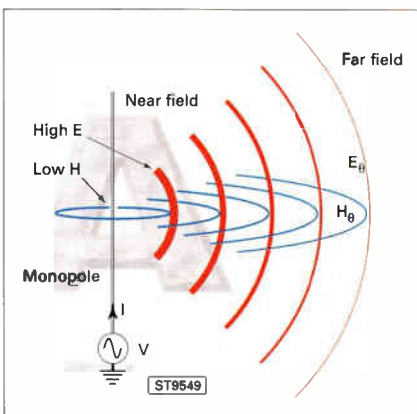
Broadband Loop

The circumference of a loop antenna multiplied by the number of turns has to be only a fraction of a wave length otherwise the 'Figure of Eight' directional characteristic will be distorted resulting in a complex reception pattern. Also the loop has to be either screened or balanced in respect to earth to ensure pronounced nulls.

Most loop antennas are tuned so that a reasonable output voltage can be achieved. This is due to the low terminal voltage produced when the loop is untuned. By tuning the loop, the output voltage increases by the loaded Q of the tuned circuit.

Another feature of the loop antenna is that the output voltage is also directly proportional to the wavelength, square area, number of turns as well as the field strength. Therefore if a single turn loop is to be used over a frequency range of say 150kHz to 30MHz, there will be a 200:1 (46dB) difference in output voltage for the same field strength.

The maximum output voltage would be at 30MHz and the response to the same field strength at 150kHz would be 46dB down. Clearly this performance is totally unusable,



Antennas

therefore most passive loop antennas are tuned and have a restricted bandwidth to achieve a reasonable output voltage.

Ideally, for the loop to be broadband, then the output voltage should only be proportional to the field strength, just in the same way as most active dipole or whip antennas.

An active dipole or whip antenna works on the principle that the voltage induced into a small antenna when connected to a high impedance amplifier is directly proportional to the field strength. Then the amplifier is used to convert this antenna voltage to a low impedance for the feeder.

Loop Construction

To construct a loop antenna to provide an output voltage that is only proportional to the field strength poses considerable difficulties. One way to solve this problem would be to use an amplifier that has unity gain at 30MHz increasing to 46dB at 150kHz.

Moreover, such an amplifier would be difficult to design to achieve low levels of intermodulation and noise. However, it is also apparent that the current induced into the loop by the magnetic-field is a direct function of the field strength and is not related to frequency.

Therefore, a loop can be made broadband by using a 'current to voltage amplifier'. However, the amplifier must be carefully designed for low noise and good intermodulation performance. This type of loop and current amplifier is the basis for some commercial broadband loop antennas.

The availability of these antennas has now given listener solution to reducing local interference, whilst providing comparable performance to more traditional active/passive wire antennas. The most significant advantage of the broadband loop, is that it can be deployed outside away from local interference and mounted on a low cost antenna rotator.

Whereas the traditional tuned loop has to be positioned near the receiver, where there are possibly high levels of local noise. The broadband loop antenna has another distinct advantage over all other active/passive wire antennas, the loop antenna's reception pattern is less affected by surrounding objects.

Ideally, all antennas should be installed away from local interference. This is sometimes a problem with large wire antennas, because of the area required.

Using a tuned loop antenna sited away from the receiver poses several problems. The obvious one is the added complexity and cost involved by remotely tuning the antenna either with a servo driven capacitor or varicap diodes (varicap diodes can introduce intermodulation products). Furthermore, having to tune the loop in step with the receiver is also a considerable disadvantage.

However, notwithstanding the problems with tuned loop antennas, their use can be an advantage in providing additional receiver front-end selectivity to reduce image and intermodulation problems.

Testing...Testing!

In order to demonstrate the differences between active/passive wire (electric-field) and loop (magnetic-field) antennas in the near field interference environment, I have chosen to use commercially available active antennas simply because of their compact size and similar (far field) performance, i.e. sensitivity.

The use of a larger passive antenna was considered, but this was found to be impractical because of the erection problems. Where necessary the attenuators were used to ensure that each antenna had the same sensitivity to the far field.

For the electric-field antenna I have used an active dipole antenna as this was readily available. The magnetic-field antenna is a balanced broadband active loop. This antenna is supplied with an antenna interface fitted with a feeder isolation transformer to reduce (common mode) mains borne noise entering the feeder cable.

During the test, both the active dipole and the broadband loop antennas were used with the antenna interface fitted with a feeder isolation transformer so that mains borne noise would not affect the results.

A JRC NRD-525 receiver and a HP 8568B Spectrum Analyser were used to measure the interference from each antenna. The interference sources are typical of a domestic environment, i.e. compact fluorescent lamps, two TVs and a Satellite receiver. Also a signal generator connected to a 7m mono-pole was used to provide a fixed point of interference. The two active-antennas were vertically mounted and polarised.

The first test was to compare the two antennas indoors. Several indoor positions were used to achieve an overall picture. These tests were then repeated outside, 5m and 10m from the house.

Interference was monitored between 150kHz and 30MHz. With the two antennas positioned in the house, I was able to monitor interference from the TVs and fluorescent lamps in the frequency band 150kHz to 30MHz. This is when I ran into a minor problem.

The interference to the loop antenna was only 20dB down compared to the dipole antenna. But the S/N ratio of the loop antenna was 30dB better than the dipole when listening to l.w. stations. So why was I not seeing at least a 30dB difference when comparing the levels of interference? After all I had checked that the far field response (outside the house) of the dipole antenna was 10dB higher than the loop to l.w. stations.

So I re-checked the far field response inside the house, only to observe that the dipole's sensitivity to l.w. stations was up to 20dB lower compared to outside the house. After a further period of experimentation with the dipole antenna, I concluded that the house was screening or absorbing the electric-field or affecting the dipole antenna in some other way.

The loop antenna was totally unaffected. I suspect that the house wiring plus central heating pipes, etc. were behaving as an electro-static screen. The test was then repeated, taking into consideration any differences with the far field output of the two antennas.

Now it was easy to observe that the loop antenna was receiving up to 30dB less interference than the dipole. Moreover, by rotating the loop, it was possible to increase the noise rejection still further. Further comparisons were made from 500kHz through to 30MHz with minor attenuator adjustments to ensure that the output of the two antennas were the same.

Generally the level of interference was 20-30dB higher using the dipole compared to the loop at 150kHz, 15-20dB at 500kHz and 5-10dB at 3-30MHz. The main source of interference appeared to be from the TVs, with background noise on the lower frequencies from the fluorescent lamps.

The differences in noise pick-up at the higher frequencies was probably not as high as it would be in

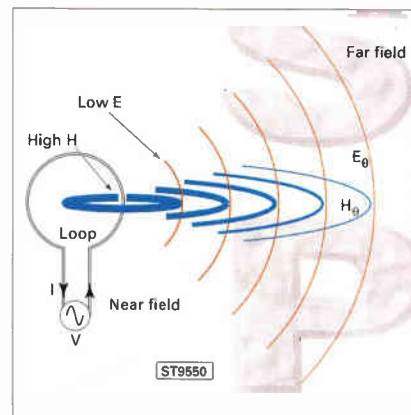


Fig. 1 (bottom left) & 2 (above): Conceptual illustration of the field intensities vs. source type and distance.

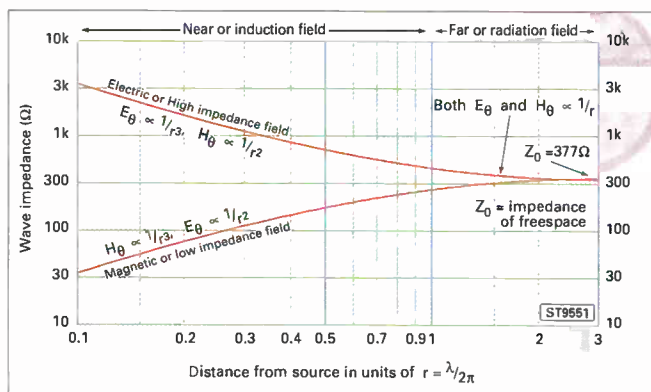


Fig. 3: Field impedance as a function of source distance.

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some other homes, because the TVs were fitted with interference filters to reduce radiated noise from the mains and antenna leads. General listening across the bands showed that the noise level was far lower using the loop antenna.

Secondly, the two antennas were positioned 5m from the house at ground level with the loop antenna pointing towards the house to receive maximum noise. A significant difference to the signal strength of the dipole antenna was noticed because the screening affect of the house was no longer a problem.

The overall level of interference received by both antennas had reduced. However, the local noise level was still 20-30dB higher on the dipole compared to loop antenna at 150kHz and was 15-20dB at 500kHz.

The difference in noise level decreased to 5-10dB at 1.5MHz. Also the deep nulls of the loop antenna provided excellent interference rejection, including unwanted l.w. and m.w. stations. However, the difference between the two antennas was less pronounced for frequencies above 6MHz.

Next, the two antennas were positioned 10m from the house. The overall level of interference received by both antennas was slightly reduced compared to the 5m position. However, the local noise level was still 20-30dB higher on the dipole compared to loop antenna at 150kHz and was 15-20dB at 500kHz. The difference in noise level decreased to 5-10dB at 1.5MHz.

Furthermore, there was hardly any difference between the two antennas above 3MHz except for the loops ability to null interference.

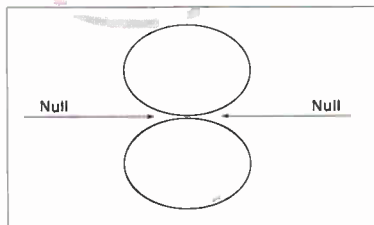


Fig. 4: Horizontal reception pattern for a loop antenna.

Mains Borne Noise

To assess the susceptibility to mains borne noise, a signal generator was coupled to the mains lead of the receiver and the active antenna power supply using a simple transformer with the mains lead wound on a ferrite ring. Hence the output of the signal generator was also coupled to the feeder screen (feeder screen was connected to the receiver chassis).

In order to make a fair comparison, the antennas were used with an antenna interface without a feeder isolation transformer. This is because the active dipole antenna is not supplied with feeder isolation transformer, but is fitted to the loop antenna as standard.

As with the previous test, the two antennas were positioned 10m from the house at ground level with the loop pointing towards the house. In this test the difference in the signal level measured on the receiver when comparing the two antennas, will be the difference in the susceptibility to mains borne noise.

The level of interference using the loop antenna was 35dB down at 150-500kHz, 15dB down at 1.3-3MHz and 5dB down at 10MHz compared to the dipole. Thus confirming the lower susceptibility of the loop antenna to mains borne noise.

The test was repeated using the antenna interface (fitted with a feeder isolation transformer) supplied with loop antenna. The difference between the dipole antenna was now 75dB at 150kHz, 60dB at 500kHz, 30dB at 1.5MHz, 25dB at 3MHz and 10dB at 10MHz.

The small difference measured at the higher frequencies was probably due to direct radiation of the signal generator to the antennas from the house mains wiring. Although the above test was conducted using an active dipole antenna, I was able to achieve similar results using passive wire antennas (longwire and a single ended balun).

Furthermore, I also noticed a 20dB reduction in mains borne noise (from a satellite receiver) when using the loop antenna compared to the active dipole at 2MHz. It was also interesting to note, that the active antenna mains plug power supplies provided some isolation from low and medium frequency mains borne noise because of the separation of the primary and secondary transformer windings.

The above comparison highlights a significant difference between the two antenna types. However, the

difference would be far less pronounced when using active whip/dipole fitted with a feeder isolation transformer.

Summary

In this article I have considered the characteristics of loop and active/passive wire antennas in the near field where there are significant differences. From the above it is easy to see that the susceptibility to interference of the active dipole (electric-field) at long wave and medium wave is considerable in comparison to the loop antenna.

However, at higher frequencies, with the antennas positioned away from the house, the difference is less pronounced. This is because the electric-field and the magnetic-field start to merge to a common field impedance at $\lambda/2\pi$ (0.16 λ) from the interference source. See **Fig. 3**. In fact, I could only detect that the loop antenna had lower susceptibility to noise when the noise source was less than 10m at 3MHz or 5m at 6MHz, i.e. 0.1 λ .

Furthermore, where local interference was observed using the loop antenna, simply rotating the antenna reduced the interference by up to 25dB. The loop antenna also demonstrated a very high immunity to mains borne noise. This is a considerable benefit, because there is simply no point in siting an antenna away from local noise only to find that the feeder is coupling noise to the antenna.

What was also very striking, was the affect surrounding buildings have on the active dipole antenna (this would also be true for active whips and some larger passive wire antennas). However, it is fair to state that traditional active and passive antennas are capable of good results, providing they are sited away from buildings, local interference, and that mains borne noise is isolated from the feeder.

Overall, the active broadband loop antenna provided consistent performance irrespective of the surroundings with excellent immunity to local noise, deep nulls and interference rejection of some unwanted l.w., m.w. and low angle s.w. stations.

My Observations

One very significant difference that was noticed when the antennas were used inside the house, was that the broadband loop was more than adequate for general listening, where reception using the active dipole was severely degraded. Thus the loop antenna is probably the only option for town, city and flat dwellers where the use of an outdoor antenna is impossible.

During this antenna comparison I was concerned with the apparent signal loss (far-field) at medium and low frequencies with the active dipole antenna placed indoors.

Why was the loop antenna totally unaffected? Or are the differences between the loop and the active dipole similar for the near field and the far field? i.e. loops respond to the magnetic-field and an active dipole or whip respond to the electric-field of the electro-magnetic wave! Well there appears to be mixed views on how the loop antenna behaves in the far field, depending on who you talk to and which textbook references are used.

One view is that the electric-field and the magnetic-field both contribute to the output of the loop. If this is true, then I would have expected some signal loss with the loop.

The alternative view, is that the magnetic-field primarily contributes to the output of the loop (assuming the loop is balanced). If the later view is true then, a simple comparison can be made by comparing the performance of the balance broadband loop to the same loop screened from the electric-field using a grounded electro-static screen, see **Fig. 5**.

In this comparison the loop is curricular, 1m in diameter with a single turn. The far-field signal sources used, were Droitwich on 198kHz and a local station on 828kHz.

Using the spectrum analyser with a measuring resolution of ± 0.1 dB there was no detectable difference between the screened and un-screened loop either in signal amplitude or reception pattern. Therefore, it would be reasonable to assume that the electric-field makes no contribution to the output of the loop.

Maybe loops are 'magnetic' after all?

SWM

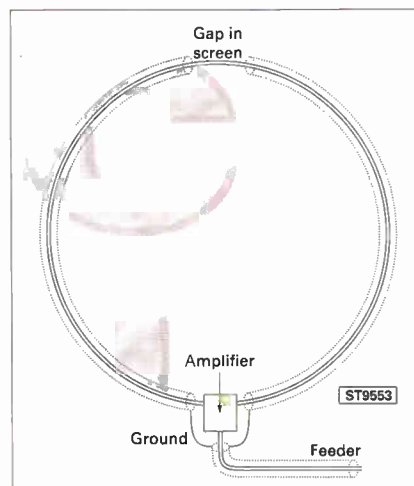
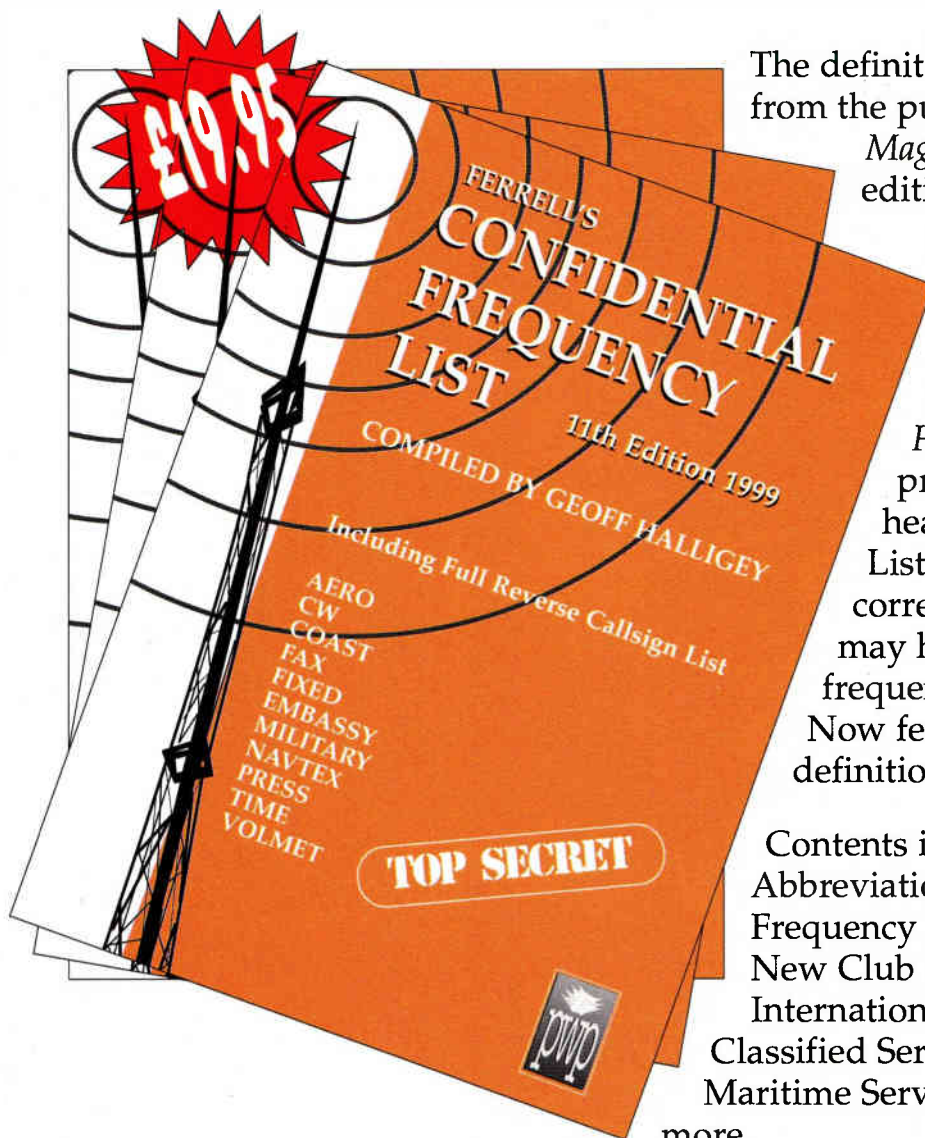


Fig. 5: Electro-static screened loop.

FERRELL'S CONFIDENTIAL FREQUENCY LIST

11th Edition 1999



The definitive h.f. frequency guide, from the publishers of *Short Wave Magazine*. Now in its 11th edition, *Ferrell's CFL* sets the pace when it comes to identifying those puzzling utility stations. Covering the spectrum from 1.6 to 29.8MHz *Ferrell's* allows you to be pretty certain what you are hearing. With its 'Reverse Listing' section, you can correlate callsigns that you may hear, to other active frequencies.

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You'll just have to order your copy and see for yourself!

To be launched at the 27th Leicester Amateur Radio Show on the 25/26th September, at Castle Donington. **£19.95.**

NEW AR8200 *The Superior Concept*

The AR8200 is the 'first' and 'only' (so far) receiver to correctly implement the new 8.33 kHz airband channel step enabling spot on reception with correct tuning and searching. If your main interest is listening to airband it's worth considering the AR8200 as a safe investment beyond 1999.

8.33 kHz tuning step: International governing bodies have recently redefined the VHF airband tuning step to provide additional frequencies, **ultimately many older receivers will not be able to correctly receive these new channels.** Latest information suggests that the new allocation will come into effect on 01.01.1999 for parts of Europe (although this will probably be pushed back another year) and one year later in the UK. Being at 'the cutting edge' the AR8200 supports 8.33 kHz correctly implemented as eight-and-one-third kHz. This means that the AR8200 will tune the VHF airband displaying the following steps 118.0083(3), 118.0166(6), 118.0250(0) MHz, the end numbers are correctly forced to 33 then 66 then 00. Most other receivers would incorrectly display 33 then 66 then 99 as the last digits so would quickly drop out of channel synchronisation, further tuning of other receivers would result in the end digits displaying 32, 65, 98 then 31, 64, 97 then 30, 64, 96 etc. If your radio cannot tune in 8.33 kHz steps, you cannot correctly search the new allocation, although tuning within 1 kHz (or tuning in 1 kHz steps) will enable you to hear the traffic, you will not be able to search.

Selectivity is not a problem with the AR8200 as a narrow AM bandwidth is also supported (although undoubtedly the geographical allocation of tightly allocated channels will be taken into consideration by the governing bodies??). The AR8200 channel steps may also be programmed in multiples of 50 Hz in any mode. Extensive step-adjust and frequency offset facilities are also provided to ensure accurate tracking of the most obscure band plans. A wide frequency coverage is available from 530 kHz to 2040 MHz with no gaps.

A.F.C.: Automatic Frequency Control is included for spot on tuning ensuring that nothing is missed, this is especially useful for monitoring offset transmissions of London ATC etc without the need to retune.

Alpha text: A larger than average back lit LCD with contrast control provides operational data. Alphanumeric text comments of up to 12 characters may be added to memory channels, memory banks and search banks (for example **MANCHEST APP**) for easy identification reducing the need for a complex list or data base.

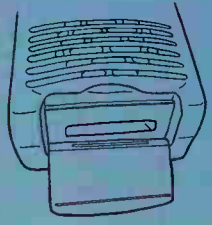
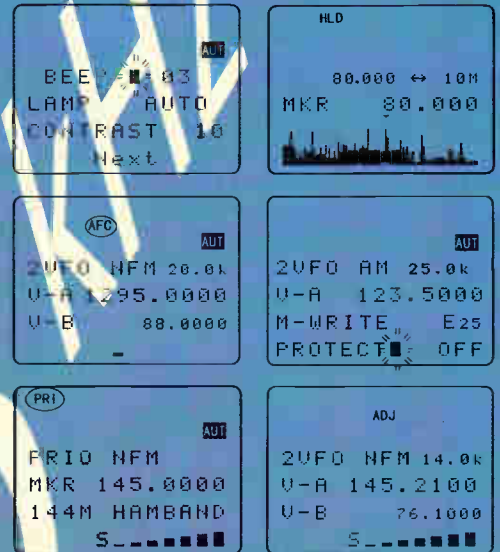
A text search feature simplifies recall of stored information.

Band scope: A high resolution signal meter and **multi-function band scope** is provided, this enables you to visually interrogate up to 10 MHz bandwidth at a time for activity, peak hold assists location of unusual or sporadic transmissions. **Flexible dynamic memory bank layout** is provided (memory banks may be varied in size between 10 and 90 channels each i.e. bank 'A' 80 channels / bank 'a' 20 channels with bank 'B' 40 channels / bank 'b' 60 channels etc). 1,000 memories, 20 memory banks, 40 search banks, select scan list, priority and lockout facilities are included. It is also possible to edit and delete individual memories, swap, copy, move and delete whole banks including dumping all data.

Computer control is available via a metallic side mounted robust connector and optional lead, an extensive RS232 command list is supported. A software package is under development which will be made available as an internet **free** download over the coming months. This connector also supports clone of data between two AR8200 along with tape output, detector output, mute and AGC. Optional **internal SLOT CARDS** (which fit into the AR8200 base) extend the AR8200 capability even further: **Memory slot card** (increase storage to 4,000 memories, 160 search banks). **CTCSS slot card** squelch & search. **Record chip slot card** (records up to 20 seconds of audio). **Tone eliminator slot card, Voice inverter slot card.** The side keypad provides four arrow keys presented as a single 'rocker' resulting in more natural and intuitive navigation through the on-screen menus. Tuning is accomplished via a variety of controls including a side panel indented main tuning dial, arrow keys and keypad. The scratch resistant "military green" cabinet has a quality feel.

Supplied with: NiCads, charger, cigar lead, whip aerial, MW bar, belt hook & screws, strap, operating manual

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AR5000 True high performance, voted best wide band receiver by readers of the German "funk" magazine in 1997.

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£1574

Government departments on both sides of the Atlantic have carried out extensive trials against rival units and we are pleased to find they are placing orders for the AR5000, good sensitivity at frequency extremes, excellent range of facilities, compactness & light weight leading to great flexibility in operation. Features include **automatic electronic preselection** between 500kHz - 999.99999MHz. "True receive" throughout it's range, not an up-converter above 1GHz.

Capabilities have been further increased with the launch of the **AR5000+3** providing three enhanced facilities: A.F.C. switchable automatic frequency control for accurate tracking of unusual bandplans, **noise blanker**, switchable to help reduce the effects of ignition noise especially while mobile, **synchronous AM**, featuring double and selectable sideband with an easy to use wide lock range. **See the full technical review in HAM RADIO TODAY magazine**, Vol.15 No.6, Chris Lorek concludes "...I must admit that I'm a fan of AOR's receivers, and having tested the AR5000, even more so. If I could afford the [£17,749] price tag [now £1574], there would be one in my shack. For the keen listener, or indeed the professional monitor, this receiver is worthy of very careful consideration..."

- Very wide frequency coverage 10kHz - 2600MHz
- All mode reception: AM, FM, USB, LSB & CW
- Automatic electronic preselection of the front end
- Excellent strong signal handling
- NCO (Numeric Controlled Oscillator) with tuning steps down to 1Hz
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- Multiple I.F. bandwidths 3, 6, 15, 30, 110 & 220kHz (500Hz optional)
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AR7030 High dynamic range, short wave receiver, awarded table-top receiver of the year 1996/97 by WRTH and 5-star editor's choice by Passport to World Band Radio 1997 & 98. Supplied with mains power unit, infrared hand control & comprehensive operating manual.
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ARD-2 ACARS & NAVTEX decoder and display unit.

Very simple to use, only one audio



connection is required from a suitable receiver. Can be used portable from internal batteries or external 12V. A computer port is provided for enhancement but is not required for operation. FREE display software is available from the AOR web site **£295**

The **SDU5000 Spectrum Display Unit** adds a variety of features to extend your receiver's capabilities, such as visually identifying new active frequencies and taking measurements. The SDU5000 may be used with a number of receivers (which have a 10.7 MHz I.F. output) and provides a bandwidth up to 5MHz in 1kHz increments with a resolution of 5kHz or 30 kHz. When using selected AOR and ICOM receivers, the frequency, mode (& attenuator with some sets) may be controlled from the SDU5000. Of course the SDU5000 makes an excellent **band scope** so that adjacent channel activity may be constantly monitored.

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West Mids Tel: 01384 481681
- Nevada Communications**
Plymouth Tel: 01705 682145
- South Midland Comm. Ltd**
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Plymouth Tel: 01752 257224
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The New Concept

AR8000 UK

All Mode Wide Band World Band Radio Receiver

The AR8000 UK is the result of AOR's long term ambition to produce a new breed of radio receiver which combines full computer compatibility with advanced wide-band radio receiver technology. With the introduction of the new AR8000 UK, AOR have broken the mould of conventional radio receiver design.

At first glance the AR8000 UK in its static form may look no different to any modern hand-held scanning receiver, but the similarity ends there... just as soon as the receiver is switched on! Initially you are greeted with the opening welcome message on the AR8000 UK multi-function liquid crystal display "WELCOME TO THE WORLD OF AR8000 RECEIVER", in a similar way to a sign on message displayed by your personal computer. This new experience immediately demonstrates to the new user and discerning radio listener that the AR8000 UK is no ordinary radio but THE NEW CONCEPT in radio design. The modern new cabinet design measures approx 152mm (H) x 69mm (W) x 40mm (D) excluding projections and weighing only 350g including NicCads (but not aerial).



The AR8000 UK is a highly sensitive hand held receiver boasting a very wide frequency coverage of 500 kHz to 1900 MHz without gaps in the range (actual acceptable frequency input from 100 kHz). Step size is programmable in multiples of 50Hz for smooth tuning. The all-mode reception provides AM, USB, LSB, CW, NFM and WFM. An independent 2.0 kHz SSB filter is fitted as standard and the USB/LSB modes use true carrier re-insertion with correctly calibrated frequency read-out (not offset by 1.5 kHz). A custom manufactured ferrite bar aerial is neatly internally installed at the top of the receiver's cabinet to enhance receive performance when listening in population centres to Medium Wave services or when commentary is provided at airshows and motor sport events.

The high visibility LCD is of a new dot matrix format comprising of four lines of display so many new facilities may be provided and displayed at the same time, these include a signal strength bar meter and a band-scope showing band occupancy. Two VFO frequencies may be displayed on the LCD simultaneously, one providing a stand-by frequency available for quick transfer. When frequencies are entered, ALPHANUMERIC comments may be stored along with frequency, mode & attenuator status simplifying the job or recalling and identifying memory channels. Password protection, computer control, data clone between sets and almost every feature you could ever wish for is provided.

This advertisement first appeared in the July 1994 Short Wave Magazine, four years later the text is still valid. At that time the AR8000 was priced at £449 inc VAT, thanks to the strong pound, today you can enjoy the same features and performance for just £299 inc VAT. Detailed leaflet available upon request...

SCAN AM A 119.4000 A00 MAN APP S_	ZVFO NFM A 145.7500 B 433.2500 S_
ZVFO A NFM A 145.3125 S_	ZVFO NFM A 433.0000 CW/AUT WFM MODE SET
ZVFO NFM A 71.0000 STEP+ 12.50 STEP SET	CHANGE-MEM 145.5000 ATT = OFF STEP 25.00
SET M-SCAN BNK.LK ON A---E-GH--- -bcd-----	AUTO-STORE BANK-J STORE ON NEXT
POWER-SAVE DELAY 10s CYCLE 3s NEXT	NFM 145.8 FREQ SET
LOW BATTERY A 145.7500 B 433.2500 S_	INITIAL SET BEEP ON 2ndF NEWUSER
SET P.WORD ****	REMOTE BPS 9600 DELI CR/LF END



Budget Band

Paul Beam explains how you can get going straight away with this fascinating and exciting area of the listening hobby.

You just don't have to spend a fortune to get involved with v.h.f. f.m. DXing in the UK. There are, as you will see listed on these pages, many stations spread across the country. The equipment required to get on the 'DX bandwagon' is readily available in both homes and cars throughout the land.

Off course once you're hooked, the money can start to flow but you can do so much with very little.

The beauty of Band II DXing, for me is that station identification is really simple. With the stations themselves 'banging' out idents and jingles asunder. If

you are fortunate to have an RDS receiver then as long as you have a quietening signal - only rare with good DX - then your display tells you what you need to know.

Getting Keener

Once you have collected all the easy stations, i.e. the ones within 'normal' range, then you'll have to start thinking about a directional antenna and waiting for some Sporadic E. As for as antennas go there are many Band II antennas available commercially, your local antenna installer can help. Once you commit to having a directional antenna, you unfortunately also have some problems to overcome.

Freq. MHz	ERP (kW)	Station	Type	Location	Freq. MHz	ERP (kW)	Station	Type	Location
88.6	0.16	R.Sheffield	B	Sheffield	96.2	4	SIBC	I	Bressay
88.8	3.8	R.Jersey	B	Jersey	96.3	0.2	Q96.3	I	Paisley
92.4	5.6	R.Leeds	B	Holme Moss	96.3	0.6	96.3 Aire FM	I	Leeds
93.2	1	R.Guernsey	B	Guernsey	96.3	1.03	Essex FM	I	Southend
93.7	0.01	IslandFM	I	Alderney	96.3	1.25	Coast FM	I	Colwyn Bay
94.2	0.01	R.Derby	B	Derby	96.3	2	GWR FM	I	Bristol
94.6	0.25	BBC Thames Valley R.	B	Henley	96.4	0.35	Tay FM	I	Perth
94.6	6.1	R.Stoke on Trent	B	Cheshire	96.4	0.625	Sound Wave 96.4	I	Swansea
94.7	0.4	R.Sheffield	B	Chesterfield	96.4	1	Gemini FM	I	Torquay
94.8	0.675	Radio Devon	B	Huntshaw Cross	96.4	1.25	CFM	I	Carlisle
94.8	2.2	CWR	B	Meridan	96.4	2	Downtown R.	I	Limavady
94.9	0.95	R.Bristol	B	Bristol City	96.4	2	SGR-FM	I	Bury-St. Edmunds
94.9	4	GLR	B	Crystal Palace	96.4	3	The Eagle	I	Guildford
94.9	6	R.Lincolnshire	B	Belmont	96.4	9.8	BRMB FM	I	Birmingham
95.0	0.01	R. Shropshire	B	Ludlow	96.4	?	Neptune R.	I	Folkestone
95.0	0.1	R. Gloucestershire	B	Stroud	96.5	0.05	Trent FM	I	Mansfield
95.0	0.1	R. Sussex	B	Newhaven	96.5	0.06	GWR FM	I	Marlborough
95.0	5	R. Cleveland	B	Teesside	96.5	0.1	R.Wave	I	Blackpool
95.1	0.04	R. Sussex	B	Horesham	96.5	?	South West Sound	I	Stranraer
95.1	5.6	GMR	B	Holme Moss	96.6	0.04	Plymouth Sound FM	I	Tavistock
95.1	5.7	R. Norfolk	B	Norfolk	96.6	0.045	Nevis FM	I	Fort William
95.2	0.1	R. Cumbria	B	Kendal	96.6	0.25	Oasis FM	I	St. Albans
95.2	5.8	BBC Thames Valley R.	B	Oxfordshire	96.6	0.4	R.Ceredigion	I	West Wales
95.3	0.04	R.Leeds	B	Wharfedale	96.6	0.6	Moray Firth R. & Speysound	I	Cairngorm
95.3	0.083	R.Leeds	B	Luddenden	96.6	1	Spirit FM	I	Chichester
95.3	1.2	R.Essex	B	Southend	96.6	4	Northants FM	I	Northampton
95.3	1.2	R.Leeds	B	Stanton Moor	96.6	8.9	TFM	I	Stockton
95.3	1.2	Southern Counties R.	B	Whitehawk Hill	96.6	10	Downtown R.	I	Eniskillen
95.4	0.5	Thames Valley R.	B	Windsor	96.7	0.025	Linc FM	I	Grantham
95.4	10	R.Newcastle	B	Tyneside	96.7	0.05	R.Wyvern	I	Kidderminster
95.5	0.05	Radio Suffolk	B	Lowestoft	96.7	0.5	Ocean FM	I	Winchester
95.5	0.25	R.York	B	Scarborough	96.7	0.55	BCR	I	Belfast
95.5	1	3 Counties R.(Bedford)	B	Sandy Heath	96.7	2.2	West Sound Radio	I	Ayr
95.5	1.6	R. Lancashire	B	E.Lancashire	96.7	2.5	KLFM	I	Kings Lynn
95.5	2	BBC Nottingham	B	Mansfield	96.7	8.2	R.City 96.7	I	Liverpool
95.5	9	R.Bristol	B	Bristol	96.7	8.7	R.Kent	B	North Kent
95.6	11	R. West Midlands	B	W. Midlands	96.7	?	Moray Firth R. & Kinnaird R.	I	Fraserburgh
95.7	5.1	R. Cambridge	B	Peterborough	96.8	5	R. borders	I	Selkirk
95.8	0.08	R Gloucestershire	B	Cirencester	96.9	0.1	Choice FM	I	South London
95.8	0.1	R. Cleveland	B	Whitby	96.9	0.1	Signal One	I	Stafford
95.8	0.4	R. Devon	B	Exeter	96.9	0.1	Southern FM	I	Newhaven
95.8	4	Capital FM	I	London	96.9	0.89	B97 FM	I	Bedford
95.8	8.2	R.Merseyside	B	Merseyside	96.9	3.2	The Bay	I	Lancaster
95.9	0.27	Invicta FM	I	Thanet	96.9	10	Northsound One	I	Aberdeen
95.9	9.6	R.Humberside	B	Yorkshire	96.9	10	Viking FM	I	Hull
96.0	0.07	R. Devon	B	Oakhampton	97.0	0.5	2-Ten FM	I	Reading
96.0	1	R.Cambridge	B	Cambridgeshire	97.0	0.5	Clyde 1	I	Vale of Leven
96.0	4.8	R.Shropshire	B	Shropshire	97.0	0.5	Invicta FM	I	Dover
96.0	5.6	R.Newcastle	B	Chatton	97.0	1	Gemini FM	I	Exeter
96.1	0.25	Invicta FM	I	Ashford	97.0	1	Plymouth Sound FM	I	Plymouth
96.1	0.5	SGR-FM	I	Colchester	97.0	2	Mercia FM	I	Coventry
96.1	3.2	R.Cumbria S.	B	Morcambe Bay	97.1	0.025	Delta R.	I	Haslemere
96.1	10	BBC Solent	B	S.Hampshire	97.1	0.2	MFM	I	Wrexham
96.2	0.08	Kix 96	I	Coventry	97.1	0.4	Orchard FM	I	Yeovil
96.2	0.15	KFM	I	Tonbridge	97.1	4	SGR-FM	I	Ipswich
96.2	0.625	Yorkshire Coast R.	I	Scarborough	97.1	10	Metro FM	I	Newcastle
96.2	1	Mix 96	I	Aylesbury	97.2	0.6	Stray FM	I	Harrogate
96.2	1	Trent FM	I	Nottingham					
96.2	2.5	Lantern FM	I	Bideford					

DXing

Namely you have to be able to change both the direction it points in, the heading and which way up the antenna is situated, polarisation.

So we are looking at some serious decisions, fairly early on. One route to take is to have a low height antenna that you can reach to manually twist on the boom to alter polarisation and have a pole (mast) that you can turn by hand. This is the way I started and it provides a pretty efficient solution.

I noticed in the *Scan '98* booklet that came free with the August issue of *SWM* that there was a Log periodic antenna intended for internal use. I must admit that I haven't yet tried to build one, but it looks like a neat solution. The bonus with this type of antenna is that you get wide bandwidth so it can be used for other interesting parts of the v.h.f. spectrum - I best get building...



Freq. MHz	ERP (kW)	Station	Type	Location	Freq. MHz	ERP (kW)	Station	Type	Location
97.2	0.625	Wessex FM	I	Dorchester	102.8	11.25	Pirate FM 102	I	Redruth
97.2	0.72	GWR FM	I	Swindon	102.9	0.05	Mercia FM	I	Leamington Spa
97.2	1	South West Sound	I	Dumfries	102.9	0.5	Hallam FM	I	Barnsley
97.2	2	Beacon R.	I	Wolverhampton	102.9	4	2-Ten FM	I	Basingstoke
97.3	2.8	Moray Firth R.	I	Inverness	102.9	7	Q 102.9	I	Londonderry
97.3	4	News Direct 97.3	I	London	103.0	0.05	Metro FM	I	Fenham
97.3	6.9	Forth FM	I	Edinburgh	103.0	0.08	GWR FM	I	Bath
97.4	0.05	Q103 FM	I	Newmarket	103.0	0.1	Severn Sound	I	Stroud
97.4	0.3	Fox FM	I	Banbury	103.0	0.175	NorthSound One	I	Peterhead
97.4	0.4	Hallam	I	Sheffield	103.0	1	Gemini FM	I	E.Devon
97.4	0.4	R. Ceredigion	I	Penwaun	103.0	1	Q103 FM	I	Cambridge
97.4	0.5	Red Dragon FM	I	Newport	103.0	4	Picadilly Key 103 FM	I	Manchester
97.4	1.9	Rock FM	I	Preston	103.0	?	FP1.	I	Caernarfon
97.4	3.2	Cool Fm	I	Belfast	103.0	?	South West Sound	I	Kirkcudbright
97.5	0.01	R. Border	I	Berwick	103.1	0.03	R. Borders	I	Peebles
97.5	0.03	R. Mercury	I	Horsham	103.1	0.08	Yorkshire Coast R.	I	Whitby
97.5	0.115	Heartland FM	I	Pitlochry	103.1	0.5	Central FM	I	Stirling
97.5	0.15	West Sound	I	Girvan	103.1	0.5	Downtown R.	I	Camlough
97.5	0.4	Gold R.	I	Shaftsbury	103.1	1	Beacon R.	I	Shewsbury
97.5	0.5	The Pulse	I	Bradford	103.1	4	Invicta FM	I	Maidstone
97.5	0.85	Ocean FM	I	Portsmouth	103.2	0.1	Metro FM	I	Hexham
97.6	0.025	Northsound One	I	Balgownie	103.2	0.1	The Bay	I	Kendal
97.6	0.1	R. Kent	B	Folkestone	103.2	0.3	N.E.Community R.	I	Colpy
97.6	0.2	Forth FM	I	Bathgate	103.2	0.4	Alfa 103.2	I	Darlington
97.6	0.78	R. Wyvern	I	Hereford	103.2	0.5	Sunrise FM	I	Bradford
97.6	1	Chiltern FM	I	Dunstable	103.2	2	Power FM	I	Southampton
100.0	2	Kiss 100 FM	I	London	103.2	2	Red Dragon FM	I	Cardiff
100.4	?	Medway FM	I	Rainham	103.3	0.05	London Greek R.	I	Haringey
101.2	?	Waves R.	I	Peterhead	103.3	0.1	Clyde 1	I	Firth of Clyde
101.6	0.1	KFM	I	Sevenoaks	103.3	0.19	Oban FM	I	Oban
101.6	?	Wey Valley Radio	I	Four Marks	103.3	2.2	Horizon	I	Milton Keynes
101.7	0.1	Ten 17	I	Harlow	103.3	5.8	R. Ceredigion	I	Blaen Plwyf
102.0	0.09	Wey Valley Radio	I	Alton	103.4	0.08	Sun FM	I	Sunderland
102.0	0.2	Southern FM	I	Hastings	103.4	0.2	CFM	I	Whitehaven
102.0	0.5	Kiss 102	I	Manchester	103.4	0.5	R. Borders	I	Imouth
102.0	1.25	Spire	I	Salisbury	103.4	1.4	MFM	I	Wrexham
102.0	1.5	The Bear	I	Stafford	103.4	1.5	Hallam FM	I	Doncaster
102.1	1.25	N.E.Community R.	I	Meldrum	103.4	2	The Beach	I	Lowestoft
102.2	0.01	SIBC	I	Lerwick	103.4	15	R. Devon	B	Devon
102.2	0.02	Lochbroom FM	I	Ullapool	103.5	0.9	Southern FM	I	Brighton
102.2	0.04	Choice FM	I	Birmingham	103.5	1	Wiltshire Sound	B	Newton Barrow
102.2	0.5	GWR FM	I	W. Wilts	103.6	0.5	Wiltshire Sound	B	Swindon
102.2	0.8	CFM	I	Workington	103.6	0.8	Radio Northampton	B	Geddinton
102.2	2	Jazz FM 102.2	I	London	103.7	1.4	CWR	B	Lark Stoke
102.2	2.5	Pirate FM 102	I	Liskeard	103.7	3.8	Channel 103 FM	I	Jersey
102.2	6.4	Lincs FM	I	Lincoln	103.8	0.16	RTM	I	Thamesmead
102.3	0.04	The Bay	I	Windermere	103.8	0.5	Dorset FM	B	Dorset
102.3	0.44	Minster FM	I	Thisrk	103.8	1	Radio Nottingham	B	Maperley Ridge
102.3	0.5	Spirit FM	I	Littlehampton	103.9	0.1	R. Leeds	B	Becroft Hill
102.3	0.8	Nevis FM	I	Mallaig	103.9	1.8	R. Lancaster	B	Winterhill
102.3	1	2CR FM	I	Bournemouth	103.9	5	R.Suffolk	B	Manningtree
102.4	1	Wish FM	I	Bileinge Hill	104.0	0.05	CWR	B	Nuneaton
102.4	2	Severn Sound FM	I	Gloucester	104.0	3.8	SCR	B	Reigate
102.4	3.3	R. Broadland 102	I	Norwich	104.1	0.75	R. Stoke	B	Stafford
102.4	8.2	Southern FM	I	Eastbourne	104.1	4	Thames Valley R.	B	Hannington
102.4	10	Downtown R.	I	Londonderry	104.1	4.4	R.Sheffield	B	Holme Moss
102.4	?	Nevis FM (FP1.)	I	Glencoe	104.2	0.065	Windermere	B	Radio Cumbria
102.5	0.1	CFM	I	Penrith	104.2	4	R. Northampton	B	Northampton
102.5	1	Moray Firth R./ Cathness FM	I	Thurso	104.2	10	R. Kent	B	Swingate
102.5	2	The Pulse	I	Halifax	104.3	0.6	Wiltshire Sound	B	Naish Hill
102.5	15	Clyde 1	I	Glasgow	104.4	0.042	R. Newcastle	B	Fenham
102.6	0.2	Metro R.	I	Almwick	104.4	1	Thames Valley R.	B	Reading
102.6	0.3	N.E.Community R.	I	Kildrunny	104.4	4.2	Norfolk	B	Great Massingham
102.6	2	Essex FM	I	Chelmsford	104.5	2.1	R. Lancaster	B	Lancaster
102.6	4	Orchard FM	I	Taunton	104.5	2.2	3CR	B	Bow Brickhill
102.6	4	Signal One	I	Stoke-on-Trent	104.5	5.4	R.Derby	B	Sutton Coldfield
102.6	9	Fox FM	I	Oxford	104.5	10	SCR	B	Heathfield
102.7	1	R. Leeds	B	Keighley	104.6	0.082	Radio Bristol	B	Bath
102.7	3.6	R. Mercury FM	I	Reigate	104.6	2	R.Suffolk	B	Great Barton
102.7	4	Hereward FM	I	Peterborough	104.6	3	SCR	B	Guildford
102.8	0.6	Ram FM	I	Derby	104.7	0.035	R. Lincolnshire	B	Grantham
102.8	1	Invicta FM	I	Dunkirk	104.7	1.25	Island FM	I	Guernsey
102.8	1	Moray Firth/KCR	I	Keith	104.7	2	R.Gloucestershire	B	Churchdown Hill
102.8	1	R. Wyvern	I	Malvern	104.7	2.5	Minster FM	I	York
102.8	5.25	Tay FM	I	Dundee	104.8	2	SCR	B	Chichester

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A brilliant new compact indoor antenna that covers 0-1650MHz and is just 20" tall (collapsed). Supplied with coax and BNC plug fitted.

ONLY **£49.95** P&P £5

Comments from John Griffiths

I have to say that I'm not a fan of indoor antennas like this as earlier desk mounted antennas tended to look like a mad scientist invention. However, I was surprised by the quality of construction of this piece of equipment and it appears to be up to the job it is designed to do. Without getting technical, the Apollo 2000 claims to be able to cover 0-1650MHz. I used it between 108-400MHz approx and was surprised by what it was able to do. It produced clean copy and there was good reproduction with very little breakthrough.

NEW Q-TEK D.C. 2000

A high performance wideband antenna offering superb performance from 25-2000MHz. Transmit range:- 6m, 2m, 70cm, 32cm & 23cm (power handling 200W). Fitted with low loss 'N' type connector. Supplied with mounting brackets.

OUR PRICE **£49.95** P&P £8.50

Comments from John Griffiths

Putting the DC-2000 up gave me a tremendous boost to all signals with the ancient AR-2000 (coming alive! Signals were well received and I found that I wandered out of airband - my usual haunt - into all manner of areas that previously have been less than good here due to my location!

Q-TEK HYPER SCAN

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SCANNING ACCESSORIES

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Allows the connection of any HF antenna to any scanner that has a BNC connector. Simply connect the long wire antenna to the push terminal on the top of the interface and attach to your scanner in place of your existing antenna.

ONLY **£12.95** P&P £1

Comments from John Griffiths

I mounted this on my AR-2000 and was well pleased with the results on HF. Verdict? A clear winner and well worth the reasonable outlay.

SCANMASTER SP-55

Boost reception of your scanner with this pre-amp. 25-1500MHz, variable gain, band pass filters.

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NEW Q-TEK HF MINITUNE

Superb quality short wave ATU. Ideal for scanners. Out performs any other tuner of its size. 100kHz-30MHz. BNC input/output. Connect to a long wire and you'll notice the

difference.

ONLY **£49.95** P&P £3.50

Comments from John Griffiths

Results were able to be looked at in terms of a cheap, low cost ATU and I can report that it is certainly good! At under £50, it must be the cheapest on the market and would suit an enthusiast looking at putting an ATU on a capable scanner.

POLICE STYLE HOLSTER "HHC-2"

Matches all handhelds can be worn on the belt or attached to the quick release body holster.

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Deluxe over the ear earpiece.

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Mobile holder for handhelds

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A fully adjustable desk top stand for use with all handhelds. Fitted coaxial fly (FAI) with BNC & SO239 connectors

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SCANNING ACCESSORIES



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Superb quality wideband receiving antenna. Covers 100kHz-2GHz (all mode). ★ Size only 290 wide x 430 high x 45mm deep. ★ Can be mounted like a picture frame on a wall ★ Can be

loft mounted ★ Mounted externally like an alarm box ★ 2 x SO239 sockets.

For HF:- this unit utilises 6 independent HF "inductively" shortened verticals and has a separate wire connection for using the internal MLB (Magnetic Balun).

For VHF/UHF:- that's a semi-secret, although a clever mixture of fan dipole arrays and inductively fed elements help maximise its performance:- It's the most compact all round aerial that works very well!

Ideal indoor or out.

£99.95 + £6 P&P.

Comments from John Griffiths

In rounding up, the intruder performed better than I expected and with little fuss in mounting and connecting up. It appears rugged enough to live out of doors and will also fit nicely on the wall - perhaps an outside wall being the ideal though I have to admit having no problems with my inside one. I found it a pleasing addition to my set-up - with cable correctly mounted and run - it should look professional and very much a part of the kit in the shack. I would suggest that this is the antenna many of us have long been looking for and therefore have no hesitation at all in saying it is definitely the business.



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SUPERB HF SHORTWAVE ANTENNA

"Mario Gongolsky" - Freelance journalist for German magazines - brief comments after testing HF-30... your HF-30 kept all the promises you have made. Smooth reception on a surprisingly low noise level. The HF-30 supplied a very clear signal to the receiver. Continuous good performance throughout the whole frequency range.

NEW SP-1 SPYWIRE

Ideal for any receiver. Receives all short wave bands. All mode, no ATU required. Built in balun. SO239 connection.

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Active SW antenna Covers 0.3-30MHz with adjustable sensitivity. Simply connect to a

receiver and away you go. New low price **£69.95** P&P £4 (includes pre-selector)

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Short wave magnetic long wire adaptor for any short wave receiver. Simply screw onto receiver & connect the wire via supplied screw terminal. (It's brilliant!)

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Complete with lead ALL FOR

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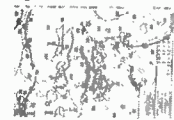


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A Loop For 1

Andrew Howlett G1HBE explains how he managed to overcome bad cross modulation on his scanner during h.f. use, by the construction of a small loop.

Having tired of short wave listening after many years, I sold my Trio R-1000 to make way for new interests, leaving myself 'h.f. less' for the first time since the 60s. What a mistake! No longer could I take a quick trip up and down the bands, and gone was one of the most useful pieces of test gear in my shack!

A few weeks ago I needed to check on the state of the higher bands above 14MHz, and the only receiver to hand was an Icom IC-R100 scanner, a fine v.h.f./u.h.f. set, but in common with most other small scanners, somewhat compromised on h.f.

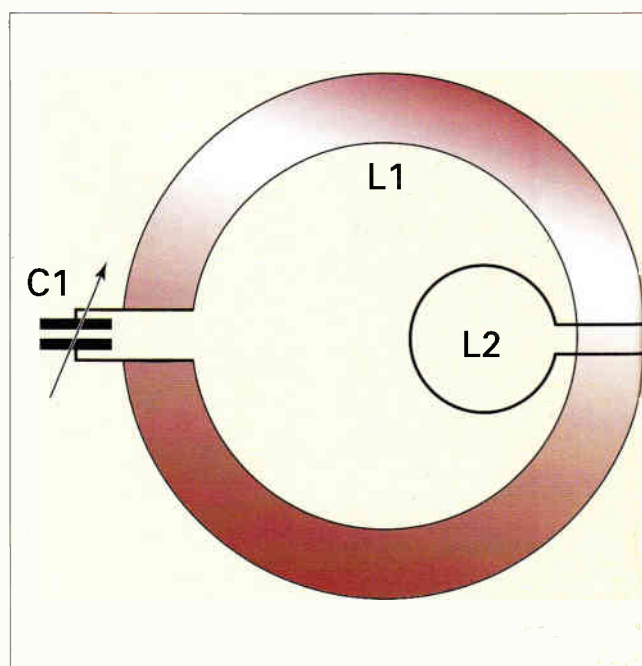
In fairness to Icom, it has to be said that it does actually receive recognisable broadcasts, and the overloading caused by the connection of a long wire antenna is not as severe as on some of the sets I've come across. However, results were badly spoilt by a constant background 'mush' of signals from bands above and below the one of interest, and it was important that this was eliminated in order for me to carry on doing my tests.

Tackling The Problem

There were two ways of tackling the problem. The first involved simply pressing a button - the one marked 'attenuator'. But although this stopped the noise, it also cut down the already weak signal to a very low level, so method two was considered. This works by adding externally a property that really ought to be built into the receiver in the first place - it's called front-end 'selectivity', and it seems that most designers leave it out of modern day sets.

This second alternative has two choices: make a parallel tuned circuit with input and output coupling windings for use with the long wire, or construct a tuned loop similar to the type used on medium wave. It was this more interesting alternative that I chose.

As the frequencies of interest were 14MHz and above, I decided to go for the single turn loop, often referred to as the 'magnetic loop', actually just a shortened



dipole with its 'far ends' brought together and tuned with a variable capacitor, signals being taken from it by means of a small coupling loop, see **Fig. 1**.

Looking around the shack for some easy way to quickly make this latest wonder, I spied a sheet of 3mm thick card, about 300 by 400mm. Then it was time for a trip to the kitchen, where a 290 by 290mm square of cooking foil was cut from the roll.

Back in the shack, I found a nice 150+150pF tuning capacitor which would mount neatly on the card. If you're having a go at this yourself, remember that none of the items are critical, and a bit of 'suck it and see' goes a long way.

Figure 2 shows the general idea. L1 is the main loop, made from cooking foil and stuck onto the card with glue. The coupling loop L2 is exactly the same but smaller, being made from the inner square of foil removed from L1. The foil is very hard to cut without it tearing, so use a sharp knife and light pressure, or you'll end up cursing and jumping up and down, like I did!

It's a good idea to drill all the holes and mount the variable capacitor before sticking the loops into place, otherwise the foils may be damaged. As it's difficult to solder to aluminium foil, all the connections should be made with 6BA solder tags and 6BA (or

The HF Bands



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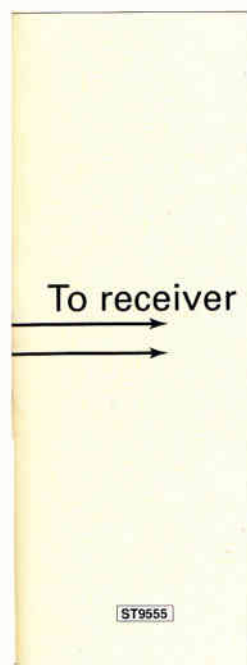
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M3) nuts and bolts, with washers on the foil side to prevent damage. Note that there is no direct connection between the two loops, the tuned winding being left floating.

I found that this arrangement gave the best results, but there's no harm in linking the earth side of L2 to the mid-point of L1 to see what happens.

In Use

Connect a suitable length of coaxial cable from the connection block to your receiver and find a strongish broadcast station around 15MHz. Peak the signal with C1, and note the directional characteristics of the loop.

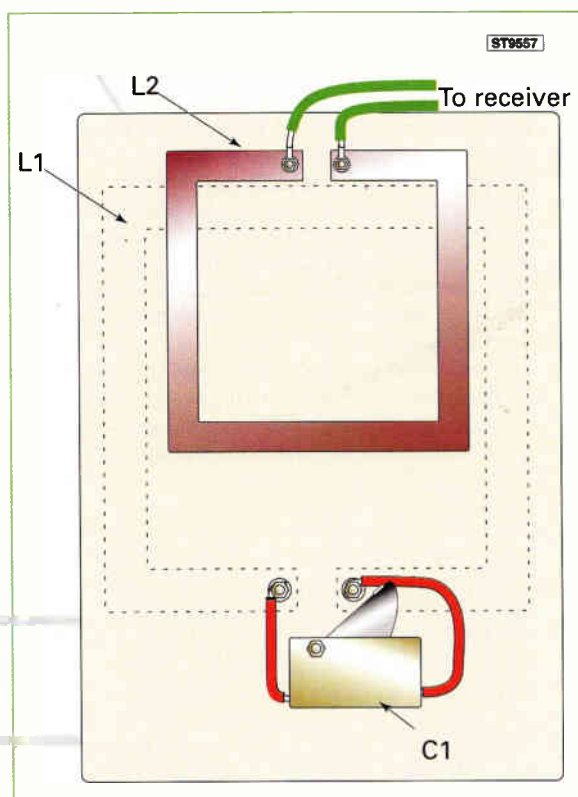
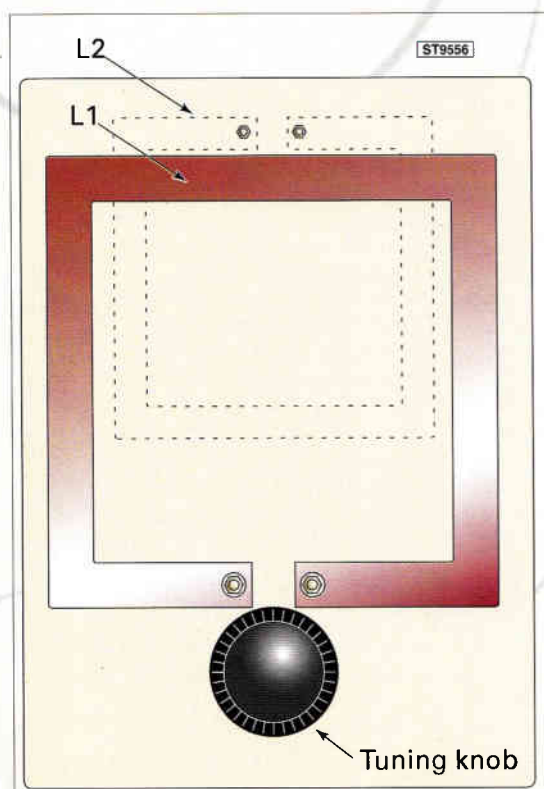


Fig. 1: General idea of single turn loop and circuit diagram of this project.

Fig. 2: Construction of loop. L1 is on the front, L2 on back. Remember to leave clearance above L1 for screws through L2 and connection block. Connections to L1 and L2 are made with nuts, bolts and solder tags.



You should find that maximum response is 'broadside on' to the station (although with so many relays it can be hard to tell). This is because unlike a multi-turn loop, the single turn loop acts like a half-wave dipole, with nulls off the ends.

The exact frequency coverage of your loop will depend upon the tuning capacitor you have used for C1, but the prototype covered from 12 to over 30MHz. Because of the rather high C to L ratio at the lower frequencies, tuning is a little 'flat' around the bottom end of the band, but this soon sharpens up as the resonant frequency rises.

A small loop such as this cannot give great sensitivity, and of course that was not the idea. The main benefit is a marked reduction of background mush due to elimination of cross modulation from other bands.

All I've got to do now is find somewhere to put it!

SWM

The End Of

Eric Westman gives an account of the end of an era: "Smiles Across The Miles..." at Radio Netherlands.

All good things must come to an end, the old saying goes, and after 67 years of "Smiles Across the Miles" Radio Netherlands' "Happy Station" has closed. Created and first presented by the ebullient and now legendary Eddie Startz on 19 November 1928, it continued until almost the present day with only a single break. This five year hiatus was during the Nazi occupation of the Netherlands during the Second World War.

Conducted predominantly in English, the programme went out every Sunday morning and was eagerly listened to by people all over the world. Easily received from Hilversum's 49 metre-band station, it enjoyed a large following in Britain.

Jovial Eddie Startz, soon dubbed Holland's Radio Ambassador Number One, with his catchphrase: "Keep in touch with the Dutch", continued to broadcast the programme weekly until he was 71 years old, since no-one of his stature could replace him. Early in the 1950's, the Dutch Government awarded him

an honour. Foremost among his weekly radio rituals that endeared him to his listeners, was the clinking of a teacup against a saucer to the background of the popular song *I Like A Nice Cuppa Tea...*, played by a famous British dance band.

This was no doubt a humorous tribute to the British habit of drinking a cup of tea at 11am - instant coffee had not then replaced tea as the mid-morning refresher in this country. From time to time Eddie would break into other

Eddie Startz with his famous "nice cuppa" in his world-wide "Happy Station" show. (photo courtesy of Radio Nederland).



languages to address listeners in non-English-speaking areas. It was his proud boast that he "spoke half-a-dozen languages and half-spoke a dozen." Among his many innovations were Dutch lessons broadcast by the slowly spoken James Brotherhood, who sounded like Charles Laughton's Captain Bligh of the Bounty, and many radio games and contests.

Countless listeners from all over the world called in at Radio Netherlands' headquarters at Hilversum to visit their star. Among them, in 1953, was the writer, who received a warm welcome and a rattle of the famous teacup. With typical humour, Eddie posed for a photograph, sadly too dark to reproduce, in the stance of a classical Greek discus thrower and wielding a gramophone record in place of a discus.

He related that before the Nazis came to occupy the station, he buried his large collection of English records in the ground so they would not be of use to the enemy. His references to the Nazis displayed a most intimate knowledge of vernacular English. Unfortunately, his record of Jack Hilton's (or was it Jack Payne's?) band playing "Nice cuppa tea..." did not survive, so when he resumed broadcasting he asked any listener who could give him a replacement to contact him.

The only offer came from a man in Ireland, so Eddie flew to London, changed planes and flew on to Ireland where he collected his record and put it in his leather briefcase. Transferring to a Dutch plane in London, he laid his briefcase on his seat and then unthinkingly sat on it. End of record, but he must have got another one from somewhere since he continued to play the song to accompany his weekly teacup rattling. Despite his status he scorned the motorcar and travelled to and from work on an ancient bicycle.

When Eddie eventually retired around 1970, his place was taken by 31 year old Tom Meyer, who imprinted the show with his own identity and musical preference. Out went the "Nice cuppa tea..." and others of Startz' gimmicks such as 'Souza Marches' and the 'University of Light Learning', to be replaced by other novelties such as the 'Easter Egg Hunt', the 'Birthday Book' and some of the world's first telephone call-in shows. Tom ran the programme for over twenty years and then moved on. But the character of the Happy Station had altered completely, and



A Radio Era

Tom's high-pitched nasal tones never had the appeal of Eddie's genial chuckle.

In 1992, Pete Myers - no relation to Tom Meyer despite the similarity of name - took over the world's oldest radio show and, like his predecessor, threw out antiquated elements and replaced them with modern ideas. He concentrated on increasing audience participation with listeners giving, on the air, their opinions and comments. Pete produced more than 100 programmes during his incumbency of two years, and expanded into more short wave territory and even on to medium waves and satellite.

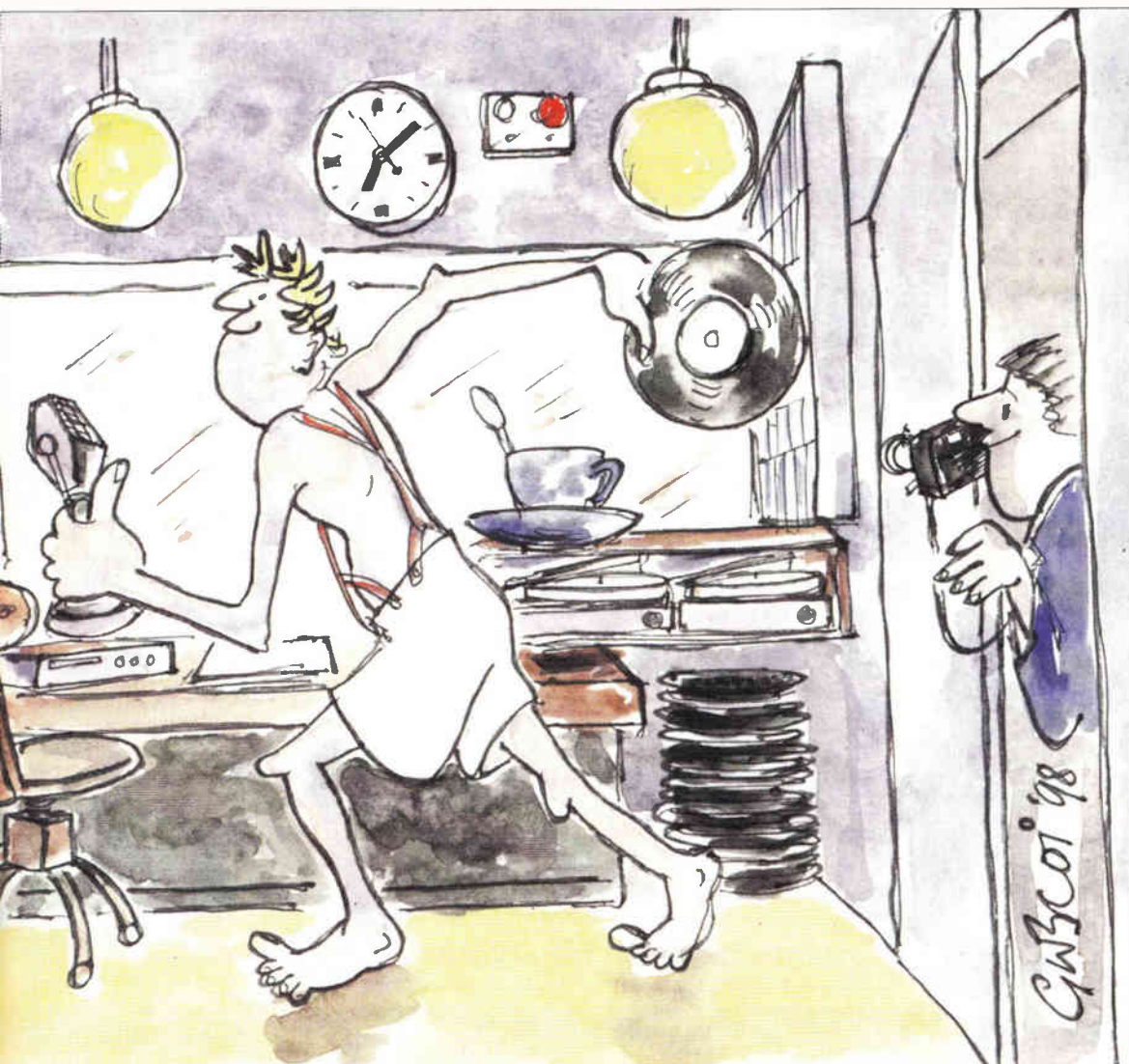
His successor, and the final host of the venerable programme, was Jonathon Groubert who had previously worked with him. Jonathon continued Pete's interactive approach and introduced on-location programmes and in

increased element of humour.

But, says Radio Netherlands, times and tastes had changed to the point where presenters were making a programme to fit a name and not to serve the majority of the audience. The programme had changed beyond all recognition, so it was regrettably decided to lay the Happy Station to rest. On Sunday 17 September 1995, amid tears and a great celebration, the Happy Station made its final broadcast.

Well, not quite. In Latin America the Spanish-language version of the programme continues in the extremely popular *La Estación de la Alegría* hosted by the witty Jaime Baguena. He has successfully changed the format to adapt it to the fast-paced lifestyle of listeners in Central and South America and the Caribbean. So for Spanish speakers at least, the Happy Station lives on.

SWM



Eddie posed for a photograph...in the stance of a classical Greek discus thrower and wielding a gramophone record in place of a discus.

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PCR-1000DSP

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Just connect to your Windows 95 PC via a serial port, plug in an aerial and go! Full 100kHz-1.36Hz.

RRP £349 + £79.95 for the DSP UT-106.

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Icom ICR-10E

The ICR-10E is still selling well and after almost a year in the market place it has proven to be a good, reliable and sturdy scanner to use. All mode, all band and PC controllable. What are you waiting for?
500kHz-1300MHz, all mode.

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The granddaddy of them all. Not because it's old but because this is the one scanner that all the rest look up too.

100kHz-2GHz, no gaps, all mode. Now with a FREE AX-400mkII scanner when ordered on our budget plan

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FREE AX-400mkII



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Still running your 12 Volt equipment of cheapo branded power supplies? Do yourself justice (and your kit)! And introduce a proper, regulated R.F. immune FP-1030A to their lives.

- 13.8 Volts DC at up to 25 Amps continuous Duty
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- Only 250Wx150Hx240Dmm (9.8'x5.9'x9.5')



RRP £229

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NEW! AOR AR-8200

The latest in AOR's range of benchmark scanners. The new AR-8200 has arrived! Tak from AOR U.K. wandered in to our London showroom the other day with what looked like yet another scanner. Were we in for a surprise! The first comment from all of us was how solid the unit felt and excellent the audio was. In fact the audio was amongst the best we have heard from a handheld receiver.

Features include 530kHz-2040MHz coverage, Band Scope and 1000 'dynamic' memories, 40 programmable search banks, AM, Narrow AM, USB/LSB, WFM/NBFM. Tuning steps are from 50Hz and include the new 8.33kHz for AM Airband.

Better still, there is FREE FINANCE on this product

Only £39 deposit
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JRC NRD 545

DSP Receiver

PLUS FREE AX-400mkII Handie Scanner!

If you actually take a look around at the receiver market and compare with fifteen years ago I'm sure you will notice there isn't quite the choice of equipment available today. Never mind. With startling performers like the new NRD-545 who cares? A summary? John Wilson paid the ultimate tribute, saying:

'The NRD-545 would be welcome in any listener's station. It is a sheer delight to use, well proportioned and with very pleasing styling and appearance.'

Nuff said then. I appreciate that £1595 is a lot of money but then the best never came cheap.

This month we're offering a brand new NRD-545 on our budget plan and I will throw in a FREE MATCHING JRC BASE SPEAKER WITH FILTERS - WORTH £200.



RRP £1795 **ML&S Price £1595**
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FREE MATCHING JRC BASE SPEAKER WITH FILTERS - WORTH £200

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A simple solution to spreading the cost of buying equipment without huge deposits and massive monthly payments. We can even buy your part exchange for CASH and you can still walk out with a new NRD545 for under £50! (Actually £47.94!)

Take a closer look at the ML&S A.R. Budget Plan - many of you already have. Call the sales desk today for any product listed in this magazine. If its available and approved by my buyers the Sales team will quote you a monthly repayment package suited to you.

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Just call for an instant quotation!*

* Budget Plan requirements: Full time employment (or disabled/retired), over 18 and below 71, Current bank account (or building society). For instant finance please ensure you have UK driving licence and cheque guarantee/credit card or Electricity/Gas/BT bill with your current name and address. Finance subject to status. **APR 19.9%.**

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All examples do not include P&P.

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Written quotations available on request



Standard AX-700mkII

50MHz-905MHz, nbfm, wbfm and am with built in panoramic display.

The final few and offered at an **unrepeatable price of only £349.95**

AOR AR-3000A

Been around since the early nineties, the AR-3000A has found its way into many thousands of hobby and commercial applications. 100kHz-2GHz, all mode and nice and compact.

£?? Call it's so low you'll order one!! (And we can offer it on Budget Plan payment)!

MVT-7100

Been around so long its growing a beard!

530kHz-1650MHz, all mode. **Only £229.95**

MVT-9000

When this first came over to the U.K. we thought EEEK!! They've left the PC interface off!! Hasn't made a blind bit of difference though. You might not be able to control this scanner from a PC (who bloomin' well cares) but it shows the others where to get off when it comes to performance. And build quality. And ease of use. And.. and! Just ask Graeme or Jez our TWO resident Scanner junkies!

Only £339
or £34.15 deposit and 12 x £28 p/m



Yaesu FRG-100

Right back in stock after months of sell out, the FRG-100 really is an ideal receiver for those who want to start in short-wave listening but don't want to throw your money away on something cheap and nasty. (Believe me, there are plenty of cheap and nasty receivers advertised!).

30kHz-30MHz, SSB/CW and AM. FM mode receive an option.



£419.95
or £29.18 deposit and 18 x £25 p/m

PRICE SMASH

AX-400MkII

Special offer on this fabulous mini scanner

RRP £249.95

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PRICE SMASH



AOR 5000

The AR-5000 is the alternative to the Icom ICR-8500. Similar in specification but presented in a smaller neater package. Covering 10kHz-2600MHz with all mode capability. Apparently won the German best wide band receiver award. So there. Also available as an '+3' version with AFC, Sync AM and noise blanker.

AR-5000 Only £1295
or £30.40 deposit and 53 x £35 p/m
AR-5000+3 Only £1495
or £32.13 deposit and 54 x £40 p/m

Commercially Sp

JW weighs-up the competition to last month's contender in the modern classic stakes - the Plessey PRS 2280.

ROUND TWO

To be presented with a classic receiver is quite an opportunity, but to be presented with two at the same time must be an enthusiast's dream, and I am first and foremost an enthusiast. Last month I wrote about the Racal RA1792, knowing that waiting in the wings was a receiver from Plessey, the specification of which mirrored the Racal so closely that they must surely have been designed to the same commercial or military requirements. However, the two receivers demonstrate differences in design approach and the Editor and I thought that a comparison would make interesting reading, particularly since both receivers have appeared on the second-hand market in recent times.

Chunky Beast

The receiver in question is the Plessey PRS 2280, a chunky beast with rather better proportions than the RA1792, but a more garish appearance as you may see from the

use a small laptop computer keyboard in a hurry? Well these receivers are a joy by comparison.

The receiver is constructed from a series of individual modules mounted in an overall Eurorack frame, which ensures excellent screening between sections and presumably flexibility in servicing although you clearly need a special extension board to work on an individual module. It's a fairly heavy unit, and unlike the RA1792 which has rubber feet underneath, even though a rack mount unit, the PRS 2280 would need a dedicated table cabinet if you wanted to avoid serious gouging of the Chippendale. I noticed that the left hand side module which contains the power supply got very hot after several hours of use, which makes sense of the comment in the installation manual about the need for forced air cooling when several receivers are mounted in a rack. In single unit use, I don't think that the heat build up would be excessive.

Front panel layout on the PRS 2280 is fairly traditional, with the main tuning knob on the right hand side and the frequency selection keypad alongside it. The tuning is easy to use, very free, properly weighted and at a good height above the desktop if you are using the receiver as a stand alone unit. Within easy prodding distance of the tuning knob are two keys marked 'fast' and 'slow' which set the tuning rate to 20kHz per revolution or 1kHz per revolution. The minimum tuning increment is 10Hz which is slow enough for the individual steps to be almost inaudible, but I did notice a curious wobble of the synthesiser when crossing each 100Hz step during very slow tuning, as though there was a long time constant somewhere in the system which caused a frequency overshoot with about a one second recovery time. Rotating the tuning knob quickly generated a "Whee.ee.ee.ee.ee" noise in the audio, but at a fairly low level, and it stopped when the knob stopped turning so didn't affect the received signal. To illustrate the easy spinning nature of the tuning knob, a good twist of the wrist will change the operating frequency by more than 150kHz in fast tune mode and 25kHz in slow tune before the knob stops, so it really feels like a classic h.f. receiver.



photographs. Although the front panel controls have a rather 'scattered' layout, they are all clearly labelled and easy to find if you are in a hurry. Unlike Racal who gave dual functions to the numeric keypad, the Plessey designers chose to have a key for every function, which accounts for the busy looking panel. All controls are large enough to handle comfortably if you are an average human being, and you don't need a weekly manicure to keep fingernails in trim so as to avoid hitting keys adjacent to the one you wanted - have you tried to

What ever the size of your digits, you'll find this front panel a dream.

Easy To Remember

Selecting frequency by keypad is in kHz only, and this is easy to remember for any h.f. user. Having entered the number of kHz you need, you can simply press the 'enter' key and go direct to the

peaking

frequency chosen, or press the decimal point and continue to enter 100Hz and 10Hz steps. The last digit on the eight digit frequency display stays at zero all the time, because that would normally be the 1Hz readout, and the PRS 2280 resolution is of course 10Hz. Frequency accuracy is, as one might expect, extremely good, and certainly far better than any hobby user could wish for. These receivers are meant to be capable of sitting on a frequency for weeks on end without ever missing a single scrap of information.

As in the RA1792, there are 100 memory channels, each storing frequency, mode, bandwidth and a.g.c. settings. The storing and retrieving of information is somewhat clumsier than more modern receivers, and care has to be taken to avoid getting confused between pressing the 'clear' button after recalling a frequency, which returns the receiver to the last frequency prior to recalling, and 'enter' which transfers the receiver to the recalled frequency and allows you to tune away from it. Unlike the RA1792, you cannot use the main tuning knob to step through and review the memory contents, which means that you have to remember what was in each memory, step through by using the keypad 100 times or have a written check list. One simple feature which was better in the PRS 2280 was that on switch-on it came up on the frequency and mode you last used, whereas the RA1792 always reverted to zero frequency and in channel mode. Funny how designers think differently on these points.

Mode selection is by individually labelled keys, with c.w., a.m., u.s.b., l.s.b. and i.s.b. being provided. There is no provision for f.m. reception, but for h.f. listeners the only f.m. signals likely to be heard are the CB channels and you don't need a PRS 2280 to hear those so it's no great drawback. Filter selection is normally linked to mode, but can be changed at will through the provision of individual filter bandwidth selection keys. In the receiver I tested there were four filter bandwidths in addition to the matched u.s.b. and l.s.b. filters, but a.m. rather lost out as there was no intermediate bandwidth between 8 and 1.2kHz, so it was a case of listening to two channels at once on short wave, or trying to make sense out of an audio bandwidth of $\pm 600\text{Hz}$. The use of i.s.b. for a.m. reception was infinitely more pleasant, and that is how I did most of the general a.m. listening checks. On a good clear medium wave frequency, the 8kHz bandwidth was marvellous for audio, and all the filters had impeccable flat tops and comfortably steep sides. Better than the DSP receivers I have tried out? Again I have to say "yes" for my ears.

General Architecture

A glance at the circuit of the i.f. section reveals that provision has been made for fitting up to

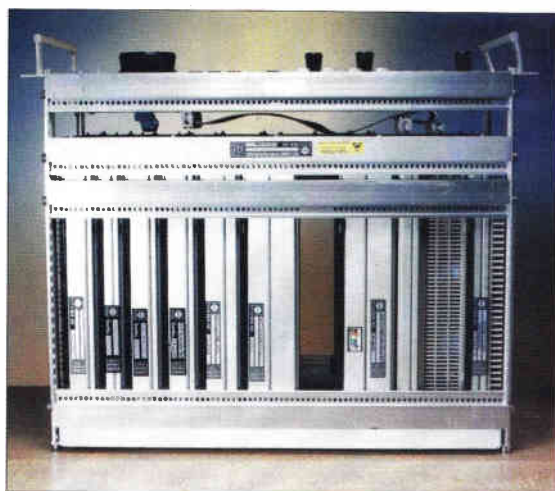
eight i.f. filters, although with only six filter select keys on the front panel it is not obvious how one would select one from eight. However, the bank of eight does not contain the u.s.b., l.s.b., and 100Hz filters because these are provided separately in another module which caters for s.s.b. and i.s.b. reception, and this is where the PRS 2280 began to show its mettle, because receiving a.m. using the i.s.b. function was outstandingly good. Let's first of all take a look at the general architecture of the receiver.

The PRS 2280 is double conversion, with a first i.f. of 65MHz. converted down to a second i.f. of 1.4MHz. Directly after the second conversion is the bank of up to eight crystal filters, selected by relays rather than diodes which can cause intermodulation problems - I like these small but important details in a receiver design. From the output of the filter bank, the signals are fed to the main i.f. amplifier, after which is the module containing the upper and lower sideband filters, a 100Hz wide filter for narrow c.w. and/or carrier recovery in i.s.b. mode, and another a.m. band pass (not crystal) filter having a 12kHz bandwidth. The presence of this 12kHz filter at the end of the i.f. chain means that any broadband noise generated in the mixers and i.f. is limited by the final filter, and in the whole receiver there are three filters in circuit for a.m. reception; the 65MHz roofing filter which is 13kHz wide, the first i.f. filter which is normally 8kHz but can be changed by selection from the front panel, and the final 12kHz filter as just mentioned. This all helps to make the a.m. performance very quiet, and is probably why the PRS 2280 sounds so good in this mode. Bearing in mind my comments on homodyne type detectors, it was interesting to see that Plessey chose to use a full wave diode detector for a.m., and whilst I may be imagining it, the a.m. quality did seem much better than the homodyne - probably wishful thinking on my part.

The a.g.c. system is also fed via the i.f. tail filters, with the bandwidth chosen to suit the mode, and in i.s.b. with a comparator used to take a.g.c. from whichever sideband is strongest. Selectable a.g.c. times are provided by a complex system which results in an attack time of 5ms and selectable decay times of 200ms (short), 2s (medium) and 10s (long). However, unlike the RA1792, the PRS 2280 a.g.c. decays steadily over the selected period rather than being a true 'hang' system in which the a.g.c. stays close to its peak level for the whole of the selected hang time, decaying rapidly at the end. There are pros and cons for each system and to some extent the choice of decay characteristics depends on the reception mode, the 'hang' system being particularly good for s.s.b. It goes almost without saying that the PRS 2280 a.g.c. works exceptionally well under all conditions.

Continued on page 46...

"The Plessey designers chose to have a key for every function, which accounts for the busy looking panel."



The modular construction, adopted by Plessey to provide a flexible configuration for remote controlling banks of 'slave' surveillance receivers from a master unit.

"...so I connected my wife's electric sheep fence (with the generator switched off) via my favourite Martin Lynch balun..."

The rear panel, showing the vital interconnections. With the PRS2282, you get access to a.g.c. input and output lines, i.s.b. audio, for remoting, i.f. output, internal i.o. at both conversion stages, internal frequency reference and data for remote control. It is also possible to use a very high precision external frequency standard for even greater receiver accuracy.

In addition to the selectable a.g.c. speeds, there is provision for switching it off, and this brings in the manual r.f. gain control which is a 'pedestal' type but only operates in the a.g.c. off condition. Strange decision not to have the r.f. gain operational when the a.g.c. is on, but there we are.

I mentioned i.s.b. (independent sideband) reception in my article on the RA1792 and again further up the page, but it is this feature of the PRS 2280 which made it the perfect short wave a.m. receiver for the keen listener. The commercial use of i.s.b. has been to enable a single carrier to have different audio channels on upper and lower sidebands, thus conserving spectrum occupancy and equipment costs. The carrier on these services is usually partially suppressed to a level of -16 or -26dB relative to peak sideband level, so the signals are in fact s.s.b. The carrier "goes along for the ride" but at the receiving end is regenerated and used as the demodulation carrier to recover the two sideband signals. By regenerating the original carrier in correct phase, the demodulated audio is a perfect replica of the original signal and most folk never realise that their everyday telephone conversations have at some part of the journey been carried on an s.s.b. system, so good is the recovery.

The bogey of h.f. and m.f. circuits is selective fading, in which the carrier and sideband components of a signal fade at different rates and by different amounts. Listen to 1215kHz at dusk onwards if you want to hear it at its worst. In an i.s.b. circuit (I use the term circuit in its telephonic or telegraphic sense), each sideband can be treated separately and have its own a.g.c. system, but the clever thing is that the same treatment can be applied to the carrier. In older i.s.b. receivers such as the Marconi HR 82, the i.f. signal was split into u.s.b., l.s.b. and carried by three huge high performance crystal filters, the carrier filter being (as far as I can remember) 100Hz wide. u.s.b., l.s.b. and carrier were then passed through three identical i.f. amplifiers each having its own a.g.c. system and were then recombined at the detector end by which time all signal components were at a constant level and not affected by selective fading. Now guess what the 100Hz filter in the Plessey PRS 2280 is used for, apart from providing a narrow c.w. filter?

Synchronicity

In normal s.s.b. reception, the incoming 1.4MHz upper or lower sideband is demodulated using a carrier generated by a stable 1.4MHz oscillator in

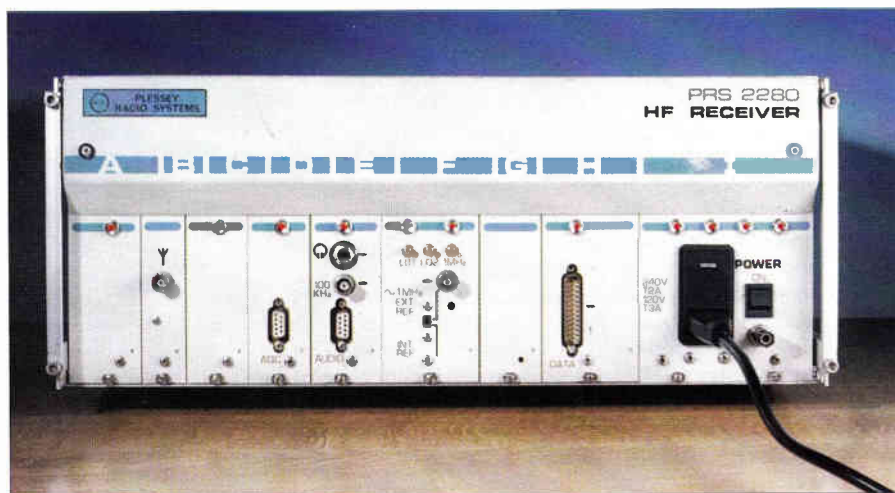
the receiver. However, in i.s.b. mode, the incoming sidebands are accompanied by a low level pilot carrier as I described previously, and this is separated from the i.s.b. signal by the 100Hz filter and can be used to phase lock the receiver's internal 1.4MHz demodulation carrier oscillator to provide perfect demodulation with the independent sidebands. However, the delight of this is that you can use exactly the same technique to resolve an a.m. signal, even though the upper and lower sidebands carry the same information, because by doing this you effectively get rid of selective fading effects, and you can also choose whichever sideband is suffering the least interference. In operation with the PRS 2280 you can key in the frequency of the station you wish to receive, switch the mode to i.s.b., watch a meter display which shows you the beat between the incoming carrier frequency and the 1.4MHz demodulation carrier - usually less than 1Hz, and then push the button marked 'Recon' (Reconstituted carrier) and the beat indicator locks solidly to a standstill and you have glorious selectable sideband a.m. There is sufficient lock range in the system to allow a slight amount of mistuning, but this is limited to about 100Hz before the carrier loses lock. Of course with receivers as accurate in frequency setting as these, you would normally be within a few hertz in any case.

It's true that I have just described what is now known as Synchronous a.m., or a.m.s., and it's also true that the AR7030 uses a demod carrier phase locked to the incoming signal, and with a wider lock range than the PRS 2280, but the way that the PRS 2280 does the job, coupled with those beautifully matched asymmetric u.s.b. and l.s.b. filters is simply so effortlessly satisfying that I did most of my a.m. listening in the i.s.b. mode whilst I had the pleasure of using this receiver, and I can't imagine anything better for the keen short wave or medium wave broadcast listener. On s.s.b. utilities or amateur frequencies the PRS 2280 performs just as well, but since on these signals the carrier component has been totally suppressed you cannot use the 'Recon' facility. Again the matched asymmetric u.s.b. and l.s.b. filters make the audio quality better than one normally hears, and signal rejection outside the filter pass bands is excellent and totally devoid of the spurious ripples generated by some DSP systems.

The c.w. filters were very good, with selection from 1.2kHz, 300Hz and the razor sharp 100Hz, but the little 'wobble' on the synthesiser at each 100Hz frequency jump was a bit disconcerting and made it difficult to accurately get the incoming signal in the centre of the filter passband, particularly in the narrower bandwidths. The receiver has a fully tunable b.f.o. when in c.w. mode, and this has a wide tuning range, albeit in digitally generated 10Hz steps which can clearly be heard when tuning across a steady signal. I think I have had better c.w. receivers in my hands, but that's all rather academic now that c.w. has been semi-officially declared dead, more's the pity.

How Low Can You Go?

Unlike the RA1792, the PRS 2280 tuning range is specified down to 10kHz so I connected my wife's electric sheep fence (with the generator switched off) via my favourite Martin Lynch balun and had a



listen down among the dead men. I wish I knew what some of these l.f. signals meant because there are some truly fascinating noises down there. I didn't hear anything on the 73kHz amateur band which was no surprise, but the whistles and groans (sounds like an RSGB annual general meeting) were there in some profusion and the receiver, as it should, worked perfectly.

Testing Time

The measured r.f. performance showed differences with the RA1792, but the PRS 2280 is up there amongst the leaders as one might expect. Sensitivity was virtually the same, as can be seen from examining **Table 1**.

The third order intercept point at 20kHz signal spacing, and normalised to a receiver sensitivity of -117dBm as is my usual way of specifying in these reviews was +30dBm, with the second order intercept point using 6.500 and 7.000MHz signals, resolving the intermodulation product at 13MHz was +64dBm, not as good as the RA1792. However, the reciprocal mixing performance was quite a bit better than the Racal receiver as can be seen in **Table 2**.

And there we have it, although there are many things I could describe about the PRS 2280 in great detail, having had the service manual by me during the review. Which receiver would I choose if I had the opportunity? That's a very hard question to answer, because each receiver had its delights and drawbacks and I suppose that the choice depends

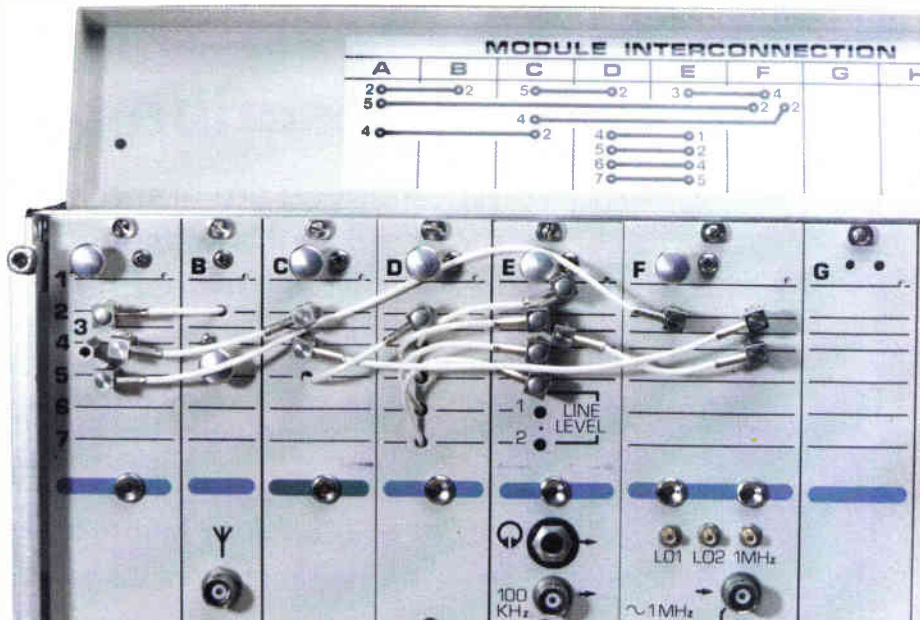
Table 1:

Frequency (MHz)	Mode	Bandwidth (Hz)	Sensitivity (dBm)
14.200	u.s.b.	2400	-121
14.200	a.m.	8000	-112
14.200	c.w.	300	-126
14.200	c.w.	100	-136
6.500	l.s.b.	2400	-121
6.500	a.m.	8000	-112
0.900	a.m.	8000	-112

more on the particular facets of the listening hobby one wishes to pursue, rather than choosing on straight performance. For medium and short wave broadcast monitoring the Plessey has the edge for me because of the way the i.s.b. system handled a.m. signals and made them so easy to read under difficult reception conditions. For monitoring a number of h.f. utilities channels the Racal memory system was easier to use than the Plessey. Looking at

Table 2:

Spacing (kHz)	RM Ratio (dB)	RM Ratio (dBc/Hz)
5	80	114
10	91	125
20	100	134
50	111	145
100	114	148



The r.f. inter-module connection, courtesy of s.m.b. connectors. The red l.e.d.s indicate a 'no fault' condition for each module.

the method of construction of the two receivers contrasts the open boards of the Racal against the bomb proof individual screened bricks which make up the Plessey, and I personally would prefer the Plessey. If life were perfect, I would like both these receivers mounted together in the same rack, but I'll just have to dream.

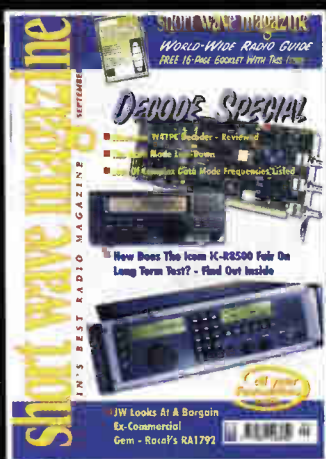
Relax Don't Rush

It's been a most interesting exercise reviewing these two superb receivers, and it does once again highlight the fact that you don't necessarily have to go rushing out to buy the latest whizzo receiver in order to get satisfaction. The classics are there if you look hard enough and when you have had your fill of ultra smart processor driven black boxes I recommend that you settle down with a real receiver and relax.

And So To Other Things

Interesting to see on the pages of *Electronics World* (*Wireless World* to we older folk) that there is now a WinRADIo receiver which is separate from the driving computer and is controlled via an RS-232 link rather like the Icom PCR1000. I look forward to having the opportunity of reviewing it for SWM. I also note the end of an era in the announcement that SMC have bought the Lowe receiver production facility and it has all moved to Southampton. It doesn't seem that long ago that I asked John Thorpe "John, do you think we can make an h.f. receiver with performance like the HF-225 but at a target price of £300?". That of course was the birth of the HF-150 and I'm sorry that Lowe have dropped out of the receiver market after all the work John and I put in to build that part of the company, but that was some time ago and I don't know what market conditions are like today so can't comment further. Now if only John would put the AR7030 into a Racal or Plessey cabinet so that I could have access to all the controls at once I could die a happy man.
Happy Listening

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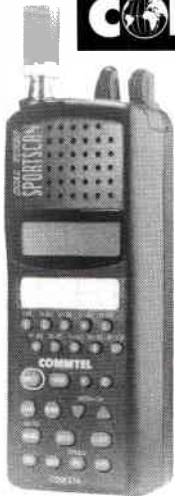
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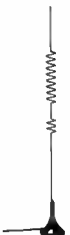
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Part 2: Winding and Mounting Toroids....

How To Use Ferrite and Powdered Iron Cores

In August's issue, Joe Carr looked at the toroidal, bazooka and related forms of inductor and transformer core. This month Joe concentrates on the very popular toroidal form of inductor and transformer core, including both winding and mounting.

Inductors & Transformers

Figure 1 shows several different forms of inductor and transformers made with toroidal and other forms of core. The coil in **Fig. 2.1a** is a single-wound inductor. It is used as tuning inductors, lump inductance and r.f. chokes. These coils are characterised by a single winding of wire on the core.

A two-coil version is shown in **Fig. 2.1b**. This form of winding is used for transformers. The dots at the top of the winding are used to indicate the same-phase ends of the coils. These dots are important when cross-connecting windings for transformers. Although the turns ratio is shown

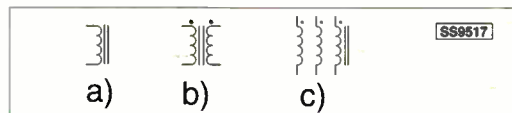


Fig. 2.1: Types of inductor: a) Single-wound, b) two-coil, c) three-coil.

apparently 1:1, that is not universally the case. One winding could easily have a different number of turns than the other winding, depending on the application. For example, if the transformer is used as the r.f. input tuning coil of a receiver, the primary may have only 1 to 5 turns, while the secondary will have as many turns as are necessary to achieve the resonating inductance.

The three-coil winding is shown in **Fig. 2.1c**. This sort of winding is used on multiple secondary transformers, BALUN (BALANCED-UNbalanced) transformers, and phase reversing (or push-pull) transformers.

Broadband RF Transformers. Perhaps the widest use for toroidal transformers is as a BALUN (or related) form of transformer. A true BALUN transformer provides the current paths to convert an unbalanced source (such as coaxial cable) to a balanced load (such as a dipole antenna), or vice versa. Some broadband transformers provide impedance transformation as well as load transformation. It is customary to install a 1:1 BALUN transformer at the feedpoint of a dipole or other balanced antenna in order to clean up the pattern. Otherwise, currents flowing in the screen of the coaxial cable are made part of the antenna and radiate (distorting the radiation pattern).

Figure 2 shows the basic forms of broadband

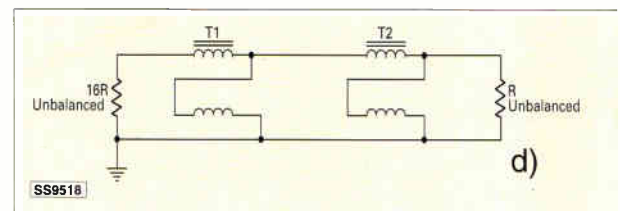
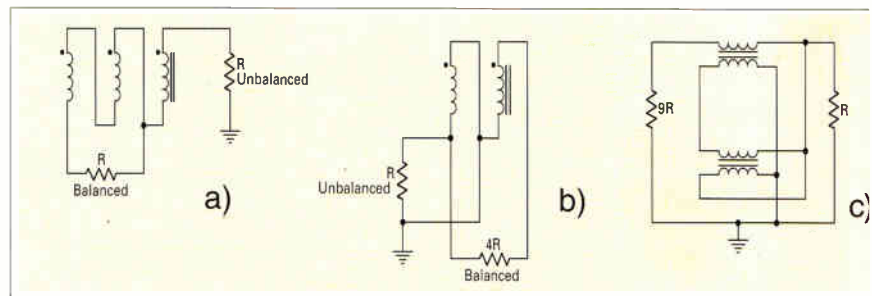


Fig. 2.2: Transformers: a) 1:1 BALUN, b) 4:1 BALUN, c) 9:1 UN-UN, and d) 16:1 UN-UN.

transformers. In each case 'R' is not a physical resistor, but rather represents the load or source impedances. The version in **Fig. 2.2a** is a 1:1 BALUN transformer. It provides load transformation but not impedance transformation. It uses a three-coil winding. A 4:1 BALUN transformer is shown in **Fig. 2.2b**. This two-winding BALUN provides a 4:1 reduction or increase in impedance, depending upon which direction it is connection.

The transformers in **Figs. 2.2c** and **2.2d** are not BALUNs because they have both load and source unbalanced. These transformers are sometimes called by the ridiculous but descriptive term 'UN-UN'. The

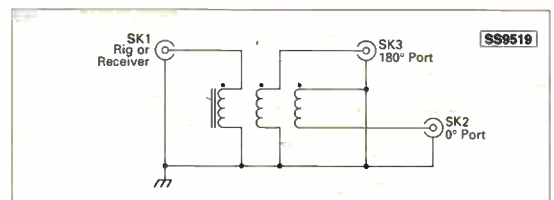


Fig. 2.3: Biphas transformer produces outputs 180° apart.

version in **Fig. 2.2c** uses a pair of two-winding transformers connected so as to provide a 9:1 impedance transformation ratio. The version in **Fig. 2.2a** is similarly constructed, but is connected to provide a 16:1 transformation. Both of these transformers can be used in solid-state amplifiers where the input impedance is low compared to the 50Ω system impedance. They can also be used on antennas such as verticals that can have a low

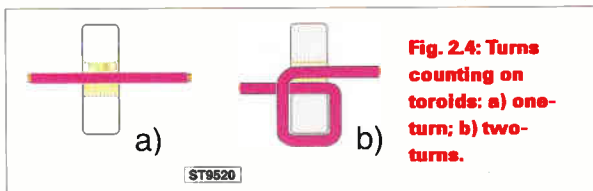


Fig. 2.4: Turns counting on toroids: a) one-turn; b) two-turns.

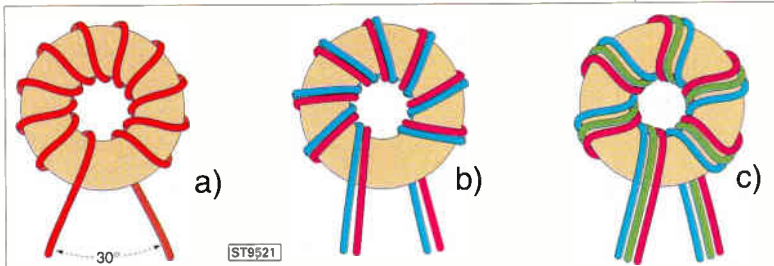


Fig. 2.5: Styles of winding: a) Single-wound; b) bifilar winding, c) trifilar winding.

Fig. 2.6: Winding designation systems.

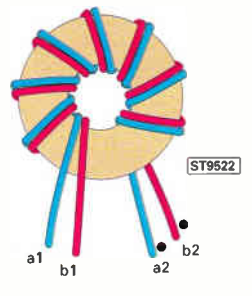


Fig. 2.8: Glue spot secures end of winding.

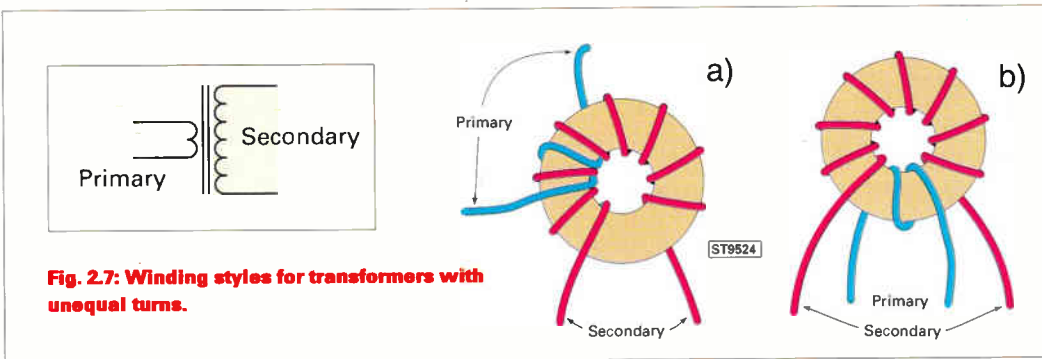


Fig. 2.7: Winding styles for transformers with unequal turns.

feedpoint impedance (2 to 37Ω in the case of the vertical) that must be matched to 50Ω .

The transformer in Fig. 2.3 is designed to provide two outputs that are 180° apart. The transformer is wound with three identical coils, with one designated as the primary and the others as the two secondaries. These transformer are used in instrumentation purposes, and for driving vertical radiators. In the latter application, the directivity can be reversed by switching from parallel feed (no transformer) and phase-reversed feed with the transformer.

Winding Toroid Cores

Counting Turns. Winding toroid cores seems to be a mystery to some. The number of turns is easily calculated, but the definition of 'turn' in the practical case seems at odds. The correct designation of 'turn' is a **pass through the toroid core**. Consider Fig. 2.4. The winding shown in Fig. 2.4a represents a one-turn winding, while that in Fig. 2.4b is a two-turn winding. Oddly, many people would see the coil in Fig. 2.4b and assume that a 'turn' is one complete round about the core. Unfortunately, that's wrong. In some coils, where the A_L value of the core is high, there is a high ratio of change of inductance per change in turns. If your toroids are consistently off in the final inductance, then consider how you are counting turns.

Winding Styles. Now let's consider the various winding styles for toroidal cores. In the radio literature you will see transformers and coils

described as **single-wound**, **bifilar wound**, and **trifilar wound**. Figure 2.5 shows these styles. The coil in Fig. 2.5a is single-wound. There is only one winding. The turns of the coil are spaced out up to 330° of the core, leaving an arc distance of at least 30° between the ends. If the ends are closer together, then there might be some capacitive coupling between the ends.

Bifilar winding is shown in Fig. 2.5b. This form of winding uses two windings, but there are not simply scramble wound on the core, or wound separately. Rather, they are wound such that the two wires remain parallel and closely adjacent to each other throughout the entire winding. Again, observe the requirement of at least 30° between the ends, and approximately equal spacing around the circumference of the core.

around the circumference of the core.

The trifilar winding is shown in Fig. 2.5c. This form of winding is like the bifilar in construction, but uses three closely adjacent and parallel windings.

Two systems of designating the windings of a bifilar or trifilar wound toroid transformer in circuit diagrams are shown in Fig. 2.6. It is, by the way, wise to use two different colours of wire insulation for the two windings. Although you could use an ohmmeter or continuity tester to identify which of the four or six ends are paired, why bother? I keep several rolls of the various sizes of enamelled wire in Joe's *Basement Therapy Laboratory* (where I go to let the wind out of my head), each of slightly different colour enamel.

One method of identifying the ends of the windings are to use the phase dots mentioned earlier. Another method is to use a letter-number system in which the winding identified by the letter, and the ends designated by numbers. The ends with the same numeral are of the same phase. Note that both ends designated '2' in Fig. 2.6 are dotted.

Figure 7 shows the method for winding transformers with a different number of turns in the two windings (Fig. 2.7a). There are basically three methods of winding these coils. First, you could wind the two windings in the bifilar manner (Fig. 2.5b) until the smaller winding is out of wire. The other method is to intersperse the two windings in the manner of Fig. 2.7b. Finally, the smaller winding can be concentrated in one area of the core.

Stabilising the Windings. If you build a large-core toroidal coil or transformer, then the heavy gage of the wire can usually be counted on to keeping the

winding physically stable. But in the case of smaller cores, the windings sometimes have a habit of unravelling a bit. This can be handled either by applying a layer of **Q-dope** over the entire winding, or by placing a small spot of glue (**Fig. 2.8**) at the ends of the windings.

Mounting Toroids

Now let's turn our attention to the matter of mounting toroids, both individually and in close proximity to other toroids. **Figure 2.9a** shows the method for mounting small toroids on a printed circuit board or perforated board. The toroid is laid flat on the p.c.b., and the wires passed through the holes and soldered to the foil side.

The method of **Fig. 2.9a** works in cases where there is not a lot of vibration. In some more rugged applications a bit of silicone seal can be used to stabilise the toroid. However, in severe cases, or where moderately high powered large cores are used, it might be better to opt for the method of **Fig. 2.9b**. The toroid is held fast using a machine screw and hex nut. Although I have successfully used brass hardware, I normally use nylon screws and nuts. Similarly, the washers that sandwich the toroid, and the washer that is under the hex nut, are made of nylon or some other insulating material. Be careful to not over tighten the nut, or damage to the toroid core can occur - they are fragile.

Figure 2.9c shows the method for mounting a

toroid on end. In this case, the edge of the form is placed against the p.c.b., and the wires brought through the holes as shown. In general, this method of mounting is less preferred than horizontal mounting because it is inherently less stable.

However, when component density on the p.c.b. is tight, or extraneous magnetic fields could cause a problem, this method becomes more reasonable.

Mounting Multiple Coils. Many circuits use two or more toroid coils or transformers in close proximity to each other. Examples include the input and output transformers of broadband amplifiers, and the inductors in r.f. filters. **Figure 2.10** shows several different mounting schemes.

One of the glories of the toroidal core is that the magnetic field of a coil wound on it is self-contained. That means there is little or no interaction between adjacent components and the toroidal coil. The **Figs 2.10a to 2.10c** show methods of mounting toroidal cores in close proximity on a p.c.b.

The toroid is said to have a self-contained magnetic field, and that is taken to mean that there can be no coupling to adjacent coils. That claim is true only when the winding is perfect and there are no manufacturing anomalies in the core itself. The typical core available to amateur builders is quite high quality. It is, however, often prudent to mount two or three adjacent coils orthogonal (i.e. at right angles) to each other. **Figures 2.10d to 2.10f** show methods of mounting coils adjacent to each other, but in different planes. These

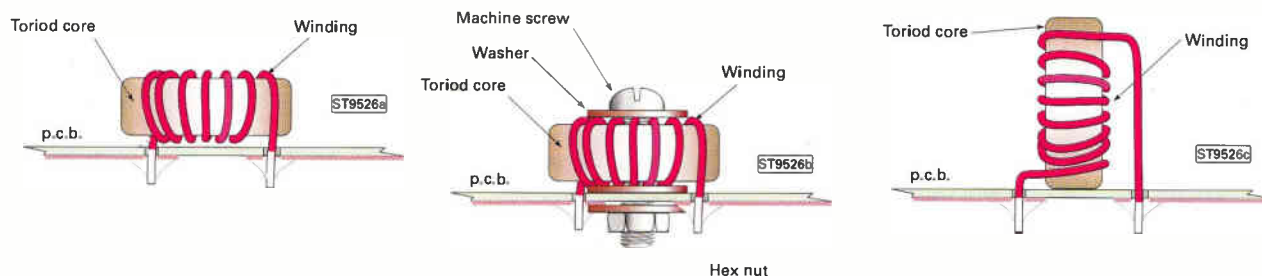


Fig. 2.9: a) Simple flat mounting;

b) secure flat mounting;

c) edge mounting.

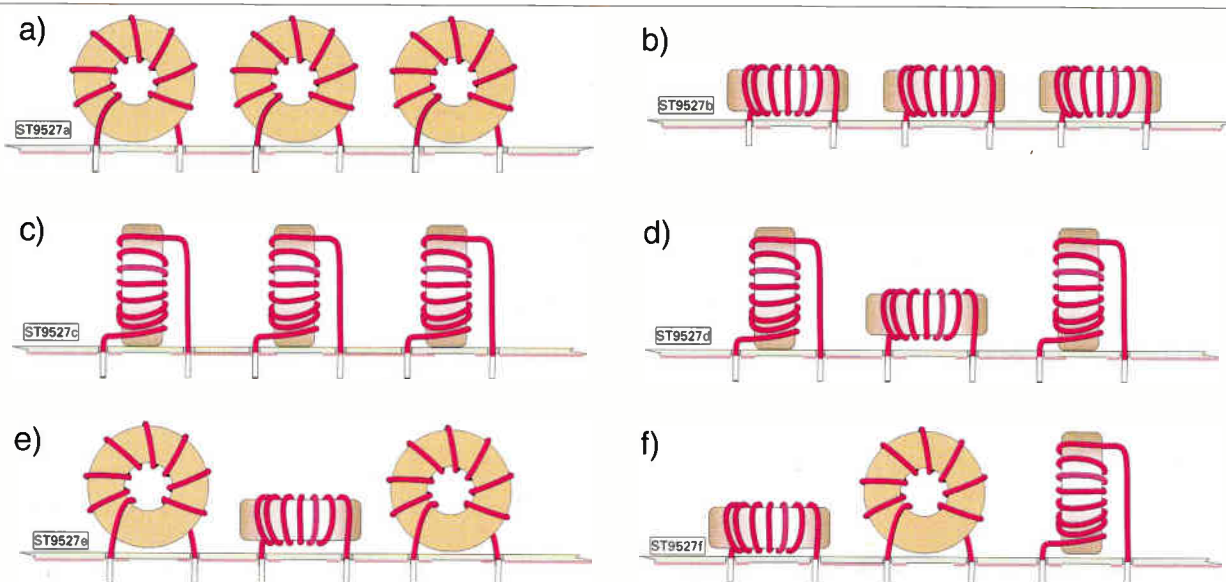


Fig. 2.10: Orientations for orthogonal mounting of adjacent toroids.

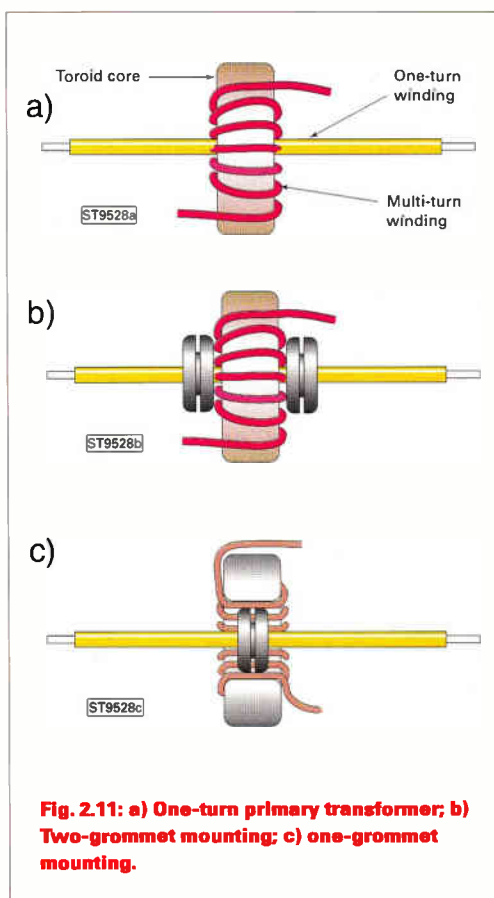


Fig. 2.11: a) One-turn primary transformer; b) Two-grommet mounting; c) one-grommet mounting.

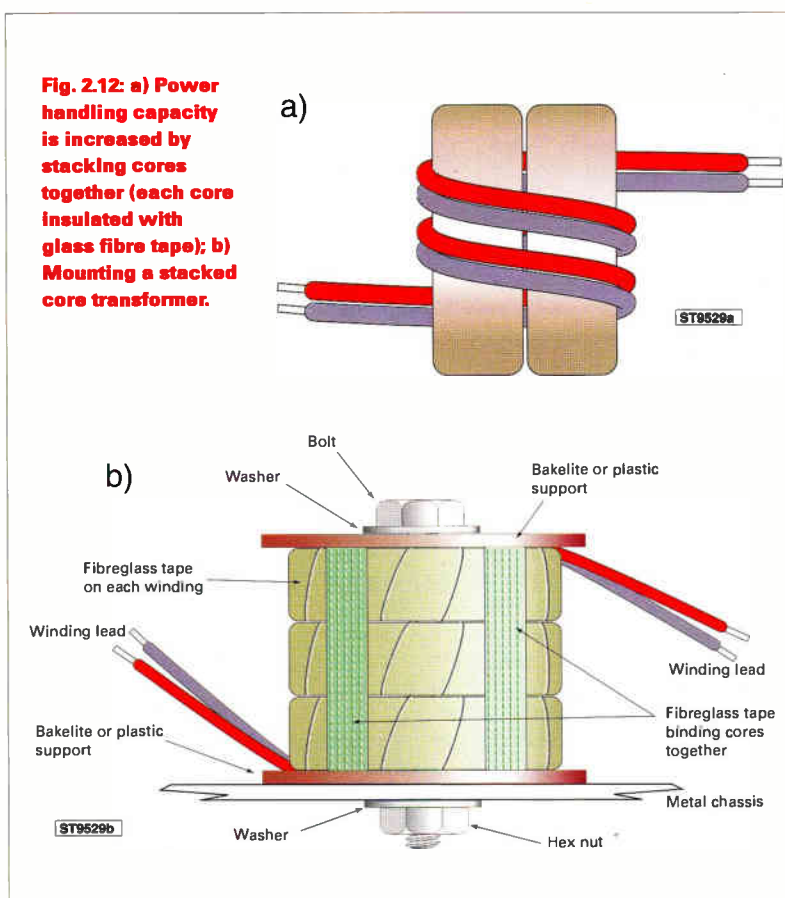


Fig. 2.12: a) Power handling capacity is increased by stacking cores together (each core insulated with glass fibre tape); b) Mounting a stacked core transformer.

methods of mounting minimise any stray coupling that might occur.

Special Mounting Methods. A lot of amateur applications, especially r.f. sensors for r.f. power meters and v.s.w.r. meters, use a toroidal current transformer with a single turn primary winding and multi-turn secondary winding. **Figure 2.11a** shows this system schematically. The idea is to put the single-turn primary right in the centre of the toroids through-hole, and therein lies the problem.

Figure 2.11b shows one solution to the problem. The single-turn primary is made of brass tubing or brazing rod. Select a size that is a slip fit for the hole in a smaller size rubber grommet. The grommets are placed on either side of the toroid core, and then cemented into place. Another method is shown in **Fig. 2.11c**. In this case a larger grommet is placed inside the through-hole of the toroid core, and then cemented into place.

High-Power Transformers

The volume and cross-sectional area of the cores are a determining factor in their power handling

capacity. In order to boost the power capacity, two or more large size cores are often stacked together as one - **Fig. 2.12a**. Each toroid is wound with a single layer of glass fibre tape to insulate it from the other. The bifilar or trifilar windings are then placed over the two cores together.

I've seen (and used) nylon filament packing (or 'strapping') tape in place of the glass fibre, but only on low to moderate power. I have not seen anyone test this tape at the highest power levels authorised for amateur radio operators.

Mounting of a stacked high power toroid transformer is shown in **Fig. 2.12b**. The cores are each wrapped in glass fibre tape, and then stacked on top of each other. Additional runs of tape are then used to secure the assembly together (shown in different colour for effect in **Fig. 2.12b**). The core assembly is then sandwiched between Bakelite or plastic supports (washers can be used if available in those large sizes). The entire assembly is then mounted to a printed circuit board or metal chassis using a bolt and hex nut. Again, although brass bolts and nuts are sometimes seen, the use of nylon hardware is **highly** recommended. **SWM**

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Next Month

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Book Review

FASTER THAN THE WIND - THE LIVERPOOL TO HOLYHEAD TELEGRAPH.

BY FRANK LARGE.

If you are interested in early forms of communication, that is before telephones, FAXes and E-mail made it all so easy, then this book will definitely satisfy your appetite!

Focusing its attentions on the history, construction and uses of the Liverpool to Holyhead telegraph, *Faster Than The Wind - The Liverpool To Holyhead Telegraph* is an intriguing mixture of both history and guide book in one. As mentioned in the Post Script at the rear of the book, it is probably the intention of the author that you visit these Telegraphs with book in hand in order for you to get a real feel of life as a Telegraph operator in the mid - 1800s.

The book also discusses even earlier forms of communication. The book spans from circa 200-118 BC to 1907 AD. From the smoke and fire signals that the Greeks used, and the use of torches and alphabet tablets used by the Greeks and the Romans (circa 200-118 BC). To the Electrical Telegraph in 1907.

You can really appreciate the extensive research which Frank Large has carried out, and his friendly and informative style means that you do not need to be an expert to understand the book, and even the less technical minded among us find this book an extremely interesting read.

As an *SWM* reader or s.w.l., this book would aid in a deeper

understanding of early communication. Although the use of the telegraph is visual rather than aural, it was no doubt the beginning of an innovative era in communications. "The Liverpool to Holyhead Optical Telegraph System was a form of semaphore which was at the forefront of the establishment of the telecommunications industry; a long time before mobile 'phones!"

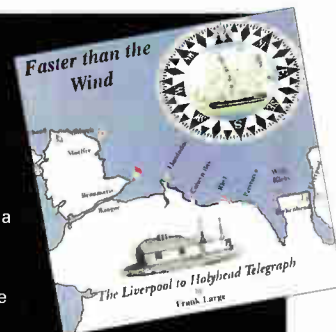
You are left in no doubt as to the sheer importance of the telegraph system that was in use in the mid 1800s. At this time it was able to convey a number of messages which took a mere ten minutes to reach Liverpool from Point Lynas. Not only could merchants in Liverpool learn of ships and their cargoes before they could even see them, but the telegraphs were also used to aid in the synchronisation of time and also to send weather reports from station to station.

Some examples of chapter content include 'The People of the Telegraph', 'The Workings of the Telegraph' and 'Vocabulary: Coding and Operation'. As you can probably see from these examples, the book covers an extensive area culminating in a look at 'The Coming of the Electrical Telegraph'.

The book does not skimp on illustrations either, in fact it is as rich in diagrams and pictures as it is in written explanation. Frank Large uses a wealth of different types of illustrations in order to aid understanding. From maps, diagrams and drawings, to pictures, paintings, photographs, and photocopies of old parchments.

In conclusion then, even if you were not interested in the use of Telegraphs before a reading of this book, then you will be by the time you have finished it!

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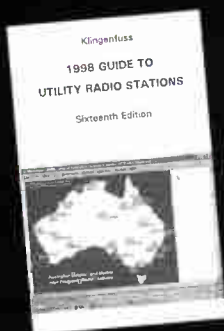
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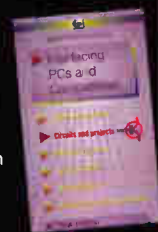
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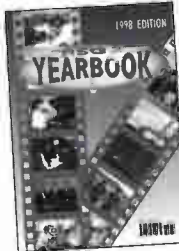
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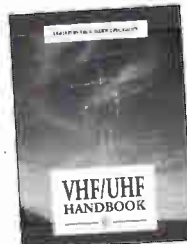


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Amateur Bands

Hello again! Once again a month of damp conditions at this QTH, which have tended to make any thought of antenna activities into a job 'for another day'. But, as I sit down to write, the weather forecast, in full accordance with that Law, predicts fine weather while I sit at the keyboard to write a column. Oh, well!

A column or so back, I mentioned the need to support the RSGB in the run-up to WRC 2001. This time, the reference is to the proposal to squirt digital h.f. signals along the mains to remote control various things. Obviously to simulate the effect accurately is quite difficult, because every home is in some way different to every other.

However, reasonable checks suggest that the radiated signal will be at S9+ or greater in any built-up area. There was some amateur activity down the mains during WW2 in the USA, and ranges of many miles were obtained.

In 1998, we are lucky in that high-powered professional bodies agree with RSGB's EMC Committee position. The belief is that if this is allowed to happen, then the h.f. spectrum could well become useless for reception and even more useless for transmission!

Letters

A new handwriting appears in the first envelope - Ken Cathcart is from Walsall, and between April and July, mostly on 14MHz, he noted KL7/K1TF, V44NEF, CF9FX, a net on April 27th which included 4X6UV, TI2CBJ, J73JT, CP5JI, CU3DT, YS1EJ, ZP9CPA; around 14.247 between 2330 and 2400. On the next day, VO1UO, K5UA, 9Z4CT, noted on 14263 and AF2Y.

Into May for 8R1CJ, 8R1WD, DJ1QQD44BS, EZ1CJN, a Special Event Station EV3DP, KH6X, FG5FC, OK8NJ, 4X6MD, AA2KD, 4X6ME, 9A9A, 5B4LP, CT3/DK4KL. On 7MHz VK4BR, 9H1DL, BV5BG, and some EUs. Back to Twenty for CU3DJ, 8R1WD, RK3AO, JX7DFA, EA3JE, RK9LWG, JR7XKN, JO4FR, WD8NMV, SV1/JYOMF, VO2WL, JA1EY, JA1NVF, JA7AVM, LU7MAL, DL/Y1IUS, KB2TVF, PA3DOB, ZP6EM, ZP5DBC, CO8HF, HC1JQ, HJ1JP, ZP6SC, HK6KKK K6FE, EA6MQ, W5VGI, 4X4FR, P43DJ, CN8MC, PT7B, OD5PM, HH2LQ, TF3GC and 4X4JP.

Finally for July we find LZ5LX, 3Z4ACT, EW6BN/M, EU5R, VK3CR, 9K2SS and 7X2WEK. Ken uses an FRG-100 or a Yupiteru MVT-7100 to receive - antenna not specified.

50MHz

Another reporter who has been silent for a long time is Ron Hastie who lives at Tedburn St. Mary near Exeter. For 50MHz Ron uses a Howes converter and a pre-amp into an FRG-8800 used as the tuneable i.f., sniffing the signals picked up from a Super Scan Mark II active antenna.

Ron logged IC5JDG on f.m., which was said to be a special for the football in Marseilles, plus CT1DYE, CT1HB, CT1AL, DL6OCE, DL7QY, EA3ADW, G4EBC, G4HBA, G6ORC, G7LJN, HA3DUW, IW2DUK, IK2YWT, IK2PCU, IK3GLD, IK4HLO, IK5IKW, IK5CVV, IK6TIJ, IW2MEX, IW4DCW, IW4DV, I4YFY, I4YSS, I5MXX, I5NZR, IZ5AHA, JN7JJE, OE5HSN, OK1KT, OK1KRY, SP2NJI, SP5QWB, SP9ACH, SM3BIV, SM6MPA, SM7WCC, S51AG, 9A1CCB and ZB2/DJ3MM.

Still with 50MHz, Brian Williams GW0GHF, 10 Pantycelyn Road, Llandough, Penarth, S. Glam. CF64 2PG writes with an appeal for some help. He wants reports on his f.m. 50MHz signals. Brian is on most evenings afternoons and weekends on 51.49, 51.53 and he regularly calls CQ on 51.510MHz. So please, everyone out there who can, please send Brian a report which he will respond to with a card.

If you do report though, make a good job of it, as mentioned recently, and when you put your report in the mail it is just courtesy to include an s.a.e. or an IRC for the return card. Alternatively, you can send your report via the Bureau system.

Last time out we had a letter from Martin Goodey in Holy Vale, St. Mary's in the Isles of Scilly which contrived to be caught under a

paper-clip and so mislaid - sorry for that! In his letter Martin notes that the weather on Scilly has been rather like the rest of the country - changeable. (I'd have said B... Awful myself!).

Band conditions have been somewhat the same with the VK and ZL signals a bit thin on the ground, but plenty of South and Central Americans. An interesting one for Martin was G0SBR/MM on the QE2 at 48N42W, and perhaps the highlight of the month successfully stalking VQ9ZZ on Chagos.

Turning to the loggings, on 3.5MHz Martin noted G0MVT and VP8/G4FU/MM at 0145 on June 13, while on 14MHz there were JY5HX, 4X4MU, PR7CPK, 9Y4ZAG, VK6VU, TZ6JA, 8R1WD, ST2SA, H75A, ZD7HI, 5Z4RL, V44NEF, 3V8BB, G0SBR/MM, TU2DP and YB6MF. Turning to 18MHz the log includes CP6EB, V44KMC, AP2AGJ, V26GG, 4S7BRG, OD1FG, 5Z4RT, 9K2QQ, A41LZ. Up again to 21MHz to find YS1RRD, ZP9DM, VQ9ZZ, TI2LAK/TI6, 9Q5TR, 5A1A, CE5BPE, 7Z5OO, 5N0/OK1AUT and finally FM5GJ.

Ted Trowell from Minster in the Isle of Sheppey has been a fixture in the monthly mail for more years than I care to think, so I was a wee bit perturbed when he missed. However, his XYL had a fall which broke a femur and needed a steel plate, so life has been a bit fraught.

However, things have looked up enough for a c.w. log this time: on 7MHz TA7W, 9M2TO, TL5A, all around 2100z, and on 14MHz around 2000z PY2CJ, BV4PS, JA7AKH, FY5YE, and LU8XW in Tierra del Fuego.

On 18MHz 1500z found K7KU, SV9/G4ZFE, SV5/G4OBK, HC1MD/HC4, and 9V1ZB, while 21MHz yielded pay-dirt in the way of ZP9XB, JY8B, PY2RCM, FG/PT2EZD, HS10VH, TU2KC, LU1APG, JA1IDY, VR98BG, LU6EDL, PU2LCD, LU3EGT, WP3A, JA4AHV, 9H1EL, JA3KN, OJ0AU, OD5/9K2MU, UY0Z, 4Z5FW, BV4HB, HF0POL at the South Pole, ZP6CW, 6Y6BA, JR4GPA, LU5FC, C4A, LU1FAM and C02OR.

Still around 1500z Ted turned up to 24MHz for EA6AEI, PY10VY and HF0POL. 1400z though was the time for 28MHz and PP5TC, TK/DF4RD, with PY1ARS as a dessert around 1700z.

Now we come to Colin Dean of Barnsley, who started this time with 14MHz where he noted BOOK (another manifestation of Slim I rather think), BY1QH, JT1BG, Y11HK, 3C5DX, 4K80ADR and 4S7A. 18MHz yielded a longer list, including AP2AGJ, AP2JZB, AP2KSD, BD4HD, BV5BG, BV5GQ, DS5RYB, DS5USH, DU1KT, HB0/PI4TUE, HZ1AB, JAs, KP2AD, V73RF/MM in the Red Sea, PY7HW/MM of CU2, OD5NJ, RA0FU, TA3BN, TL5A, TL8CK, TR8JCV, VU2TRI, WH0AAV, 3C5DX, 5X1T, 6W1RD, 8P6EE, 9K2RA and 9K2ZZ.

Up again, and 21MHz said CE8ABF, DU3HNK, FM5DN, FM5GU, HC8A, HS0/G4UAV, JAs, JY8/A71BD, OD5NH, P40HQ, UA0FZ, YBs, 4F4IX, 5H3DD, 7Q7RM, 9J2BD, 9V1YC and 9V8RH.

Now we stop at Oxford, and Paul Goodhall who wrote early before going to Elgin for a few days. Before going, Paul scoured 14MHz for such as K1UQV, VK3BCY, VE7GX, VK6WZ, VK6DM, W7ODP, VE2/F6GLE, VK6WZ, KH6ID, K6JAH and KH6ALF.

On July 14, Paul had a restless night so rose for a coffee around 0230, switched on and logged WY2QT, WA4KH, the VE2CY/P knocking off N4VA, KC2AU, W4FL, TV8WQ, K18AF, N5WWM, AE4PY, K4GDG, then RN6BY attending to HC6NK, K6SH, N1WAS, W1DEE, N2SG, KC5DW, AE4PY, K4FA, KB6FO, WA1MKS; then a bit up the band W6OHS, N5IFH, HR5IEB, N5WZVJGQ, W5ZE by 0300 - after which sleep came easily!

A few evenings later KB6ATT and NT4NA, TA3BN, then TT8ZB and a pile-up from which Paul worked JH1QHT, JA4XXM, JS2LHI, JA3REK, JA4IES, ZP5PAH, JA3QAO, OM2TH and JA2BAY followed a few moments later by JJ6 and ZP6SK with UT5UDX and finally HK0BFB.

Backing up to Eighty, Paul noted GM3VLB/M on Gigha running a string of G and EU stations, and GS4EEO/P on Soay who worked G3XVR before shifting to Twenty for W9DC, I8LEL, PY2DBU and JO7WKO. Up to 21MHz and here BY4BZB YC2JVQ, JA8LNA, JA0XIL, JE9MVA, JA3EJO, and calls I read as 'FBC8RZ' and 'FBC5CLO' - can someone clarify please?

Oddments

For the up-to-date news you need the weekly *DX News Sheet* of course, as most news of DX stations breaks between the copy leaving me and you reading it! However, we hear of a September operation from CEO, San Felix, which might still be around, and in November VQ9 activity by the Space A DX Group.

Finale

Space closes in, alas. As usual, the deadline is the first of the month, to **Box 4, Newtown, Powys SY16 1ZZ**. As well as lists of calls heard, I'd like to see more news and views, to make the column more of a forum where ideas and thoughts can be banded about. For now though, good hunting!

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SSB Utilities

The UKMACCS network is the United Kingdom Maritime Coastal Communications System, and it is used by the Royal Navy and other NATO naval forces for communications in and around the coast of the UK. It comprises of a number of 'calling' frequencies (actually, pairs of frequencies, as this is a duplex system) where ships can contact shore-stations to send and receive messages. Once contact has been established on the calling frequencies, the ship and shore-station will QSY to another pair of frequencies. Once communications have been established on the new frequencies the messages are passed, usually in cyphered RTTY - known as CRATT.

However, the UKMACCS calling frequencies have been suspiciously quiet over the past few months, and the 'tell-tale' two-tone marker has not been reported for many months. I have received a few E-mails and letters asking if this service is still active, but I have not heard anything. I am mentioning this in the hope that listeners around the UK will monitor the UKMACCS calling frequencies over the next few months, and report back with details of what they hear. On this page I have listed the UKMACCS calling frequencies, and their expected times of operation.

So, how will you know if you are hearing UKMACCS signals? Well, the calling frequency used by the shore-station carries a two-tone bleep every five seconds. This indicates that the particular channel is not in use and ships may call-in. When the bleeps disappear, the channel is in-use and ships must wait.

By listening at various times of the day on the listed frequencies, you should hear the bleeps which will indicate that you have found the 'active' frequency and that the UKMACCS service still exists. If you don't hear any bleeps, then try checking the other listed frequencies.

I have been told that the 'Echo Coastal' frequency is now 6.522MHz but I have not heard the bleeps on that frequency, or on the previous listed frequency, so I cannot confirm whether this is true or not. In any case, please try both frequencies when you search for UKMACCS activity.

JMC III

I regularly get requests for advanced information about military exercises, usually including a request for "the frequencies that they will be using". Well, here is a brief note about an up-and-coming exercise which will take place within the next few months and will generate a lot of h.f. signals.

The third Joint Maritime Conference (JMC) will take place during October and November and will involve a large number of aircraft, submarines and surface ships in exercises around the northern coasts of the UK. The dates of this exercise

are 26th October until 5th November.

This exercise attracts maritime patrol aircraft from several European nations so do not be surprised to hear many different accents in use. The aircraft will be based at RAF Lossiemouth and RAF Kinloss in northern Scotland, but almost all of the exercises will take place in the north-eastern Atlantic. Aircraft involved are RAF Nimrods, Atlantic aircraft from France, Germany and Italy, and P-3 Orion aircraft from the US Navy and the Netherlands.

I have tried several web-searches for variations of JMC and Joint Maritime Conference but I was unable to find anything. If anyone finds any interesting information about JMC exercises on the web I'd like to hear from you.

As for the frequencies to be used, I have absolutely no idea, but the fun of listening to s.s.b. utilities is in the hunting for the signals. Most of the signals in recent years has been between 2 and 10MHz, but obviously avoiding the broadcast bands. A good place to start is with the 'Architect' weather and pressure broadcasts at H+00 and H+30 - these are usually followed by 'additional information' which contains the codes for the active frequencies.

You could also try listening for transmissions from the station with callsign 'MKL'. This station uses a range of frequencies to transmit in u.s.b., c.w. and CRATT. Each of the MKL frequencies has a designator and *Eavesdropping on the British Military* lists the following:

MKL Frequencies (MHz)

2.428	
3.936	ARCN 111
4.730	ARCN 112
4.757	
5.441	
6.686	
6.697	ARCN 113
6.757	
8.987	ARCN 114
9.036	ARCN 115
11.212	ARCN 116
13.237	ARCN 117
15.039	ARCN 118
23.236	ARCN 119

Also note that MKL transmits a weather forecast in c.w. at the top of each hour on some of these frequencies and this usually includes the 'tri-graph' callsigns of those vessels and aircraft taking part in the JMC.

Contracted Flight Watch Agencies:

San Francisco: callsign 'ARINC'
3.013, 6.640, 11.342, 13.348, 17.925, 21.964MHz u.s.b.

Honolulu: callsign 'ARINC'
3.013, 6.640, 11.342, 13.348, 17.925, 21.964MHz u.s.b.

Bahrain: callsign 'Falcon Bahrain'
4.687, 5.538 (primary night), 6.637, 10.078, 11.354 (primary day), 13.339 (backup), 13.342, 17.922, 21.970MHz u.s.b.

Sydney: callsign 'QANTAS Control'
4.687, 6.637, 10.078, 13.342, 17.922, 21.970MHz u.s.b.

UKMACCS Initial Calling Frequencies

Channel	Coastal	Ship	Operating Schedule (UTC)
Alpha	1.780	1.875	2000-0600
Bravo	2.702	2.754	2000-0600
Charlie	3.710	3.158	
Delta	4.420	4.502	0600-2000
Echo	6.509	6.221	1600-2000
Foxtrot	8.716?	8.2353	0600-1600
Golf	13.1349	12.3641	

BINA

For those of you who may not have heard this term before, *BINA* is the name given to the RAF *En-Route Supplement* covering the British Isles & North Atlantic. This is the handy red book which lists v.h.f. and u.h.f. frequencies for airfields in the above region, it also contains h.f. frequency information for major ATC areas and detailed information about the RAF STCICS system.

During 1997, the *BINA* changed from a deep red colour to a bright pink colour. The latest edition, as I write these words in early August, now contains some additional h.f. frequency information which will be of interest to listeners.

Towards the back of the book there is a section which lists all the STCICS frequencies and operating times, and this is now followed by a section titled 'Contracted Flight Watch Agencies'. This section gives details of four other h.f. stations around the globe which have agreed to handle h.f. communications to RAF aircraft. I have listed the frequency and location details for these agencies elsewhere on this page.

In fact, these are all fairly well-known frequencies, it is just that this is the first time that I have seen them listed in a *BINA*. Getting copies of an RAF *BINA* is quite simple and has been mentioned many times in this column before (and also in Godfrey Manning's 'Airband' column), so instead of repeating the details here, I will refer the reader to Godfrey Manning's *Airband Factsheet*.

One other snippet which I noticed in the current *BINA* is that it now says that "STCICS provides long range h.f. communications flight watch for RAF aircraft from 24 hour manned ops centres at RAF Kinloss and RAF Bampton Castle". This answers the question from a few months back about the exact location of the operators of the 'Architect' service... these are the two sites as listed in the *BINA*.

Attention - 123!

Many readers will be familiar with the phonetic alphabet stations (E10) which litter the h.f. bands. These stations are heard around the clock and predominantly use five letter groups, all of which are pronounced phonetically using the standard ICAO (NATO) alphabet: Alpha, Bravo, Charlie, etc.

Readers may not be aware of another station which uses a phonetic alphabet - not the familiar one noted above, but one which the rest of the world abandoned years ago. This is a station full of curiosities, not least the fact that it uses procedures more likely to be found in Morse traffic than on a voice station.

The pre-NATO phonetic alphabet station (E15) operates a fixed schedule, so finding its transmissions should not be a problem, however, Western Europe does not appear to be its target area and transmissions are quite weak at times. The station also uses some unusual frequencies.

All transmissions start with a three letter schedule identification which is repeated for several minutes, e.g. "Nancy Adam Susan", given by either a male or female announcer. Most, but not all, transmissions are in s.s.b. This is followed by a tone. If no message is due, the announcer says: "Queen Robert Union" repeatedly for five minutes, QRU meaning "I have no traffic".

If a message is to follow, the voice says: "Queen Thomas Charlie", QTC meaning "I have traffic for you". This is followed by: "Nancy Robert" (NR = number) and "George Robert" (GR = groups) followed by the group count.

Interestingly, the GC is given in reverse, e.g. a 21 group message would include in the preamble: "GR 12"! The message itself is delivered in single five letter groups using the following alphabet:

Adam, Baker, Charlie, David, Edward, Frank, George, Henry, Italy, John, King, Louis, Mary, Nancy, Otto, Peter, Queen, Robert, Susan, Thomas, Union, Victor, William, X-ray, Young, Zebra.

This alphabet was formerly used by the American Radio Relay League (ARRL) - with the exception of "I" which, in the ARRL alphabet, is "Ida".

Following a repeat of the message, the transmissions end "Robert Adams", RA - the reverse of AR - Morse procedure for "End of transmission". The pronunciation of the two announcers - they both went to the same language class - results in some peculiar corruptions of familiar words, such as strongly rolled R's and only by listening can you really experience this.

Transmissions are daily, but time-keeping can be rather poor. Schedule is as follows:

Time	Station	MHz
1100	BEC	18.000
1200	USP	17.503
1230	MSA	11.170
1300	BEC	11.000
1400	FYP	14.000
1630	MSA	6.716
1700	FYP	14.000
1730	MSA	5.834
1800	USP	5.834
1900	SAR	4.130
2000	NAS	5.530
2100	MSA	4.130

Finally, with regard to the operating agency and location of this station, reports indicate a strong signal around Greece and Cyprus, which suggests a possible East Mediterranean/Middle Eastern origin. The curious reverse GC and ending is a peculiarity of Arabic and Hebrew which read right to left. Some years ago Libya Radio used the frequency 18.000MHz.

Where Do They All Hide?

Several readers have asked for more details of frequencies, in the hope that they will be able to find some of the more elusive stations more easily. Unfortunately, this is easier said than done, for the simple reason that many numbers stations either don't use fixed frequencies, or use so many that publishing a list would be of little use.

Certain stations, notably Family I, the Russians, use frequency 'windows' - areas of spectrum, often within fixed service allocations, where the majority of their transmissions may be found. Their individual frequencies, however, may run into many hundreds and no regular repertoire can be identified - they are schedule-specific.

Having said all this, it will come as a relief to learn that many stations do use regular/favoured frequencies, although some stations may vary theirs upto 20kHz.

"Ready! Ready!", M17/E1 (Family VII) sends its primary transmissions on one frequency and its two repeats (at 20 minute intervals) on a further two frequencies, up or down the band. Here's the complete list: 10.470, 9.245, 8.070, 8.140, 7.790, 7.425, 6.990, 6.675, 6.290, 5.865, 5.695, 5.290, 4.740, 4.460, 4.270, 3.910, and 3.410MHz.

The Arabic station, E9/V8 (Family XII) only seems to use 11.290 & 6.645MHz.

The Phonetic Alphabet station, E10, uses a large number of fixed frequencies, often ten or more at once and several networks use triple parallels: 2.120, 2.270, 2.515, 2.628, 2.743, 2.953 ranging right up to 17.170, 17.410, 17.966, 18.178, 19.715, 20.425, 20.740 and 23.195MHz. Too many to list here.

Two letter stations (Family VI) G16/E16 also select from a fixed list: 2.690, 2.702, 2.745, 3.228, 3.262, 4.543, 4.594, 4.821, 4.888, 5.015, 5.182, 5.732, 5.770, 6.765, 5.853, 7.404, 7.532, 7.661, 7.858, 8.063, 8.173, 9.040, 9.325, 9.450, 10.177, 10.460, 10.500, 10.740, 11.617, 11.108, 11.545, 12.092 and 21 more up to 22.885MHz.

An easy daily one to find is the Czech "Control" station (Family IXc), S17: daily 1355 on 5.027/4.485. Another easy one, until recently daily but now only Mondays, is the Russian "Control" station S25 (Family Ia): 0800 on 14.890, moving at 1820 to 11.270.

The "Strich" family (III) M3/E11/G11/ S12 commonly uses 4.015, 5.050, 5.180, 5.365, 5.520, 5.550, 5.625, 5.830, 6.330, 6.640, 6.850, 7.256 (1630 daily at present, ID 287), 7.650, 8.033, 8.163, 9.245, 9.950MHz, etc. amongst many others.

M53 only seems to use two frequencies: 6820 Winter and 8231 Summer, most days at 2000 and 2100. Often quite weak here.

Many more stations use their own favoured frequencies, others don't. Schedules often appear random but when studied, very few stations send transmissions which are completely unpredictable. Very often, day, date, time, frequencies, schedule number, etc., even sometimes the message itself, can all be predicted accurately, sometimes a year in advance.

Listing exact frequencies, unlike say in the case of broadcast or utility stations, is far less important than understanding a station's habits. Frequencies are merely an aspect of a station's entire profile and depending on the station, its precise recording can range in usefulness from very significant to totally worthless as far as prediction is concerned.

We must adopt a Numbers Station mode of thinking, which gradually becomes instinctive. If we don't, then our monitoring has no method and finding a station becomes a matter of chance and we may never hear a regular monthly transmission in a lifetime!

Luck certainly does play a part, but of course, we can't rely on it. Once we get to know a station's habits thoroughly, we learn to think in the same - often bizarre - way as its operators and an intuition develops which can be very useful, however unscientific.

Good listening! Keep the logs coming in.

ENIGMA Booklet

Since we mentioned this in the last article, there have been many enquiries. For those of you who have not yet written in about this, we hope to have the booklet ready by late October. It should cost no more than £2.50. All ENIGMA members will be informed in advance and we are also sending details to all non-members who have written in.

MilAir

An interesting selection of letters and electronic mail this month with a very noticeable, underlying theme. It is obvious that some of you have been rather disappointed with the three main airshows that have taken place during 1998. Some of my correspondents have felt that Mildenhall, Yeovilton and even the RIAT at Fairford have been below par compared to previous years.

I visited the latter two and I did think that Yeovilton was not up to its normal standards but Fairford did appear to be up to its traditional blend of colourful schemes and unusual aircraft types and air-arms. I have a couple of reports relating to these shows with more information hopefully to follow in a future column.

Yeovilton Show

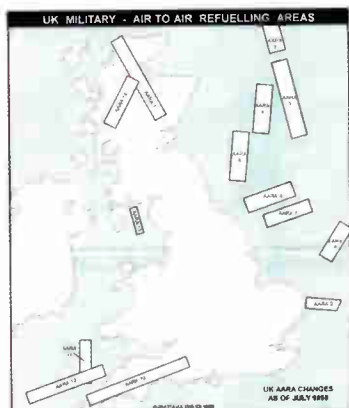
Thanks to **Tony, Bill P** and one anon, the following frequencies were noted in use at Yeovilton on Thursday afternoon, Friday and Saturday. **Approach** 369.875, 127.35/**Radar** 338.875, 339.975, 123.3 (NATO Common), **Tower** 372.65, 122.1 (NATO Common), **Ground** 311.325, **ATIS** 379.75. **AIR/AIR** and/or **Operations** frequencies noted were: 276.25/800 Squadron, 259.8/899 Squadron, 291.9/847 Squadron? Also heard on the Thursday was the h.f. operations frequency 8.977MHz.

RIAT Fairford

Not much new noted during a brief listening session at **RIAT 98**. IAT Tower was once again on **121.175** and **337.575**. **119.15** was Ground Operations with u.h.f. Ground Ops on **259.975**. The old Command Post frequencies of 307.8 and 371.2 appear to have definitely been withdrawn as none of my correspondents heard them in use. There is one report of the Operations Dispatch frequency being used on **379.475**.

Air Refuelling

In reply to several correspondents, including **Dave G**, I have attempted to piece together the changes to the Air Refuelling Areas. I am most grateful to **Photavia Press** who at my request helped with information and kindly provided me with a map of what they believe to be the new Air Refuelling Areas. As always, any comments would be



welcomed and if you note any frequencies in use with these changed areas, please let us know.

The latter part of 1997 saw a change to the Air Refuelling areas with Area 6A (North Sea) being withdrawn. This has now been followed, in mid-July this year, with what appears to be a rather complex series of changes but is actually fairly straightforward. The changes have involved the moving of one area, name changes to existing areas and some areas swapping names.

The July changes are as follows: **AARA4** has had its location moved further to the east in the North Sea so that it's now much closer to AARA 3. AARA4 used to be split into North (AARA 4N) and South Areas (AARA4S) and it is the old north area which has been moved and renamed AARA4. The old southern area AARA4S has been renamed AARA5. **AARA5** has been renamed AARA7. **AARA7** has been renamed AARA 10, **AARA 10** has been renamed AARA14. **AARA6** has been renamed AARA8 and **AARA8** has been renamed AARA6.

Gasp! - I trust you all understood that - it does make sense - honest! Hopefully the map will make it all clear, it can be seen that the Areas now run numerically in a clockwise direction starting and finishing in the North. One item of note, the old AARA10 has become AARA14, which as far as I am aware is a new allocation as the old system only went up to AARA13.

UK Military Area Radar

Starting from this month, I intend to review the frequencies in use with Scottish and London Military. There is little doubt that the gradual reduction of operational aircraft, squadrons and airfields within the UK over the past ten years has lead to a reduced number of frequencies in use by the military.

As a consequence, the list of London and Scottish Military frequencies in use seems to get smaller every year. We start this month with Scottish Military Radar, London Military will follow in a future column - If anyone has a recent (1998) list of London Military frequencies and transmitter sites could they please send in a copy - Thanks.

Scottish Military

My thanks go to an old friend and two anonymous readers who have kindly sent in the latest situation with Scottish Military frequencies. Apart from the distress frequency 243.0, there are currently just twelve frequencies in use, they are as follows:

Frequency	Comment
134.3	Initial Contact Frequency
134.475	
231.625	
249.475	Initial Contact Frequency
252.475	
258.0	
259.175	
259.725	
259.775	
268.575	
268.925	
292.675	

The transmitter allocations are as follows:

Lowther Hill	134.3/249.475/292.675
Mangersta	134.3/134.775/249.475
Windyl Head	134.3/134.775/ 249.475/252.475/259.775
Rhustaffnish	134.475/259.725/268.575
Craigowl Hill	134.475/259.175/ 268.925/292.675
Great Dunfell	252.475/259.775
High Buston	134.775/259.175/268.925
Fitful Head	231.625/258.0
Stornoway	231.625/258.0/259.725/268.575
Tiree	249.475

I found only one possible query, can anyone confirm when 249.425 was withdrawn from use by Scottish Military? I have a record of it in use during mid 1997.

8.33 Update

Why is it that bureaucrats have to invent amazing names for a group of people who sit round a table to discuss something? Anyway, the Eurocontrol **8.33 PMC** met on the 23rd July to discuss the delays to the introduction of 8.33kHz spacing. (PMC = Project Management Cell!!!!). The outcome, as expected, was that the introduction within Europe will now be delayed until the 7th October 1999.

Seven countries will be the first to introduce the new spacing, they are: Austria, Belgium, France, Germany, Luxembourg, Netherlands and Switzerland. This is, allegedly, the final delay and no further extensions to the deadline will be made to allow the airlines to re-equip their aircraft. The UK is now expected to convert during the latter part of the year 2000, although having spoken to the CAA, it seems that initially very few London Control frequencies will be changed.

N225SF

In reply to my request for information regarding the aircraft registered N225SF, I have had a reply from **Peter H** in Staffs. He writes that the aircraft, thought to be a C-130 operating for the US Military is on the US register as a Gulfstream 1159 owned by the Chevron Corporation. So not such a mystery as first thought?

A Plea

Lastly, I hope you don't mind but I have included a brief note to help a long-standing friend who is now disabled. His car, which is specially converted for him to drive, was broken into at the RIAT at Fairford this year. His vehicle was immobilised and consequently safe but unfortunately his car radio and his scanner, Icom IC-R100, were stolen. He has tried in vain to replace the Icom but without much luck, it seems they are quite rare second-hand. If anyone has an IC-R100 they wish to sell please contact me via SWM and I will put you in touch with him - thanks. See you next month.



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Satellite TV News

This month's column format has changed somewhat due to personal 'happenings' which I've detailed informally later, though the satellite strand is maintained...
Checking out the skywaves evening of August 11th, I ventured onto Intelsat K @ 21.5°W and found 'c/t/n test transmission' @ 11.682GHz vertical analogue.

Unusual for such a European activity (using PAL) at past 2200 hours and I continued to monitor the downlink. At 2230 up came a caption showing it was in fact a corporate rehearsal for BP-ARAMCO. Various 'media' activities followed including sound tests, camera angles and lighting adjustments. This followed the announcement earlier that day of the World's largest take-over between these two oil groups and the knock-on effects could well be profound particularly in the employment (or lack of) sector as the groups merge into a single operation and 'rationalise' much of their administration. Unfortunately, the next day I was away from home and missed the all important transmission - did anyone see this presentation?

Intelsat K again at teatime of July 28th and a caption 'SOHO 601' and on colour bars 'TSG-601' suggesting a London based facility company. Hovering on the downlink 11.678GHz vertical appeared a series of commercial playouts and repeats for 'Loose Rabbit', a string of video commercials with running times of 15 seconds, 30 seconds, etc. For 'Loose Rabbit' fans the London number 0171-439 2730 as appeared on the screen could be an anoraks dream!

Copy deadlines meant that several interesting sightings were missed last column. July 13th and the Orangemens' March in Northern Ireland was given high exposure news coverage - that morning a city march from 0900 hours was carried live on *Intelsat K* (I assume this was ex Belfast) though most of the action seemed to concentrate in the small town of Drumkree.

There was the Orangemens' encampment in a field under careful observation by the UK

forces and local police who were camped in the next field, large tents, kitchens and a fleet of ambulances. Now along these fields ran a country road and several SNG (satellite news gathering) trucks were parked complete with uplink dish and small scaffold tower for their reporter/live feeds, etc.

Various live reports were noted mainly on the 5°W and 3°E *Telecom* birds identifying as 'C4 O/B Unit', 'UKI/31 (ITN Mobile Edit)', the familiar NI based 'UKI 120 DGSP' and oddly 'Army Camp Stores'! This same day saw the start of the *Tour de France '98* from Cork in Southern Ireland and remarkable air shots were carried live via *Telecom* 5°W at 12.690GHz vertical. The annual *Tour de France* always provides high quality pictures from the most difficult positions - usually moving cars, motorbikes and the air - over the years these OB techniques have reached dramatic perfection.

President Clinton is always good for news and in August came court statements and revelations over suggestions of earlier sex involvement with a member of his junior staff. New England Satellite fired up their SNG truck with a live NTSC analogue feed into Sky News via *PAS-3R* @ 43°W (12.730GHz horizontal) into their 1800 news broadcast (they'd convert back into PAL back at Isleworth).

Our Sandown, IoW campaigner **Roy Carman** has closed down his earth station in Haig Close, escaped from the 'Garden Isle' back to the mainland and is currently rebuilding the satellite system in Dorking, Surrey. His final reception notes from that sunny isle has a taste of radio - July 15th and on *Eutelsat II F4*, 7°E @ 11.175GHz horizontal Roy saw footage of and music from Essex-FM @ 96.3MHz, the use of computer technology in driving that station and equipment control...then on July 20th, same satellite, the control room of 'Pirate FM' and related broadcasting activity...its now July 28th and again *II F4* and footage of 102.4 'Wish FM' with their cleaner listening to programme output.

July 30th and *Orion-1* @ 37.5°W with a corporate presentation, the quarterly meeting of the 'Tivoli' company with live hookups between Slough, Austin (Texas), Raleigh, Rome, Santa Clara and Indianapolis - this on 12.668GHz vertical. Unusual these days to see analogue TV on this bird!

Finally, congratulations to our Chonburi, Thailand contact **Alan Smith** who has recently married and moved 'down the road' - his 3m dish is currently being re-erected. Alan is subscribing to the local DTH digital TV service using a 600mm dish and receiver model ABS 9877 from the 'Sun Moon and Stars' company.

The 28 channels (@ £15 a month) includes BBC World, which suffers the 'nasty habit of freezing the video' and breaks in the audio, Alan suspects a too low data rate and has written to the Beeb.

On A Personal Note

After much delay and indecision I have bought a digital satellite receiver with latest software as of mid August, hopefully I can master the new technology. I opted for RSD's OMD 300 - it's UK made (in Stirling) and the company were happy to provide full information, technical data and software upgrading instructions - unlike another well known UK based company that are sourcing their badged digital receiver offshore and wouldn't even supply a leaflet - business must be good!

A recent hospital op' and a period away from the daily slavery has enabled me at long last to fit my original 1.5m dish with a 4GHz C-Band LNB (17K noise, £60 new), feedhorn (£10), support struts (nil) and fire the system up - signals first time!

To change from left to right hand circular I'm having to



Fig 1: News reporter awaits a live broadcast from Drumkree, NI, in the rain, via the French Telecom B2 satellite.



Fig 2: Intelsat K and the opening montage prior to a news footage transfer into the UK.



Fig 3: Yemen TV via Arabsat 2A @ 26°E in C-Band.



Fig 4: Test card prior to programmes on *Arabsat 2B* @ 30.5°E in C-Band.

trudge out into the snow and twist a PTFE section within the waveguide but otherwise results are impressive, considering the size of the dish - rather undersized for C-Band work. Trawling across the Clarke Belt and *Arabsat 2A* @ 26°E provides very strong signals from various Middle East domestic channels such as Saudi, Kuwait, Syria, Egypt, Doha and even the Yemen TV service.

TV Mauritania appears on *Arabsat 2B* @ 30.5°E which opens with news at 2000UTC, a sparklie signal though almost clear with bandwidth reduction - this on an old manually tuned 7dB threshold receiver. I can track from about 50°E round to 27°W - further West and it's screened by the 1.2m dish.

Next job is to fit an active splitter and feed a 2nd 'modern' a 3dB threshold extension receiver - results should dramatically improve. It shows that you can work C-Band effectively without a mega dish and bank balance. One problem on the original dish circa 1987 was the very noisy 600mm actuator arm (motor drive), not unlike an old car trying to start as the drive tracks the dish, more complaints upcoming from the neighbours - memories of the planning enforcement officer of last year!

I stripped down the motor and then having found the brushes and springs that immediately leapt out into the long grass, greased and re-assembled the thing - with much difficulty - and it still worked, the arm and motor was wrapped in swathes of bubble-wrap and an overcoat of a black dustbin liner. Result was a vastly quieter motor and sufficient to keep the neighbours sleeping through the night. Progress reports to follow...

Orbital News

Arabsat are preparing a free-to-air package (FTA) for the 13°E *Hot Bird 4* slot based on the Scientific Atlanta PowerVu digital standard. *Arabsat* will receive via satellite the domestic channels from across the Arab World and uplink the total package from Tunis - intended for the Arabic community across Europe.

NRK, Norway has signed with Canal Digital to provide both NRK1, 2 services on their digital platform in both analogue (D2MAC) and digital. A new D2MAC smart card will include NRK, TV2, TV Norge and Kanal 5 - TV Norge will go D2MAC shortly and drop analogue on 1°W.

There's plenty of transponder capacity at the Scandinavian 1°W hot spot at this time and the decision to proceed with *Thor-4* is on hold until end '98 albeit there's a 24 month delay between an OK and the bird arriving in its slot. Delaying the 'go-ahead' decision will allow the on-board electronics to be modified, taking into account new changes in technology, Internet, etc.,



etc. *Thor-3* arrived on station early August which offers 14 Ku-band transponders and an orbital life of + 11 years.

Portugal's CABO are distributing 12 DTH channels soon the Via Digital platform across Iberia as from September 1st including a sports channel 'Sport TV'. Canal Satellite Digital with Canal+ Espana are working with CNN to offer a 24 hour Spanish language version 'CNN Plus' with journalists in Madrid and backup from a dedicated Spanish group at CNN HQ in Atlanta.

Polsat TV and Canal Plus Polska are joining forces in a Polish digital platform and hope to include national broadcaster TVP this coming Autumn airing via the 13°E *Hot Bird* slot. This will rival the Maidstone, Kent based digital package Wizja TV that also intends opening this Autumn.

Belgian Financier Albert Frere is joining with Jean-Claude Darmon to form a French all sports channel opening this Autumn and the French Canal+ group still reckon to open their 24 hour news channel but it's now delayed until Autumn 1999 - they're actively seeking an active partner in the newspaper world.

It's been a quiet summer at the Kourou launch facility with no launches in four months from last April, no fault at the facility but problems with the satellites themselves. Eutelsat's *W1* bird suffered fire damage at the French Aerospatiale factory, *PAS-7* is having more back-up checks made and the *ST-1* satellite is being modified and upgraded. Arianespace still reckon to launch 11 birds this current year.

Press releases...Intelsat's *805* bird entered service at the end of July at 55.5°W running 41.5dBW at C-Band over 28 transponders (1.5m dishes!) and with 3 Ku-band transponders @ 52dBW - bird is intended for 'multimedia solutions to the Americas and Europe'. Eutelsat have ordered up a ground stored satellite from Matra Marconi as a spare should any of their orbital fleet fail.

Eutelsat dispute the ITU decision in not recognising Eutelsat's claim for their *Europesat-1* bird to slot at 29°E. The ITU say that they've been too long in utilising the 29°E slot.

Meantime, SES Astra are still using the 28.2°E slot and Eutelsat claim that SES operate at that slot in breach of ITU Radio Regulations and without permission.



Fig 5: News announcer for TV Mauritania at 2000 hours UTC.



Fig 6: Rear view of my C-Band LNB attached to feedhorn. Note the F-type Plug is carefully wrapped with aluminized tape to ensure waterproof connections.



Fig 7: Hispasat 30°W TV-3 identification.

Fig 8: Arianespace caption ex Kourou launch site after the Eutelsat *Hot Bird 4* launch.

Fig 9&10: Examples of Australian news feed package idents via *PAS-4* @ 68.5°E.

Airband

The day after this issue of *SWM* is published, September 25, the **Red Arrows** are scheduled to display at Cranwell. Last-minute cancellation is always possible, not least because the 'Reds' are theoretically a combat-ready shadow squadron.

Information Sources

If in doubt, try 'phoning the free information recording (0500) 354802 after 1900 local the night before. *Red Arrows* displays are notified for the purpose of temporarily restricted airspace. Royal Flights are also notified, tie this information up with the *Court Circular* or similar royal diary in a quality daily newspaper - and you can find out where the Queen's going!

The Radiocommunications Agency is the regulatory authority for radio usage in this country. They publish various guides, free of charge, from their library (telephone 0171-211 0502/0505).

I obtained a copy of RA255 *United Kingdom Table of Radio Frequency Allocations Part 2* (28-470MHz). Officially, the military airband doesn't exist! There is an obscure allocation for 'government' and 243MHz emergency locator beacons are specifically mentioned.

My *Airband Factsheet* is now on Issue 8. Please, I don't have a photocopier so I can't send out *Factsheets* - even though people keep asking me for one! Instead, send a pre-paid reply envelope (to hold two A4 sheets) to the Editorial Offices at the Broadstone address given on the masthead (contents) page of this *Magazine*.

A satisfied customer is **Andrew Green** (Barnsley) who particularly appreciated the supersonic routes included with the *Factsheet* as a bonus. I believe that my supersonic routes chart is the only one available to enthusiasts. Andrew also equipped himself with some official publications, as suggested in the *Factsheet*.

One publication, the *En-Route Supplement* from the RAF, no longer lists Finningley. Andrew thinks that the airfield still looks in good condition. It's probably on a care and maintenance basis, then. There's a suggestion that Doncaster Council will turn it into a civil airfield, competing perhaps with Sheffield.

Surprisingly, many currently active military bases welcome civil traffic. Sign of the times that they're desperate for the revenue generated by the landing fees! Northolt is a good example. Beat the crush at Heathrow.

So far, I've been less than impressed by the Internet. Finding information can be hit-and-miss as well as time consuming (for that, read expensive). When searching, unconnected advertisements suddenly clutter the screen without so much as a by-your-leave.

However, if you know that an information provider has put exactly what you need on the Internet (and you know where to find it!) then a purpose is served. Like all new technology, it is a valuable tool when suitably applied. It is not the universal answer to every conceivable problem.

In Runcorn, **Peter Thornhill** has been accessing Entrix Aviation at <http://www.entrix.co.uk/aviation/> He pays £4.95 a month but doesn't say to which service provider. Then, there's the 'phone bill to think of. Peter also sends examples of NOTAMs <http://www.notams.jcs.milhome.html>, weather observations for certain airports <http://www.phd.nl/aviation/wx/> with satellite pictures included, navigation warnings <http://www.ais.org.uk/nav/nav.htm> and aerodrome information <http://www.ais.org.uk/aero/aero.htm> Airline timetables are also to be found.

Long time, no hear from pilot friend **Bob de Savigny-Bower**. He tells me that

<http://www.totavia.com/BCaviation/etc.htm> enables real-time monitoring of US air-traffic control. You didn't say which airports are included, Bob.

Teletext, in particular BBC2 *Ceefax*, can be nearly as fast as the Internet on a good day (only joking!). Page 475 warns of the hazards of travel to certain distant lands. There's a reference to airways which overfly places regarded as dangerous and you can cross-reference these to a high-altitude radio-navigation chart, if you want a bit of excitement. Chart suppliers are listed on the above-mentioned *Factsheet* and I only mention those that sell by mail-order to the public.

Radio Procedures

When instructed to climb, descend or turn, controllers make certain assumptions. Climb or descent should be at 500ft per minute (as measured on the cockpit Vertical Speed Indicator, VSI). A different rate must be agreed or, as we are reminded by AIC 71/1998 from the CAA, the controller will find that the aircraft no longer follows the expected tactical plan - and might conflict with other traffic as a result.

Turns are conducted at Rate 1 (would take two minutes to go full circle). It's a standard training drill to enter a turn, hold Rate 1 on the Turn and Slip Indicator (or Turn Co-ordinator) and not lose height or much airspeed! Go on, try it!

Modern large airlines often don't simply use the flight number as the callsign. For example, flight BA5 goes London-Tokyo by B.747 but the flight with callsign Speedbird 5W goes to Houston.

John Weir (Edinburgh) asks about callsign structures. A typical callsign has a name to designate the operator, e.g. Speedbird for British Airways, then a number, for the actual flight and finally an optional letter.

What the airlines do with the letter is their business and is frequently confusing! Sometimes it represents the point of origin or the destination. Britannia designate outward sectors as A, returns as B (e.g. Britannia 98 Alpha would be an outward). They also change frequently - even on the spur of the moment - to cope with operational needs.

I couldn't trace Northwest 9881 or United 9499 as neither callsign matches a flight number, so can anyone else tell me (and John) what these are? The callsign 'County' is unhelpfully listed as County Air Services Ltd. and not having had any dealings with them I can't tell you any more, John.

The official civil callsign list is *Designators for Aircraft Operating Agencies, Aeronautical Authorities and Services*. Published by ICAO, you can buy it from the CAA whose address is on the *Factsheet*. Before you all rush to get one, I warn you that it's expensive!

A possible source of flight numbers is the list sold by **Len Woolley, 3 Furze Gardens, Morwenstow, Bude, Cornwall**



Abbreviations

AIC	Aeronautical Information Circular
B.	Boeing
CAA	Civil Aviation Authority
ft	feet
ICAO	International Civil Aviation Organisation
Me.	Messerschmitt
MHz	megahertz
SID	Standard Instrument Departure

Canadair Regional Jet.

Christine Mlynek.



EX23 9SX, for £3.00 all inclusive. Shown are origin, destination and, if known, the aircraft type. Len points out another convention: even-numbered trans-Atlantic flights are eastbound (except Air France!). He is still working on a computer disc version of his listing.

A Bit of History

Sixty years ago, they made Spitfires in what is now Jaguar's motor works at Kingsbury Road, Castle Bromwich, so I'm told by **John Court** (Birmingham). In July there was a reunion of many of those involved in production of this aircraft, including Alex Henshaw, test pilot.

I wonder if he remembers tests to improve speed? Designed by Mitchell, the Spitfire was intended to be faster (including in the climb and in terms of rate of turn) than any potential adversary. Various versions during the War were spurred on by the need for improvements so as always to maintain the speed advantage. If the Axis forces were equipped with a better Me.109 then Allied Spitfires had to rise to the challenge.

Every bit of speed mattered. Even the exhaust was directed backwards to obtain maximum jet effect. Special flat rivets were specified so as to reduce airframe drag. Conventional rivets have a raised head that sticks out into the slipstream.

Unfortunately, these rivets were difficult to get right and expensive, so the idea was to fit them only where they made a worthwhile difference. They built a prototype with all-flat rivets, then stuck halved dried peas on them. By removing the peas in groups, test-flying after each amendment, it was possible to determine which rivets made a difference to speed and which didn't matter.

Back to the celebrations, I'm glad that Ray Hannah still enjoys flying this type - as he did on this special occasion.

The Spitfire, the supreme performer, was outnumbered by the Hurricane. Axis pilots felt insulted when shot down by the latter but considered their defeat was justified if a Spitfire beat

them. Captured airmen often insisted that it was a Spitfire, not (as was really the case) a Hurricane, that had shot them down.

There's a link to PW Publishing. Our sister magazine *Practical Wireless* was founded by FJ Camm, whose brother Sidney designed the Hurricane (and other Hawker products).

Frequency & Operational News

I received an anonymous list of frequencies from **Furmanite Engineering**. I'm not sure how to make use of the list as no explanation was given and it just appears to be a copy of a standard publication. Perhaps the sender forgot to include the details? In which case, please write in to the above address (rather than sending a FAX to Broadstone that they then have to post to me!).

Most of the following information comes from **Martin Sutton** (CAA). East Midlands loses all outer and middle markers. Liverpool SIDs sometimes hand off to London Airways, Manchester Sub-Centre, 125.1MHz. London (Heathrow) SID Midhurst 4F is a revised version of 2F. Manchester Approach 119.4MHz now offers Danger Area Activity Information Service (DAAIS) for EG D304 Upper Hulme (A/C 68/1998). Helicopter route HMR 6 (southern North Sea) begins at new point LAGER. In the London Zone, helicopter route H9 has a new holding point at Feltham.

If you require more details on any of the above, write in and I'll print them here. Don't forget to tell me which month's edition you're asking about! The next three deadlines (for topical information) are October 5, November 9 and December 7. Replies always appear in this column and it is regretted that no direct correspondence is possible.



Vickers Vimy Replica.
Christine Mlynek.



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Propagation Forecasts

How to use the Propagation Charts.

The charts contain three plots. The lower dashed line represents the lowest usable frequency (LUF), or ALF (Absorption Limiting Frequency). The chances of success below this frequency are very slim.

The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

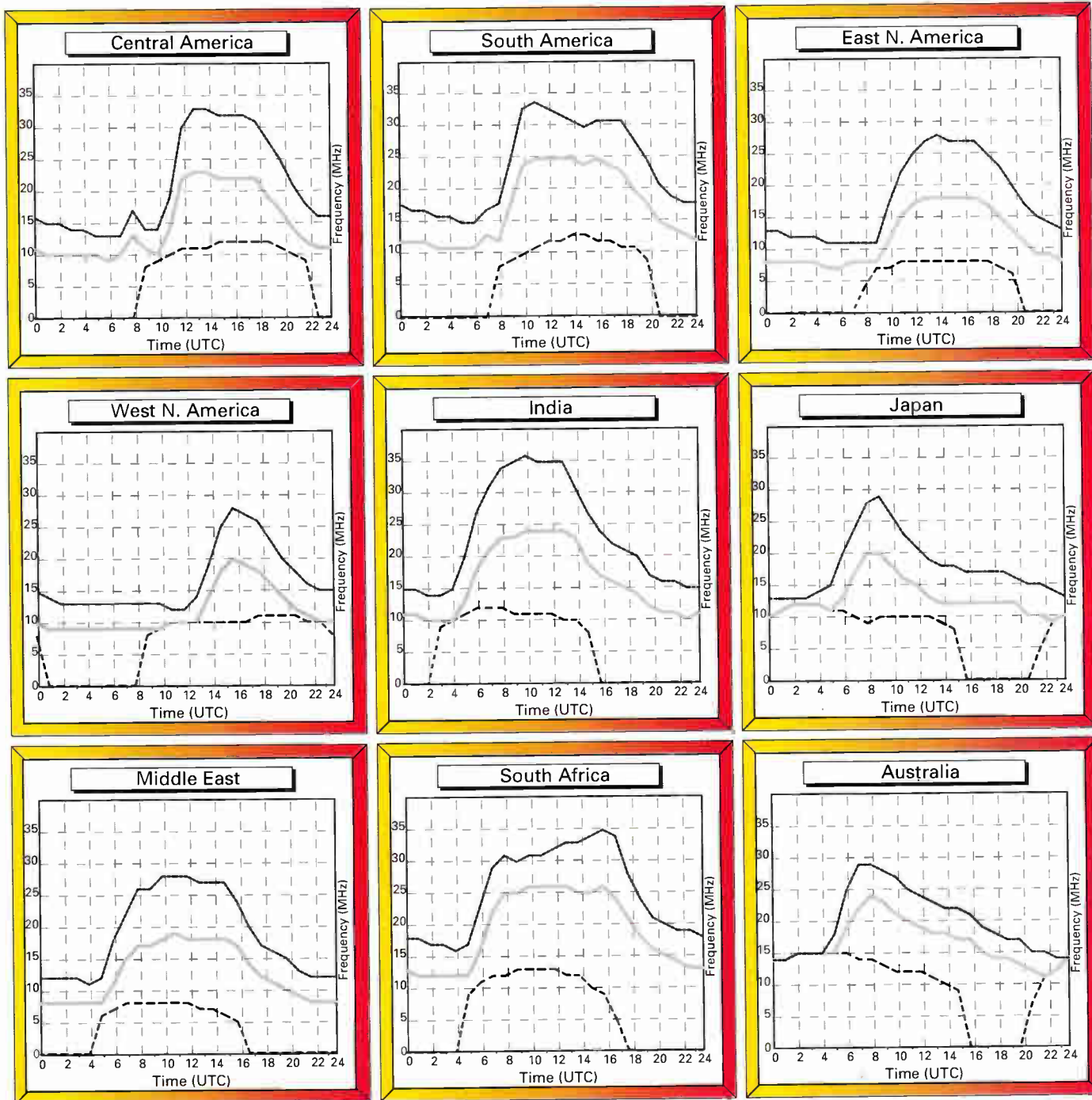
Lastly, the upper dashed line, represents the maximum usable frequency (MUF) a 50%

probability of success for the path and time.

To make use of the charts you must select the chart most closely located to the region containing the station that you wish to hear. By selecting the time chosen for listening on the horizontal axis, the best frequencies for listening can be determined by the values of the intersections of the plots against frequency.

Good luck and happy listening.

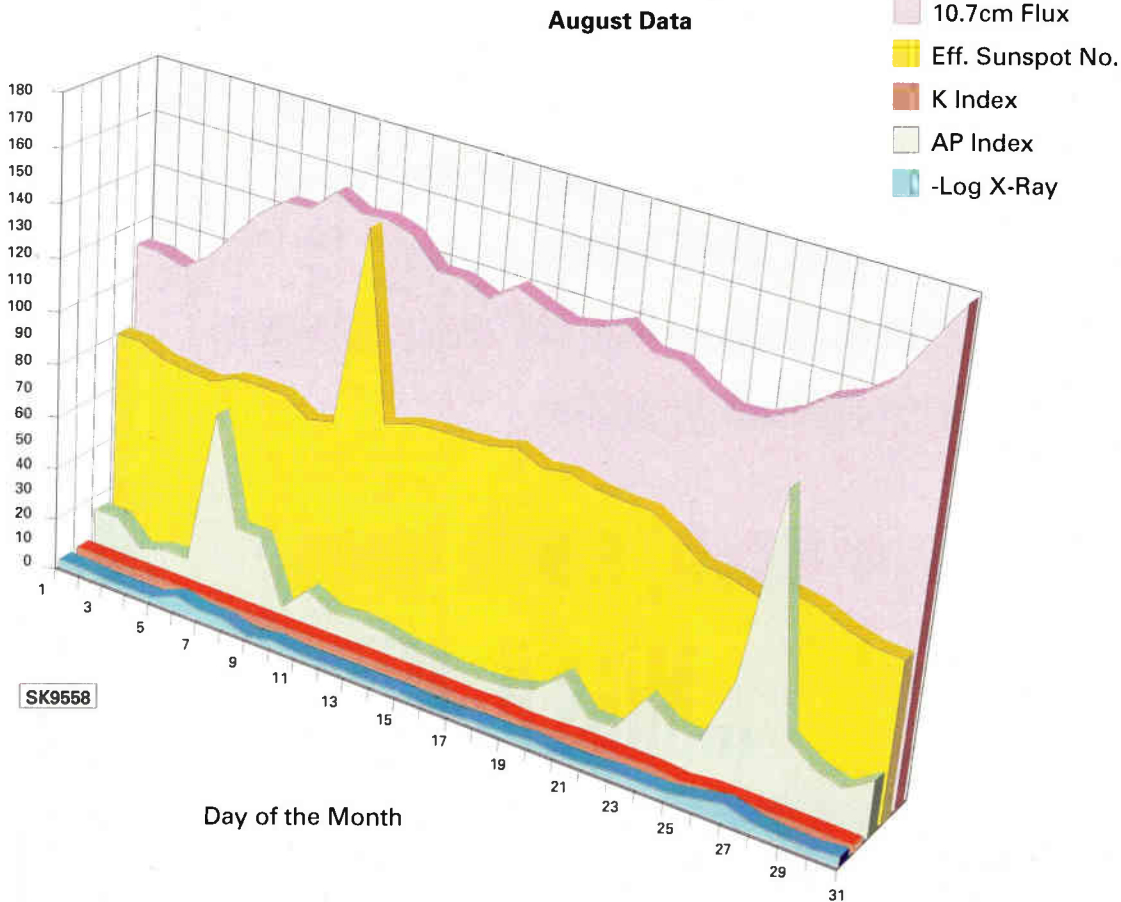
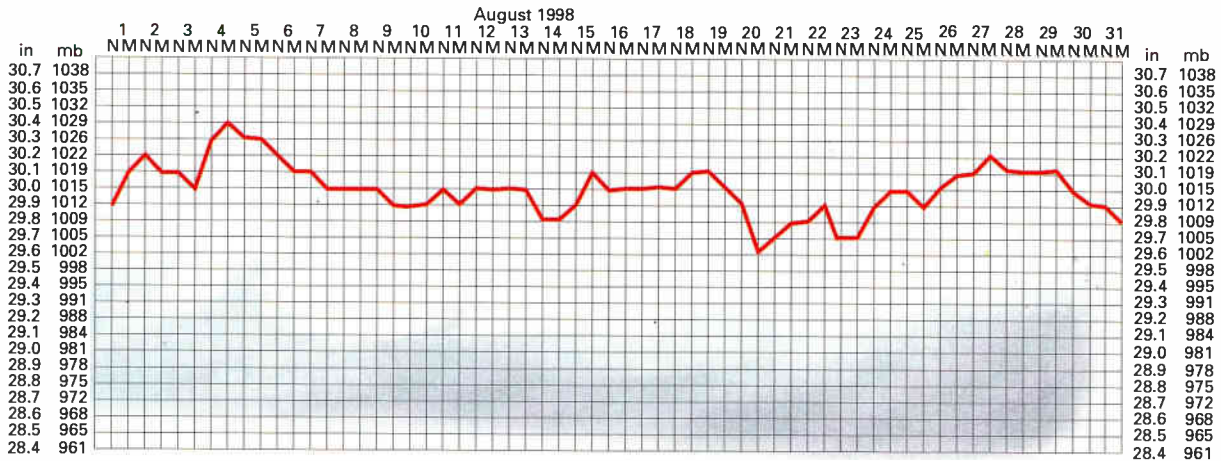
October 1998
Circuits to London



■ KEVIN NICE G7TZC, SWM EDITORIAL OFFICES, BROADSTONE ■ E-MAIL: kevin@pwpublishing.ltd.uk

Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, August 1998.



guide to the chart

The 10.7cm solar radio flux is used as an indicator of the general level of solar activity.

The K and AP indices are measures of geomagnetic activity.

The K index ranges from zero (very quiet) to nine (severely disturbed). K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions.

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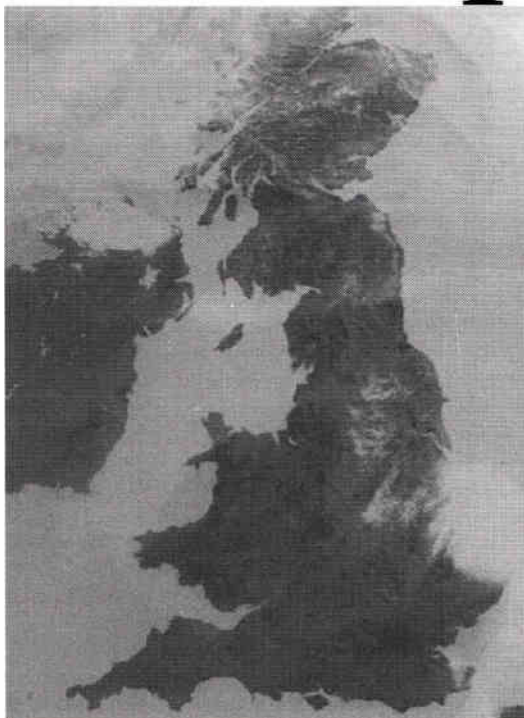
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Info in Orbit

Summer 1998 became one of the most active periods for WXSAT monitoring that I can recall in many years. Looking in my log book, nearly a decade ago, METEOR WXSATs were being launched regularly, and often transmitting telemetry on the same frequency as their predecessors - usually 137.30, 137.40 or 137.85MHz. Then we had the NOAA WXSATs (numbers 9, 10 and 11), and could sometimes hear the signal from one over in the far west, while the next one came up in the far east - also on the same frequency! Today's WXSATs seem better organised.

The biggest improvement that I have noticed is the change in communication between users - you, me and thousands of others - and the official organisations which operate the satellites. The Internet is one facility which has made this possible.

Another change is the helpfulness of the operations and planning staff closely involved with controlling the satellites. My enquiries of staff involved with the RESURS project have been remarkably fruitful.

Ippolitov Vitaly and Olga Tarakanova have provided valuable information about the equipment on-board RESURS 01#4, part of which I am including this month.

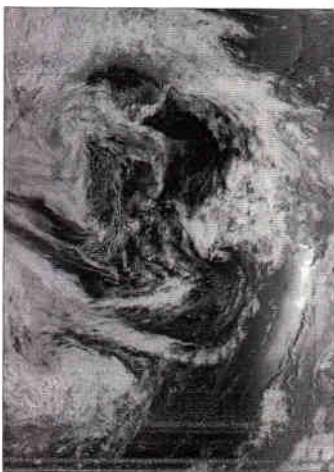


Fig. 1: NOAA-1511 August 0930UTC.



Fig. 2: RESURS-O 1#4 6 August 2135UTC northbound at night.



Fig. 3: RESURS-O 1#4 11 August 1015UTC.

Current WXSATs

NOAAS-12, 14 and 15 transmit continuous imagery. The v.h.f. antenna problem on NOAA-15 originally threatened to prevent most a.p.t. users from receiving good quality images. It had not deployed correctly, resulting in transmission of a very weak a.p.t. signal.

Those using standard equipment (as compared to the use of large antenna arrays, usually the province of professional receiving stations) received poor telemetry. Then the antenna effectively fixed itself in June when it 'flipped' into place. Since that date, I (and everyone else) have received superb images - see Fig. 1.

METEOR 3-5 resumed transmissions on 137.85MHz after a period of silent running. SICH-1 and OKEAN-4 (a.k.a. 1-7) have been heard making a few brief transmissions, but I have not obtained an image.

The new RESURS 01#4 made a few early transmissions on 137.30MHz until about 16 July, when further data transmissions were heard on 137.23MHz. It is scheduled for testing during a two month period. I logged a short transmission on 137.40MHz at 0945UTC on 29 July, and a day's operation on 6 August - see Fig. 2. It resumed transmissions on 137.40MHz on 10 August.

A new schedule for transmissions from the European geostationary WXSAT

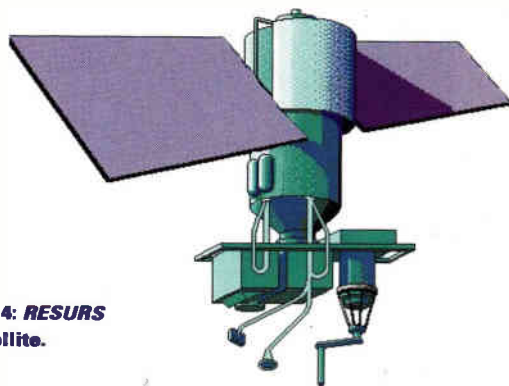


Fig. 4: RESURS satellite.

METEOSAT-7 was introduced on 15 July, but the changes listed are for those with Primary Data User Systems (PDUS). At the time of writing, my own PDUS system is not yet operational. Across the Atlantic, the American GOES-9 WXSAT was taken off active duty and replaced by GOES-10.

RESURS - All Revealed!

It would be easy to believe that the METEOR series was the main Russian imaging constellation. I still have some tape recordings of METEOR 1-30, one of the best of the early imaging satellites that I have seen.

The first in the RESURS series, RESURS-01 was launched on 4 November 1994 into a circular, sun-synchronous orbit, from Baikonur cosmodrome (Russia), that averaged 678km high. It carried two types of imaging hardware, but transmitted its data in digital form on 8.192GHz, so did not attract the attention of amateur satellite enthusiasts. The on-board equipment was named MSU-E and MSU-SK, the former obtained high resolution imagery comparable to that from LANDSAT.

Olga Tarakanova of the R&D Center ScanEX, in

Table 1

Average orbit height	835km
Orbit inclination	98.05°
Earth orientation precision	0.167°
Orientation precision by velocity vector	0.45°
Stabilization precision, not more than	0.005°
Carrying frequency of digital data transmission	8.192GHz
Carrying frequency of analogue data transmission	137 - 138MHz
Digital data rate	61.44, 15.36Mbit/s
Common mass of the satellite	3200kg
Mass of useful loading	1000kg
Active life period - minimum	2 years

the CIS, very kindly sent me a complete equipment specification, with information on RESURS, including Table 1 (one of several). The new satellite, RESURS 01-4 - see Fig. 4 - is the first in the series to transmit a.p.t., and therefore attract our attention.

Operated by the Commonwealth of Independent States, its main objective is researching the Earth's

natural resources, ecological monitoring, meteorology and making geophysical observations of the sun for the study of the radiation balance of the Earth. Data transmission is carried out in both digital and analogue forms - a.p.t. (See **table 1**, below, left)

The scientific equipment includes the following: Multispectral scanner of high resolution MSU-E (two complete sets) for Earth observation in visible and near infra-red spectrum.

This scanner uses three sections of the spectrum (0.5 to 0.6, 0.6 to 0.7 and 0.8 to 0.9 μ m). Immediately below the satellite (its nadir) the scan (swath) width is 60km by 500 - 600km with a resultant ground resolution of 30m along the flight direction and 33m across. Also carried onboard is a multispectral scanner of middle resolution MSU-SK (two complete sets) for Earth and cloudiness observation in visible and near-infrared spectrum, also television apparatus MR-900M for cloudiness and Earth observation in visible and near-infrared spectrum with spatial resolution 1.6 x 1.8km.

As has become common practice for many satellite launches, a number of smaller satellites were included in the *RESURS* launch. Further information on *RESURS 01#4* will be included in future columns, my grateful thanks to Olga and her colleagues at ScanEx for providing extensive information.

East & West Extremes

Two NOAA images from **Bob Cobey** reminded me of the 'extremes' that can be seen from the east and west sides of Britain, from images transmitted by the polar WXSATs. **Figure 5** was received by Bob during July, from a six-degree elevation pass of *NOAA-15*. His QFH antenna is loft-mounted and the picture clearly shows both the Black Sea and the Caspian Sea < enhanced with artificial colour.

On the eastern side of Britain, those with a clear eastern horizon may be able to receive low elevation passes from WXSATs at the extreme limits of UK reception. Similarly, for those on the western side, views of Northern Canada and the mid-Atlantic are possible.

Figure 6 shows the extreme north-west limit that I can see from Plymouth (UK). My western horizon is perfect - we live on a hill with a clear view to the west. Unfortunately, my eastern horizon is limited by houses on the east side of the hill. Consequently, my images are limited to coverage as shown. I would be very pleased to hear from readers who have comparable (or better!) views. Let's see those pictures!

Sicilian Volcano Eruption

"Early in July a tremendous heat wave affected the Mediterranean region and a cloudless sky promised a good view from the satellite". Thus wrote **Peter Schoen** of Helmbrechts, Germany, a regular correspondent to 'Info'.

Peter operates an h.r.p.t. system (high resolution NOAA pictures) and had a rare opportunity to

collect high quality image data from *NOAA-15* at 1732UTC on 1 July. At that very time, the Aetna volcano on the island of Sicily erupted - for one day.

Peter kindly sent a set of pictures, including **Fig. 7**, the channel 2 image in which smoke can be clearly seen blowing from the volcano. Just one day later, the drama was over and the images showed a heat excess but no further smoke.

Maplin System

A letter from **John Jardine** included an image taken with the Maplin WXSAT system that John had constructed - the first that I have seen in a very long time. John lives in a ground floor flat, so antenna positioning was a difficult problem.

Some 10 years ago John tried the MK1 system, but did not have much success, even using the tape recorder facility that allowed live data to be recorded for later playback under controlled conditions. Last year, after again reading this column, John opted for the ready-built and tested Maplin system.

Figure 8 shows John's crossed-dipole, a single set of dipoles with no reflectors, this is the antenna retailed by Maplin for use with their satellite receivers. Despite the limited effectiveness of his antenna, John reports receiving a clear signal from the NOAA WXSATs for about ten minutes, and sent **Fig. 9**, a *METEOR* 3-5 image.

John comments that the system accepts up to 781 lines of data (used at 120 lines per minute), and produces a 250KB file size which can be saved in 'tiff' format for transfer to a graphics program.

Geoffrey Anderson of Weobley in



Fig. 5: NOAA-15 image of Eastern Europe during July from Bob Cobey.

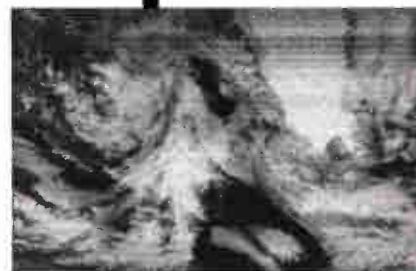


Fig. 6: Greenland from Plymouth.

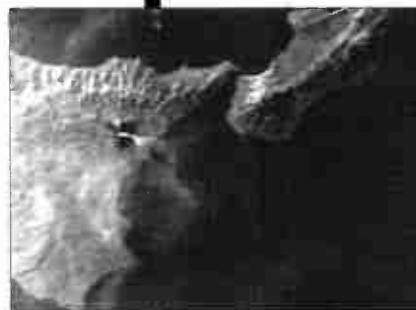


Fig. 7: Sicily - volcanic activity image by NOAA-15 from Peter Schoen on 1 July.



Fig. 8: John's Maplin antenna.



Fig. 9: METEOR 3-5 image on 9 May from John Jardine.

Herefordshire sent two images taken using a Dartcom receiver, with output fed directly into an SB16 sound card fitted into his computer. The 'WXSAT' program was used to decode the image via the sound card.

The antenna used for WXSAT reception is a 10-element, vertically polarised 2m beam, manually tracked from information obtained from *WinOrbit* which Geoffrey has displayed on the screen at the same time. The 10-element antenna normally gives a good signal from horizon to horizon - except for high angle passes, when Geoffrey suffers drop-outs at elevations angles of about 45°.

Geoffrey has just built, and now operates a RIGSAT RX2 WXSAT receiver with a standard turnstile antenna. He comments that the combination produces "wonderful results", but in this instance, cannot capture the satellite much below 10° elevation. **Figure 10** shows sunglint in the Mediterranean sea just below Italy.

University Student Projects

Andy Pritchard E-mailed me from Staffordshire where he is at university. They have an automated WXSAT receiving system made by Dartcom. It receives satellite transmissions using automated tracking software which is updated over the Internet - an increasingly popular method.

The antenna used is a dual cross dipole mounted on top of the octagon building which towers over Beaconside, Stafford. They use a 1m dish for collecting METEOSAT Images. The receiver is computer controlled and selects the satellites in sequence.

Andy's project is an automated system which recognises frontal systems on the images, and adds colour to the various 'fronts'. It then superimposes them on an appropriately timed METEOSAT image. The actual image that Alan sent was a near infra-red image from *NOAA-12* which needed contrast expansion for inclusion here.

E-mail Correspondence

I welcome E-mails from readers on the Internet. Please remember that I cannot respond if a valid

return address is not given! Many people are (understandably) using corrupted addresses to minimise the possibility of 'spam' (unwanted advertising E-mails) being received. If you expect a reply, please check your address is valid.

Shuttle Launch Schedule

STS-95 Discovery is scheduled for a launch on 29 October into a 28° inclination orbit. A comprehensive listing of all Shuttle flights and payloads, together with associated information is available from me as the *Shuttle Pack*. Please include a secure £1 and stamped s.a.e. for the A4 booklet.

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Frequencies

NOAA-14 transmits a.p.t. on 137.62MHz.
NOAA-12 and *NOAA-15* transmit a.p.t. on 137.50MHz.
 NOAAs transmit beacon data on 137.77 or 136.77MHz
METEOR 3-5 uses 137.85MHz in sunlight only.
RESURS-O 1#4 may transmit on 137.30 or 137.40MHz.
OKEAN-4 and *SICH-1* use 137.40MHz (brief transmissions).
METEOSAT-6 (geostationary) uses 1691 and 1694.5MHz for WEFAX.
GOES-8 (western horizon) uses 1691MHz for WEFAX.
MIR uses 143.625MHz for voice.

Father David Chapman

I receive a number of letters each year from several regular correspondents, and have frequently been touched by the extremely kind comments often made. Reverend David Chapman was one such correspondent, so I was saddened to hear of his passing on 27 February. David was a regular reader of 'Info'. I extend my sympathies to his family.

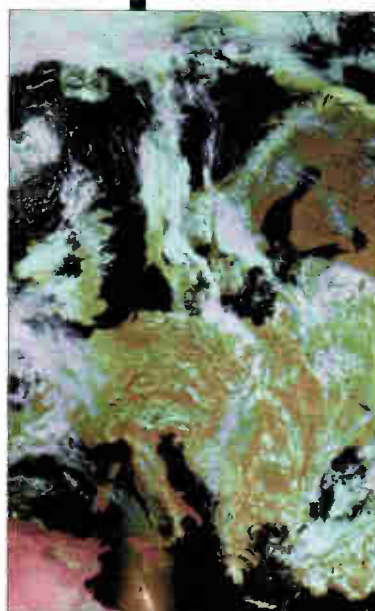


Fig. 10: NOAA-149 June at 1231UTC from Geoffrey Anderson.



Fig. 11: NOAA-12 near-infra-red image from Alan Pritchard at Staffordshire university.



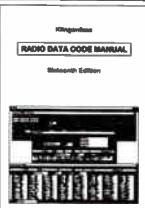
Fig. 12: Father David Chapman.

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Decode

Following last month's Decode Special, I thought it might be helpful if I continue the theme with some ideas on what to do next. Whilst it's great to be able to load programs such as JVFAX, HAMCOMM and RadioRaft, you will soon find that the basic set-up may not be ideal for your monitoring habits.

What you need is an understanding of how to adjust

the basic settings of each program so that they start-up in your favourite mode with all the settings optimised. This might sound complicated, but it really is quite straightforward.

Whilst all the necessary information is usually contained in the disk handbooks that are supplied with the programs, they are not usually written for inexperienced operators, so they can be difficult for the new listener to use. This is often compounded by the natural reluctance of the new

user to mess about with a program after finally managing to get it running!

To help you make the best of your new-found interest I'll try and take the hassle out of the customisation by providing some step-by-step examples of typical customised set-ups.

HAMCOMM Speed-up

This is probably the easiest of all to deal with as it relies on a special configuration file to set the way it operates. Every time you start HAMCOMM it looks at this file to see how it should set itself up. This file is a simple text file that can be edited using just about any type of simple text editor.

If you use a Windows based PC, the simplest program to use is *Notepad*, though you can use any basic text editor providing it doesn't save any formatting with the text - you can only use

Microsoft Word if you specifically save the file as a text file.

The author, *Django*, has made this configuration file extremely easy to change thanks to the addition of descriptive comments throughout the file. He is able to do this because when HAMCOMM starts and reads this file it ignores any line that starts with a #. In that way comments can be added at will providing the line starts with a #.

The only problem with the configuration file and its supporting comments is that they are really written for radio amateurs so demand a certain level of knowledge. Whilst it's tempting just to jump in and make changes, there's always a risk that you'll get in a real pickle and not be able to run the program at all.

To help you with this I'll run through a customised configuration file that you may find easier to adapt for your particular style of listening. One of the first things to do is to save the original config file so if you do get in a mess you can always get back to where you started!

A good name to use for this would be *old.cfg*. Now you need to generate a brand new configuration file that you can set-up with all your preferences. As before, you need a simple text editor to do this.

The first command to enter is 'set confirmexit on'. This causes the program to check whether or not you really want to exit the program and is a useful check to stop you accidentally jumping out of the program. Next we need to tell HAMCOMM which COM port we are using for the interface.

The command to add is 'select port com2' - obviously you need to change the port number to suit your system. HAMCOMM includes a fix command to deal with timing problems that may occur with some systems, but you should normally leave this disabled using the command 'timercheck off'.

Next comes some commands to get the displayed clock into the format you want. I would recommend you use UTC to line-up the displayed time with that used in just about every frequency list. To do this, 'set timezone UTC'. Next you have to tell HAMCOMM the difference between the local time shown on your PC's clock and UTC.

If your local time is an hour ahead you need to show the difference in seconds. So for each hour of difference, you need to either add or subtract 3600 seconds. To tell HAMCOMM to adjust for local time one hour ahead of UTC you need to use the command 'set timediff -3600'.

Now we start to get into the receive parameters of HAMCOMM. First of all you need to set the mode that HAMCOMM starts with. If you're into press or weather stations you will want standard RTTY so you use the command 'set mode baudot'.

However, if you're into marine band stuff you probably want to start with SITOR so use the command 'set mode ARQLISTEN'. You shouldn't need to use the AMTOR clock correction so set this off with the command 'set clockcorr 0'. You can also turn-on the extended RTTY character set with 'set extendedbaudot on'.

Now we can get on with setting speeds, shifts-and the like. The 'set baud 50' command sets the RTTY baud rate and you can enter whatever number corresponds to the speed used by your favourite station. The Morse speed can also be set and I suggest 'set wpm 20' for most commercial traffic.

You can supplement this with the 'set autowpm on' option. When it comes to setting the centre frequency for reception, I suggest you stick with the default setting i.e. 'set afcenter 1360' as this provides a very good starting point.

The shift setting depends very much on the type of signals you monitor with most commercial RTTY using 400Hz whilst SITOR generally uses 170Hz. The command to use is 'set afshift 400'.

If you're using a receiver with coarse frequency steps I suggest to make use of HAMCOMM's automatic frequency control to get the best results. To do this use the command 'set afc on'. In the example I left it turned off.

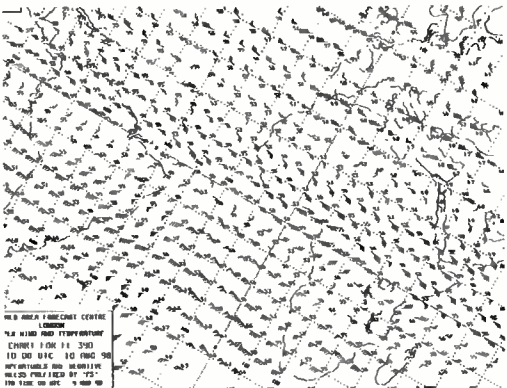
Another feature that's very useful for receiving text under noisy conditions is the unshift-on-space facility. This causes RTTY signals to revert from figure shift to letters after receipt of a space character. However, if your station sends batches of numbers this can be a real pain, so the choice is yours. The command is 'set autounshift on'.

Another precaution that you may find useful is the facility to suppress blank lines. To do this just enter 'set rxblanklines on'. You can also set HAMCOMM to receive the data in erect or inverted polarity 'set keying normal or reverse'.

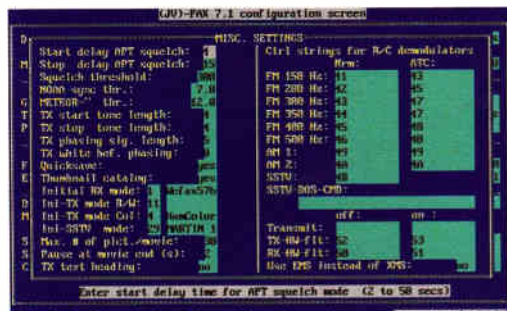
For the automatic decoding of SYNOP weather data you can use 'set wxdecode on'. To help with the decoding and display of data HAMCOMM uses a small receive buffer.

The default setting is usually fine, i.e. 'set rxbuffer size 512'. HAMCOMM also features a very useful receive buffer window which enables you to scroll back to see information that's scrolled off the top of the screen. You can set the number of lines with the command 'set rxwindowlines 75'.

Another particularly useful command for the listener is the 'set txwindow off'. This removes the screen space that's normally set aside for the transmit text and makes for a much cleaner display area.



High Definition JVFAX Image for Northwood on 4.610MHz.



Miscellaneous Settings Menu.

Decode Listeners' HAMCOMM Configuration

```
set confirmexit on
select port com2
set timercheck off
set timezone UTC
set timediff -3600
set mode baudot
set clockcorr 0
set extendedbaudot on
set baud 50
set wpm 20
set autowpm on
set afcenter 1360
set afshift 400
set afc off
set autounshift on
set rxblanklines off
set keying normal
set wxdecode on
set rxbuffer size 512
set rxwindowlines 75
set txwindow off
set rxlogfile "startup.log"
```

You can also use the config file to set-up an automatic log file that will capture everything you receive to disk. This is very handy for monitoring those stations that only send data occasionally. The command for this is 'set rxlogfile "startup.log"'. Let's just finish off, here's a complete config file along the lines I've described here. (See table, bottom left.)

If, like me, you like to listen to lots of different systems, you can create a whole range of configuration files that can be easily loaded via the file menu.

JVFAX Special

Setting up JVFAX for optimised performance demands a slightly different approach because JVFAX doesn't use a configuration file in the same way as HAMCOMM. The technique here is to make full use of the configuration screen that can be selected from the main menu.

One of the first items to optimise is the graphics and printing set-up. Whilst the default setting of 480 x 640 is okay, everything looks so much better if your system can handle 800 x 600 resolution. To do this just tab over to the Graphics box and hit the space bar till the option that suits the capabilities of your PC comes into view.

If you're not really sure what your system can handle, you can either check out the manual for your PC/graphics card or just try the most likely settings. You will soon see if it's wrong and can start again.

If you have some technical background you can even customise the JVFAX display setting to match your graphics card. Whilst looking at graphics you can decide whether or not you want true colour images displayed using a different setting than your main display. To do this you just move to the TC-Graph setting and choose the mode you want.

The printer configuration is a question of choosing the highest resolution mode that your printer can emulate. If you're using a printer with a sheet feed you also need to set "Formfeed at end of pict" to yes or you will get pictures spread across more than one sheet of paper.

You will also note that there's an option to enable or disable scrolling. I would strongly recommend you leave this set to enabled. If you don't, any received image will be overwritten as soon as it reaches the bottom of the screen!

For those of you trying to use JVFAX with a slow PC, the "Max. interrupt frequency" option is the one you will need to adjust. If you find there are some lines missing from your received images this is probably because your processor is having trouble keeping-up with the demands of JVFAX. The solution is to try reducing the "Max interrupt frequency" until the effect disappears.

Next you need to look at "Enable auto lock when ATC is on". If you suffer a high level of local interference then you should set this on as it will prevent the tuning getting confused by interference during image reception. All it does is freeze the a.t.c. setting as soon as the picture reception starts.

Once you've finished with this screen you tab the cursor to the Miscellaneous settings item. This takes you on to a second menu that really gets into the nitty-gritty of JVFAX settings.

Not surprisingly most of the settings here are best left alone, but there are a few that can make life much easier. The first to go for is the "initial RX Mode". This setting determines the default mode that JVFAX uses when you first switch to FAX reception. I suggest you change this to Wefax576 and once you've completed all this you can press CTL Enter on this and the next screen to get back to the main menu.

Next, you need to select the Mode editor screen to set-up the receive modes. The main one to change is Mode 1 Wefax576. Once you have this selected, tab down to the Deviation box and set this to 400Hz. You can also decide whether or not you want the Automatic Tuning Enabled.

As for intensity levels, I suggest you set this at 256 even if you're only receiving black and white charts. I say this because I've found that images received in this mode are much easier to clean-up than basic two level images.

I recently received a letter from a reader who was disappointed with the image quality and wanted to know if there was some better software around that would give clearer images. In my experience JVFAX gives very good

results when used with the basic comparator interface.

The main reason for poor image quality is likely to be the prevailing propagation conditions and the dreaded multipath distortion which is the scourge of FAX monitors. The only solution is to receive the station using one of the alternative frequencies that all FAX stations publish. That's about it for JVFAX but if you have discovered any neat tricks please write and let me know.

Customised RadioRaft

RadioRaft has really taken the Decode market by storm since its introduction a year or two ago. Like JVFAX, this program lets the operator customise the parameters from within the program so you don't have to play with configuration files.

The changes are stored in a type of configuration file called an .ini file but you must not be tempted to play with this as the parameter data is held in a coded format and if you get it wrong you will end-up in a real muddle. If you don't heed this advice and end-up in a mess the solution is to simply delete the .ini file and restart RadioRaft whereupon it will create a brand new .ini file.

Most of the set-up is very straightforward, so I'll just take you through the 'settings' menu that can be found at the top of the main screen. Other than setting the port and interface type, which should be 'AF Interface' for HAMCOMM type interfaces, you can set some other important parameters.

The first is the Signal Tracking option that can be set on or off. I suggest you leave this switched on as it enables RadioRaft to keep track of any small frequency changes caused by the transmitting signal or the receiver.

Next comes the facility to set what's called the mark/space transition frequency. This is really just another name for the centre frequency. The default setting of 1750Hz is generally about right for most set-ups but you can change it to provide a better match with the pass-band of your receiver.

You could also use this setting to match RadioRaft to an external bandpass audio filter. In this case you would just set the transition frequency to the centre frequency of your filter. If you find that every time you decode a RTTY type signal you end-up with the shift set to 1 you can pre-set this via the settings menu.

HF Interference Threat!

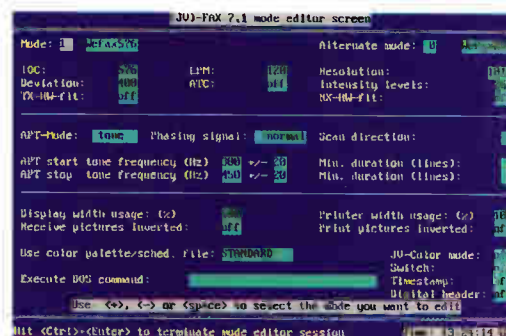
I recently came across a very worrying proposal to provide data communications using the standard mains distribution wiring to carry the data. Whilst this initially sounds like a great idea, there's potentially a huge interference problem that could have very serious consequences for radio hobbyists.

In order to provide high speed data to ordinary customers the systems which has become known as Digital Power Line has to superimpose a hefty 1MHz data stream on top of the mains signal. The data signal is likely to be relatively high power and will no doubt spread harmonics throughout the h.f. bands.

For those that have a data take-off there will doubtless be a filter system to separate-out the mains from the data, however, this is unlikely to be the case for those that don't subscribe. Even more worrying is street lamps which, as far as I can see, should turn out to be excellent vertical antennas radiating interference throughout the local community.

As if this isn't bleak enough, the next steps will be to increase the data rates which will spread the interference even further across the spectrum. The RSGB are taking-up the case on behalf of radio amateurs and have produced a white paper detailing the proposition and its potential effect on the spectrum.

The RSGB, along with other spectrum users, are certainly taking the threat very seriously. If I hear any more detail I'll try and keep you updated through the column.



JVFAX Mode Editor.

Readers Special Offers

If you'd like a copy of Hamcomm/JVFAX, etc. I've arranged a very special offer with the Public Domain and Shareware Library (PDSL). They have put together a library set of all five disks for just £12.00, all inclusive.

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latest hot software!

DX Television

Compared with the previous month, July was remarkably tame and predictable. Large doses of Italy provided lengthy periods of reception from private stations TV Napoli (M Napoli) on Channel IA and Radio Video (VIDEO) on E2. The band was also awash with Spanish signals on many dates.

Tropospheric Reception

Minor tropospheric enhancement occurred in early July and also between the 20th and 26th with mainly the usual crop of Benelux transmissions. In addition, Tom Crane (Essex) logged Luxembourg (RTL+ E7 from Dudelange) on the 5th and Germany (WDR-3 E48 from Eggegebirge) on the 17th. Over in Bristol, Stephen Michie noticed a slow-fading DR-TV PM5534 test card from Denmark on E3 on the 22nd and comments that normally the signal suffers from severe ghosting when received via Sporadic-E.

Oval Mystery Solved

Earlier in the season a programme in Arabic was resolved on Channel E3 co-channelling with Serbia on two occasions. TV6, a private station in Turkey, was the chief suspect due to the similarity of the logos. However, the station has now been identified as JTV-1 (Jordan) sporting a new logo. The signal originated from the Suweilih 100kW outlet.

Transatlantic Opening

Via Peter Chalkley (Luton) comes some juicy news of a transatlantic 6m opening in early July between Germany and Illinois (USA). A Channel E2 vision carrier was heard but so far there have been no reports of USA TV being received in Europe.

The only time DXers seem to look for transatlantic catches is when Iceland is present, although USA and Canadian signals would tend to arrive from a more westerly direction. The magic time for transatlantic DX is often between 2000 and 2300UTC, although there have been some exceptions. So, always keep a frequent look out to the west even if the band seems dead.

Reception Reports

Vincent Richardson (Dolgarrog) has enjoyed many openings, mainly from Central Europe and Italy. Of particular interest was a PM5544 test card at 0842UTC on the 18th broadcast by TV Napoli on Channel A.

The identification was 'MUSIC NAPOLI' at the top with 'TELEVISION' below. This may explain an early evening sighting of an unidentified PM5544 seen last year on IA. On the 19th, Vincent logged a low-power relay of ORF-1 on Channel E3 at 1223UTC.

A mystery this season has been a 'YTH' caption preceding a news programme on R2. This has now been identified as the Ukraine 1st network. Peter Barclay (Sunderland) received the clock at 1759UTC on the 4th, followed by the news. A striped '1' logo on R2 remains unidentified, although YT-1 (Ukraine) is the prime suspect. Peter Barber (Coventry) observed this on

the 19th and 28th during late afternoon openings.

Peter comments that the direction of TVE (Spain) and RTP (Portugal) signal paths usually coincide but on rare occasions one signal arrives by the apparent direct route and the other from the west!

Simon Hockenull (Bristol) reports a good month although interference from a nearby personal computer is playing havoc in Band I at times. During one opening, Simon witnessed a classic Sporadic-E opening from Spain on E2 with strong signals accompanied by continually varying ghosting effects.

Overseas Reports

The Russian G-204 test card has been received by Lt. Col. Rana Roy (India) several times this season. It has been generally a poor one, with only one opening to the Middle East when Dubai E2 was received.

Further afield, Todd Emslie (New South Wales, Australia) has sent a summary of record Sporadic-E successes notched up last December and January, the peak months for activity in the southern hemisphere.

One example was reception from the Philippines when DWWZTV-2 at 55.250MHz (Channel A2) was identified at a distance in excess of 6000km. Weaker carriers were detected at 55.2505 and 55.2514MHz.

The audio carrier at 59.75MHz was quite clear at times using a D-100 DXTV Converter fed into an ICON R7000 to boost its performance. Samoan TV (KV2K on Channel A2) was received on three occasions by Anthony Mann (Perth, W. Australia) at a distance of 7500km. There are signs of increased F2 activity. Already Chinese video has been detected at 49.75MHz.

Test Cards

The striking thing about this season is the scant showing of test cards. Stations tend to either broadcast round-the-clock these days or show text pages.

Norway displays programme schedules during periods of test transmissions with only rare glimpses of the PM5534 with transmitter identification. Recently however, Stephen Michie (Bristol) was fortunate enough to see a regional NRK test card similar to the one used in Nordland.

The Baltic states still show test cards, with Lithuania using colour bars and the ubiquitous G-204. Estonia uses both colour bars and the Philips PM5537 test pattern with 'EESTI TV TALLINN' identification.

Countries such as Slovenia, Switzerland and Austria show live panoramas of various holiday mountain resorts with weather details such as temperatures, humidity, wind speed, etc.

Getting Started With DXTV

Paul Glover (Worthing) has been an active short wave listener for many years and hopes to sample TV DXing but is unsure of the basics such as equipment required. A TV or converter such as a D-100 covering Band I (Channels 2 to 4) and a dipole 2.5m in total length is all that is required.

Publications such as *DX-TV For Beginners* and *Guide To DX-TV*, available from the SWM Book Store, give full details about the necessary equipment and cover all other aspects of the hobby.

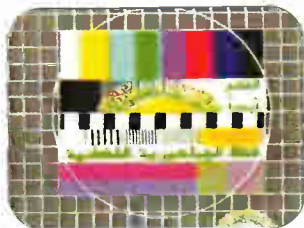


Fig. 1: A Libyan test card. The Channel E6 Tripoli outlet has been received in the UK via Sporadic-E on several occasions.



Fig. 2: The Moroccan 1st network test card. There is a high-power Channel E4 transmitter in the south of the country at Layounne.

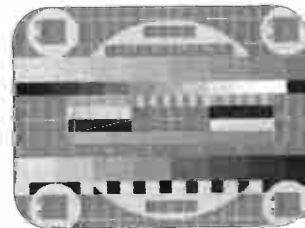


Fig. 3: The Russian G-204 test card. There are many subtle modifications and various identifications depending upon its origin.

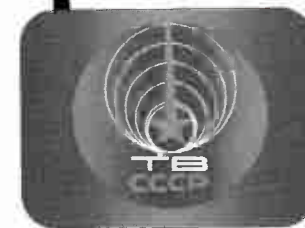


Fig. 4: The Russian opening sequence, circa 1988.



Fig. 5: The Russian (TSS) clock caption radiated in the Eighties.

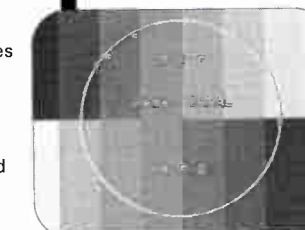


Fig. 6: The test card radiated by the 2nd network of RFO in New Caledonia.

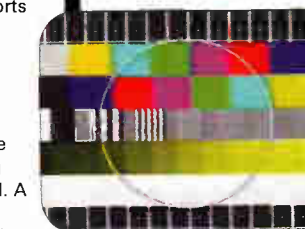


Fig. 7: The Fiji TV test card.

FM Band Reception

Not much to report this time! **Damien Green** (County Mayo, Éire) wonders what the 76-87.5MHz spectrum is used for. In Japan, many f.m. stations use it for broadcasting and some Sony receivers available in the UK will cover these frequencies. In the UK, various public works communications can be heard in this part of the band.

Damien is seeking a list of f.m. radio stations which DXers have logged from Éire and Europe. Please send any information via the address shown at the top of the column so it can be passed on.

Service Information

Belarus: A new logo in the top-left of the screen is in use. It resembles a thin horizontal line intersected by a thicker diagonal bar.

Ukraine: At closedown the YT-2 network shows programme previews ('1+1' logo in the top-right of the screen) followed by colour bars.

Information supplied by Stephen Michie (Bristol).



Fig. 8: Opening caption broadcast by Fiji TV.



Fig. 9: One from the archives. This Test Slide was used many times in the Fifties and Sixties during BBC Experimental Colour Television Test Transmissions.

Sporadic-E Log For July

The collective log includes reports from the following DX-ers:- Stephen Michie, Bristol; Peter Barber, Coventry; Vincent Richardson, Dolgarrog; Peter Barclay, Sunderland; Simon Hockenhill, Bristol; Tom Crane, Essex; **Barry Bowman**, Manchester. Times shown are in UTC.

Day	Log
1	Italy (RAI UNO) IA; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Spain (TVE-1) E2, E3 and E4 between 1250-2200; Portugal (RTP-1) E3.
2	Italy (RAI UNO) IA; Italy (M NAPOLI) IA; Spain (TVE-1) E2, E3 and E4; Portugal E3; Hungary (RTL KLUB) R2; Germany (ARD-1) E2; Slovenia (SLO-1) E3; Croatia (HRT-1) E4; Norway (NRK-1) E2 and E3; Sweden (SVT-1) E2 and E3; Ukraine (YT-2) R2; Moldova (TVM) R2.
3	Italy (RAI UNO) IA; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Spain E2, E3 and E4 between 1600-2000; Sweden E2, E3 and E4; Portugal E3 and E4; Serbia (RTS-1) E3; France (Canal Plus) L3; Hungary (RTL KLUB) R2;
4	Italy (RAI UNO) IA and IB; Spain E3; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Ukraine (YT-1) R2 with 'YTH' news at 1800.
5	Italy (RAI UNO) IB; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Slovenia E3; Croatia E4; Serbia E3; Austria (ORF-1) E2a and E4; Germany E2, E3 and E4; Spain E2 and E3; Denmark (DR-TV) E3; Lithuania (LTV) R2; Estonia (ETV) R2; Slovakia (STV-1) R2; Sweden E2, E3 and E4.
6	Serbia E3; Norway E2, E3 and E4.
7	Italy (RAI UNO) IA; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Spain E2 and E4; Hungary (RTL KLUB) R2.
8	Spain E2, E3 and E4; Portugal E3; Italy (M NAPOLI) IA.
10	Italy (RAI UNO) IA; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Portugal E3.
12	Spain E2, E3 and E4; Portugal E3.
15	Italy (RAI UNO) IA; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Spain E3; Hungary (RTL KLUB) R2; Corsica (Canal Plus) L2.
17	Italy (RAI UNO) IA; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Hungary (RTL KLUB) R2; Sweden E2 and E3; Spain E2 and E4.
18	Italy (RAI UNO) IA; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Croatia E4; Serbia E3; Russia (RTV) R2; Rumania (TVR-1) R2; Lithuania R2; Czech Republic (NOVA) R2; Hungary (RTL KLUB) R2; Spain E2, E3 and E4; Portugal E3; Norway E2; Sweden E2, E3 and E4.
19	Italy (RAI UNO) IA; Slovenia E3; Croatia E4; Germany E2; Austria E3; Hungary (RTL KLUB) R2; Spain E2 and E4; Portugal E3; Czech Republic (NOVA) R2; France (Canal Plus) L3; Norway E2 and E3.
20	Italy (RAI UNO) IA and IB; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Slovenia E3; Croatia E4; Serbia E3; Spain E2, E3 and E4 including regional programmes at 1200; Portugal E3; Corsica (Canal plus) L3.
21	Italy (RAI UNO) IA and IB; Italy (VIDEO) E2; Denmark E3; Austria E2a; Spain E2, E3 and E4; Portugal E3; Germany E2; Switzerland (SRG/DRS) E2; Hungary (RTL KLUB).
22	Denmark E3; Sweden E2 and E3; Norway E2 and E3.
27	Italy (RAI UNO) IA; Italy (VIDEO) E2; Spain E2, E3 and E4; Portugal E3; Serbia E3; Czech Republic (NOVA) R2; Lithuania R2; Russia (RTV).
28	Italy (RAI UNO) IA; Italy (VIDEO) E2; Italy (M NAPOLI) IA; Spain E4.
29	NRK E2; Spain E4.
30	Italy (RAI UNO) IA; Italy (VIDEO) E2; Spain E3; Portugal E3.

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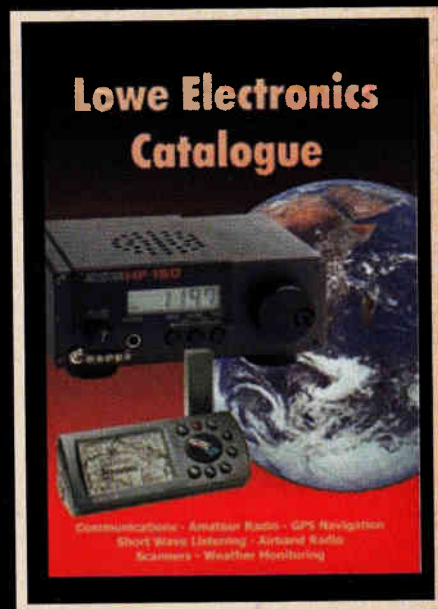
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