short wave magazine

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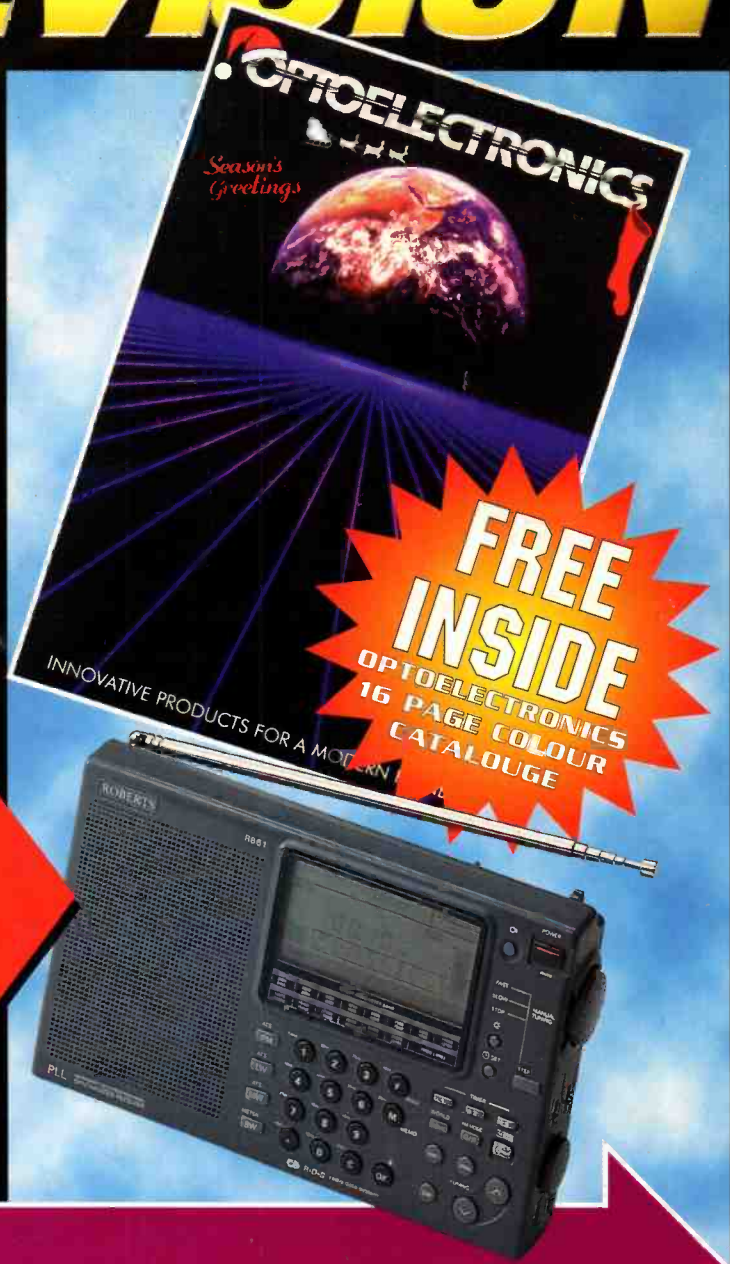
AND Roberts Radio R861 Reviewed by Simon Spanswick



DECEMBER 1996
ISSN 0037 - 4261
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Optional CTCSS board.....£49.95

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A low profile discreet scanner antenna optimised for the UHF bands c/w 10' cable. Receives 25 - 1000 MHz
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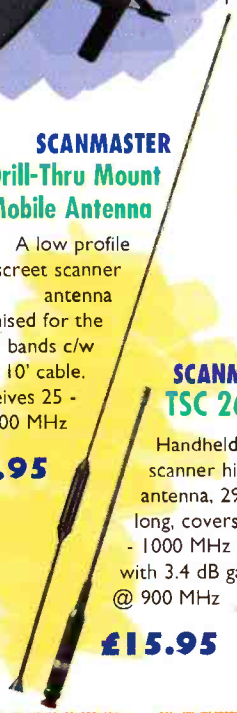

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It's a receiver

a counter, a recorder, a decoder....

U.S. Patent No. 5,471,402

•Two-Line LCD display, first line displays frequency. Second line switches between either CTCSS, DCS, DTMF, Signal Strength, or Numerical Deviation.

NMEA-0183 GPS Interface,-Connect your GPS to the Xplorer for Mapping applications. *(GPS and Mapping Software not included)*

The New Xplorer Test Receiver. Ideal for any two-way communications testing or monitoring. The Xplorer is a value packed performer integrating the functions of a CTCSS, DCS, and DTMF Decoder, Frequency Recorder, Nearfield Receiver and more into one hand-held unit. No more guessing when programming a frequency for monitoring-the Xplorer captures nearfield frequencies off the air from 30MHz - 2GHz in less than 1 second. The New Xplorer; providing the power of handheld portability with state of the art functionality and performance.

•Built-in Speaker. All frequencies received are demodulated for instant monitoring.

...and the last instrument you will ever NEED.

Features & Specifications

•Easy touch control pad. F1 & F2 keys control all Xplorer functions. Hold, Skip, Store and Lockout all enabled through the keypad.

- •Frequency Lock Out, Manual Skip, and Auto or Manual Hold
- •Internal Speaker, Audio Earphone/Headphone Jack
- •Built-in PC Interface, PC Connection Cable and Download Software included
- •Relative ten segment Signal Strength Bargraph
- •Optimum Maximized Sensitivity for increased nearfield distance reception
- •Tape Control Output with Tape Recorder Pause control relay and DTMF Encoder for audio data recording
- •High speed FM Communications Nearfield Receiver, sweeps 30MHz - 2GHz in less than 1 second
- •Two line LCD displays Frequency and either CTCSS, DCS, DTMF, Deviation or Signal Strength
- •NMEA-0183 GPS Interface provides tagging data with location for mapping applications
- •Frequency Recording Memory Register logs 500 frequencies with Time, Date, Number of Hits and Latitude/Longitude. *(Latitude & Longitude coordinates are only displayed in memory when used with GPS)*
- •Real-Time Clock/Calendar with lithium battery back-up
- •Built-in Rapid Charge NiCad Batteries with 5 hour discharge time and Power Supply included
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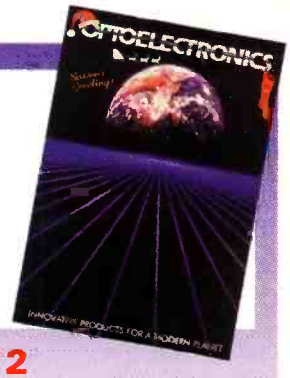
16-page Optoelectronics Catalogue



Regular Columns

Good Listening

Communiqué

SEND YOUR NEWS TO KEVIN NICE AT THE EDITORIAL OFFICES

DSP IF For AR7000

The all mode, 100kHz to 2GHz, AR7000 is another pioneering receiver design from AOR. Confirming the arrival of the digital revolution, the new radio employs true Digital Signal Processing. Demodulation and filtering are performed at high speed by a 16-bit DSP. Down conversion is performed digitally also.

The AR7000 features a 16-colour 85mm l.c.d. (similar to the SDU5000) for all display data, including frequency, squelch and volume levels, a.g.c. speed, mode and filter selection. Also provided are visual scan, search and spectrum display.

The receiver can also drive an external PAL or NTSC video display. RS-232 control is built-in and the AR7000 comes supplied with and infrared remote control.

The AR7000 is expected to be available during the first quarter of 1997. Price is rumoured to be £1000+.

Specifications:

Frequency Range:	100kHz to 2.0GHz.
Step Size:	10Hz to 1MHz.
Modes:	a.m., n.b.f.m., w.b.f.m., u.s.b., l.s.b., c.w.
Memory:	1500 (100ch x 15 banks).
IF Filters:	s.s.b. 2, 2.5, 3kHz. c.w. 50, 150, 250, 500, 800Hz. a.m. 3, 6, 8kHz.
CW Offset:	400, 600, 800Hz.
IF Shift:	±8.5kHz.
AGC:	Fast, Slow.
Programmable Scan:	8 banks.
Programmable Search:	8 banks.
VFOs:	Two, with AUTOMODE band data.

Unique New Project

A new EMC test centre is opening soon to serve the West Country. Located near Bideford, North Devon, the centre at Caddsdown Park represents an investment of over half a million pounds by a group of small to medium sized North Devon electronic equipment manufacturers in conjunction with Exeter University. The test centre serves not only as a common resource for all these companies, but is also available to interested companies all over the South West who need full compliance and pre-compliance testing to the very latest standards.

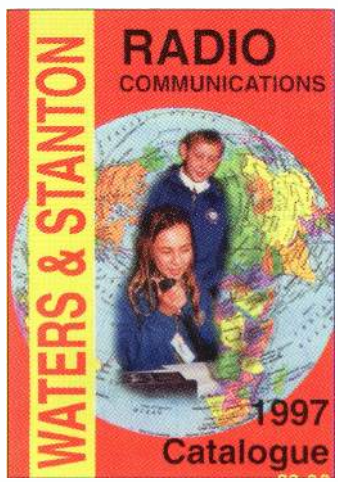
The centre will also serve as a training resource for Exeter University who will be offering 'hands on' short courses for r.f. engineers involved in EMC and type approval work. A valuable feature of these courses is that they accumulate academic credits towards recognised degree or diploma qualifications.

The Caddsdown Park centre is being run by John Wilson, well known to readers of this magazine, who has been tempted out of semi-retirement in order to apply his considerable knowledge and expertise in r.f. measurement to this unique new project. He will also be involved in the setting-up of the Exeter University courses, so we can expect some comments on CE marking of radio equipment from him in due course.

For more information, contact: **Electronic Test and Calibration Ltd., Unit 1 Babbacombe Farm, Abbotsham, Bideford. Tel: (01237) 451349, FAX: (01237) 451345.**

Just What You've Been Waiting For!

The eagerly awaited 1997 version of the **Waters & Stanton** *Annual Product Catalogue* has just been published and many hundreds have already been sent out to waiting customers. Still in A4 format, now with colour front cover and enlarged to 144 pages, the catalogue contains around



400 products which will be of interest to all radio amateurs and hobbyists.

Available for only £2.50 postage paid from: **Waters & Stanton Electronics, 22 Main Road, Hockley, Essex SS5 4QS.**

Field Day Event

The **Mid-Warwickshire Amateur Radio Society** held their Summer Field Day at Draycote Water Country Park, located between Leamington Spa and Rugby. An area of high land overlooking the Severn Trent reservoir was the location for the two stations. The weather was favourable and nearly all the club members were present.

The v.h.f. station GX6WAR had several local contacts, also working the West Midlands and Telford. The club's most recently licensed member, Bernard M1AUK made his first QSO.

Just before 0900UTC, GX3UDN/p was fired up by Rod G0FBY with a quick test QSO with near neighbours Stratford-Upon-Avon ARS who were operating GB800SA in celebration of 800 years of their town. There then followed during the morning session a number of good 'ragchew' type contacts with a wide range of European calls, including SM2, SP9, DJ8, HA8 and OK2.

The station comprised a Kenwood TS-440 with 100W into a 20m pro-am mobile whip antenna, which performed remarkably well. It was even possible to tune up on 18m from the internal a.t.u., and on this band, Brian G4DF had c.w. contacts with HA8 and EA6, with 569 reports received!

After a splendid buffet lunch, which was enjoyed by all, it was time to give some points away to the stations who were active in the European HF Championships and Tony G1KCS enjoyed his first taste of h.f. operating, working half a dozen stations in quick succession. Club Chairman Brian Clulee G0LXG had EA1, UA4 and ES1 in the bag during a brief session at the mic.

After a thoroughly enjoyable field day, GX3UDN/p went QRT. Special QSL cards are being despatched to the bureau for all stations worked.

NEWS • NEWS • NEWS • NEWS • NEWS • NEWS • NEWS • NEWS

Future Use Of Television

The Government has decided on the arrangements for the future use of television broadcasting channel 35. These arrangements, which meet the broadcasting policy objectives of the National Heritage Department and DTI's industry development objectives, have been agreed with Channel 5 Broadcasting (C5B) by President of the Board of Trade Ian Lang. This agreement will ensure that both the UK's future digital TV needs can be met and that C5B can maximise its launch audience.

The key proposals are - C5B to have access to u.h.f. channel 35 for five years to enhance its initial audience - the return of channel 35 for new broadcast services as the market for advanced digital TV develops and the move of C5B viewers on channel 35 to alternative means of service delivery at that time.

Mr Lang said "This deal represents the best solution for ensuring the continuing development of new digital TV services and technologies while boosting C5B's audience in the crucial start-up phase. Its five year span sets a firm but fair arrangement for C5B to establish their audience."

The agreement allows for the return of u.h.f. channel 35 for use in advanced digital TV systems once the market for such systems and their spectrum efficiency is evident. It also allows for the migration of C5B viewers in channel 35 areas to alternative means of service delivery at the time.

National Transmitter News

Strathyre: A new television relay station opened on 26 June 1996, about 32km north west of Stirling.

Provided jointly by NTL on behalf of the Independent Television Commission (ITC) and the BBC, it is located on a mast on the west of the village. It is designed to bring good television, NICAM and teletext reception to an additional 230 people in the village of Strathyre, to include Ardoch, Creagan, Immervoulin and Kipp.

STATION DETAILS

Channels:	BBC 1 (Scotland)	21
	BBC 2	27
	ITV (Scottish)	24
	Channel 4	31
Antenna Group:	A	
Polarisation:	Vertical	
ERP:	10W	

Millhouse Green: A new television relay opened on 27 August 1996, about 3km west of Penistone, South Yorkshire.

Provided jointly by NTL on behalf of the Independent Television Commission (ITC), and the BBC, it is located on a mast head near Hill Side. It is designed to bring good television, NICAM and teletext reception to an additional 250 people in the areas of Millhouse Green and Catshaw.

STATION DETAILS

Channels:	BBC 1 (North)	58
	BBC 2	64
	ITV (YTV)	61
	Channel 4	54
Antenna Group:	C/D	
Polarisation:	Vertical	
ERP:	10W	

Penrhyn-Coch, Ceredigion: A new television relay station opened on 23 August 1996.

The station has been built jointly by the BBC and by NTL on behalf of the ITC. It brings the possibility of improved television and teletext reception to about 840 people in Penrhyn-Coch.

STATION DETAILS

Channels:	BBC Wales on 1	55
	BBC Wales on 2	62
	HTV Wales	59
	S4C	65
Antenna Group:	C/D	
Polarisation:	Vertical	
ERP:	90W	

Alverton: A new television relay station opened on 20 September 1996, about 1.5km west of Penzance town centre.

Provided jointly by the BBC and NTL on behalf of the ITC, it is located on a mast around 200m south of the Castle Horneck Youth Hostel. It is designed to bring good television ond teletext reception to approx. 630 people in Alverton, to include Alexandra Road, Hawkins Road and Trewithan Road.

STATION DETAILS

Channels:	BBC 1 (South West)	21
	BBC 2	27
	ITV (Westcountry)	24
	Channel 4	31
Antenna Group:	A	
Polarisation:	Vertical	
ERP:	8.0W	

New Design 8-Way Connector

Following the long tradition established by the Bulgin PXO551/2 series connectors, universally adopted as a standard connector system in the Lighting and Disco Industries, this new family has been introduced to enable safe interconnection of equipment at mains voltages and is now available from Cirkit. The range comprises two chassis mounting and two flex mounting, male and female types, enabling the user to employ appropriate versions to satisfy the requirements of power in and power out functions with matching reverse sex couplers.

Fully compatible with the existing PXO551/2 series currently in service, PXO556, 7 and 8 have been up-graded to 10A 250V power handling capacity, over an operating temperature range of -20 to +70°C. Body mouldings are in glass filled Nylon rated UL94 HB with tin plated brass pins and sockets to ensure good solderability and low contacts resistance. Terminations are designed for screw, 4.8mm push on tabs or solder tags with p.c.b. spill options for chassis mount bodies.

These 8-pole leading earth, connectors will accept cables up to 14mm diameter and conform with the requirements of BS EN60065: 1994, BS415: 1994. Cirkit can be reached at: **Cirkit Distribution Ltd., Park Lane, Broxbourne, Herts EN10 7NQ, Tel: (01992) 444111.**

Equipped For Broadcasting

Midhurst, and its low powered relay Haslemere, are now equipped for broadcasting BBC1 and BBC2 television programmes with stereo sound, using the BBC developed NICAM 728 digital systen. This system uses an additional transmitted signal, which is quite separate from the normal (mono) TV sound signal.

BBC Television started its NICAM stereo service with the launch of the autumn programme schedules at the end of August 1991. Twentyeight main television stations and nearly 600 of their relays have now been equipped to transmit NICAM stereo signal.

The television transmissions from the transmitter at Midhurst, situated east of Petersfield, serve

over 200 000 viewers to the north of the South Downs, including Horsham, Burgess Hill, Cranleigh, Stornington, Pulborough and Petersfield. To the north west, the service extends to Bordon and Froyle in Hampshire.

Details of stereo TV programmes are published in *Radio Times*. Alternatively, if you have Ceefax, turn to page 698 (BBC2) for further Engineering Information.

Further information on the NICAM 728 stereo system is available from: **BBC Engineering Information, Broadcasting House, Havelock Road, Southampton SO14 7PU, Tel: (01703) 374225** or **BBC Engineering Information, Villiers House, The Broadway, Ealing W5 2PA, Tel: 0181-231 9191.**

Leave Your Desk But Don't Lose A Call!

New proposals published by DTI address the future of the cordless telephone market in the United Kingdom. They include bringing about greater mobility for business 'phone users while not incurring the expense of cellular 'phones and keeping the benefits of private branch exchanges (PBXs).

Mr Ian Taylor, Science and Technology Minister says, "Four million cordless telephones are already in use in Britain and new radio frequencies are proposed to meet the growing demand for low cost consumer products. New digital cordless 'phones with advanced voice and data facilities offer increased flexibility and efficiency both in and around the office or work place for business users.

"Two new class licenses under the Telecommunications Act are proposed, which would extend significantly the licensing of public access digital cordless communications in the UK.

"I want to see increasing on-site mobility for business users. Businesses should be able to enjoy the greater flexibility cordless PBX services bring, with staff no longer being out of touch as they work in and around their offices or sites."

So, new digital technologies mean that leaving your desk no longer means losing calls!

MSF Clock Radio From Roberts Radio

It is an interesting statistic that clock radios account for over 60% of the radio market in the UK. Roberts radio have decided that they would like a share of this and have just launched an pair of futuristically styled clock radios.

The CR950 is a radio controlled clock operating on the multi-standard frequency (MSF) system to give fantastic accuracy. The signals, originated by the National Physiology Laboratory in Teddington are transmitted from Rugby. This ensures that the accuracy of the clock is maintained automatically, adjusting for British Summer-time changes along the way.

The radio section of the CR950 is fairly conventional with m.w., l.w. and v.h.f. f.m. coverage. The alarm can be set so that you can wake up to either the radio or the 'Humane Wake System'. The later conjures up a Mr Bean scenario with a humane pistol aimed at a suitable point on the sleeper's anatomy, but in

reality it's a buzzer!

The 12-hour green l.e.d. digital clock display can be dimmed for night-time use. The case is available in charcoal grey or dove white and is expected to retail at around £50.

The companion model is the CR960 without the MSF clock and, of course, the l.w. band. The expected retail price is around £40.

Further details from: **Roberts Radio Ltd., PO Box 130, Mexborough, S. Yorkshire S64 8YT. Tel: (01709) 571722.**

ISWL on the Web

The International Short Wave League now has a Home Page on the Internet. The page carries details about the ISWL, its activities, current Club Call operators, QSL information, net times, membership information, etc.

Readers can connect to the ISWL at **http://www.aber.ac.uk/~srj5/iswl.html**

Mini Vacuum Cleaner

If you are into vintage valved receivers the latest offering from Jessop, the photographic people, will be of interest. Ideal for removing the dust that so likes to accumulate around the insides of sets, the Mini Vacuum Cleaner Kit also features a blow option, along with brush and nozzle attachments for access to the most difficult nooks and crannies. Of course, it is also useful around computers and more modern equipment, including the car.

The kit costs just £9.99 and is available from your local **Jessop Photo/Video** store or by mail order - just call **0116-232 0432**.

Watson Accessory Brochure

Waters & Stanton have produced their first Watson Radio Accessory brochure. A four-page colour production, the leaflet illustrates and describes each Watson product.

You can have a copy by just sending your name and address to **Waters & Stanton Electronics, 22 Main Road, Hockley, Essex SS5 4QS**.

Young Amateur of the Year

The RSGB Young Amateur of the Year award was won by 14-year old Christopher Davies M0AAU from Shrewsbury. Benjamin Clarkson G7WHO, also 14 years old and from Reading was the runner up.

Both boys received their numerous prizes from the Radiocommunications Agency, RSGB and industry at a special ceremony on Sunday 6 October at the RSGB HF and IOTA Convention at the ICL Beaumont Conference Centre in Old Windsor. The prizes were presented by Roger Louth on behalf of the RA, Peter Sheppard G4EJP President of the RSGB, Peter Simpson of Wray Casle, Dennis Goodwin of Icom (UK) and Tom Crosbie of Lowe Electronics.

Christopher became interested in amateur radio at the age of 12. He gained his Novie licence under the direction of Dave Whalley G4EIX. Sitting the full RAE at the age of 13 he waited until he passed his 12w.p.m. Morse test before applying for his full Class A callsign. A year later he became M0AAU. He is now working towards his Duke of Edinburgh Award at school.

Benjamin passed the Novice RAE soon after his 12th birthday despite having colour blindness and severe dyslexia. At the age of 13 he took the full RAE and gained his G7 callsign on his 14th Birthday. He is a member of the Scouts and helps the local St John Ambulance Brigade in the Reading area.

For further information on the Young Amateur of the Year award scheme contact **Marcia Brimson 2E1DAY on (01707) 659015**.

More Spectrum Falls to GSM

The RA have announced yet more spectrum to be handed over to the ever increasing bandwidth required to support the digital mobile 'phone networks. This time it's the 888-889MHz segment currently allocated to low power anti-theft devices, type approved to the MPT1353 specification. Device included are the security tags used by retailers as anti-shoplifting devices.

There will be no new approvals given to equipment after 31 December 1998. The service will be completely withdrawn on 31 December 2003. The use of such devices between 888 and 889MHz will not be allowed from 1 January 2004 and will be illegal in the UK.

The Agency tell us that it recognises the very real concerns of the 'low power radio community. They are currently participating in work within Europe to identify alternative European harmonised frequencies which will be in place by 2003.

Radio and TVDX News

This is Public enemy Number 1 in the eyes of UK TVDXers. Diplomat Communications Ltd., Basingstoke have introduced their models SX-T and SX-S capable of operating within the new Band 1 mobile spectrum of 55.75-67.50MHz in various transmission modes at powers up to 30W. Operation across the new mobile Band 1 spectrum will commence any time now!

It's now thought the start to the new Solar cycle no.23 will be approx. May 1997 with another report suggesting that the present Solar minimum will occur between May 1996 and January 1997- there being an overlap between the outgoing early and the incoming new cycle.

Our Gibraltar contact suggests that International Treaty obligations will make GBC swap their TV transmissions on ch. E6 to E12 and their E12 to E6. No explanation has been given though it's likely for political reasons.

Slovakia has opened her first national private TV network August 31st last covering some 60% of the population. Called 'TV Markiza', it's opened new studios near to Bratislava at Zahorski Bystrica costing nearly $4million. Programmes will be 40% in-house and the rest bought in from overseas.

A fourth terrestrial TV network 'Ruutunelonen' has been granted a licence to open in Finland, beating several other applicants for the hotly contested franchise.

Ulster TV, Belfast has pulled out of Southern Ireland's TV3 terrestrial private channel. Planned to open some years ago, a new opening date is now given as Autumn 1997.

Future Proof Radio?

Fairhaven will soon be launching their new radio receiver, the RD500. The RD500 is designed as a high quality h.f. receiver with the ability to upgrade to v.h.f. and u.h.f. in the future. It has a massive memory capacity and a tuning step size of 5Hz as well as many 'as standard' features including a variable bandwidth stereo c.w. filter, i.f. noise blanker, a variable frequency notch and peak filter, n.b.f.m. and 'a.m. sync.' modes as standard, an audio compressor (for improving fading signals), cassette control, passband tuning, noise cancelling at antenna inputs and a variety of scan modes.

The receiver is heavily text oriented with 20 characters of text per entry plus frequency, mode and auxiliary settings assigned to each entry. It will come complete with PC software and has RS-232. It has a large TV-style remote control, an on-board real-time clock, and some exciting firmware upgrades are planned for the future.

Interesting Features

The RD500 includes some interesting features rare on receivers in this or any other class for that matter.

Noise cancellation with dual antenna inputs. The h.f. antenna inputs are combined in antiphase. The use of a small local antenna - such as a whip - can be used to reduce local noise.

Stereo c.w. filter, this facility spreads the audio spectrum across the stereo panorama. This provides spatial separation of c.w. signals.

Cassette recorder control. Provided via the rear mounted DIN socket, control can be triggered by the receiver squelch.

The receiver is designed and manufactured in Great Britain by Fairhaven Electronics Ltd., it will be available early next year and will cost £799. For more details contact: **Fairhaven Electronics Ltd., 47 Dale Road, Spondon, Derby DE21 7DG. Tel: (01332) 670707.**

Specifications:

Architecture:	Dual Conversion. 1st i.f. 55MHz, 2nd i.f. 455kHz
Frequency Range:	20kHz to 40MHz.
Modes:	a.m., synchronous a.m., u.s.b., l.s.b., c.w., n.b.f.m. and w.b.f.m.
Step Size:	5Hz in l.s.b., u.s.b. and a.m.s. modes. 100Hz in a.m. mode. Step speed increases with spin-wheel rotation.
Memory:	14200 or 57000 with 20 characters of text for each entry. Stored are; frequency, mode and all included in the auxiliary set-up menu.
Display:	Alphanumeric showing frequency to 10Hz, mode, memory location, v.f.o. in use and set-up detail.
Antenna Inputs:	50Ω via SO-239 socket. High impedance input for whip/noise cancelling antenna.
Attenuator:	20dB switched.
AGC:	Variable Peak-hold period and decay speeds
Sensitivity:	s.s.b. MDS 0.1µV a.m. 1µV for 10dB S/N (50Ω antenna input) 500kHz - 30MHz
IF Filters:	s.s.b. 2.4kHz. wide 6kHz, n.b.f.m. 25kHz
Third Order Intercept:	+12dB
Spurious Responses:	>65dB rejection of images, i.f.s etc.
Frequency Stability:	Drift <30Hz/hr @20°C
Audio Outputs:	Internal/External Speaker, 2.0W into 4Ω Stereo line output, 0dB Headphone 80mW into 32Ω Record input/output approx. 200mV via DIN socket.
PC Software:	Included, receiver control, back-up and editing package.
Power Supply:	12V d.c. @ 600mA. 240V a.c. mains p.s.u. (supplied) Eight internal AA-size cells (option)
Dimensions:	205 x 65x 193mm (w x h x d) excluding protrusions.
Weight:	600g

Bandscan AUSTRAILIA

Rallies

December 8: The Portland Amateur Radio Club are holding their 2nd Annual Radio Rally and Craft Fair at the Burton Cliff Hotel, Burton, Bradstock, nr. Bridport, Dorset, from 10am till 5.30pm. More information from **Mrs C. Haddon** (Secretary), **1 Victoria Place, Easton, Portland DT5 2AA**.

December 8: The SDX Cluster Support Group Radio, Electronics & Computer Rally is being held at the Maryhill Community Centre Halls, Maryhill Road, Glasgow. The halls are located approx. 1 mile from junction 17 of the M8 motorway and five minutes walk from St. Georges Cross underground station. As well as the normal traders, radio, electronics, computers, antennas, etc., a series of lectures are planned for the day. There will also be an RSGB Forum, which will be attended by members of the RSGB General Council. A cafe will be run throughout the day, serving hot/cold drinks and light snacks. Talk-in will be provided by Strathclyde Raynet on S22. Fees: Adults, £2, UB40 holders, £1.50, Senior Citizens, £1.50 and children under 14, free of charge with adult. **John Dundas GM0OPS** on **0141-638 7670** or packet @ GB7SAN, GB7SDX.

***December 15:** The Verulam ARC Rally is to be held at the Watford Leisure Centre, Horseshoe Lane, Garston, Watford, Herts, off A405 near M1 junction 6 and M25 junction 21A. Doors open 10am to 4pm. Features include trade stands, Bring & Buy, grand raffle, cafe, licensed bar and free parking. Morse tests will be available. Details from **Walter G3PMF** on **(01923) 262180** or **Ralph G1BSZ** on **(01923) 265572**.

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January 19: The Oldham ARC Mobile Rally will be held at the Queen Elizabeth Hall, Civic Centre, West Street, Oldham, Lancs. Doors open at 11am (10.30am for disabled visitors). This event will feature all the usual traders and a Bring & Buy stall. Morse tests are avoilable on demand. Talk-in on S22 via GB4ORC, commencing at 7.30am. Mobile contact prize up to 2pm. Refreshments and free parking available. **(01706) 846143** or **0161-652 4164**.

February 2: The 12th South Essex Amateur Radio Society Radio Rally is being held at the Poddocks, Long Road, Canvey Island, Essex. The Paddocks is situated at the end of the A130. Doors open at 10am. Features includes amateur radio, computer and electronic component exhibitors. There will also be a Bring & Buy, RSGB Morse testing on demand (two passport photos required). Home made refreshments, free car parking with space outside main doors for disabled visitors. Admission is £1. Further information from **David G4UVJ** on **(01268) 697978**.

February 2: The Horwell Amateur Radio Society are holding their indoor Radio & Computing Rally at the Harwell Science & Engineering Centre, 1 mile west of the A34 between Oxford and Newbury. Talk-in on S22. Doors open at 10am. There will be trade stands, a Bring & Buy, craft exhibitors, bar and light refreshments. Admission is £1 and children are free. **Arthur G0KOC** on **(01235) 815399** or **http://www.rmplc.co.uk/eduweb/sites/ntaylor/rally.html**

If you're travelling a long distance to a rally, it could be worth 'phoning the contact number to check all is well, before setting off. The Editorial staff of *SWM* cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you have any queries about a particular event, please contact the organisers direct. Editor

* Short Wave Magazine & Practical Wireless in attendance

This month I have a grab bag of news from Australia and New Zealand including schedules, news of a radio emission health study, information on the Royal Flying Doctor Service and school of the air and a few web sites for the Internet connected.

Radio Australia

Radio Australia can best be heard in Europe on the following schedule. All times are UTC. 6.090MHz 1530-1800; 7.330MHz 1800-2100; 9.615MHz 1130-1430 and 1530-1800; 11.640MHz 0030-0400; 11.855MHz 2100-0100; 15.510MHz 0000-0400; 15.530MHz 0600-0800; 17.750MHz 0100-0500; 17.880MHz 0100-0800; and 21.725MHz 0800-1130. QSL to **Radio Australia, GPO Box 428G, Melbourne 3001, Victoria, Australia**. English language programme enquiries can be sent to **raelp@radioaus.abc.net.au** and transmission technical enquiries can be made to **ratx@radioaus.abc.net.au**

Health Issues

Bowing to public concern the Federal government has allocated A$4.5 million (about £2.2 million) for a programme to examine the potential health risks of mobile telephones, mobile telephone transmission towers and other radio communications equipment. The programme includes the public dissemination of r.f. EME as a public health issue; support for Australia's participation in the WHO project to assess the health and environmental effects of EME exposure; and the establishment of an Australian research program to complement world research. The programme follows a Commonwealth Scientific and Industrial Research Organisation report pointing to a link between mobile telephone towers and health risks and a report from Lincoln University in New Zealand linking proximity to mobile telephone towers with some forms of cancer. The funds will come from a small increase in radio communications licence fees. While I am in favour this study I really wonder how far the available finance will go in resolving the issues involved.

Radio New Zealand

Until 17 March 1997 Radio New Zealand International (RNZI) will transmit to the following schedule: 9.700MHz on Mon.-Fri. from 0816-1206 and Sat-Sun 0758-1206; 9.875MHz Mon.-Thu. 1650-1952, Fri. 1650-2006, Sat 1900-2006 and Sun 1850-1952; 11.735MHz Sun-Thu. 1953-2135, Fri. 2007-2206 and Sat 1959-2206; 11.905MHz Mon.-Fri. 0459-0715 and Sat-Sun 0459-0758; and 15.115MHz Sun.-Thu. 2135-0458 and Fri.-Sat. 2206-0458. RNZI is closed from 1206-1650. For QSLs RNZI is at **PO Box 123 Wellington New Zealand**. e-mail QSLs are accepted though confirmation is also via e-mail. RNZI e-mail address is: **rnzi@actrix.gen.nz** and more RNZI information and schedules can be found at **http://www/actrix.gen.nz/biz/rnzi/**

Jindalee Operational Radar Network

The Jindalee over the horizon radar project in northern Australia has been coming under some scrutiny from a parliamentary committee and the Australian National Audit Office. The overall project cost for this radar system is an astounding A$1.1 billion (£540 million). With over A$800 million (£390 million) already spent the project is running over budget and three years behind schedule. The project began in 1991 scheduled to finish in 1997. The completion date has been progressively moved so that the latest scheduled completion date in 1999 with the possibility that this will stretch further and into 2000. The project comprises kilometres long radar sites in Western Australia and Queensland linked to a co-ordination centre at Edinburgh RAAF Base near Adelaide. When completed the system will scan Australia's northern coastline which is one of the longest and least inhabited in the world. Listeners to the amateur bands will of course be familiar with over the horizon h.f. radar systems as the source of the famous 'woodpecker'.

Reader Input

David Edwardson from Wallsend Tyne and Wear has some interesting reports and observations. David raises the question of frequency sharing between the Royal Flying Doctor Service and the Cairns School of Distance Education. I have spoken with the school and they tell me that they now have their own five frequencies. The five frequencies are 4.880, 5.300, 5.357, 5.865 and 7.357MHz transmissions are at 1kW u.s.b. In general, four transmissions are carried simultaneously as four classes are in progress at any one time. Times are 2130-0630. There are other similar schools at Chartres Towers, Longreach, Rockhampton, Charleville and Brisbane. The Royal Flying Doctor Service in Cairns uses 2.020, 2.260, 5.145 and 7.465MHz. The only regular listening schedules are on 5.145MHz from 2300-2315 and on 7.465MHz from 2315-2330. Emergency calls can come in at any time on the four frequencies with an emergency button on homestead transmitters being used to alert Cairns of the call. Concerning Radio Australia, David tells me that 17.715MHz is fair to weak around 0700; 21.725MHz fades in after 0900 but is weak; 11.880MHz comes in at around 0700 with a weaker signal than 17.715; and 9.615, 11.660, 7.330 and 6.090MHz are all heard at varying times with fair to strong signals. Finally, the strongest signals in Europe from VL8A Alice Springs are at times 1800-2100 and Sydney Volmet 6.678MHz is best in the morning, 11.387MHz is

Web Sites

This column would not be complete without a few web sites for Internet connected readers to look at. The Department of Communications and the Arts is at **http://www.dca.gov.au** and media releases and speeches are at **http://www.dca.gov.au/mediarel.html**. Telecommunications company Vodafone is at **http://www.vodafone.com.au** and Vodafone service provider Smartcom is at **http://www.smartcom.com.au**. There is an Australian pay television compilation called JJ's Television Page at **http://www.nepean.uws.edu.au/users/johnf/tv.html** which gives links to a number of Australian and world sites on pay television, television channels on the web, television guides and programmes and television usenet newsgroups. And as I have noted before the Australian pay television companies are at **http://www.optusvision.com.au/** and **http://www.foxtel.com.au/** Several state branches of the Wireless Institute of Australia also maintain a web presence. VK1 is at **http://email.nla.gov.au/~cmakin/wiaact.html** VK2 is at **http://sydney.dialix.oz.au/~wiansw/** VK5 and VK8 are at **http://www.vk5wia.ampr.org/** and VK6 is on **http://www.faroc.com.au/~vk6wia/** And while I'm giving these sites Radio Vietnam is on **http://coombs.anu.edu.au/~vern/tieng_noi_vn/tnvn.html**

Greg Baker PO Box 208
Braidwood NSW 2622
Australia
greg@pcug.org.au

best in the evening. David says that he has logged Port Moresby 4.890MHz at around 0900 and Radio New Zealand on 9.700MHz from 0700.

Other News

The federal government has reversed a Labor government decision and from 31 July 1997 will permit aeroplane pilots to carry portable Emergency Locator Transmitters or Emergency Position Indicating Radio Beacons.

According to the Australian *Radio and Communications Magazine* prominent Australian DXer Bob Padula has launched the *Electronic DX Press*. This electronic newsletter has among other things short wave schedule updates, new stations, new transmitters, schedule analysis and international frequency planning. Further details and a sample copy are available at **100026.262@compuserve.com** from Bob.

At a capital cost of A$9.9 million (£4.8 million) Special Broadcasting Service (SBS) television is being extended to five major regional centres in New South Wales, Victoria and Queensland. Ongoing costs for operations and maintenance will be A$720 000 (£350,000).

The Spectrum Management Agency (SMA) is to be merged with telecommunications regulator Austel to form a new Australian Communications Authority.

The Australian government will also provide A$7 million (£3.4 million) over four years to provide captioning of evening television news broadcasts on Australian Broadcasting Corporation (ABC) and SBS networks to aid the deaf and hearing impaired. According to the government nearly one million Australians representing 5.7% of the population suffer some degree of hearing loss. ABC short wave transmitters are VL8A Alice Springs on 4.835MHz local nights and 2.310MHz local day; VL8T Tennant Creek 4.910MHz nights and 2.325MHz days; and VL8K Katherine 5.025MHz nights and 2.485 days.

I welcome any news and comments. In particular I am interested in any s.w.l. information on Australian stations heard by *SWM* readers so I can chase up more details and interesting snippets from this end. My address is shown at the head of the page. For personal replies please send two IRCs.

Grassroots

Club Secretaries: Send all details of your club's up-and-coming events to: Lorna Mower, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

AVON

Bristol International RC: Tuesdays, 8pm. The Black Horse Public House, West Street, Old Market, Bristol. All visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.l.s or CBers' can get together and have a good natter and do things that you do in radio clubs. PO Box 28, Bristol BS99 1GL.

RSGB City of Bristol Group: last Tuesdays, 7pm. New Friends Hall, Purdown, Bell Hill, Stapleton, Bristol BS16 1BG. December 17 - Christmas party. Dave Bailey G4NKT. 0117-967 2124.

South Bristol ARC: Wednesdays, 7.30pm. Whitchurch Folkhouse Assoc., Bridge Farm House, East Dundry Rd, Whitchurch. December 4 - Annual club darts match, 11th - Christmas social, 18th - Christmas greetings from SBARC. For more information ring (01275) 834282 on a Wednesday evening.

BEDFORDSHIRE

Dunstable Downs RC: Fridays 8pm. Chews House, High Street South, Dunstable, Bedfordshire. November 29 - Informal meeting, December 6 - Talk on computers by Phill G8XTW, 13th - Informal meeting, 20th Xmas party. New members and visitors welcome, just drop in or call Paul G7TSJ an (01582) 861936.

BUCKINGHAMSHIRE

Aylesbury Vale RS: Wednesday evenings, 8pm. Hardwick Village Hall, (Hardwick is situated off the A413 between Aylesbury and Buckingham). December 4 - G6NB construction contest. Gerry Somers G7VFV on (01296) 432234.

DEVON

Appledore & DARC: 3rd Mondays, 7.30pm. Appledore Football Clubroom. December 16 - Christmas party. Dave Brierley G3YGJ. (01237) 476124.

Plymouth RC: 1st & 3rd Tuesdays, 7.30pm. The Royal Fleet Club, Devonport, Plymouth. December 17 - Sherry and mince pie night. John Doherty G7HIK on (01752) 896501.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. December 20 - Christmas party and quiz. Peter G4UTO. (01803) 864528.

GREATER LONDON

Southgate ARC: 2nd & 4th Thursdays. Winchmore Hill Cricket Club, The Paulin Ground, Firs Lane, Winchmore Hill, London N21 3ER. November 28 - Radio on the air - G6QM let's see if it works, December 12 - AGM. M. Viney G0ANN on (01707) 850146.

HAMPSHIRE

Horndean & DARC: 1st & 4th Tuesdays, 7.30pm. Lovedean Village Hall, Lovedean Lane, Lovedeon, Hants. December 3 - Natter night, 10th - Club Christmas dinner. S. Swain (01705) 472846.

Southampton ARC: Mondays, 7pm. This club is now up-and-running after some years of inactivity. New members welcome. Harold McIntyre on (01703) 737715.

HEREFORD & WORCESTER

Bromsgrove ARS: 2nd & 4th Tuesdays. Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. December 10 - Night on the air. Barry Taylor. (01527) 542266.

Hereford ARS: 1st & 3rd Fridays, 8pm. Many talks and interesting evenings including, December 6 - Islands on the air, 20th - Informal - bring a mince pie and Christmas spirit. Tim G0JWJ, QTHR. Tel: (01432) 279435 or Paul G0DJF on (01432) 353765.

Malvern Hills RAC: 2nd Tuesdays. Red Lion, St Annes Rd. Jim Davis G0OWS. (01684) 576538.

HERTFORDSHIRE

Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Rye Road, Hoddesdon. December 5 - AGM, 19th - Christmas social. Don G3JNJ on 0181-292 3678.

KENT

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. December 10 - Christmas social. A. Messenger G0TLK. 0181-777 0420

Dover RC: Wednesdays, 8pm to 10pm during term time. Duke of York's Royal Military School, Dover. Morse classes are held from 7pm to 8pm and Novice training courses are also conducted as required at that time. The club is in the course of registering as a C&G Exam centre and hopes to be operational as such in time for the May exams next year (1997). The club also operates a CB station and encourages practical project work. December 4 - Natter night/club operating, 11th - Digital communications, talk by John G3GIE, 18th - Club Christmas social evening. Brian Hancock G4NPN on (01304) 821007.

Medway AR & TS: Fridays, 7.30pm. Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham, Kent. December 6 - Video Recorder Servicing (Part 2) by Peter G0GIR, 8.30pm, 20th - Christmas party. G3VUN, 40 Linwood Avenue, Strood, Rochester, Kent ME2 3TR. (01634) 710023.

LANCASHIRE

Preston ARS: Thursdays, 8pm. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood, Preston. December 5 - General discussion evening, Natter night and G3KUE on the air, 19th - An illustrated talk. Eric Eastwood G1WCQ. (01772) 686708.

NORFOLK

Norfolk ARC: Wednesdays, 7.30pm. Formal and informal meetings at The Norman Centre, Bignold Road, Off Drayton Road between 'Asda' and Three Mile Cross Roundabout, Norwich. December 4 - Science for all by G3PTB, 11th - Night on the air/construction QRP/Morse practice, 18th - Christmas dinner. Mike G4EOL. (01603) 789792.

NORTH YORKSHIRE

Hambleton ARS: All meetings held at Allertonshire School, Northallerton, 7.30 to 9.30pm. November 28 - Operating night - vintage and d.i.y. equipment, December 12 - Social event. More details from John G0VXH on (01845) 537547.

SOMERSET

Wincanton ARC: 1st & 3rd Mondays, 7.30pm. The Community Lounge, King Arthur's Community School, West Hill, Wincanton. December 2 - Lecture on the new Wincanton Radio Club 70cm repeater GB3TC by Dave G3ZXX, 16th - Lecture on the Post Code Challenge by Dave G3ZXX. Tim Stellar G6RCT on (01963) 31788.

Yeovil ARC: Thursdays, 7.30pm. The Red Cross Centre, 72 Grove Avenue, Yeovil. December 5 - The first transatlantic amateur radio signals by G3MYM, 12th - Cruising with an inverted L by G7SDD, 19th - Social evening with mince pies and r.f. Cedric White, QTHR. (01258) 473845.

SOUTH YORKSHIRE

Barnsley & DARC: Mondays. December 2 - Proposed talk, 9th - Natter night, 16th - Talk on GB3SY and GB3DV the u.h.f. repeaters of the South Yorkshire Repeater Group by Ernie G4LUE, starts 8.15pm prompt. Ernie Bailey G4LUE on (01226) 716339 between 6 and 8pm.

WARWICKSHIRE

Mid Warwickshire ARS: 2nd & 4th Tuesdays, 8pm. St Johns HQ, Warwick Div., 61 Emscote Road, Warwick. December 11 - Christmas meeting. G8HRI on (01926) 424465.

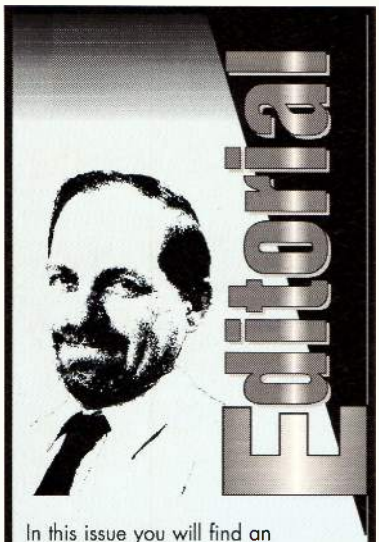
Stratford-upon-Avon & DRS: 2nd & 4th Mondays, 7.30pm. Home Guard Club, Main Street, Tiddington, Stratford-upon-Avon. December 9 - Quiz organised by Terry G3MXH and computer question and answer session organised by Jeremy G0CDO. The Society are again organising a course of instruction for the Radio Amateur Examination of the City & Guilds of London Institute and further details can be obtained by writing to the Chairman of the Society, Mr J. Harris G8HJS, enclosing a stamped addressed envelope. The address to write to is: 57 Evesham Road, Stratford upon Avon, Warks CV31 2PB.

WEST YORKSHIRE

Wakefield & DRS: Tuesdays, 8pm. The Ossett Community Centre, Prospect Road, Ossett. December 3 - On the air, 10th - Tropospheric openings, how they come about, 17th - Christmas social. Bob 0113-282 5519 or G3WWF@GB7WRG.

WILTSHIRE

Trowbridge & DARC: 1st & 3rd Wednesdays, 8pm. The Southwick Village Hall, Southwick, Trowbridge. December 4 - Family Christmas party and presentation night. Ian G0GRI on (01225) 864698.



In this issue you will find an interesting project - a replica Denco One-valve short wave receiver. With the re-introduction of the Denco range of plug-in coils, it is now easy to construct receivers of this type. Well-known 'one-valve' exponent, Ron Pearce, has been badgering me to publish one of the old receivers that were available in kit form many years ago. This project is the outcome. We are running a simple competition to go with this project. Why not build your own replica and enter? I guarantee that you will enjoy the challenge!

Competitions

While on the subject of competitions, I have received a couple of rather unpleasant letters complaining about the results of the AOR AR7030 competition that we ran earlier in the year. It would seem that there is a rumour circulating that the winner is employed by *Short Wave Magazine*! This is untrue. We conduct our competitions in a very fair way. All the correct entries are placed in a large box and, on the appointed day, stirred well and a winner picked at random from within the box. The person picking the winning entry out of the box keeps their eyes tightly shut, as well!

Writing books on radio subjects, or writing occasional articles for *SWM* does not disqualify a reader from entering. If it did, anyone having a letter published in the magazine, or their name mentioned in one of the columns, would have to be excluded, and I'm sure that you wouldn't want that to happen.

I can assure all of you who enter our competitions that they are fairly conducted and that we bend over backwards to ensure that all entries get an equal chance of winning - 'nuff said!

As this is the last issue of *SWM* before Christmas I will wish you all the appropriate 'Season's Greetings'.

Dick Ganderton G8VFH

Letters

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to any other magazines. **The views expressed in letters published in this magazine are not necessarily those of *Short Wave Magazine*.**

'Bombes'

Dear Sir

I was one of the five Post Office Engineering Department technicians who worked on the 'Cobra' 4-wheel high speed Bombes at Dollis Hill and Eastcote from 1942 until 1945. So, I was particularly interested in David White's piece in the October issue of *SWM*.

I realise that in an article of this nature, it is not possible to go into too much detail, but there are a few points which could do with correction or clarification. I therefore venture to enclose a copy of the text of a talk about the 4-wheel Bombes, which I was persuaded to deliver at the 'Enigma' Reunion in Bedford, September 1995.

1. BTM did produce 4-wheel Bombes.
2. Only the basic 3-wheel Bombe part of the 'Cobra' machines was made by BTM.

Mawdsley developed and manufactured the associated high-speed 4th-wheel machine from an original design by Dr. Wynn-Williams of TRE, Malvern.

PO Research Station, Dollis Hill, developed the pulse generator and 'Stop' sensing/display rack and cobbled the lot together, sorting out the bugs.

There are a few relics of the 'Cobra' machines in the Museum at Bletchley Park - notably brush assemblies and a commutator from the Mawdsley machine. The Americans at Eastcote operated their own 'Bay' of BTM Bombes. They did not have the US-built machines.

In the sketch at the bottom of page 29, I think you will find that the section designated 'Diagonal Board' was in fact three rows of 26 switches (one row for each bank of drums). One switch on each row was used to 'mark' a point on the input of the Bombe network.

We did not have these switches on the 'Cobra' machines so this matter should be checked with one of the surviving RAF technicians who maintained the BTM machines.

David J. Whitehead CEng MIEE
Backwell
Bristol

*Thank you for that clarification, and the text of the talk David. I wonder if we have any of the RAF technicians you mention who are readers if so they might like to drop me a line. - **KN***

Dear Sir

I have recently come into possession of a Trio receiver (model 9R-59D). It seems to be in good working order, but due to its age, it did not come with a handbook.

Can you tell me just how old this set might be? I know it's a tall order, but I wonder if anyone at the *SWM* offices or any of your readers can help out with any original literature or photocopies, etc. I would be most grateful for any assistance. Needless to say I would be more than willing to cover any costs.

E. R. McGowan
Antrim
N. Ireland

Dear Sir

I have for many years been a subscriber to both *Short Wave Magazine* and *Practical Wireless*. I have a short wave hand-held receiver ESKA RX12S (12-channel crystal control) that I bought from Eska (in Denmark) some years ago. In the past I used to order spare crystals and coils from Eska, but now this firm seems to be out of the market.

The receiver is very good indeed and I would like to find crystals and coils to receive some new utility frequencies that I have found very interesting, but I don't know who could provide such items. Perhaps Eska had some other people making crystals and coils for them. Do you have any ideas on how to solve my problem?

I thank you very much indeed and I appreciate your magazine that is very close to my interests, (I have three scanners' too).

Gallesi Gian Claudio
Italy

*Unfortunately, there isn't anyone in the SWM Offices who is familiar with this particular radio. You don't say what size of crystal that the set uses nor do you mention what the markings are on the ones that you currently have. With this information, it should be possible to work out how the crystal is used to generate the local oscillator frequency. This in turn will allow new range crystal frequencies to be calculated. Most crystal manufacturers should then be able help. The coils that you also mention, however, pose more of a problem - hopefully someone reading this is familiar with your radio and will be forthcoming with some help. If so please write to Gallesi via the Editorial Offices, thanks - **KN**.*

Dear Sir

As an old s.w.l. recently returning to my hobby, I am now plagued with modern day interference which is coming from my own computer and TV set. The interference from the computer is the worst, giving background noise, masking many signals in the range 1 to 14MHz, the television interference, whilst annoying, is more of a nuisance value, but it would be nice to be rid of it. Switching off either appliance eliminates the problem.

The interference at the Racal can be completely stopped by removing the antenna from the receiver, thus proving the noise is solely airborne and not via the mains. The radio set-up is Racal RA17L and a Drake R4B, both fed from an outside long wire, (approx 25m long), via a magnetic balun situated outside under the eves.

The Racal has been checked to ensure that all casing and chassis bolts are secure and the chassis is earthed with heavy copper tape secured to an earth spike in the ground. All antenna connectors are crimped onto known good 50Ω coaxial cable and have been checked for continuity and good contact. The Drake independently gives the same results when connected to the same long wire and balun, thus corroborating the Racal's results.

The computer is situated in the downstairs room as is the TV and the Racal RA17L and Drake are situated in the attic some two floors up. I have tried snapping ferrite data-line filters around cables leaving the computer and at the same time earthing the computer metal case to a nearby radiator copper pipe, there was no change in noise level.

A marginal reduction in interference was achieved by moving the antenna slightly away from the offending computer, but this was not sufficient to bring the signal from amid the noise level. I would appreciate it if you could suggest a possible cure (other than ditching the computer), there must be many others in the same situation.

I have been thinking of buying an active aerial, such as the Datong AD270 in order to amplify the signal (12dB) to the receiver but I have the feeling that this will also amplify the interference thus back to

square one. I am also not sure how the Racal will perform with the increased input signal.

As a side issue, can you advise me if you know of anyone that can repair a Datong Up-converter, Datong have declined to repair it.

I. G. Bennett
Tyne & Wear

Well, taking one point at a time. Your radiated interference can be reduced by following the directions given by Andy Ikin on page 32 of this issue. The key here is getting the antenna away from the noise source.

You mention having connected the computer case to a nearby radiator pipe, but this is not necessarily a good earth. Indeed the pipe work may not be connected to earth anywhere. Gone are the days of metal rising mains on the cold system! By connecting in this way you may be just be adding the heating system as a radio radiator as well.

The active antenna suggestion will not cure this kind of problem, adding gain alone will not only amplify both noise and desired signal by the same amount, but you have any intermodulation products to contend with as well. You may, though, find that you can easily site such an antenna far enough away from the noise source as to improve the situation. There is only one way to discover what happens - try it. - ***KN****.*

Dear Sir

Further to Dennis Woodward's letter in the March issue of *SWM*, I had been a life long reader and s.w.l. and concur with his views - best expressed - 'Variety is the spice of life'.

I, myself, have now reached the ripe old age of 82 and have been reading *SWM* over the years ever since it was first published. In those early days it was half the size or its present form, but kept its readers well informed on current amateur and short wave matters.

I well remember that you published several d.i.y. short wave circuits, thus keeping your readers up-to-date with the latest improvements in short wave reception and radio components in the 1930s. Now the bad news!

I lost my collection of *SWM*s (including a first issue) during the London Blitz, including my collection of QSL cards. These contained a good selection of amateur cards - i.e. US Submarine Base Panama to a card from NOME Alaska - all blown to the four winds - from whence they came.

The good news was, the family was not at home on that night. One item I regret loosing, was a letter typed on Government brown headed paper from the CO of Kenley RAF Station, telling me I should not be listening to his fighter pilots conversing about 'Bandits' at ANGELS 5. Silly me, I had sent them a full reception report, thinking they would be pleased to hear their transmissions were going out very well.

I commenced my listening by purchasing a short wave kit set, put on the market by, of all people, Morphy Richards of Foots Cray in Kent. Their first and only venture into the radio market place. It came with plug-in coils wound on Bakelite formers, complete with lots of hand capacity noises, I still have the 10in long-fire screwdriver, used to keep your distance when trimming.

I then progressed to a Hallicrafters *Super Skyrider* - much better results ensued. Finally I have now arrived at using an AOR AR2800 desk monitor and an AR8000 hand-held. What a change around. No more wet batteries, huge dry batteries and accumulators.

I have a new collection of QSL cards, but as Mr Woodward suggests, the amateur bands are not as of much interest to listen to in the modern times. I am not computerised, yet! but I did pass my marine v.h.f. licence, when I was able to go deep sea angling off Eastbourne. *Anno Domini* has now intervened and I am now a retired angler as well!

Len Nosworthy
Polegate
E. Sussex

Dear Sir

In retirement, the postman's delivery of *SWM* is eagerly awaited each month. I read it virtually from cover to cover and particularly these past months the writings of John Wilson, whose advice I have followed since the early *Lowe's Listener Guides*.

Like John Wilson I have a predilection for valved receivers and being an impoverished pensioner I run a Racal RA17, being good but cheap! Thanks to another regular, Mike Richards, an interest in 'Decode' added a further dimension on my listening and a computer, HAMCOMM & JVFAX were added to my set-up very successfully.

John's recent comments on WiNRADiO have sparked my attention as I have the software demo for this receiver and that seems to be very good. I can also run HAMCOMM through Windows 3.11 believe it or not!

Now I can't wait to hear John's comments in the review of WiNRADiO before I expend (for me) a large sum on this items, to put together what I think could be quite a slick combination.

Ron Lewis
Ramsden
Oxford

John has been trying a WiNRADiO - courtesy of Lowe Electronics - and his finding will be published in a future issue of SWM. - ***Ed****.*

Dear Sir

I was very disappointed to read the letters published in your October issue from the listeners who were bemoaning the cost of their hobby. Many people now seem to be of the mistaken belief that the only way to enjoy the hobby is to spend obscene sums of money on some dream radio and that this will solve all their problems.

Most of my modest listening equipment has been purchased second-hand over the years through your 'Trading Post' pages and acquiring items in this manner has caused me few problems and given me hours of enjoyment, even though it is hardly high-tech gear. In fact, there is added satisfaction when that elusive signal is finally found.

As with all things in life, you have to be realistic about what you can afford to put into a hobby or interest. While it would be very nice to own a Rolls Royce, I am happy to accept that I never will. In the same way, I will never own an IC-R8500, but I feel I can live with this.

In short, I would say to Messrs Semmens and Newell, do not get too despondent and just try to enjoy your hobby at a level which is right for you. If you do not want to pay dealers, over the top prices, it may be necessary to try other sources. Remember, it is only a hobby, you could always try fishing instead!

Malcolm Woodwock
Abingdon
Oxon

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR.

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SWM SERVICES

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Components for SWM Projects

In general all components used in constructing *SWM* projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

The printed circuit boards for *SWM* projects are available from the *SWM* PCB Service, Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B74 4JF. Tel: (0956) 374918 (Mon. - Fri. 9am - 5.30pm).

Photocopies and Back Issues

We have a selection of back issues, covering the past three years of SWM. If you are looking for an article or review, or whatever that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues are **£2.60** each, photocopies are also **£2.60** per article, plus **£1.00** for subsequent parts of serial articles.

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Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. If you require help with problems relating to topics covered by *SWM*, please write to the Editorial Offices, we will do our best to help and reply by mail.

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60 years of BBC TELEVISION part 2

Keith Hamer and Garry Smith continue their look at the technical achievements made by BBC-TV engineers in the sixty years that have elapsed since the start of the world's first high definition television service.

Extending The BBC Network

Before 1950 there was no television outside the London area and there were still only the two original and very cramped studios at Alexandra Palace. A plan for nationwide coverage was prepared in the late Forties and approved by the Postmaster General. The plan envisaged five high-power transmitting stations serving the London area and South-East England, the Midlands, the industrial North of England, Central Scotland and South Wales with part of the West of England. The major centres of population lying between the areas covered by these five stations were to be covered by five medium-power stations, leaving the more outlying areas to be served by other stations of lower power.

These stations had to be accommodated within the band of frequencies (41 to 68MHz) allocated to broadcasting in 1947 by the Atlantic City Conference of the International Telecommunications Union. It was, therefore, decided that they should all use the vestigial sideband system of transmission to reduce the total bandwidth required - apart from the London station at Alexandra Palace which, being of much earlier design, had always used the double sideband system. By this means five independent frequency channels were obtained and it was decided that they should be shared on the basis of one high-power station, one medium-power station, and one or more low-power stations in each channel.

Sutton Coldfield

Television was extended to the Midlands in December 1949 with the opening of the Sutton Coldfield transmitting station. By August 1952, all four new high-power transmitting stations had been opened. More than 80% of the population of the United Kingdom was within range of BBC Television transmissions.

Construction of the medium-power stations was not authorised until 1953, but in the early part of that year, a special effort was made to increase the coverage to the maximum possible in time for the Coronation in June of Her Majesty Queen Elizabeth II. Temporary stations were built with all speed at Glencairn near Belfast, at Pontop Pike (covering the heavily populated Tyneside area) and at Truleigh Hill, near Brighton.

Construction of the five permanent medium-power stations was started in July 1953 and completed in June 1956. Meanwhile, a temporary low-power station had been brought into service in the Isle of Man and further stations had been authorised to cover East Anglia, the Channel Islands, part of the North of Scotland, the Londonderry area of Northern Ireland, North-West England, and West Wales. All these stations were completed before the end of 1957 by which time the original Alexandra Palace transmitters had been replaced (in March 1956) by new transmitters of higher power on the Crystal Palace site in South London.

During 1958, the coverage was extended to the far north of Scotland by the opening of transmitting stations at Thrumster near Wick, and in Orkney. The coverage in the south-east of England was reinforced by two new low-power stations at Dover and Folkestone. In 1959, a transmitting station was opened at Peterborough, and the main distribution network was then complete. The BBC Television Service was then available to some 49 650 000 people, equivalent to 98.6% of the population of the United Kingdom. All the twenty-three stations were accommodated in the five frequency channels of Band I.

Progress on the building of new television stations had to be slowed down between 1951 and 1953 on account of the economic situation of the country; the government had placed restrictions on capital expenditure. Nevertheless, the main network was completed by 1955. By 1961 there were five high-power transmitting stations (including Crystal Palace, which replaced the original station at Alexandra Palace), eight medium-power stations, and twelve of lower power.

Much difficulty had been caused by the need to accommodate all these stations in the five frequency channels available in Band I. It was planned to share these five channels between ten or twelve stations, and to use frequencies in Band III for the remainder, as provided for in the Stockholm Plan prepared by the European Broadcasting Conference in 1952. However, by the end of 1961 the government had not allowed the BBC to use any channels in Band III (174 to 216MHz). Careful planning and re-planning was required to enable all the BBC stations to operate in Band I without creating intolerable mutual interference with reception since as many as six stations had to share the same channel.

The BBC Television Centre

Long-term plans for a permanent studio centre were actively being pursued during the Fifties. The idea of a Television Centre was actually conceived before the War. The 13.5 acre site at the White City on Wood Lane near Shepherds Bush in West London was purchased as long ago as 1949. Construction work for the BBC Television Centre began in 1951 and the Main Block opened on June 29th 1960. The Scenery Block had already been brought into use as early as 1953. The Restaurant Block was built next and was used temporarily to provide additional offices and rehearsal rooms. The Presentation area was brought into service in late 1960 and took over from Lime Grove as the controlling centre for the BBC Television network.

Cameras in the main production studios at the Television Centre in 1960 were of the Image Orthicon type, using 4.5in (114mm) pick-up tubes. Turret-mounted lenses provided minimal horizontal viewing angles of 9, 16, 24, and 35°. Newly-developed studio zoom lenses were also available. They were turret-mounted, too, and covered horizontal viewing angles in the range of 9 to 32°.

The Central Control Room was the focal point for the control of programme contributions from all sources. It was part of the Presentation Suite which contained a Presentation Studio with its associated local Control Room. The Presentation Studio was used for announcements and simple programmes of the interview type and contained two vidicon cameras. The Presentation Suite also contained the International Control Room which was the focal point for television programmes sent to, and received from, other countries via the Eurovision Network. Sound and vision mixing facilities were specially arranged for programmes requiring multi-

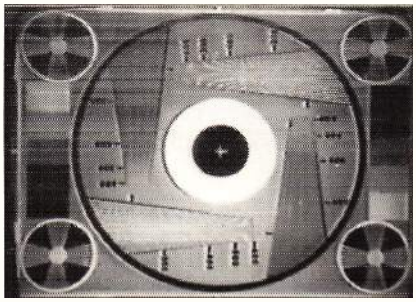

Fig. 1: The SMPTE test card was radiated in early 1964 by the BBC during field trials prior to the launch of BBC-2.

Fig. 2: The first BBC-2 on-screen Identification Symbol used from April 1964.

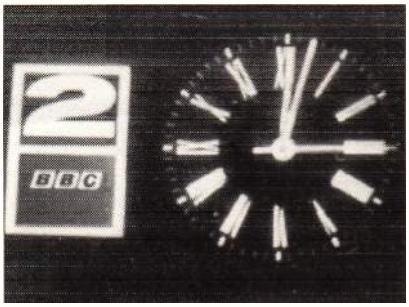

Fig. 3: The first clock caption radiated by BBC-2 from April 21st, 1964.

lingual commentaries and there was a comprehensive control line switching system to facilitate the setting-up of the necessary programme circuits at home and abroad. Magnetic tape reproducers were provided which carried identification signals in various languages.

Outside Broadcasts

The number of cameras available in a typical BBC OB unit in the early Sixties was three. They could be operated away from the vehicle using camera cables up to 610m in length. The vision control equipment inside the vehicle permitted cutting, fading or mixing of the camera outputs. Sound equipment was installed to accommodate up to ten microphone inputs.

The cameras used with the mobile control rooms were exclusively of the Image Orthicon type. By the end of 1961 there were nine of these mobile units in service; three in London and one at each of the main Regional centres. Three were equipped with 3in (75mm) image orthicon tubes and six with 4.5in (114mm) tubes.

The cameras had turrets which carried a number of alternative lenses so that a lens of the desired focal length could be selected quickly. The turrets fitted to later cameras accommodated lenses of 2 (50) and 40in (1020mm) focal lengths simultaneously, as well as two others of intermediate focal length. The cameras were fitted with a 'neutral density' filter with a range of 10:1 which, when operated in conjunction with a remote iris control from the main OB vehicle, allowed scenes of widely different luminance to be televised, while simultaneously permitting control of the depth of field over a greater range of distances than was previously possible.

Some cameras were fitted with a zoom lens instead of the lens turret. The zoom lens, devised in 1951, was cumbersome and heavy and had a range of variation in focal length of 5:1. A lighter and more compact type was first used in 1953 and had alternative ranges of 4 to 20in (100 to 510) or 8 to 40in (200 to 1020). To change from one range to another involved dismantling the lens. In 1961, a zoom lens was produced with a continuous variation in focal length of 4 to 40in. This total range was split into four, the required range being obtained by a simple 'optical' switch which altered the relationship of the moving elements of the lens.

Vision signals from the mobile units were conveyed to the television network in various ways. Permanent vision cable circuits were rented from the General Post Office in parts of central London, with extensions to certain places further out from which OBs were frequently taken. Ordinary telephone lines were also used for short distances of one or two kilometres either as 'spurs' to this main cable or independently. Elsewhere, BBC radio links were used which mainly operated in the Super High Frequency (s.h.f.) band on frequencies in the range of 7050 to 7300MHz. These links gave a range of about 70 km over an optical path with a power of 3W: greater distances were covered by using two or more links in tandem. It was often not possible to achieve an optical path between the site of the OB and the site of the first s.h.f. link; in such circumstances, u.h.f. equipment of BBC design was used for the first 'hop', operating on a frequency of the order of 600MHz.

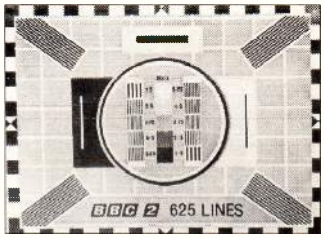

Fig. 4: A modified version of Test Card "C" was used by BBC-2 from May 1964 until the introduction of colour in 1967 and replaced Test Card "E" which had been transmitted from April 1964. Test Card "E" was discontinued due to inherent technical problems with the design of the frequency bars.

Fig. 5: Due to a complete power failure at Battersea Power Station, the official launch of BBC-2 (planned for April 20th 1964) had to be postponed until the following day. The morning programme for under-fives quietly launched BBC-2 ahead of the official opening at 7.20 in the evening!

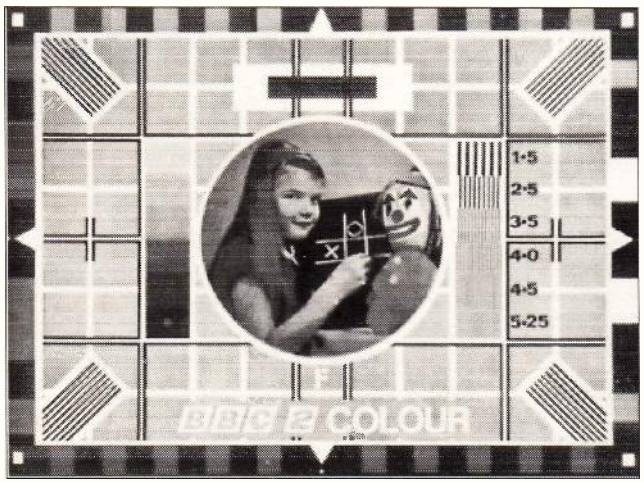

Fig. 6: The original version of the BBC Colour Test Card "F" radiated from July 1st, 1967. The little girl in the centre picture (Carole Hersee, daughter of the former BBC test card designer George Hersee) was eight years old when the photograph was taken. There have been various slight modifications made since 1967, perhaps the chief one being the introduction of a digitally-generated version in 1984. Test Card "F" has also been used by television services in countries throughout the world including Norway, Finland, Australia, New Zealand and Bahrain. All the photographs in this article are from Keith Hamer's BBC Archive Collection.

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Scanning is Golden

Kevin Nice, fed up with punching in frequencies, has been looking for an alternative to sore fingers. Letting your fingers do the walking may be a solution to some problems, Scancat Gold is a solution to receiver control worth looking at.

Looking for ultimate in receiver control? Then you could do a lot worse than Scancat Gold from Computer Aided Technologies, just so long as you have a receiver that has remote control capability that is.

Why would anyone want to connect a radio to computer? This is a question that has been asked quite recently within the pages of this very magazine. Quite simply the answer to that question is this - convenience. Yes, I know JW will probably say that the disadvantages out way the advantages but my own experience says otherwise. (You can limit the amount of r.f. interference that gets into your receiver by some simple, yet effective steps). If you own a scanner then you will know what I mean, if you are an h.f. only listener with a receiver that has computer control - and for that matter those of you who have more dignified older receiver, you my well still be with me on this.

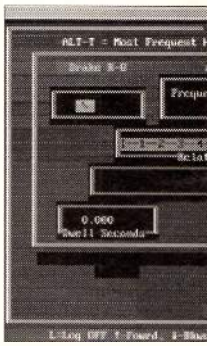
Listening Habits

You see, if your interests lie with non-broadcast listening, then you have a very basic problem. This boils down to not having enough radios. To catch the action, the s.w.l. must operate on two levels firstly monitor known frequencies and secondly search for new ones of interest. This fundamental fact is true regardless of what part of the spectrum holds your interest. To achieve the former, without computer control, listeners are left only with having to monitor lots of frequencies simultaneously - by using lots of receivers or by the use of memories within the receiver(s). This approach gets very confusing. I for one suffer from not knowing which from radio the activity is emanating, when I've got more that two running in the shack. Oddly enough, I've got four sets running as I write this, and its maddening every time on chirps up to be sure which one is responsible but how else do I monitor four frequencies simultaneously.

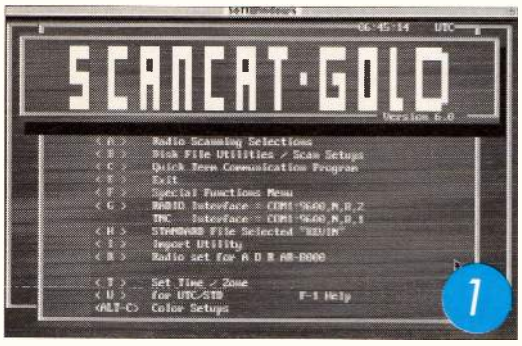
In step the solution - computer control, you need a receiver that has a control port, a computer, a suitable interconnecting lead and here's the crunch, some software. A good program assists with both our above aims, i.e. monitoring known frequencies and discovering new ones, even unattended!

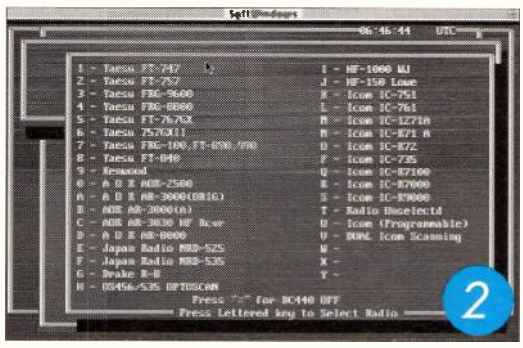
Getting Going

Scancat Gold is supplied in a sealed envelope which contains a single 720KB 3.5in diskette, a 108-page A5 manual, a product summary and a thanks for purchase. Installing the software was very straight forward, it is not copy protected which allows multiple copies to exist on different machines. The minimum computer requirements are an XT (8088) machine with at least 600KB of base RAM free, DOS 3.0, one floppy though to use Scancat properly you need a hard disk (are there any floppy only machines in use any more?). Also needed a minimum of a Hercules - do you remember those - and a single serial port. So it is quite feasible to have this software running on the £10 rally bargain machine! The program also runs in a DOS window under Microsoft Windows and OS/2.



I actually installed it on several machines including a 68040 based Macintosh with a DOS emulator, though I didn't actually attempt to drive a radio with that version. The installation is initiated by typing at the DOS prompt INSTALL A: C: SCANCAT this tells the installer the source files reside on drive A: and the target for the expanded installation is the directory SCANCAT on the C: drive. It is possible to specify what is needed for your own preference and machine set-up. The whole process takes but a few minutes. Once complete the software invites you to type SCANCAT to start the program. It is possible to specify all the operating parameter at the command line, this is very useful indeed as it is therefor possible to create a batch file that specifies log file, radio type, start and stop time, frequency range and increment - very





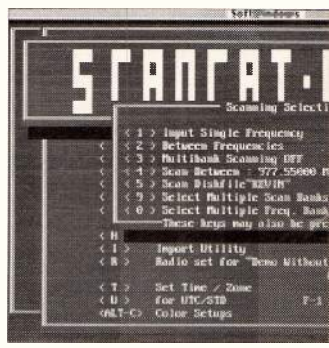


Fig. 1: The Main menu options continue to be available even when sub menus are displayed.

Fig. 2: The full compliment of radios supported by Scancat Gold. Note option 'V', Dual Icom scanning - drive both a h.f. and v.h.f. set at the same time!

Fig. 3: Scan mode selection menu.

useful.

Typing SCANCAT only, though, loads the program in its interactive menu driven mode. This is the best way to become acquainted with the facilities offered by Scancat. Upon starting this way you are greeted by a main menu **Fig. 1**. To proceed and begin driving you radio there are a few thing to be attended to forthwith - connect the radio and computer, specify your radio to Scancat, and determine the frequencies to monitor. So lets go. I used a HF-150 as I happened to have to hand, both the radio and the interface to drive this radio remotely. Once connected I needed to tell Scancat what to expect **Fig. 2**. You can see the radios that are supported. Computer Aided Technologies say in the manual that they will add other radio if customers send a copy of the radio programming protocol that they wish to be added - may well take up this offer with my main station receiver a, Plessey set, once I can establish the commands!

Okay, with option J selected, I just need to set-up the Scancat port setting, for the HF-150 the comms. settings are fixed, if you are using a different radio don't forget to set them to match, many hours can be wasted with mismatched serial interfaces - I know, I've wasted many.

Cleverly, Scancat helps you here, with radio's default settings being mirrored by the program. Should you wish to alter these vital settings, then typing G at the main menu facilitates this desire.

We are just about ready to go now, just one last thing, type U, to set the displayed time to UTC. If you must then the screen colours can be changed by the user - frankly I just couldn't be bothered to do anything other than leave them as default - after all the scheme didn't offend my eye.

Listening at Last

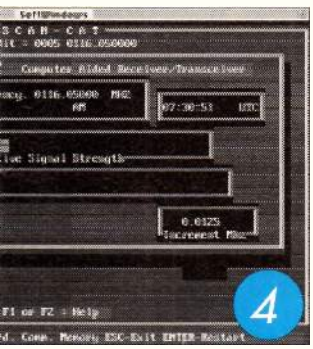
From the main menu type A and you are presented with seven options numbered strangely, from 1 to 0 (6, 7 & 8 missing), this allows the selection of the scanning mode to be used. The options can be seen in the drop down menu showing in **Fig. 3**. Having made your selection you are then presented with the control panel **Fig. 4** which displays vital information including frequency and mode, CTCSS or DCS tone, when present and a suitable radio is selected. Time, signal strength - again radio dependant, disk record information - when scanning from a file. Dwell time and increment are also displayed in their own windows as is DTMF information - yet again dependant on radio type. Unfortunately the radio available during the review does not have all the bells an whistles that shows Scancat at its best.

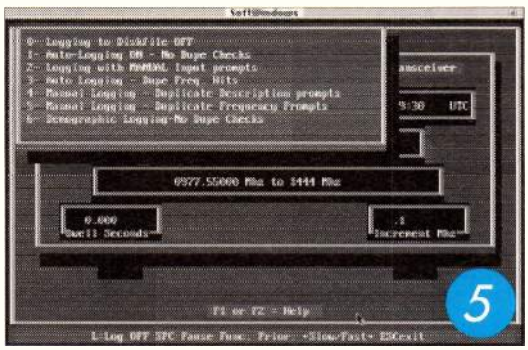
Having arrived at the control panel and entered the desired frequencies, we are off.

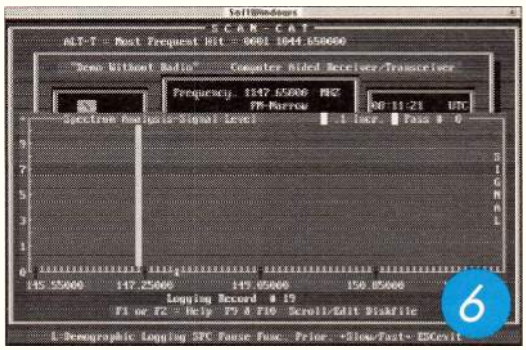
Fig. 4: The scanning display Shown monitoring 116.05MHz in a.m. mode at 0730UTC.

Fig. 5: Logging options.

Fig. 6: Spectrum display format.







Automatic Logging

It is now possible to create log file which will record all 'hits' i.e. instances of active frequencies encountered. As you might have guessed, there are several options available for this facility - six in all see **Fig. 5**. Once a log file has collected some hits it can be viewed, edited or used to control the receiver. The file can also be saved, annotated with description, sorted by any of the fields, printed or saved to disk.

Whilst Scanning it also to produce a visual spectrum display of the results, **Fig. 6** shows a sample display.

Memory Management

Another extremely useful facility provided by Scancat is the ability to both read from the radio's memories into a file. The reverse function is also available, i.e. write to the radio memories/banks from a disk file. This is a very useful function indeed. Imagine that you have been manually entering frequencies into your radio over a period of time. However organised you try to be it is nigh on impossible to keep any semblance of order for long. To restore order all you have to do is upload your radio's memories via Scancat, sort and edit them. When you have knocked them into shape, not only do you have a permanent record on disk, but you can then reload the sorted data back into the radio. ■

Scancat Gold is available from
Computer Aided Technologies direct at:
PO Box 18285, Sheveport, LA 71138, USA.
Tel: +1 318 636 1234 (Orders only) FAX: +1 318 636 0449. E-mail: scancat@scancat.com
A free demo is available at the Website
http://www.scancat.com
You can also obtain Scancat via UK dealers.

Unfortunately this brief look at Scancat can not do all the program's extensive features justice. To provide an in-depth look at all these capabilities would need more space than available. Watch your favourite radio magazine for an in-depth feature on this and other computer control packages.

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A Band Pass Tuner Unit

Have you got problems with intermodulation and crossmodulation? You've not got a tuned r.f. section in your receiver? Ray Loveland G2ARU offers you a simple and inexpensive add-on unit to help.

Many modern transistorised receivers have poor front-end performance. As a result, strong out-of-band signals can cause breakthrough, particularly when long wire antennas are used. This is due to the fact that these receivers do not have any tuned circuits in the early stages. They rely on switched band-pass filters or in some cases have very little or no front-end filtering. Antenna tuning units, a.t.u.s, are used by many listeners and there is no doubt that they often give some improvement, but this is not always the answer to the problem. A far better solution is to put some parallel tuned circuits between the antenna and the receiver input.

A pre-selector unit usually has two tuned circuits with a single transistor to contribute some gain, but often the level of amplification in the pre-selector causes further problems. The modern receiver has adequate gain and there is no advantage in having further gain in the pre-selector. What is needed is simply a band-pass tuner containing two tuned circuits which can be tuned to the desired received frequency. This consists of an input coil coupled to the output coil with a small capacitor, both being tuned by a two-gang variable capacitor and connected between the antenna and the receiver. The basic circuit is shown in **Fig. 1**.

I made up a unit to cover from 3.75 to 30MHz in three ranges with the circuit as shown in **Fig. 2**. This has proved very satisfactory in improving the performance of my receiver and I can recommend this circuit to any listeners experiencing out-of-band breakthrough. The three ranges are bought into use by means of a switch which also has a position to connect the antenna directly to the receiver.

The tuner must be well screened to prevent pick-up which would bypass the filter. I built mine in a metal case and the complete unit is illustrated in **Fig. 3.** The

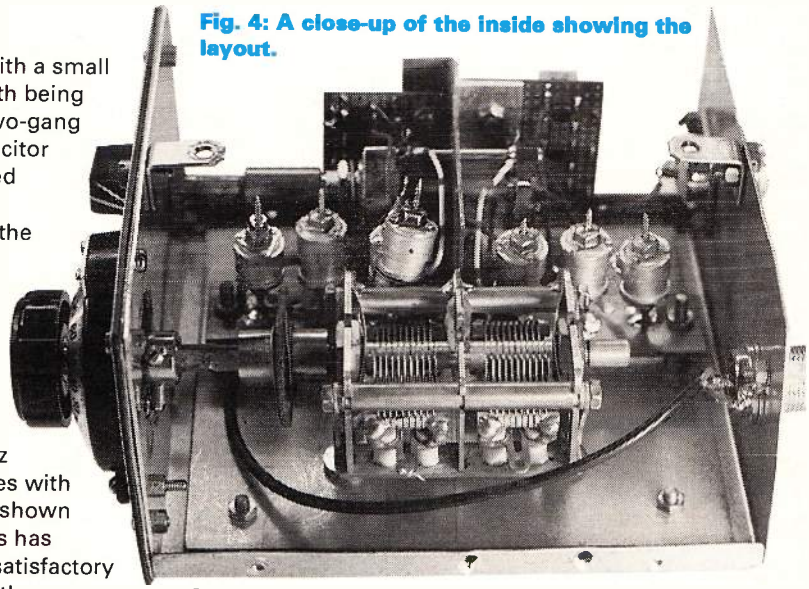

Fig. 4: A close-up of the inside showing the layout.

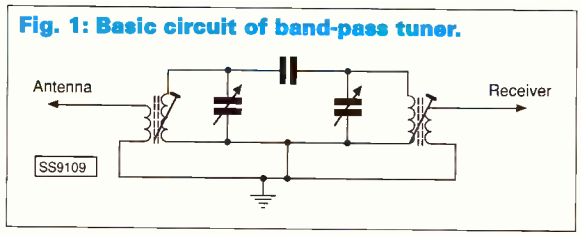

Fig. 1: Basic circuit of band-pass tuner.

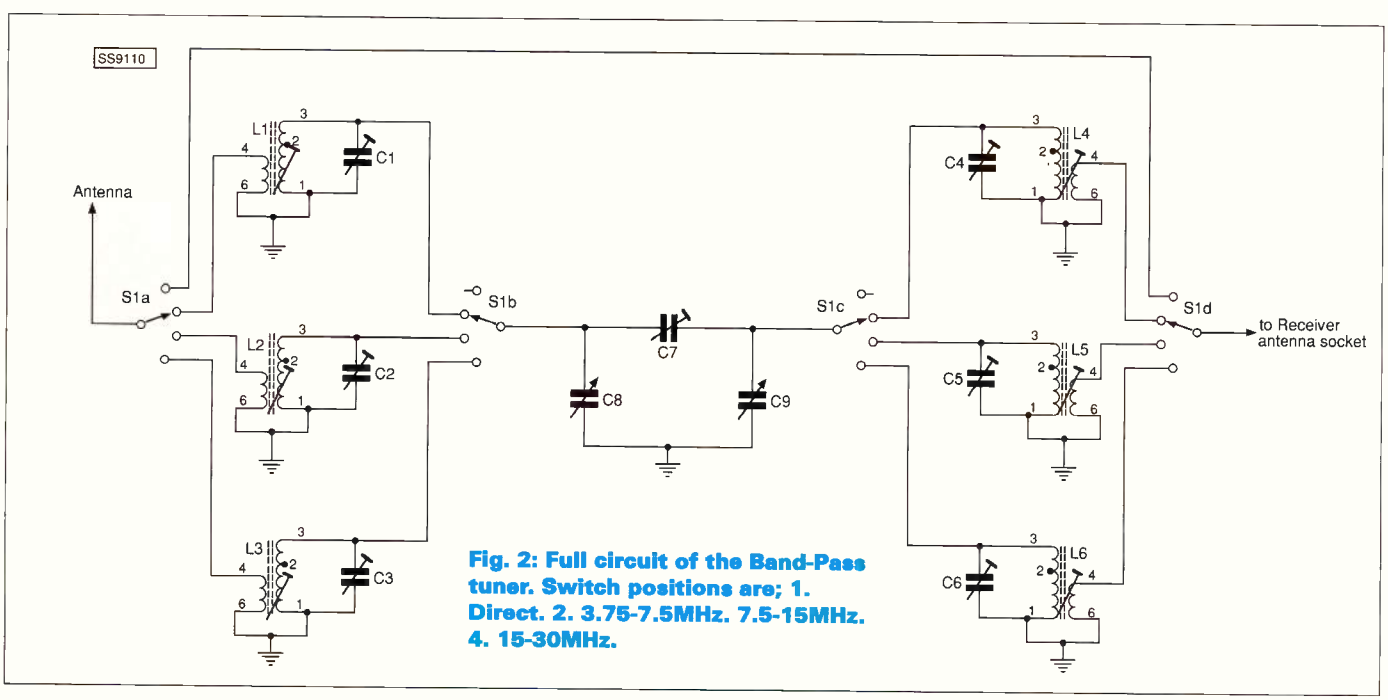

Fig. 2: Full circuit of the Band-Pass tuner. Switch positions are; 1. Direct. 2. 3.75-7.5MHz. 7.5-15MHz. 4. 15-30MHz.

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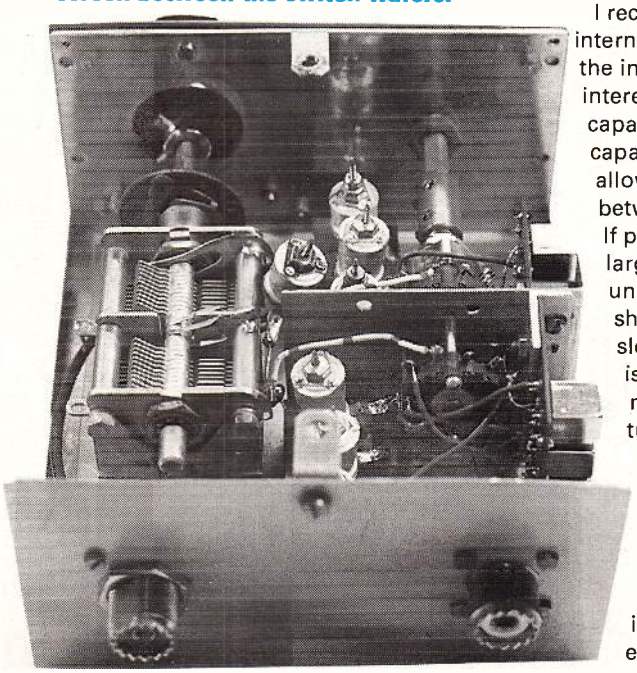
Toko KANK3335R	2	L3, L6

MISCELLANEOUS

4-pole 4-way wafer switch (two wafers); Case, approx 75x50x100mm; 6:1 slow motion drive; SO-239 sockets, SK1, SK2 (2off); Veroboard 52x27mm (2off); Single - sided p.c.b. material to fit case.

internal construction is shown in **Figs. 4** and **5**. It is essential to screen the input from the output to prevent coupling and to this end screened coils were used with a screen between the switch wafers. The switch screen is clearly shown in **Fig. 5**. For the coils I used the Toko transistor antenna coils which have a tuned winding and a low impedance coupling winding. Used back-to-back, they provide the two tuned circuits with antenna input and receiver output. The coils are mounted on a piece of Veroboard (**Fig. 6**) and **Fig. 7** shows the underside of the board with connection details. The illustration shows a piece of board 10 holes by 20 holes but this can of course be varied to suit the method of construction

Fig. 5: Rear internal shot showing the screen between the switch wafers.



employed. In my unit I used larger pieces as can be seen in **Fig. 4**.

As shown in the circuit, **Fig. 2**, the tuned winding on the Toko coils is tapped. This tapping is not required and pin 2 should be cut off near the base. This needs to be done very carefully as a connection is made to this pin which must not be severed. When cutting, ensure that the pin is being snipped leaving this connection. Each earthing tag of the coil screening cans should be bent outwards at a right angle to the can so that they sit on the upper surface of the board when the coil is inserted. The track on the board needs to be cut in four places as shown in **Fig. 7** with a Vero spot face cutter or a twist drill.

The coils can be mounted on the board by pushing the pins through very carefully and then soldering the pins to the tracks. **Fig. 7** shows the top view of the board with the coils inserted. The earth lugs on the cans must be connected to one track by soldering a piece of tinned copper wire to the lug and passing it through the board to the track below. My thanks are due to Steve Price G4BWE for suggesting this excellent method of fixing the Toko coils, *RadCom* September 1994.

I recommend coaxial cable for the internal wiring from the switch to the input and output sockets in the interests of screening. The variable capacitor I used has a maximum capacity of 100pF. This only just allows an overlap between the ranges. If possible a slightly larger capacitance unit - say 120pF - should be used. A slow motion dial is really necessary as the tuning is quite sharp. The one shown on my unit is available from some component dealers. Philips 'Beehive' trimmers are used in my tuner and these are excellent. Although no longer

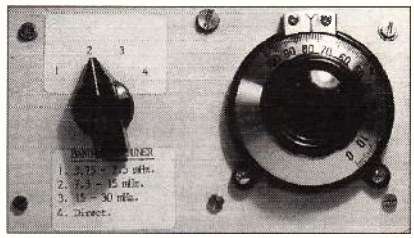


Fig. 3: The front panel.

manufactured, they seem to be readily available. They are mounted on a piece of p.c.b. material a shown and wired directly to the switches.

Alignment is quite straightforward and should follow the normal procedure for ganged circuits. This is best done with a signal generator by adjusting the coil core at the l.f. end and the trimmer at the h.f. end. If a signal generator is not available, try to find a steady signal near each end of each range and align on this. The top end trimmer C7 can be adjusted for the best signal but will not be found to be critical. If desired, it could be replaced with a small fixed capacitor of about 3pF. When adjusting the cores, always use a non-metalic trimming tool as the cores can easily be damaged if a screwdriver is used.

In use, the tuner can be left in the circuit all the time with the switch in the direct position. When any breakthrough is experienced the tuner should be switched to the appropriate range and the tuning peaked. The peak is quite sharp and tuning needs to be done carefully.

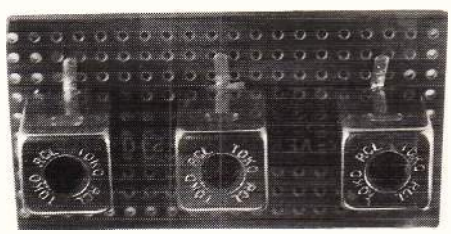


Fig. 6: The Veroboard sub-assembly showing the Toko coils.

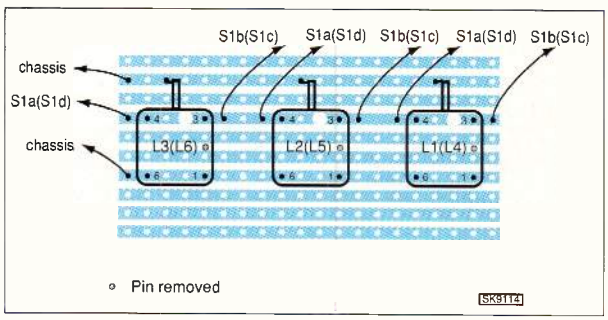


Fig. 7: The Veroboard layout showing breaks in tracks and switch connections. The References in brackets show the wiring for the second board.

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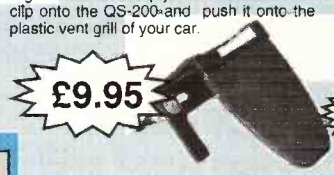

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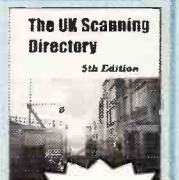

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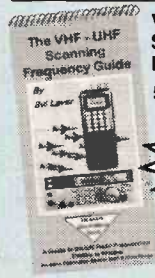

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Roberts R861

Synthesised Portable Reciever

The latest portable radio to hit the short wave listening market is the R861 from Roberts Radio. As Simon Spanswick has been discovering, this receiver offers complete broadcast and amateur coverage, plus the added benefit of Radio Data System on the f.m. broadcast band.

The effects of the spread of digital technology, and the almost daily reduction in its cost, are being felt throughout the consumer electronics industry. Digital displays are routinely fitted to many products in the market place, and the sophistication of electronic control is increasing rapidly. So it comes as no surprise that the newest portable short wave radio to appear in the UK benefits from the latest technological developments.

Roberts Radio, the long established UK radio manufacturer - complete with Royal Warrant - has a comprehensive range of short wave receivers, sourced from Sangean, the Taiwanese manufacturer. The new R861 is the size of a large paperback novel, and it boasts a range of features that might not be out of place on table-top or semi-professional receivers. For example, there are more than 300 memories, some pre-programmed in the factory to key broadcast frequencies, to enable easy tuning to favourite stations. And a sophisticated clock has the time in no less than 42 cities stored, so if you fly from London to Delhi you can instantly find the local time and compare it to UTC.

Back To Basics

Before you start to use the set, you will want to know how it is powered. The R861 uses four LR6 (or AA) size batteries. There is no separate battery supply for the on-board computer, so changing cells needs to be completed within three minutes to maintain the clock setting. The receiver is supplied with a 6V d.c. mains adapter which runs not just on the European 230V 50Hz mains but also the North American 110V 60Hz supply. This should be a boon for travellers, although it has to be said that the mains adapter is no lightweight item.

The set's layout is conventional, with the loudspeaker to the left-hand side of the front panel, the comprehensive liquid crystal display to the right above the numeric keypad and other push-button controls, and rotary tuning and volume knobs on the right-hand side. There are sockets to connect earphones, a tape recorder (audio and automatic start outputs are provided), an external a.m. antenna and the mains adapter.

On to frequency coverage. The R861 tunes continuously from 150kHz (the lowest frequency of the long wave band) to 29.999 MHz (the very top of the short wave spectrum). The f.m. broadcast Band II is included from 87.5 to 108MHz.

Switching On To The World

I admit that I like to take a piece of equipment out of its box, switch it on and find out how it works without wading through an instruction manual. I am pleased to report that I managed to work out most of the functions of the R861 by myself, so I conclude that operating the receiver is straightforward and reasonably intuitive. As you power up the set, the display, which shows just the clock when the set is switched off, fills up with data. The waveband is displayed (f.m., m.w., l.w. or s.w. to the left of the screen, the short wave metre band appearing to the right) together with the frequency the set is tuned to, in MHz on short wave or f.m., kHz on long and medium wave. A signal strength meter also appears as soon as the set is switched on.

Tuning Options

I like the tuning options. A frequency can be quickly called up by pressing the key marked 'F', and then the numbers on the calculator-type keypad followed by the 'ENTER', button. If you make a mistake while entering a frequency, press 'C' to correct the last number - or numbers - keyed.

Manual tuning is possible using the rotary tuning knob and you can choose frequency steps: on short wave, you can tune in either 1 or 5kHz steps in a.m.

reception mode; on long and medium wave 1 or 9kHz steps; on f.m. either 100 or 50kHz steps. In addition to the tuning knob, there are 'UP' and 'DOWN' buttons which mirror the rotary knob's function, except that tuning is only in the larger steps on each band. These 'UP' and 'DOWN' buttons double as the automatic scan facility simply by holding one of them for about a second. The set will then search up or down from the frequency currently selected until it reaches a sufficiently strong signal to make the set think it is receiving a broadcast. The set can, of course, be confused into thinking it is receiving a station if it encounters strong interference while it scans.

If you want to move quickly to a particular broadcast band, there's a neat solution. Each of the numeric buttons on the keypad has a broadcast band noted alongside it in small lettering. Press 'SW' followed by the appropriate button (such as '5' for the 41 metre band) and you will find the set tunes instantly to the lowest frequency in that band (7.10MHz in the case of the 41 metre band, 15.10 for the 19 metre band).

Now the clever bit of tuning! Suppose you are travelling and want to find the strongest local signals quickly, without trawling up and down the bands manually. This receiver has the solution: an automatic tuning system that works on long and medium wave and f.m. Hold the appropriate waveband button for a couple of seconds, and the receiver will scan up the band and automatically store the nine strongest stations on long wave and the 18 strongest on both medium wave and f.m. for rapid, easy recall.

The large liquid crystal display and front controls.

Turning The Pages

With so many memories, there needs to be a sensible way of dealing with them so the user does not have to remember which frequency is programmed in which memory position for what station(which would defeat the object of having the memories in the first place!). This set borrows an idea pioneered by Sony to compile an invisible book within the set, containing 33 different pages each with nine separate memories.

For short wave, there are 29 separate pages, and 28 of them already have some frequencies pre-programmed with key frequencies of the major international stations, from BBC World Service to Monitor Radio International, plus some of the less well-known broadcasters like Radio Cairo and Radiobras from Brazil.

The digital display has a box that shows the page number, and alongside is an alphanumeric display that gives the name of the station programmed. Pages one to three contains BBC frequencies, and then from page four the stations appear in alphabetical order, from Radio Austria International to the Vatican on page 28.

Each of the frequencies can be overwritten to allow for changes in the broadcaster's schedule, and the alphanumeric display can be altered to meet the user's needs. There are plenty of spare memory positions to store additional stations, frequencies - for example page 10 has just a single frequency for Radio Cairo, leaving eight other memories free for personal choices.

One quibble I had with the system is that when you've tuned to a pre-programmed channel and then tune manually away from it, the name of the last memory channel's station - like USA VOA - remains in the digital display. This can be confusing and it is something I would like to see changed on future models.

The controls on the end of the R861.

FM Digital Data

Yet another feature that I found a delight on this set is Radio Data System, or RDS. Transmitted with just about every f.m. audio signal in the UK, and much of western Europe, is an inaudible data stream that contains a wide range of information about the broadcast in progress. The R861 decodes one part of the RDS signal to provide the name of the f.m. station a frequency carries. If the receiver detects an RDS signal, the display shows the RDS symbol, and provided the data signal is strong enough, the station's name appears in the alphanumeric box in the liquid crystal display. The four national BBC FM networks in England appear in the format BBC R1, while a local station might appear as SPIRE FM or CAPITAL.

A further feature of RDS is clock time. Some RDS stations transmit accurate time information derived from national time signal stations like MSF Rugby, and the R861 will automatically update its internal clock using this system every minute if the RDS station transmits time data.

Summer Time, Sidebands and More

I mentioned in the introduction that this receiver has a sophisticated world clock. It also has a simple and effective daylight saving feature: press the

Look out in the January issue for a chance to win a new Roberts R861 Receiver.

button with a sun symbol, and the clock moves forward an hour to summer time, and the same sun symbol appears alongside the time in the display. Press the sun button once again, and the clock goes back an hour.

To select a different city, press the 'WORLD/HOME' button and then use the 'UP' and 'DOWN' keys to move through each of the 42 different cities that have been selected. And yes, the set does take account of the half-hour difference in places like New Delhi.

The clock also has three separate timers that can switch the set on to three different frequencies, and start a cassette recorder remotely if you wish. Or alternatively, you can select a buzzer to sound instead of choosing the radio to switch on at one of the times selected.

This receiver is not aimed solely at the broadcast listener. Since it has selectable sidebands radio amateurs and utility listeners can also use this set to tune across the spectrum. Pressing the 'AM' mode button toggles the set between a.m., l.s.b. and u.s.b., and the tuning step automatically reduces to 40Hz in either of the sideband modes.

Some other features I discovered include, in no particular order of importance; the backlight for the digital display which illuminates for about ten seconds when the set is on battery power, or constantly when on mains supply; stereo f.m. reception through headphones; a sleep facility to turn the set off automatically after somewhere between 10 and 90 minutes; a lock to prevent accidental switch-on when travelling, or de-tuning when listening to a favourite station; a battery meter which displays in place of the signal strength meter for a few seconds after the receiver is switched off; a manual a.m. gain control; a switchable narrow and wide a.m. filter; a three position tone control; and, finally, an easy to access switch to change from European medium wave tuning steps of 9kHz to the North American 10kHz standard.

Performance Equals Facilities?

Now it is fine for a receiver to have a huge number of well thought out facilities, but the bottom line question that has to be asked is "does it perform well?" The answer, in the case of the Roberts R861, seems to be "yes". I've tried the set on short wave and have pulled in the major broadcasters without any problems, and some of the weaker signals have also proved relatively easy catches - and all using just the in-built telescopic antenna. My conclusion is that the set's sensitivity is good, and at least on a par with similar offerings from Sony and Grundig. The filter widths seem to be about right for broadcast listening, so selectivity can be described as good.

The operating method seems reasonably well thought out, and anyone should find their way around the set in a matter of minutes, rather than hours - with or without the handbook! I like the clear, easy-to-read digital display, and the keypad has a nice, positive feel to it. ■

Specifications

Frequency coverage:
150kHz - 29.999MHz.
87.5 - 108MHz.

Power:
4 x LR6 (AA) cells.
6V d.c. via mains adapter (supplied).

Battery life:
Approximately 16 hours at 4 hours a day using Alkaline cells.

Size:
215 x 130 x 35mm.

Weight:
840g.

Accessories:
Carry case; tuning guide; stereo headphones; wire antenna.

Summing Up

I like it! The R861 seems to be well-built, and its performance is more than adequate for a travel portable. It has lots of features, and the positively enormous number of memories means that even the most serious listener should find enough capacity for all his or her favourite frequencies.

The sound quality is good through the built-in loudspeaker, and I particularly liked the f.m. stereo through headphones.

I think this set is probably aimed at the executive travel market, but I am sure that many enthusiastic short wave listeners would be well pleased with the R861 if they acquired an example. And at a UK Retail price of around £200, I would suggest that the receiver offers very good value for money. Thanks to **Waters and Stanton Electronics, 22 Main Street, Hockley, Essex SS5 4QS Tel: (01702) 206835** for the loan of the review model.

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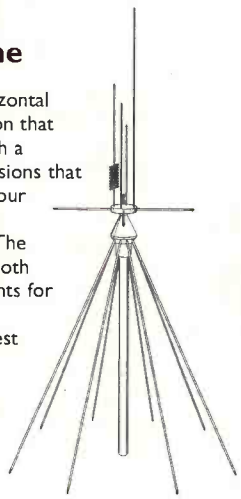

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  MW 510 - 1729.9kHz
  SW 1.73 - 29.9999MHz
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  Selects LW (150-509.9kHz), MW (510-1729.9kHz), or SW (1.73-29.9999MHz) sequentially
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30.000-87.495	5.0kHz	n.f.m.	225.000-400.000	12.5kHz	a.m.
87.500-107.995	50.0kHz	w.f.m.	400.005-520.000	12.5kHz	n.f.m.
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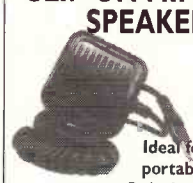

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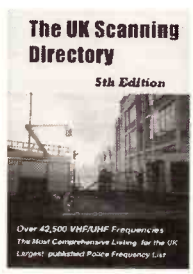

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Quieten It Down

Plagued with noise from your end-fed antenna system? Given up trying to eliminate it? Maybe Andy Ikin has the answer to your prayers.

Some time ago I was looking at some data sheets on longwire antennas and matching transformers - MLBs - for hints on how to erect the longwire for low noise performance. I discovered such data sheets from two companies, one British and one Dutch. Both companies' offerings showed the longwire running from the roof or chimney of the house to a tree or pole in the garden with the 'balun' connected at the house end of the longwire. The feeder cable was shown connected to the receiver and in one case the screen of the feeder cable was connected to an earth rod. See **Fig. 1**.

Disappointing Results

I gave this antenna erection a try at my home, unfortunately, with disappointing results. The local noise level was not much lower than if I had connected the longwire directly to the receiver. It seemed that some analysis of the situation was required.

First of all I realised that the 'balun' data sheets illustrated the longwire and 'balun' within the local interference field of an average house and that this was the first reason why the interference was so high. This local interference field extends up to 5m around and above the average house. To resolve this problem I removed the 'balun' from the top of the house and placed it in the garden at the far end of the antenna. At the house end of the installation, the first 6m of wire was replaced by Nylon cord as shown in **Fig. 2**.

This ensured that the antenna and 'balun' were now outside the local interference field. The level of local noise was reduced. However, there was still mains borne noise present, mainly from television sets. This noise was entering the receiver because the return path for the longwire is the mains wiring of the house. **Fig. 3** shows a typical longwire and 'balun' schematic and how noise is induced from the mains.

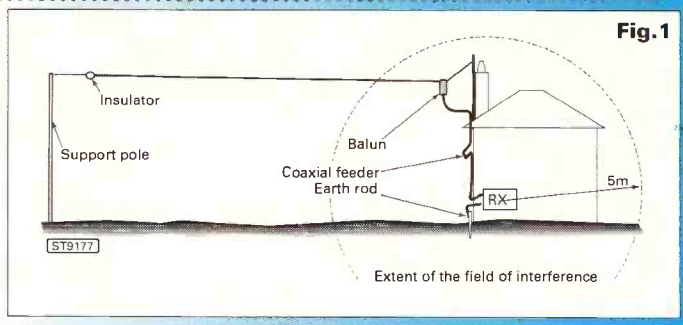
The Feeder Can Radiate

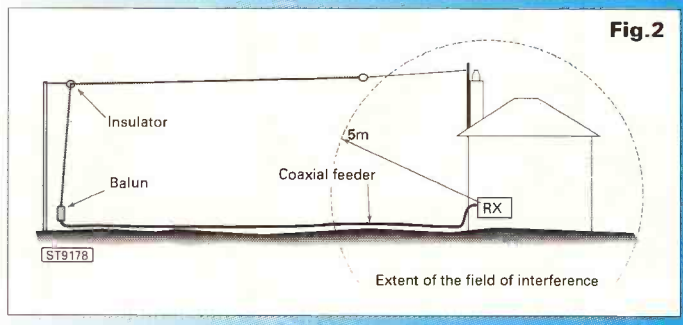
Examining **Fig. 3** it is obvious that this type of antenna, and indeed any other antenna that uses the mains earth as the return path, are prone the mains borne noise. Also there is the problem that the feeder can radiate noise to the antenna, because the feeder is connected to mains earth. However, there are two simple solutions to this problem as shown in **Figs. 4** and **5**. The first one is to use a balun where the antenna return path is isolated from the mains earth i.e. the 'balun' has a separate earth connection isolated from the feeder screen.

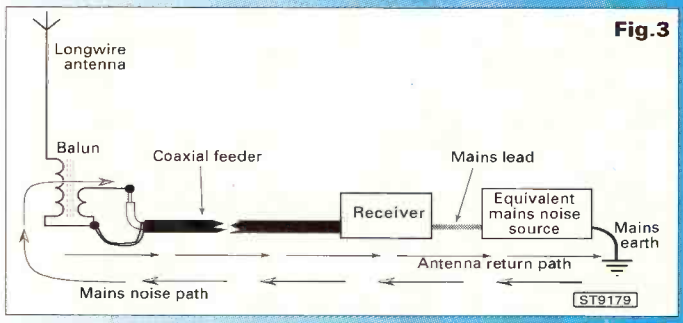
The second way is to remove noise from the feeder by fitting a wideband 1:1 isolation transformer at the feeder next to the receiver and connecting the feeder to a separate earthing rod. Using an isolation transformer and siting the antenna away from the house removes nearly all local interference. Combining both solutions as shown in **Fig. 6** reduced the noise even further by preventing noise induced onto the feeder screen being in the antenna return path. i.e. the feeder can pick-up noise within the 5m interference field of the house.

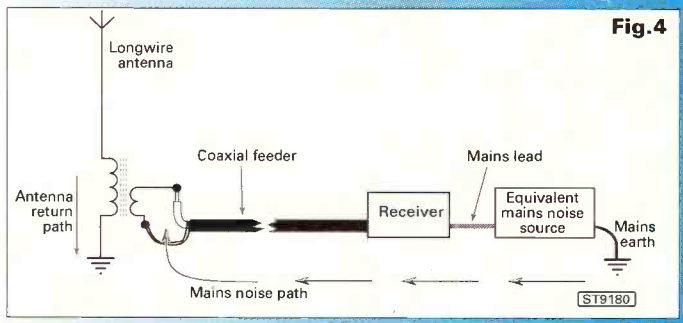
It is worth noting that the grounding of the feeder screen at the receiver to a separated earth rod is only of limited use because of the difficulty of providing a low impedance earth. The feeder screen must not be connected to earth at the balun otherwise noise will be induced from the earth loop formed by the feeder earth and the receiver mains earth.

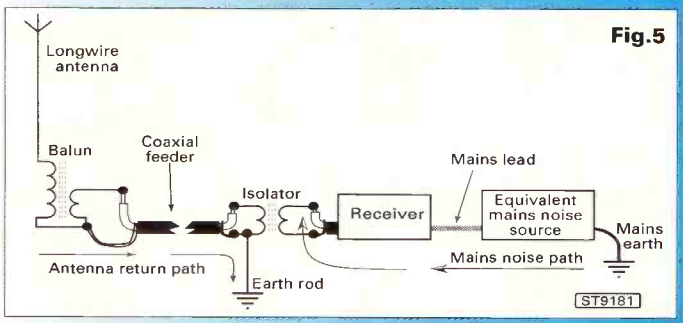
Feeder isolators are available commercially, alternatively they can be made using simple components. Details of a Simple Antenna Feeder Isolator will be published in a future of issue of *SWM*.

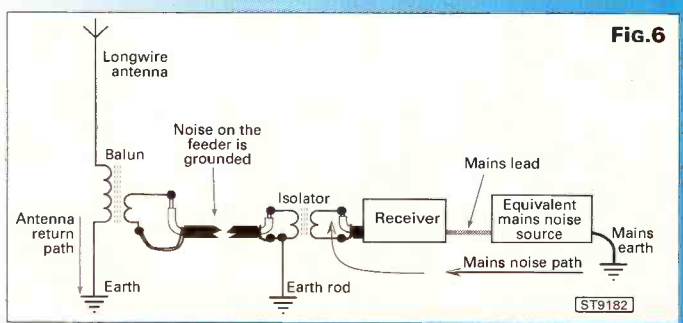












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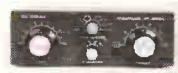

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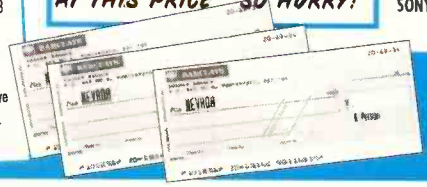


Europe's Number 1 Supplier

Beginner's Simple Short Wave Receiver

Using Miniature Dual Purpose Green Coils

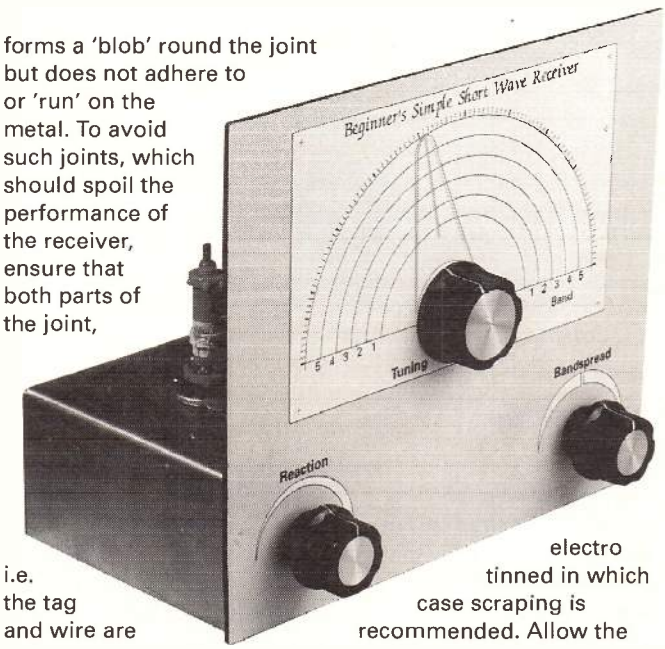
This interesting project is presented by kind permission of Ronnie Allbright. Ronnie has restarted making Denco coils using the original machinery and the experience gained when he was works manager at the original Denco factory. The receiver is presented word for word from the original Denco technical literature, so the style and format does not match our usual treatment of constructional projects.

This design has been kept as simple as possible, consistent with good 'one valve' performance, in the interests of the beginner. To this end, the 'plug in' method has been adopted for the tuning coils, thus eliminating coil switching. It requires only one coil at the start, but allows for further ranges to be added as required. It is basically intended for short wave operation using 'Maxi-Q' Miniature Dual Purpose Green Coils ranges 3.4 and 5 giving coverages from approximately 1.6 to 30MHz or 10 to 180m. Ranges 1 and 2 coils may however also be used covering the long and medium wave broadcast bands.

The circuit is a straightforward grid leak detector using a battery pentode valve type 1T4. The coil is tuned by C1 using the smaller band-spread condenser C2 for fine tuning. C3 controls reaction.

The receiver may conveniently be built on a 'Maxi-Q' blank chassis type CH.8. The hole sizes required for mounting the main components are listed on the layout diagram.

Mount the main components on the chassis and then commence soldering in the small components, carefully following the layout. Care must be taken to avoid dry joints, i.e. where the solder forms a 'blob' round the joint but does not adhere to or 'run' on the metal. To avoid such joints, which should spoil the performance of the receiver, ensure that both parts of the joint, i.e. the tag and wire are clean (scrape if necessary) before attempting to solder. In the case of valveholder tags and tuning condenser connections (which are usually either silver plated or hot tinned) and with clean tinned copper wire, scraping should not be necessary. However, some tags and connections may become oxidised with age or may be nickel plated or electro tinned in which case scraping is recommended. Allow the soldering iron to become thoroughly heated before use and apply a clean tinned face of the bit so as to make contact with both parts of the joint and below the joint if possible. After two or three seconds apply a good quality resin cored solder to the top of the joint, whereupon the surplus solder should flow round the joint onto the iron. Remove the iron from the



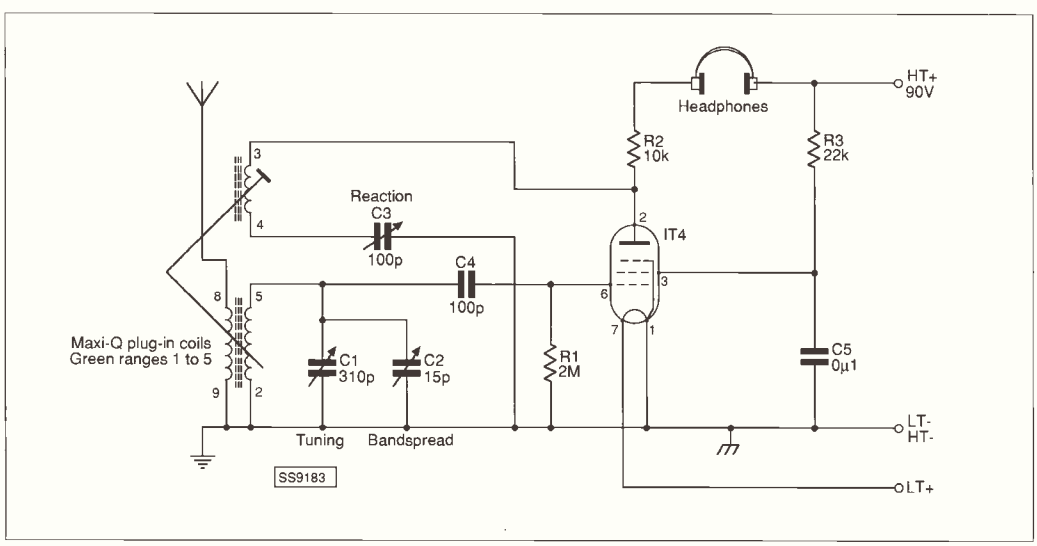


Fig. 1: Schematic circuit diagram of the Beginner's Simple Short Wave Receiver using Maxi-Q plug-in green coils.

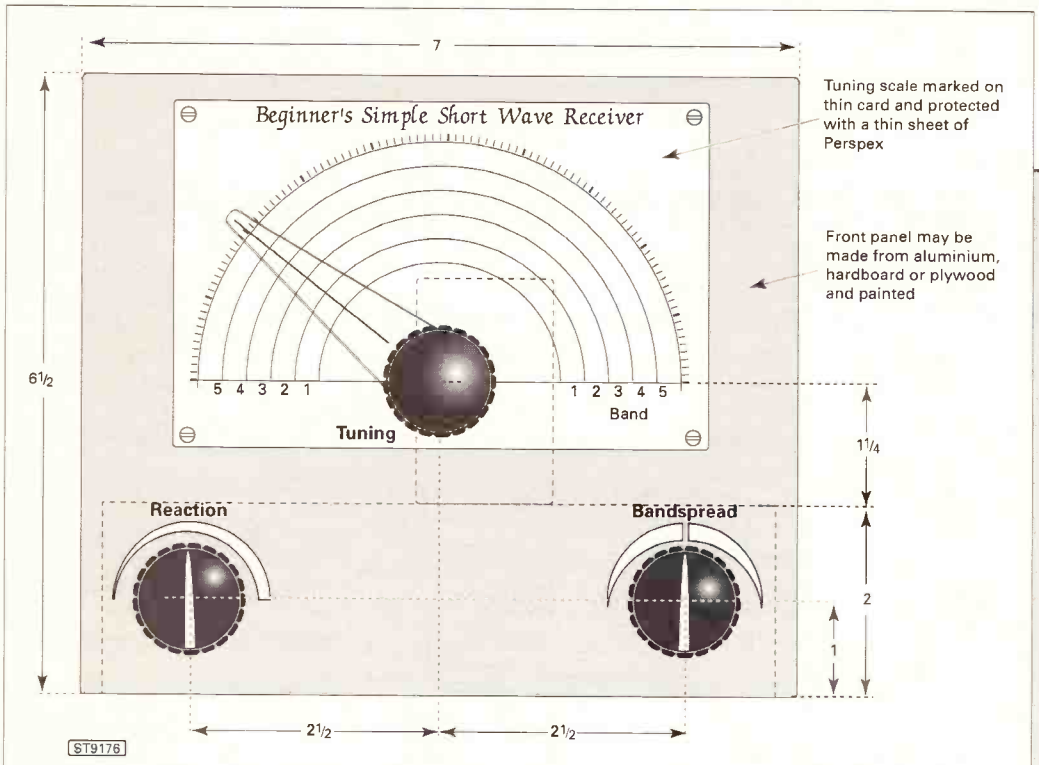


Fig. 2: Front panel layout shown half full size.

joint and shake off the surplus before proceeding with the next joint. After a little practice, the amount of solder applied can be controlled so as to avoid having appreciable surplus to shake off and thus eliminating waste.

It cannot be over emphasised that to obtain the best results from a simple receiver, a good aerial is essential. This should be erected as high as possible and as far clear of surrounding objects as practicable.

The earth connection should be made either to a buried metal plate or stake or to the incoming water (not gas) main.

Carefully recheck the wiring before inserting the valve and connecting the supplies. At first, connect only the l.t. leads and ensure that the filament glows before connecting the h.t. lead.

In operation, the reaction control should be kept just below the point at which oscillation occurs. This is the point at which a whistle occurs behind each station. This varies in pitch from a high note down to zero and up to inaudibility again as the set is tuned through the station. This should not be confused with the 'thresh-hold howl' which is sometimes set-up if the reaction control is turned too far and is present on or off a station. It will be necessary to adjust the reaction control in step with the tuning control if this condition, at which the receiver is most sensitive, is to be maintained. Although this is difficult at first, it comes readily with a little practice. If it is required to listen to c.w. Morse signals the reaction control should be advanced to the point of oscillation and the bandspread condenser used to adjust the note to a suitable pitch.

Some Notes on Building a Replica Denco One-valve Receiver

The Editor offers some help to get you building your one-valver.

The art of constructing receivers such as this one has been lost along with the essential tools needed to do the 'chassis bashing'. However, all is not lost! The valve and valve holders are still readily obtainable, as are the Jackson variable capacitors used for the Reaction and Bandspread controls. The main tuning capacitor is no longer made, but Denco (Clacton) Ltd. have a limited number available. Instead of the specified capacitor you could use any 310pF variable capacitor, mounting it directly on the front panel instead of the chassis. In this instance the panel should be alumminium.

The combined h.t. and l.t. battery is obviously going to be a problem and some alternative form of power supply will be needed. One solution, although not elegant and rather expensive, is to use ten 9V PP3 batteries in series for the h.t. supply. The 1.5V heater supply can be obtained from a single D-size cell. A simple mains power supply would be simple to build and designs for these have been published in the past. **Remember - valves use high voltages and a shock from the h.t. supply would be unpleasant, to say the least. I use the old trick that I had drummed into me as an apprentice - keep your left hand in your trouser pocket at all times!**

Chassis

I was able to build my own chassis from a piece of 16s.w.g. aluminium sheet. The holes for the valveholders were punched out using 'Q-max' cutters and the sides and ends were folded up on a brake in my workshop. For those of you unable to do these operations we will be arranging for chassis and front panels to be made available.

Construction is straightforward using the drawings as a guide. Unlike modern constructional methods using p.c.b.s, valved receiver construction utilises the valveholder tags and other large component terminals as the support for the resistors, capacitors, etc. Because the tags and components are larger than modern day ones, you will need to use at least a 25W soldering iron to guarantee good soldered joints, as well as scraping the tags clean.

A full size front panel drawing, with other useful information, can be obtained by sending a self-addressed label and two First Class stamps to the Editorial Offices, clearly marked 'One Valver'.

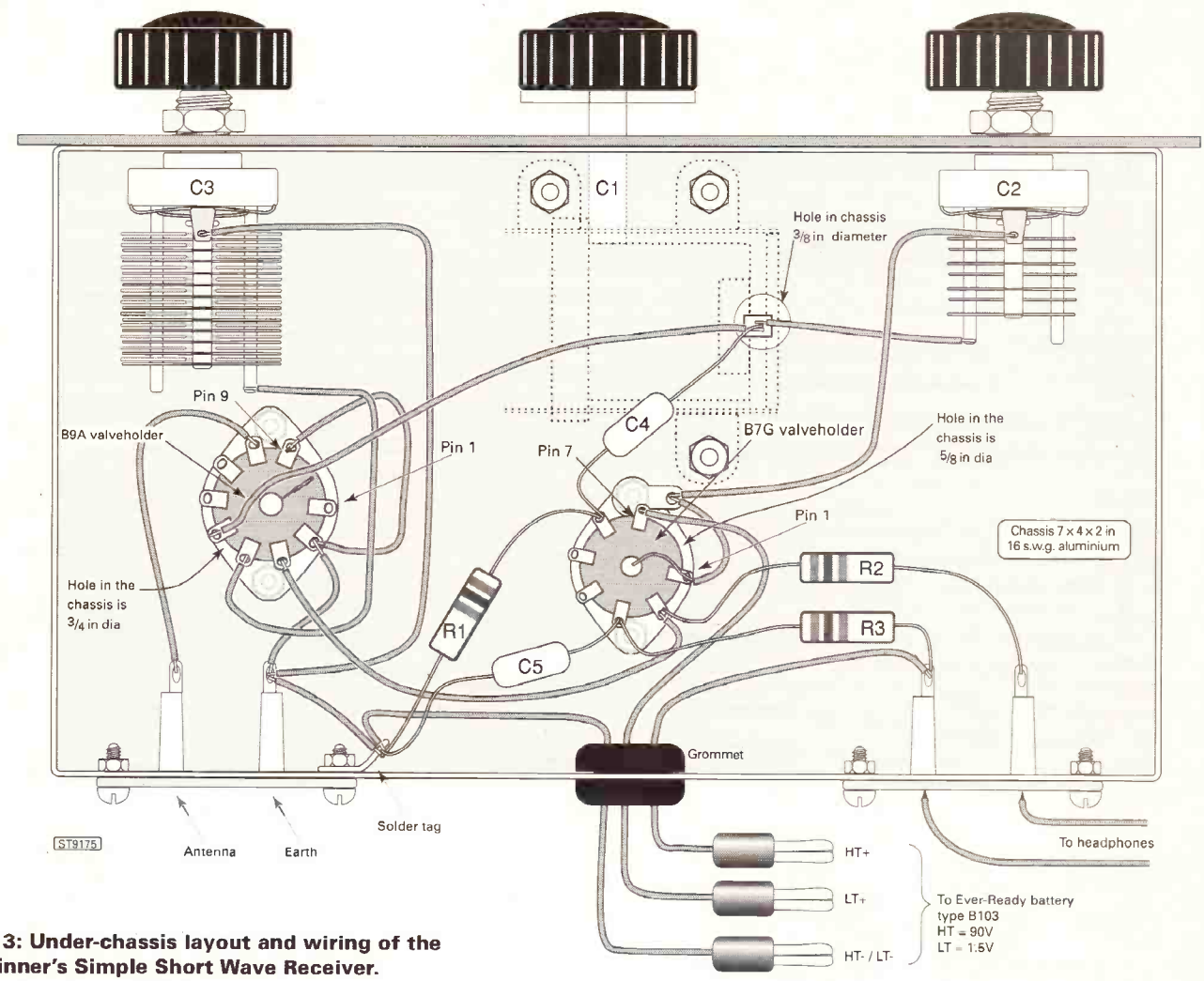


Fig. 3: Under-chassis layout and wiring of the Beginner's Simple Short Wave Receiver.

You Will Need

Resistors

Carbon film, 1W, 5%

10kΩ	1	R2
22kΩ	1	R3
2MΩ,	1	R1

Condensers

Ceramic

100pF	1	C4
0.1µF	1	C5

Variable Condensers

Jackson type 'E'

310pF	1	C1

Jackson type C804

15pF	1	C2
100pF	1	C3

Coils

Denco Maxi-Q Miniature Dual Purpose
Green Range 1-5.

Valves

1T4	1	V1

Miscellaneous

Battery, Ever Ready type B103; Headphones 2kΩ; Valveholders, B9A (1) and B7G (1); Maxi-Q Blank Aluminium Chassis Type CH.8 (See text); Front panel (See text); Knobs (3); Aerial/earth socket; Headphones socket; Wander plugs (4); Grommet 12mm; Solder tags 4 & 6BA; Wire, screws, nuts, sleeving as required.

The Denco coils and Jackson 310pF Type 'E' variable condensers are available from: **Denco (Clacton) Ltd., 259/265 Old Road, Clacton-on-Sea, Essex. Tel: (01255) 422213.**

The 1T4 valve and valve holders can be obtained from **Colomor, 170 Goldhawk Road, London W12 8HJ. Tel: 0181-743 0899.**

J. Birkitt, 25 The Strait, Lincoln LN2 1JF. Tel: (01522) 520767 is a useful source of air-spaced variable 'condensors' and other components.

Competition

When you have completed your one valve receiver, you can enter our competition. Simply use your receiver to listen to as many stations as possible over a period of one week. Keep a detailed log of the stations you have heard and at the end of the stipulated period send in your log and a photograph of the one-valve receiver used. The winner will be the reader sending in the best log. The listening period can be selected by the reader, but the closing date for receipt of logs at the Editorial Offices is 28 February 1997. The competition is also open to any other home-built one-valve receiver - but it **must** be home-built and use only **one valve**.

Well known one-valve enthusist, **Ron Pearce** has agreed to help the Editor judge the logs and select the winner. A suitable prize will be awarded to the winner. So, get building.

IF Transformers For Valve Receivers

You want to build that valved receiver, but you can't find the correct i.f. transformers - well Ray Loveland G2ARU, had a similar problem that he solved with an ingenious idea. Read on and find out more.

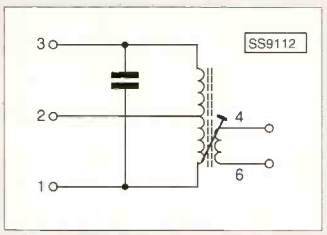


Fig. 1: Circuit of a Toko i.f. transformer.

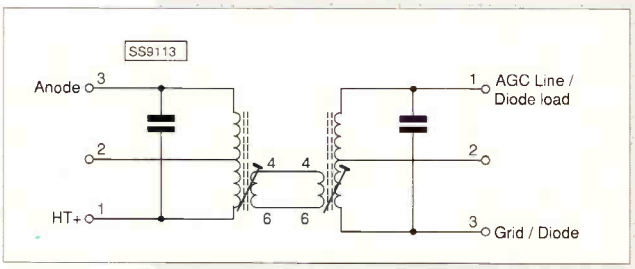


Fig. 2: A pair of Toko transformers wire with their low impedance windings back-back to replace valve i.f.t.s.

Many constructors of valve receivers are frustrated by the difficulty in obtaining suitable i.f. transformers as these have not been manufactured for some years. Sometimes these items can be obtained at rallies, junk sales and from old radio chassis, but the supply is always uncertain. It is possible to make the 10.7MHz version if suitable formers and screening cans are available, but the construction of 465kHz transformers is virtually impossible for the home constructor. Fortunately, the supply problems of these components can now be overcome completely in the following way.

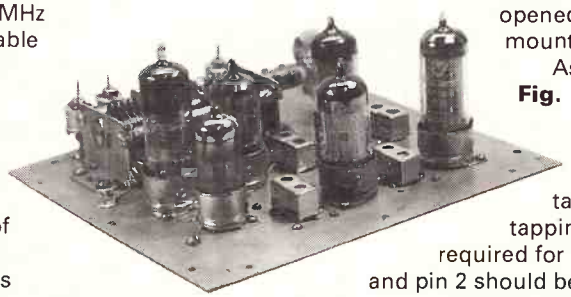


Fig. 3: A valved airband receiver incorporating the Toko assembly.

Readily Available

Both 465kHz and 10.7MHz i.f. transformers for transistor circuits are readily available in the form of Toko components from Cirkit and other suppliers. Single units cannot be used in place of the normal valve types as they contain only one tuned winding with a low impedance coupling as shown in **Fig. 1**. It occurred to me that these could possibly be used in pairs with the coupling winding of one connected to that of another, thus providing the usual two tuned windings, see **Fig. 2**. In order to test this I built a valved airband receiver using the same circuit as my airband receiver, described in the *Short Wave Magazine* in March 1994 with the Toko coils in both the 465kHz and 10.7MHz stages, see **Fig. 3**. This proved to be entirely satisfactory with the pairs of Toko coils working as well as the original i.f. coils.

I made each pair of transformers into a single unit by mounting them on a piece of Veroboard, **Fig. 4**. This should be cut 8 holes by 12 holes with as wide a margin as possible by cutting just into the next row of holes and then filing the edge straight. The four corner holes are opened up for 8BA mounting screws. As shown in **Fig. 1** the tuned winding on the Toko coils is tapped. This tapping is not required for valve circuits and pin 2 should be cut off near the base. This needs to be done very carefully as a connection is made to this pin which must not be severed. Before cutting, ensure that the pin is being snipped above this connection. Each earthing tag on the coil screening cans should be bent outwards at the right angle to the can so that they sit on the upper surface of the Veroboard when the coil is inserted. The track on the Veroboard needs to be cut in four places with a twist drill or the Vero spot face cutter as shown in **Fig. 5**.

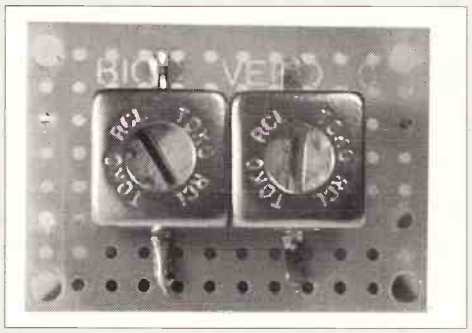


Fig. 4: The two coils assembled on the Veroboard.

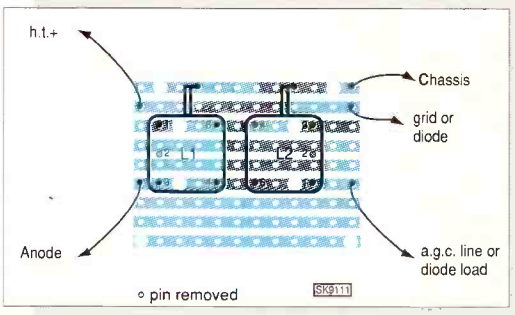


Fig. 5: Veroboard layout viewed from above.

Mounting

The transformers can now be mounted on the board by pushing the pins through carefully. **Fig. 5** shows the top view of the board with the coils inserted. The pins can now be soldered on the tracks and the earth lugs on the cans connected to one track by soldering a piece of tinned copper wire to the lug and passing in through the board to the track below.

The units can be mounted in the chassis by cutting a rectangular hole 12 x 22mm or through a 22mm round hole (I used a 7/8in chassis cutter) and then drilling the four corner fixing holes.

The Toko coils I used were:

465kHz type YRCS 12374AC Cirkit stock no 35-23740

10.7MHz type KAC6184C Cirkit stock no 35-61840

Alignment is carried out in the normal way, but a non-metalic trimming tool must be used as the cores are easily damaged if a screwdriver is used. ■

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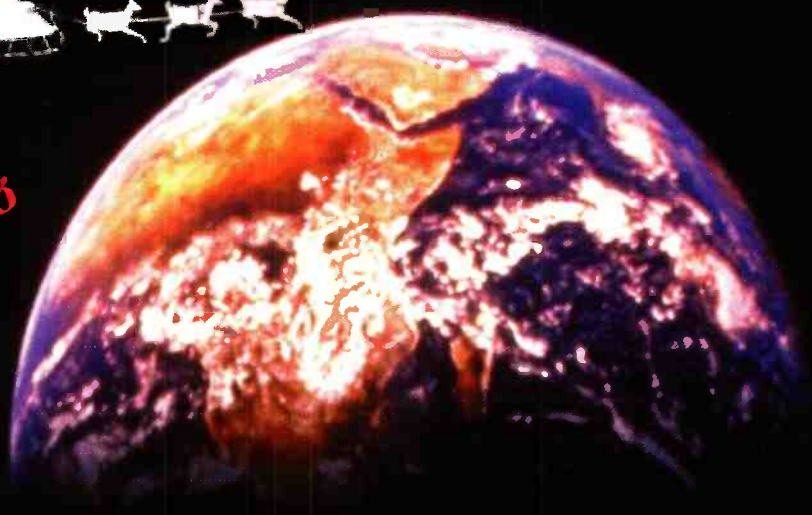

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Optoelectronics proudly presents the new XPLORER Test Receiver. The XPLORER is a multi-function nearfield communications test and surveillance receiver with optimum maximized sensitivity offering greater distance reception than any nearfield product ever previously manufactured.

Operation

The XPLORER sweeps the range of 30MHz to 2GHz in less than 1 second. It will automatically lock on any active frequency in the nearfield and demodulate the FM audio for monitoring through the internal speaker. The two-line character LCD displays the frequency of the transmitted signal on one line. On the second line, the display can be changed to indicate either All Mode Decoding of any sub audible tones or codes (CTCSS, DCS, or DTMF), relative Signal Strength, or FM Deviation. Operation allows for Manual Skip, Frequency Lock Out, Auto or Manual Hold, and Frequency Recording of 500 frequencies. The Frequency Recorder Memory Register can include such information as Frequency, Time, Date, Latitude, and Longitude, Signal Strength, CTCSS, DCS, DTMF and Deviation. The XPLORER has a Serial Data Interface that provides for TTL and RS-232C format, throught which an NMEA-0183 compatible receiver may interface to provide latitude & longitude information (GPS required). The handheld size (5.5"H x 3"W x 1.6"D) allows the user to operate in any situation.

U.S. Patent No. 5,471,402

High Speed, Nearfield Receiver

The XPLORER is a completely unique Nearfield Test Receiver. It is not a single frequency radio receiver in the conventional sense, or a high speed scanner. It is actually a frequency sweeper using multiple swept harmonic LO frequencies that enable the XPLORER to lock onto virtually any two-way FM signal in less than one second. Its unique frequency conversion system allows it to search for and acquire new frequencies much more quickly than a conventional receiver. Because of its high rate of sweeping, the XPLORER is essentially a self tuning receiver. The primary reason for a nearfield receiver is to trade distance for speed. A conventional scanning receiver will receive signals from greater distances than the XPLORER, but suffers from being able to scan only 25 to 100 frequencies per second. It could take several minutes to several hours to tune an unknown frequency using a scanner. The Xplorer can find that unknown frequency instantly.

Built-in speaker allows for instant demodulation of all FM signals (Please Note: U.S. versions of the Xplorer are cellular blocked, as required by federal law) •

SPECIFICATIONS

Frequency Range:	30MHz - 2GHz (U.S. units: FCC requires cellular frequencies to be blocked
Modulation:	FM, Deviation <100KHz
Frequency Response:	50 - 3000Hz
Auto Sweep Time:	<1 Second
Input:	50 Ohm, -59dBm @ 100MHz, -25dBm @ 1GHz
Outputs:	Internal Speaker, Audio Headphone Jack, Serial Interface Connector
Controls:	Multifunction Rotary Encoder with push button, Skip, Hold, Function, F1, F2, & Power Key Pad Switches
Indicators:	LEDS: Lock, Charge
Display:	LCD 2 Line x 16 character display with EL backlight
Power:	Battery: Internal NiCad Pack, 7.2V 900mAH Charge/Operate: Universal AC Input, 12V regulated 2A max. output
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FEATURES

- High speed FM communications nearfield receiver, sweeps range of 30MHz to 2GHz in less than one second
- Two line character LCD displays Frequency and either CTCSS, DCS, DTMF, Relative Signal Strength or FM Deviation with automatic EL backlight
- Optimum maximized sensitivity for increased nearfield distance reception-Can receive two-way communications up to 1/4 mile away
- NMEA-0183 GPS Interface provides tagging data with location for mapping applications (GPS Required)
- CI-V compliant Serial Data Interface with RS-232C levels
- Automatically record up to 500 frequencies in memory with number of hits, time and date
- Manually record CTCSS, DCS, DTMF, Signal Strength, and Deviation into memory
- Real-Time Clock/Calender with battery back-up
- Frequency Lock Out, Manual Skip, and Auto or Manual Hold capability
- Rotary Encoder for easy selection of menus for set-up
- Internal Speaker, Audio earphone/headphone jack
- Built-in PC interface with interface cable included
- Relative ten segment Signal Strength Bargraph
- Numerical Deviation Display with 1-10kHz and 10-100kHz ranges
- Includes Built-in Rapid Charge NiCad Batteries with 5 hour discharge time

Two Line LCD

First line displays frequency. Second line switches between one of the following displays:

CTCSS Mode

DCS Mode

DTMF Mode

Deviation Mode

Signal Strength Bargraph Mode

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SCOUT®
FREQUENCY RECORDER

•Scout® shown with optional **DB32** antenna

NEW TECHNOLOGY

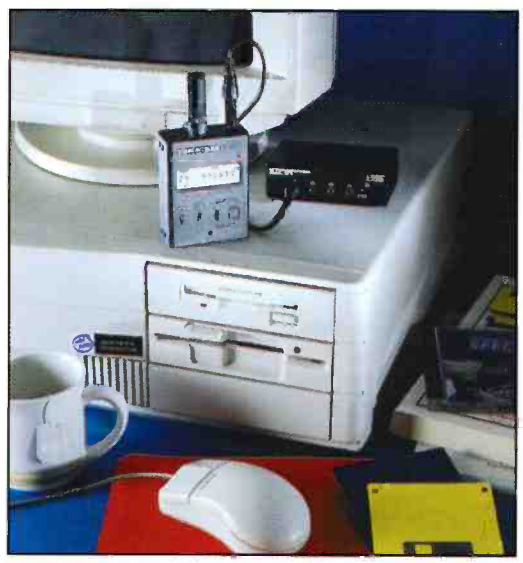
The Scout® is the latest advancement in hand-held frequency counters; a frequency recorder that excels at finding and recording frequencies for security, law enforcement, and recreational monitoring applications. The Scout frequency recorder is a revolutionary device that can record up to 400 unique frequencies and store them in memory. The Scout is similar to a conventional frequency counter, in that it measures the frequency of any transmission from 10MHz-1.4GHz that is ten to fifteen dB greater than the ambient RF level. However, the Scout distinguishes itself from a frequency counter by being able to differentiate between random noise and coherent RF transmissions. This exclusive feature developed and patented by Optoelectronics is called Digital Filter and Auto Capture. This feature allows the Scout to record frequency transmissions automatically. An embedded microcontroller evaluates each measurement to determine when an actual RF frequency is dominant, this is the digital filter processing which makes automatic capture and recording possible.

FINDING FREQUENCIES

The Scout features a custom ten-digit Liquid Crystal Display (LCD) which can be seen easily in daylight and an electroluminescent (EL) backlight for night operation. For discreet recording, the Scout, small enough to fit in your pocket, has a built-in pager style vibrator to alert you when frequencies are recorded. It also has a distinctive double beep that informs you when a new frequency is found and a single beep indicates that a previously recorded frequency has been hit again. A 16 - segment bargraph is on the LCD front panel display which provides a real time relative indication of RF signal strength. There is also an LED front panel indicator which flashes each time a measurement is successfully completed.

SERIAL INTERFACE

The serial interface on the the Scout conforms to the CI-V interface standard. It allows the unit to be connected to a PC for downloading stored information. An Optoelectronics **OPTOLINX** is required to interface the Scout to a PC.



Scout downloading with optional **OPTOLINX**

FEATURES

- Records and saves up to 400 unique frequencies
- Records up to 255 hits on each frequency in memory
- 10MHz - 1.4GHz single frequency range
- Records frequencies automatically and unattended with Patented Digital Auto Filter and Auto Capture
- Automatically tunes the following receivers with Reaction Tuning®:
  Radio Shack Pro-2005/6 (when equipped with the Opto Scan456 computer interface board), Radio Shack Pro 2035/2042 (when equipped with the OptoScan535 com puter interface board), Pro 2005/6 (equipped with an OS456 *LITE*) ICOM's R7000, R7100, R9000 and AOR models AR8000 and AR2700
- All frequencies are automatically saved and can be deleted by pressing the clear button
- Recall Mode: View all 400 frequencies and number of hits stored in memory
- Custom ten-digit LCD display
- Automatic EL backlight for night operation
- 16 segment RF signal strength bargraph
- Distinctive beeps indicate frequency hits, and pager style vibrator for discreet recording
- LED front panel measurement indicator
- Supplied with rapid charge NiCad batteries (8 hour discharge time)
- AC charger supplied, for 2 hour recharge
- PC utility software supplied for downloading memory into a PC using the optional Optoelectronics OptoLinx

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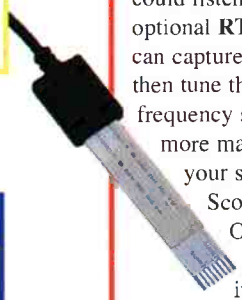
SPECTRUM

With the Scout **Spectrum CD ROM** you can download all of your saved frequencies to compare against the Spectrum FCC database. Spectrum is an authorized FCC database for the entire United States. Frequencies can be looked up by City, County, State, Service Code, or Company and printed to reports or reviewed on screen. With Scout support, frequency downloads can even be reviewed in reports.

PLUG & PLAY

With the New **RT-8000**, Reaction Tuning your AR8000 is a matter of plugging in the cable and capturing frequencies. The RT-8000 consists of a new battery cover with notch for Reaction Tune access, cable with ribbon adapter, and velcro. No modification necessary to the AR8000.



SPECIFICATIONS

Input Amplifier	50 Ohm vswr <2:1
Range	10MHz - 1.4GHz
Sensitivity	<5mV 30MHz - 900MHz
Maximum Input	+15dBM, 50 milliwatts
Time Between Measurements	10 milliseconds, all range & gate times
Display	10 digit LCD with backlight Decimal at MHz point
Timebase	10MHz setable to + 1ppm
RF Signal Strength Bargraph	16 segments, approximately 3dB segments, Relative indication only, No Calibration
Size	3.7" x H x 2.75"W x 1.2" D
Weight	8.5 oz
Battery	Internal 4 cell AA 850mA hour, fused,NiCads flying leads
Operating Time	8 Hours
Charging circuit	Rapid charge with negative delta V and time out termination
Power	12VDC 1 Amp wall plug adapter for rapid charging, 6VDC 130 mA minimum operating power required, AC90 adapter supplied
Power Connector	2.1 mm coax, center positive

REACTION TUNE®

When it comes to scanning, nothing can capture the excitement like Scout Reaction Tune®. When connected to an AOR AR8000/2700, Scout Reaction Tune® becomes as easy as walking or driving down the street. As a matter of fact, just like the photos shown here, that's exactly how portable it is. The beauty of Reaction Tuning is that it allows you to capture frequencies in out of the way places or areas that you wouldn't normally take your scanner. How many times have you wanted to know which frequency someone was operating on so you could listen in? When connected to the AR8000 using the optional **RT-8000** , the Scout can capture a frequency and then tune the scanner to that frequency simultaneously. No more manual tuning of your scanner, let the Scout do it for you.

Once the Scout captures a frequency, it logs it into one of its 400 memories, and tunes the receiver in less than a second. The Scout will also tell you how many times each frequency in memory has been hit. You can even scroll back through the memories to later tune the scanner with Memory Tuning™.

The Scout will Reaction Tune the following receivers: A Pro-2005 or 2006 (when equipped with an OptoScan456 board), Pro-2035 or 2042 (when equipped with an OptoScan535 board) Pro 2005 or 2006 equipped with an OptoScan *LITE* ICOM R7000, R7100 or R9000, and AOR AR8000 and AR2700.

Protect your Scout® with the CC30 carry case. CC30 holds Scout®, DB32 MiniAntenna, and AC90 adapter • (Case and Mini Antenna Optional)

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OS456 & OS535

COMPUTER CONTROLLED SCANNING

Increased Speed - Decoding

LTR Trunking Decoding using ScanStar® Software(OS535 only)

The OptoScan456/535 are add-on computer interface boards designed to fit into the Realistic Model Pro-2005/2006, Pro-2035/ 2042 & Comtel Com 205 receivers The OptoScan 456/535 allow for complete computer control of the receiver. It will not only tune the radio, but increases scanning speed up to 80 channels per second (using Probe software). It also provides decoding of CTCSS, DCS, and DTMF (touch tone) and much more.

COMPUTER CONTROL

The OptoScan456/535 also include a built in CI-V to RS232 serial interface converter application in which a receiver is connected to a computer. It converts the CI-V interface voltage levels to RS232 levels compatible with most personal computers. This feature eliminates the need for an external interface converter box. In addition, the RS232C interface provides pipeline tuning, resulting in the ability to increase the scanning speed of your receiver. The OptoScan456/535 makes using the Pro-2005/2006, Pro-2035/2042 & Comtel Com 205 easier and much less confusing. Even when away from the scanner, the computer can continue to search out those frequencies you want to monitor and record them into virtually unlimited numbers of memory channels. All front panel controls are more easily accessible through software menus. The OptoScan 456/535 are supported by software programs such as PROBE, SCANSTAR, SCANNERWEAR for Windows, Visual Wavelinks, and RADIO MANAGER for Windows. The Spectrum FCC database can also be imported to use with any of these programs.

SPEED

At 80 channels per second, the OptoScan456/535 can scan faster than an unmodified Pro-2005/2006, 2035/2042 & Comtel Com 205 receivers. The faster your receiver can scan, the less chance you have of missing any communications. In short, a Radio Shack Pro 2005/2006, Pro-2035/2042 & Comtel Com 205 receiver equipped with an OptoScan and the appropriate application software, forms a complete computer-aided scanning system.

DECODING

The OptoScan 456/535 provides software decoding of CTCSS, DCS, and DTMF (touch tone) tones and codes. See what you have been missing with this added dimension to scanning. The OptoScan boards provide decoding which appears on your PC monitor in the software program alongside any frequency monitored when present. Great for monitoring local repeater access, dispatch services, and many two-way communications. There is also a signal strength indicator which provides a bargraph relative signal strength of your monitored frequency.

INSTALLATION

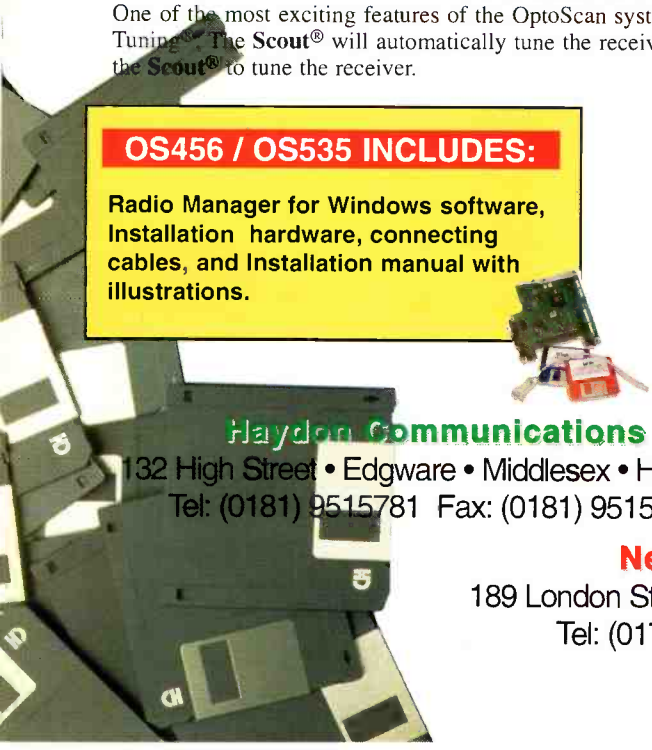
The OptoScan456 and 535 are very easy to install. In about 1 hour you can enter a whole new scanning adventure. Both boards come with a detailed step by step instruction manual complete with photos to guide you through the entire installation. A soldering iron is required to solder two wires to the existing board on the radio.

REACTION TUNING WITH THE SCOUT®

One of the most exciting features of the OptoScan systems is that they can be used with the Optoelectronics exclusive **Scout®** for Reaction Tuning™. The **Scout®** will automatically tune the receiver to the frequency it records. Frequencies may also be recalled from the memory of the **Scout®** to tune the receiver.

OS456 / OS535 INCLUDES:

Radio Manager for Windows software, Installation hardware, connecting cables, and Installation manual with illustrations.



SPECIFICATIONS

Signal Decoding	52 CTCSS tones, 106 DCS codes, 16 DTMF characters
CTCSS Acquisition Time	*600 milliseconds (0.6 seconds)
DCS Acquisition Time	*350 milliseconds (0.35 seconds)
DTMF Digit Rate	10 characters per second
CI-V Interface	Miniature 3.5mm phone jack, standard CI-V
RS-232 Interface	DB-9 connector, CI-V protocol
Tape Pause Interface	Sub miniature 2.5mm phone jack

(specifications cover both OS456 and OS535)

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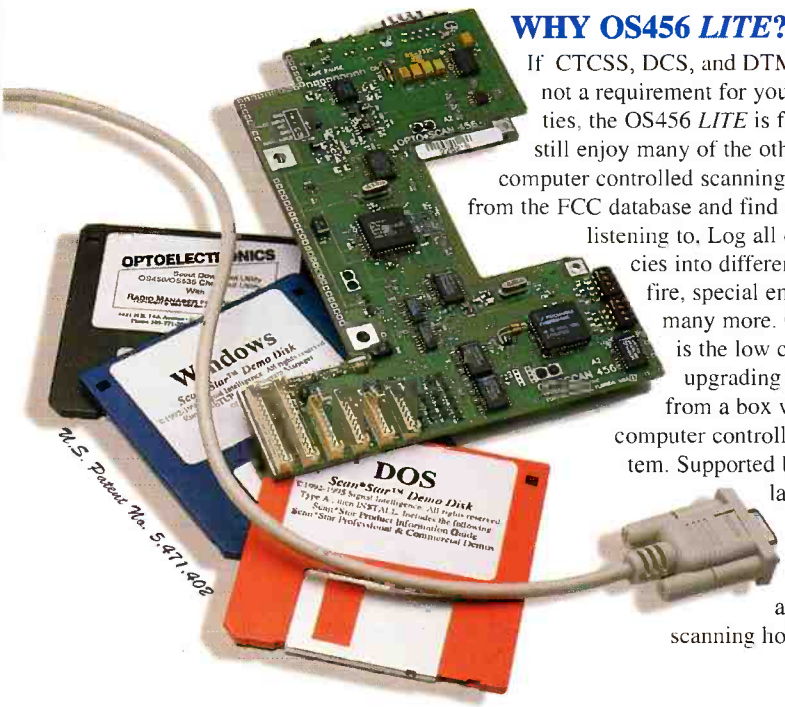
NEW OptoScan456 LITE

For the Realistic Pro 2005/2006 & Comtel Com 205

Low cost computer controlled scanning, Entry level PC scanning, Call it what you want, we call it the OS456 *LITE*. Continuing in the OptoScan tradition, the OS456 *LITE* allows all the functions of the original OS456 with the exception of CTCSS, DCS, DTMF decoding and signal strength. The OS456 *LITE* allows complete computer control of the Realistic Pro 2005 or 2006 & Comtel Com 205 at less cost .



WHY OS456 *LITE*?

If CTCSS, DCS, and DTMF decoding are not a requirement for your scanning activities, the OS456 *LITE* is for you. You can still enjoy many of the other benefits of computer controlled scanning; Import data from the FCC database and find out who you're listening to, Log all of your frequencies into different groups, police, fire, special emergency and many more. OptoScan *LITE* is the low cost solution to upgrading your scanner from a box with a display, to a computer controlled scanning system. Supported by the most popular scanning software packages, the OS456 *LITE* is a must have addition to your scanning hobby.

HIGH SPEED SCANNING

The OS456 *LITE's* pipeline tuning allows for the highest scanning speed available at over 80 channels per second (using Probe software). DBase files can be imported into the software to obtain information such as licensee call sign, service code, description, latitude/longitude, licensee address, city , zip code.

EASY INSTALLATION

No soldering required! The OS456 *LITE* plugs right in. Out of the box and into your scanner. The easy step by step instruction manual guides you through each step of the installation process.

OS456 *LITE* INCLUDES:

Radio Manager for Windows software, Installation hardware, connecting cables, and Installation manual with illustrations.

WHY USE COMPUTER CONTROLLED SCANNING

Many people are finding that the computer is a way to make everyday tasks much easier. Well, the same is true for scanning, the computer increases the performance of your scanner in several ways: By using computer control you can increase scanning speed up to two and three times. Regular scanning functions are also made easier under computer control, such as creating search files, scanning between two frequencies. Combining your PC with your scanner makes for hours of high speed enjoyment of two favorite hobbies.

The OS456 *LITE's* CI-V input allows for easy connection with the Optoelectronics Scout for Reaction Tune. No modification needed. The OS456 *LITE* is equipped with A 3.5mm CI-V jack. When the Scout receives a frequency the data is passed over to the receiver and tunes the receiver to that signal in less than 1 second, or take the Scout out and load up the memory, and later Memory Tune the receiver •

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R10 INTERCEPTOR®

FM TEST RECEIVER

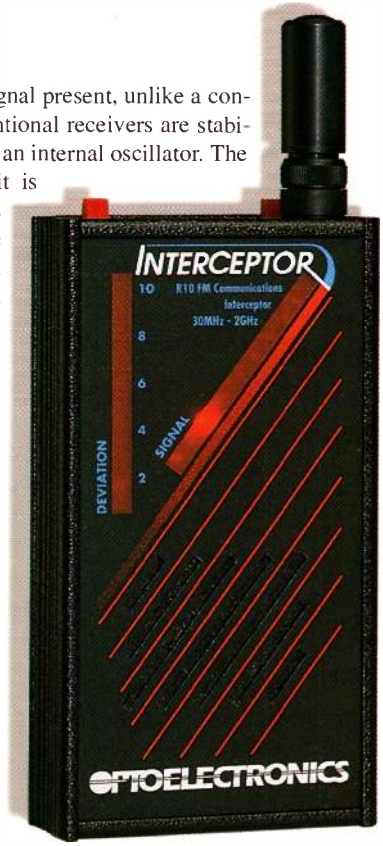
Optoelectronics presents a totally unique instrumentation concept, the Model R10 FM Communications Interceptor®. Developed for two-way communications, it has significant impact in security, counter-surveillance and recreational monitoring applications.

AS A COMMUNICATIONS TEST INSTRUMENT

The Interceptor® measures deviation (wide and narrow band), relative signal strength, and signaling tones (CTCSS, DCS, and DTMF-using the optional **DC440** Decoder). The R10 can be used for any measurement requiring demodulated FM. The R10 is ideal for testing VHF, UHF and Cellular transmitters, and can be a low cost and highly portable substitute for a service monitor in some applications.

NEW TECHNOLOGY

The Interceptor® responds to any strong signal present, unlike a conventional radio receiver or scanner. Conventional receivers are stabilized and tuned to a particular frequency by an internal oscillator. The Interceptor® is stabilized by the signal it is receiving. The advantage of this process is that the Interceptor® does not have to be tuned to a frequency in order to receive a signal. Any FM signal from 30MHz-2GHz can be intercepted without gaps in coverage. The Interceptor® is also completely automatic for hands free operation.



NEARFIELD OPERATION

The Interceptor® operates best in the Nearfield, the region surrounding a transmitter where the signal strength is high but falling off rapidly with increasing distance. The corresponding farfield is where signal strength is relatively low, but falling off slowly with increasing distance.

The actual distance from which the Interceptor® can detect a transmission will vary depending upon the RF floor and the presence of other strong signals. Tests indicate that distances of 200 to 800 feet from a 5 watt UHF or VHF transmitter are typical. This makes the Interceptor® one of the most sensitive nearfield detectors available.

SECURITY & COUNTER SURVEILLANCE APPLICATIONS

This great sensitivity to nearfield signals makes the Interceptor® ideal for RF security and counter surveillance applications. The signal strength bargraph is useful in locating stuck transmitters or listening devices concealed in a room or automobile.

COMMUNICATIONS MONITORING

Unlike scanners and receivers that must be tuned to a specific frequency or scanned through a fixed frequency range, the Interceptor® will provide an exciting new dimension to recreational monitoring with near instant response to strong signals. Communications monitoring hobbyists will be able to take the Interceptor on cruise ships, to military bases, theme parks, zoos, airports, space shuttle launches, parades, sporting events, car races or anywhere FM communications are used.

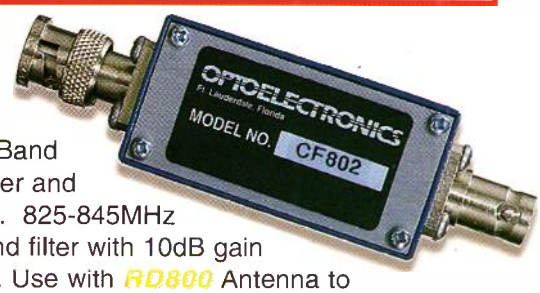
•Shown with optional **DB32** miniantenna. R10 Interceptor includes **TA100S** antenna.

FEATURES

- Full range receiver
- Pocket Sized
- Built-in speaker
- Thumb wheel volume control/power switch
- Skip button frees Interceptor® from any unwanted signals
- Dual 10 segment bargraphs provide deviation and relative signal level indication
- High intensity LED bargraphs
- Lock indicator to display signal reception
- Low battery indicator
- Supplied with Telescoping Whip Antenna, AC90 power supply, earphone, and built-in rechargeable NiCad batteries

SPECIFICATIONS

Frequency Range	30MHz - 2GHz
Modulation	FM, Deviation < 100KHz
Frequency Response	50 - 3000MHz
Auto Tune TIme	< 1 Second
Input	50 Ohm, -45dBm @100KHz -20dBm @1GHz
Max Input	+15dBm
Output	Internal Speaker, Audio Earphone
Controls	Audio Level/ Power, Squelch, Skip, Deviation 10k/100k
Indicators	LEDs: Lock, Power. LED Bargraphs
Power	Internal NiCad Pack, 7.2V 600mA
Size	5.1" High x 2.8" Wide x 1.5" Deep



The *CF802* Cellular Band Pass Filter and Amplifier. 825-845MHz pass band filter with 10dB gain amplifier. Use with *RD800* Antenna to increase typical reception distance between 750 - 1000 feet for *Interceptor®*, *HandiCounters®*, and *Scout®*.•

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R20 INTERCEPTOR®

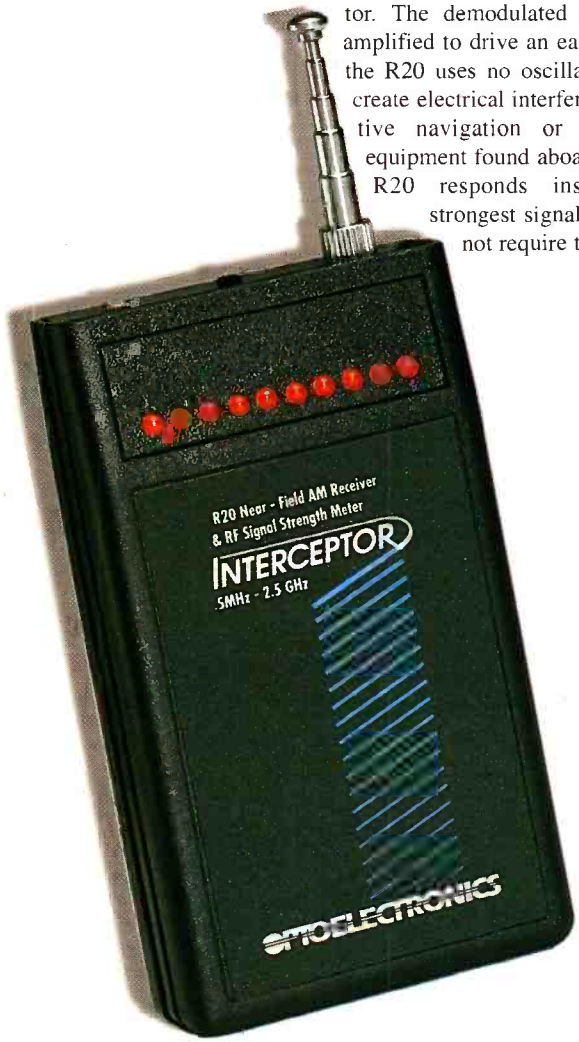
AM TEST RECEIVER

The R20 Interceptor® is both a sensitive RF signal strength meter (for all RF signals) and a nearfield AM receiver. The 10 segment LED bargraph responds with nominal 3dB increments to RF signal level received through the built-in antenna. Amplitude modulated signals are detected and can be monitored using the earphone supplied. FM transmitters can be detected by quieting, resulting from detector saturation. The audio output is processed using automatic level circuitry. This eliminates the need for a volume control and also protects the listener from strong signals that produce potentially harmful load transients.

USE AM RECEIVER FUNCTION FOR:

- Aircraft Communications Monitoring
- Ham Radio
- CB Radio
- AM Broadcast
- Communications Test

The Nearfield Amplitude Modulated Receiver circuitry uses a Microwave Miniature Integrated Circuit Amplifier (MMIC) and a microwave diode detector. The demodulated audio signal is amplified to drive an earphone. Because the R20 uses no oscillators it does not create electrical interference with sensitive navigation or communication equipment found aboard aircrafts. The R20 responds instantly to the strongest signal because it does not require tuning.



SIGNAL STRENGTH BARGRAPH USES

- RF field strength measurements
- Check transmitter output
- Locate Stuck Transmitters
- Test Microwave Oven Leakage

The Signal Strength bargraph feature of the R20 is ideal for relative field strength measurements. Each segment corresponds approximately to 3dB change in average signal level. Internal adjustments are provided to set the zero and full scale levels.

SPECIFICATIONS

Frequency Range	.5MHz - 2.5GHz
Outputs	Earphone Jack for Demodulated Audio Out
Indicators	10 Segment LED Bargraph
Power	Internal 9V battery powered with easy access compartment 3 + hour battery life
Antenna	Built-in telescoping whip antenna
Size	4.2"Hx2.4"Wx.9"D

DID YOU KNOW ?

• The R20 works as an excellent low cost bug detector

COME FLY WITH ME.

So what do you do on an airplane? How about monitoring the pilots? Many scanner hobbyists take their scanners along for the ride, but who wants to sit back and search for signals? With the R20 Interceptor®, just turn it on and you can easily monitor everything the pilots transmit, and because the R20 uses no oscillators it does not create electrical interference with sensitive navigation or communication equipment found aboard aircrafts.

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DC440

CTCSS, DCS, & DTMF DECODER

Special Interest

- Using the **OptoLinx**, the DC440 can be used with any receiver / scanner under computer control, providing the receiver is equipped with a serial port.

TONE READING...IMPROVED!

The DC440 is a powerful instrument for decoding sub-audible and digital signaling tones as well as Touch-tone® characters. The DC440 monitors the demodulated audio output from the Communications Receiver, Service Monitor, Scanner, or **Interceptor®** and, automatically decodes Continuous Tone Controlled Squelch System (CTCSS) tones and Digitally Coded Squelch (DCS) codes. A unique feature of this instrument is that DTMF characters are simultaneously displayed with the CTCSS or DCS digits on a two line alpha numeric LCD. A serial data jack permits connection to a PC serial port using the optional **OptoLinx** interface. This enables the DC440 to datalog using the optional Codelog datalogging software.

U.S. Patent No. 5,471,402

SIX OPERATING MODES

The DC440 has six operating modes for maximum flexibility. On power up, the default mode permits automatic detection and display of 50 CTCSS tones and 106 DCS codes along with 16 DTMF characters. When connected to the discriminator circuit of a communications receiver and a logical output from the squelch circuit, the DC440 can be used to automatically monitor tone and code usage as well as un-coded transmissions. Other modes include All Decode, CTCSS Decode, CTCSS Period, DCS Decode, DTMF Decode, and DTMF Recall.

CI-V ADDRESS

The serial interface on the DC440 conforms to the CI-V interface standard. It allows the unit to be connected to a PC for remote control and automatic datalogging. The CI-V interface is an asynchronous, half duplex, TTL serial interface connected in a wire-or (bussed) configuration. Several different devices can be connected to the bus simultaneously, and each device has its own unique address.

MOBILE DECODING

The DC440's design allows it to operate as a bench instrument, yet compact enough to be used in mobile operations with the optional **NiCad** pack. For simple and portable operation, use the DC440 with the Optoelectronics **R10 Interceptor®**, this direct audio connection makes for convenient and portable tone decoding.

ACQUISITION TIME

CTCSS	600mS
DCS	350mS
DTMF Decode	10 characters per second.

SPECIFICATIONS

Function	Decodes & displays 50 CTCSS tones, 106 DCS codes, and 16 DTMF characters
Display	2 x 16 character w/EL Backlight
Controls	Power, Mode, and Recall
Inputs	
Audio In:	3.5mm stereo phone jack, 400KOhm input impedance
Data Out:	3.5mm mono phone jack, CI-V protocol
Output	Serial Data (I/O)
Power Requirement	7 - 15VDC
Size	1.8" high x 4.5" wide x 4" deep

Modes	**Display**
All Decode	*CTCSS:_ _ _._ */* DCS:+_ _ _ - _ _ _ */* ON THE AIR* DTMF:_ _ _ _ _ _ _ _ _ _
CTCSS Decode	*CTCSS DECODE* _ _ _._Hz
CTCSS Period	*CTCSS PERIOD* _ _ _ _ _ _ _._ _uS
DCS Decode	*DCS DECODE* _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
DTMFRecall	*DTMF RECALL* _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

**Indicates when Tone or Code is active.*
**ON THE AIR* Squelch circuit in receiver is open with no code or tone.*
_ _ _ _ Represents characters or digits displayed.

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Pocsag Decoding with any receiver Demo Software Included

OPTOLINX

UNIVERSAL RADIO - PC INTERFACE

UNIVERSAL INTERFACE

Optoelectronics' latest breakthrough, the **OPTOLINX** Universal Interface, adapts for use with a wide variety of Radios, Scanners, Decoders, Frequency Counters, and Frequency Recorders. The distinguishing feature of the **OPTOLINX** is its unique ability to connect both full and half duplex devices and alternate them under software control. The advantage of the full and half duplex interface **OPTOLINX** is that it allows for multiple radio computer controlled scanning. For example, it is now possible for the AOR AR8000 (full duplex receiver) to scan with ICOM R9000, R7100, or R7000 (half duplex receivers). This is the ONLY device made that has the capability for complete versatility, functionality and speed that no other interface can match.

AR8000: When connected to the AR8000, the **OPTOLINX** provides multiple functionality. Use the AR8000 under computer control for ultra high speed scanning with the built-in squelch status input available only on the **OPTOLINX** interface. The **OPTOLINX** also allows the user to easily modify frequency bands under software control. Uploading and downloading frequency bandplans becomes as easy as clicking your mouse.

ICOM Receivers: The **OPTOLINX** is equipped with a CI-V interface, allowing complete computer control of the ICOM R7000, R7100, and R9000 receivers. The **OPTOLINX** has all the functions of ICOM'S CT-17 interface, and adds the squelch status input which allows the R7000 to scan at a higher speed under computer control. Use the Optoelectronics **DC440** Decoder to provide decoding of CTCSS, DCS, and DTMF in a software controlled interface.

SCOUT®: The **Scout** is equipped with a data port, and when connected to the **OPTOLINX**, frequencies can be downloaded to a PC. This data can be stored in files displaying number of hits, or matched up against the **SPECTRUM** FCC database to review frequencies. **Scout** frequency files can be used as bandplans and uploaded to the AR8000 for scanning.

DC440: The **DC440** is compatible with a CI-V input and will interface with the **OPTOLINX** for tone decoding with any of the **OPTOLINX** compatible receivers under computer control with **Codelog** software.

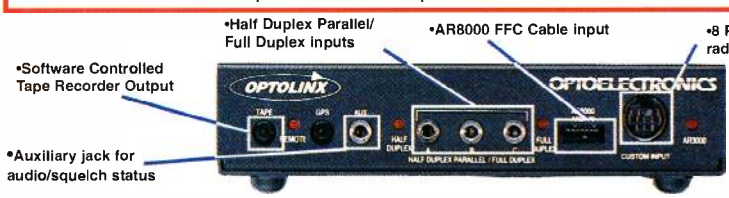
M1: The Optoelectronics' **M1** frequency counter is equipped with a TTL asynchronous serial interface. When connected to the half duplex input of the **OPTOLINX,** the **M1** datalogs frequencies received with time and date stamping using **Optolog** software.

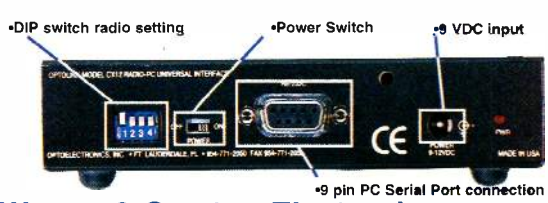
Pocsag Decoder: Decoding of Alphanumeric paging signals can be done using the **OptoLinx** connected with any receiver or scanner and a PC. Any messages, phone numbers sports and news updates transmitted over the paging frequencies can be decoded using the Pocsag decoding (Demo software included with the **OptoLinx**). *Note: May require connection to receiver discriminator circuit.*

FEATURES

- •Computer Control AOR AR8000 using supplied FFC cable
- •Computer Control ICOM R7000, R7100, R8500 and R9000
- •Download **Scout** frequencies to a PC
- •Interface **DC440** Decoder with any **OPTOLINX** compatible receiver for decoding of CTCSS, DCS, and DTMF under computer control
- •Interface **M1** frequency counter for datalogging with **Optolog** software
- •Switch between full and half duplex radios using remote software or external switch
- •Data Slicer Circuit-converts FSK data to RS232. Works with popular decoding PC software for ACARS, etc.
- •8 pin mini DIN connector for single cable custom radio connection
- •Interface multiple radios in a star network configuration
- •Software controlled tape recorder output

OPTOLINX shown with AOR AR8000 and FFC cable





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8040 BENCH COUNTER

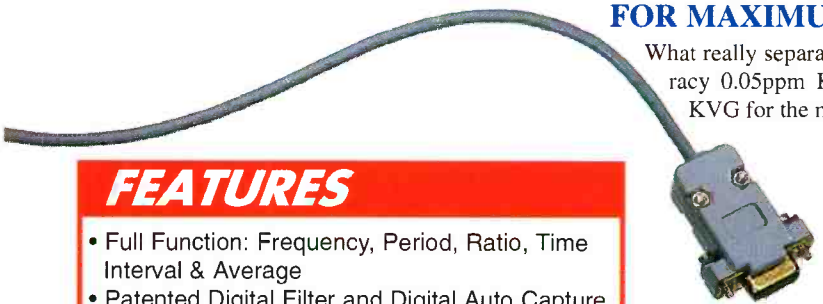
When Frequency Measurement Accuracy Counts.

ON THE BENCH.

The 8040 is a full-featured multi-function counter in a compact, bench/ portable design. Capable of frequency measurements from 10Hz to 3 GHz, the 8040 is suited for virtually every application. Outfitted with a rapid charge NiCad battery pack, its compact size and ultra-high sensitivity make it perfect for "off-the-air" measurements and frequency finding using the patented Digital Filtering and Digital Auto Capture functions. The 8040 brings all the same advanced features and more found in the Model **3000A+ HandiCounter®** to a bench/portable configuration. It shares the same specifications for sensitivity, gate times, display resolution, and operating modes as the **3000A+**. For bench use, the 8040 adds a complete set of input signal conditioning and trigger level controls for both high impedance input amplifiers. This gives the operator more flexibility in making frequency, period, ratio, and time interval measurements on a wider variety of signals. In addition, the 8040 has a built-in RS232 serial data interface that allows it to interface directly to a PC using only the optional **CB-232** cable and **OptoLog** software for datalogging.

THE ONLY PORTABLE BATTERY OPERATED COUNTER WITH A KVG O.O5ppm OVEN FOR MAXIMUM ACCURACY AND STABILITY!

What really separates the 8040 from any competition is the low power, maximum accuracy 0.05ppm KVG ovenized timebase (OCXO). The OCXO is manufactured by KVG for the military and is extremely rugged as well as low in power consumption.



- The CB232 Interface cable for data logging with OptoLog software •
(**CB232** and **OptoLog** optional)

FEATURES

- Full Function: Frequency, Period, Ratio, Time Interval & Average
- Patented Digital Filter and Digital Auto Capture
- 16 Segment Signal Strength Bargraph
- Optimized sensitivity for maximum RF pick-up distance
- Dual 50Ohm and 1MegOhm input amplifiers with AC/DC coupling, +/- Polarity, Trigger Level Adj., Low Pass Filter, and Attenuator
- .05ppm 0-50 degrees C Ovenized Timebase
- Internal Clock Output/External Clock Input
- Built-in RS232 Serial Data Interface
- 10 digit LCD display with Electroluminescent backlight
- Built-in Low Pass Filter

Now Compare This

Model	Freq. Range	Accuracy Standard	Accuracy Optional	Battery	Cost
Optoelectronics 8040	3GHz	.05ppm Oven		Rapid Charge NiCad	$999.00
Phillips PM6666	1.3GHz		.2ppm TCXO	NiCad	$2250.00
Hewlett Packard 53181A	3GHz		.025ppm Oven	None	$3675.00

KVG OVEN SPECIFICATIONS

Frequency Stability:	Temperature range - 10 degrees C to 55 degrees C, +/- 2×10^{-8} Temperature range - 40 degrees C to 70 degrees C, +/- 5×10
Aging after 24 hrs. continuous operation:	< +/- 5×10^{-9} / day < +/- $1{,}5 \times 10^{-7}$ / year

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3000A+

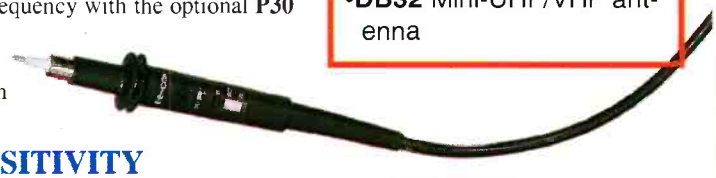
MULTIFUNCTION COUNTER

The 3000A+ is the first hand-held frequency counter to combine the computing power of a microprocessor with our custom OE10 high speed counter IC to provide unparalleled counting capabilities. The 3000A+ can capture off-the-air signal frequencies completely without operator intervention and store the result of three counts.

The microproccesor digitally filters the RF signal frequencies to reduce spurious counting. This is done without relying on the signal strength to exceed some arbitrary level, ensuring reliable performance in today's dense signal environments. Proprietary software monitors the incoming RF for stable coherent signals, and only when these conditions are satisfied will the count be displayed to the user.

Internal memory using the Patented Auto Capture function allows the 3000A+ to store the last three filtered frequencies for later examination. The 3000A+ has four separate input amplifiers to push sensitivity to new levels. The input circuitry has been designed to cover the 20Hz - 3GHz range in bands chosen to optimize sensitivity for each application. The 3000A+ is equipped with a built-in High Pass Filter for frequencies above 800MHz, excellent for 800MHz antenna pick up distance.

The direct 1 to 250MHz input is used primarily for setting crystal oscillators on frequency with the optional **P30** Oscilloscope Probe and monitoring HF through VHF communications with an optional antenna.



P30 Probe

MAXIMUM SENSITIVITY

Newly designed FET input amplifiers deliver high sensitivity from 20Hz to beyond 50MHz, while reducing battery drain. Two identical amplifiers are used for Ratio and Time Interval measurements.

MULTIFUNCTION COUNTER

Not only a high performance hand-held counter, the 3000A+ also offers the ability to measure Period, Ratio, and Time Interval. With all the functions of a bench instrument, the 3000A+'s portable package makes it an excellent choice for field operations.

GATE SELECT AND ACCURACY

For increased resolution, the 3000A+ offers 15 selectable gate times. Six gate selects from 100uS - 10S in the 200MHz range. Five gate selects from 400uS - 4S in the 800MHz range, and Four gate selects from 1.6mS - 1.6S in the 3GHz range. Initial accuracy for the unit is 1ppm. The 3000A+ offers an optional factory installed .2ppm accuracy **TCXO**.

Recommended Accessories

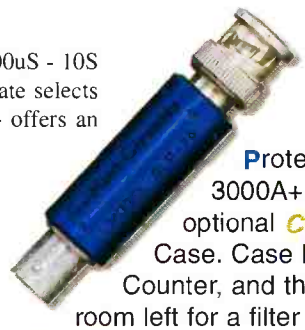
- **BLP70** Low Pass Filter
- **P30** Scope Probe
- **CB232** PC Cable
- **CC30** Carry Case
- **OptoLog** PC Datalogging Software
- **TA100S** Telescoping Whip Antenna
- **DB32** Mini-UHF/VHF antenna

Did You Know ?

- For locating stuck transmitters, the 3000A+ offers the greatest sensitivity

FEATURES

- Patented Digital Filter greatly reduces the display of random noise and oscillation without any loss of sensitivity or antenna pickup distance
- Patented Digital Auto Capture locks counter display on first reading to pass the filter
- ARM/STORE button stores and recalls frequencies from a three register stack
- Low Power Consumption, 5-6 hour battery operation
- Built-in PC interface, use with optional **CB-232** and **OptoLog** software for datalog ging
- Fast 250 million counts per second for high resolution counting, 250MHz direct count
- Dual high impedance amplifiers for ratio and time interval counting
- Full range counter covers 20Hz to 3GHz
- Ultra sensitive bargraph with 16 segment display of RF signal
- Multi-function counter with Frequency, Period, Ratio, and Time Interval Measurement capability
- Electroluminescent Backlit Display



Protect your 3000A+ with an optional *CC30* Carry Case. Case holds the Counter, and there's even room left for a filter or antenna. The *BLP70* is a great accessory for capturing frequencies below 70MHz, use with the optional *RD27* Rubber Duck Antenna for maximum performance •

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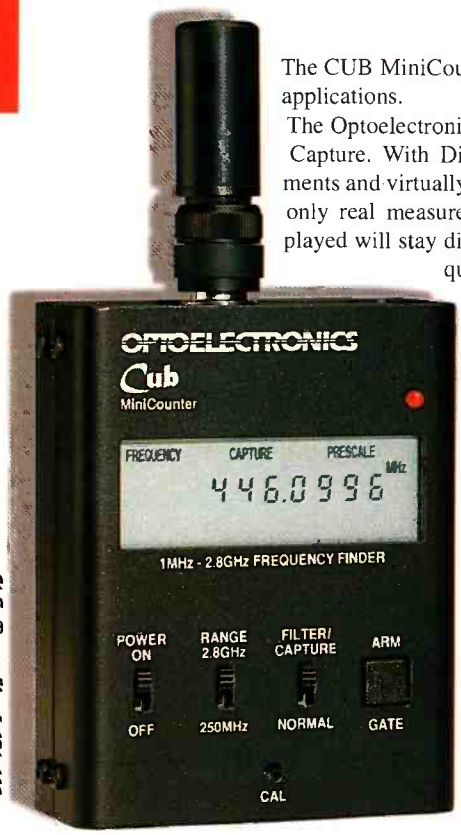
CUB MINICOUNTER

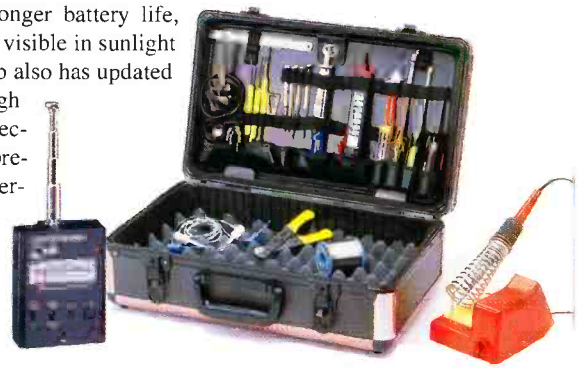


U.S. Patent No. 5,471,402

Cub shown with optional **DB32** Mini Antenna

The CUB MiniCounter is ideal for Communications, Surveillance, and Recreational applications.

The Optoelectronics CUB incorporates the Patented Digital Filter and Auto Capture. With Digital Filter on, the internal microprocessor evaluates measurements and virtually eliminates random counts that are observed in normal operation; only real measurements are displayed. With Auto Capture, each frequency displayed will stay displayed until cleared. Gone are the days of writing down the frequency with a pen and paper before it disappears. The Cub also has an LCD display for greater visibility and longer battery life, unlike the outdated LED models which aren't visible in sunlight and drain the life from your batteries. The Cub also has updated NiCads with 10 hour discharge. With a high speed .0001 second gate and up to eight selectable gate times, the CUB allows for fast and precise measurements. The CUB is simple to operate, yet still has the sophistication and accuracy that the experienced service and field technicians demand.



Recommended Accessories

- **DB32** VHF/UHF Mini Antenna
- **TA100S** Antenna
- **Antenna Pk 1:** See page 15 for description
- **Antenna Pk 2:** See Page 15 for description
- **CC30** Carry Case
- **BLP70** Low Pass Filter
- **BHP800** High Pass Filter
- **HandiCounter Accessory Pack:** Includes **TA100S**, **CC30**, and a **Belt Clip**

FEATURES

- 1MHz - 2.8GHz range
- 9 digit LCD display for better visibility and longer battery life
- 10 hour discharge built-in NiCad batteries
- 8 selectable gate times
- High speed .0001 second gate time
- 1MHz - 250MHz direct count capability for high resolution
- Patented Digital Filter eliminates false counts
- Patented Auto Capture locks frequency displayed until cleared
- Direct and Pre-scaled ranges

SPECIFICATIONS

Frequency Range:	1MHz - 2.8GHz
Input Impedance:	50 Ohm
Input Coupling:	AC
Max Input:	+15dBm (50mW)
Time Base:	Frequency: 10MHz, Initial Accuracy: +/- 1ppm
Display:	9 Digit .175" character height Liquid Crystal
Annunciators:	Frequency, MHz, Low Batt, Prescale, Filter, Capture Decimal point at the MHz position
Size:	3.7" high x 2.75" wide x 1.2" deep, Weight: 7.5oz
Cabinet:	Stamped Aluminum, black textured
Power:	9-12VDC at <100mA from AC90 adapter
Battery:	Internal 4 cell AA shrink wrapped NiCad pack

Frequency Display Resolution *Least significant digit displayed.*

Range	Gate Select	Gate Time	LSD	Sample Display
250MHz	1	.0001S	10kHz	250.00
	2	.001 S	1kHz	250.000
	3	.01S	100Hz	250.0000
	4	.1S	10Hz	250.00000
	5	1.0S	1Hz	250.000000
2.8GHz	1	.0064S	10kHz	2800.00
	2	.064S	1kHz	2800.000
	3	.64S	100Hz	2800.0000

Input Sensitivity (Typical)

<15mV @ 10MHz	<5mV @ 800MHz
<3mV @ 27MHz	<5mV @ 1GHz
<6mV @ 150MHz	<25mV @ 2GHz
<5mV @450MHz	<100mV @ 2.4GHz

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M1 MICROCOUNTER

The Optoelectronics M1 MicroCounter is a full range 20Hz - 2.8GHz, pocket sized frequency counter. The M1 uses an imbedded micro-controller along with our powerful custom OE10 counter IC to provide advanced features such as our Patented Digital Auto Filter, Digital Auto Capture, Data Storage, and Serial Data Output.

APPLICATIONS

The M1 excels as a very high performance hand held test instrument that can be used for general purpose frequency measurement. The M1 has much greater sensitivity than ordinary frequency counters, especially at RF frequencies. This makes the M1 ideal for measuring radio signals off the air at the maximum possible distances using an optional antenna. For in-circuit measurement of frequencies from oscillators or test points, switch the input from 50 Ohm to 1 MegOhm input impedance for use with a scope probe for direct connection.

DIGITAL COMMUNICATIONS PORT.

The Optoelectronics M1 hand held frequency counter is equipped with a TTL asynchronous serial interface which allows the unit to be connected to a PC for datalogging frequency information. An accessory RS232 converter, the optional **OPTOLINX** permits interfacing the M1 directly to the serial port of a PC. **Optolog**, an optional PC compatible data logging program, records time and date stamped frequency data.

U.S. Patent No. 5,471,402

*M1 shown with optional **RD440** Antenna*

FEATURES

- Patented Digital Filter and Auto Capture
- Stores three frequencies
- Low Power Consumption, 4-5 hour operation
- 10 Digit LCD display with EL backlight
- Digital Communications Port for datalogging using optional **OptoLinx** & **OptoLog** Software
- High Speed 250MHz direct count with 1Hz per second resolution
- Ultra sensitive RF 16 segment bargraph
- 10 gate times from 100 micro seconds to 10 seconds with 13 milliseconds in between measurements
- High impedance and 50Ohm amplifiers for full range 20Hz to 2.8GHz coverage

The BHP800 & BLP70 High Pass and Low Pass Filters. See Pg. 22 •

SPECIFICATIONS

INPUT

Amplifier:	**1 Meg Ohm**	**50 Ohm**
Impedance:	1 Meg Ohm, 30 pF	50 Ohm vswr <2:1
Range:	20Hz - 40MHz	10MHz - 2.8GHz
Sensitivity:(typical)	<20mV 1KHz - 10MHz	<10mV @ 10MHz
	<50mV 10MHz - 40MHz	<1mV @ 150MHz <7mV @ 800MHz
		<12mV @ 1GHz <100mV @ 2.4GHz
Maximum Input:	50V AC + DC	+15dB\m, 50 milliwatts

Frequency Display Resolution

Least significant digit displayed (LSD) as a function of gate time and range.

Range	Gate Select	Gate Time	Measurement Time	LSD Resolution	Sample Display (MHz)
200	1	100uS	13mS	10kHz	150.00
	2	1mS	13mS	1kHz	150.000
	3	10mS	13mS	100kHz	150.0000
	4	100mS	110mS	10Hz	150.00000
	5	1S	1S	1Hz	150.000000
	6	10S	10S	0.1Hz	150.0000000
2400	1	6.4mS	13mS	10kHz	2000.00
	2	64mS	75mS	1kHz	2000.000
	3	640mS	640mS	100Hz	2000.0000
	4	6.4S	6.4S	10Hz	2000.00000

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ACCESSORIES

ANTENNAS, FILTERS, PROBES, CARRY CASES, SOFTWARE...

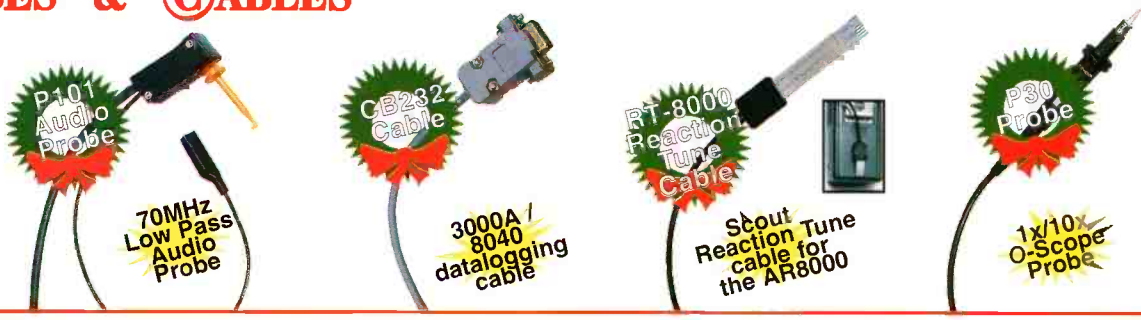
Add the gift of accessories to your Optoelectronics Christmas •

ANTENNAS

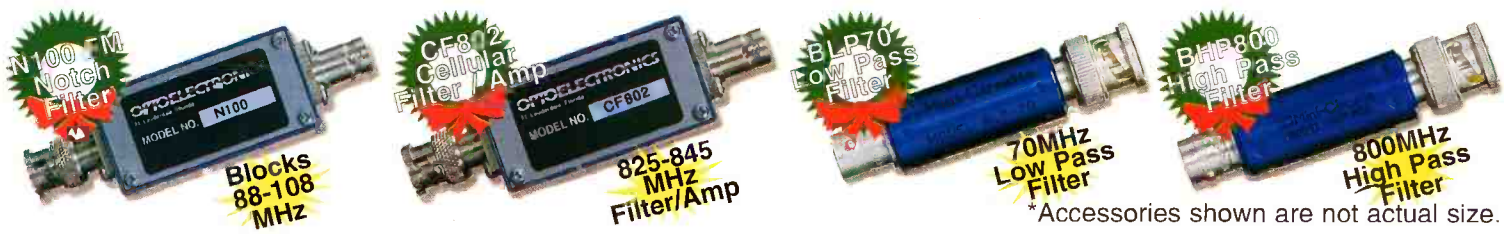
CARRY CASES

SOFTWARE

PROBES & CABLES



FILTERS



*Accessories shown are not actual size.

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Seasons Greetings from the entire staff at Optoelectronics.

TRADE-INS WITH WARRANTIES!

ICR-7000, AOR-3000 & ICR-7100

Due to the enormous success of the IC-R8500 and AR-5000, we have a limited selection of trade in's of previous models.

ICR-7000

The most popular of all base scanners. 25-2GHz, All mode, beautifully built, hundreds sold to government establishments worldwide. **From £650**

ICR-7100

The successor to the famous ICR-7000. Smaller and more compact, 1000 memories and enhanced scanning modes. All mode as standard, covering 25-2GHz. **From £895**

AOR-3000

Both 3000 and the "A" model is available. Very neat, can be used mobile or base. 100KHz-2.3GHz, offering all short wave as well as VHF/UHF frequency coverage. **From £595**

All units are offered with 12 months warranty, operating manual and necessary plugs etc. Very limited stock.

Welz WS-1000

This amazing little unit is a full blown scanning receiver capable of covering everything from 500kHz to 1300MHz with no gaps. Not only is it the smallest scanner you've ever seen, it's the lightest too. Closer in size to a box of matches rather than a pack of cigarettes, the new WS-1000 from Welz-Diamond is technology in its extreme. Take a scanner with you where you wouldn't have bothered before.

specification

- 500kHz-1300MHz
- AM/NBFM/WBFM
- 1/5/6.25/9/10/12.5/15/20/25/30/50/100kHz steps
- 400 memories ▶ Skip search
- Power voltage from only 2.2-3.5V DC
- Dimentions in mm: 58(w) x 97(h) x 24(d)
- 16mA power save 1 sec.
- Weight: 200 grams incl. batteries & antenna

NOW AVAILABLE FROM STOCK

SPECIAL OFFER ONLY £299
incl. VAT & FREE postage

NEW... Icom ICR-8500

Covering 100kHz-2GHz, all mode, IF Shift, APF and direct RS-232C compatibility. Icom have once again set a "standard" to which all other base station scanners must be judged.

Offered with 5 years parts and labour including accidental damage, worth £126. Order during December and January and receive an Icom SP-21 matching speaker and an AD-55 mains PSU - ALL FREE OF CHARGE.

RRP: £1695. Deposit £295, and 24 payments of £70.14. Total cost of loan £283.36. (APR 19.9%)

AR-8000 UK

The best scanner on the market. Don't argue. My scanner man Graeme said so. To find out why, give him a call. Even if he does spell his name rather strangely.
RRP: £410.

ML PRICE SLASH: NOW ONLY £309.

Super low finance available from only £27.50 per month!

ICOM ICR-10E

NEW PRODUCT

When Icom introduce a new scanner, the competition take a deep breath. The amazing ICR-1E introduced over 5 years ago stopped all other scanner sales in their tracks. With the introduction of the new ICR-10E, looks like Icom are about to continue a tradition. Just look at these features:

- All mode FM, WFM, SSB, CW, AM
- 500KHz-1300MHz
- Real Time Bandscope
- 1000 memories
- Alphanumeric tag to each memory
- Tunable bandpass filters employed for excellent RX performance
- Multi function dot matrix display
- Full Computer access capability.

Available from stock during December. RRP £429.

Available only from Martin Lynch with 5 years warranty, including accidental damage, FREE OF CHARGE!

The New AOR AR-7030

Probably the best engineered receiver in the world. Including a FREE FIVE YEAR WARRANTY, only available from MARTIN LYNCH.

RRP: £799.

FREE 5 year warranty

Deposit: £99.
12 payments of £64.28.
Cost of loan: £71.45

Opto Electronics Scout

The most innovative product for scanners of 1995? Connect this little frequency counter up to your AR-8000 and see it make the scanner jump onto a frequency that its literally just "sniffed" out of the air! Termed "Reaction Tune", it has many uses both for the hobbiest and commercial user.

RRP: £449. ML Price: £369 Super low cost finance available from only £27.50 p/m!

AKD TARGET RECEIVER

The ideal way to starting off the wonderful hobby of Short Wave listening. Offered with mains PSU, Short wave aerial wire and operating manual.

£159.95 p&p £7.50

The New AOR AR-5000

For those who take the entire radio spectrum very seriously. The AR-5000 covers 10kHz through to a staggering 2600MHz! All mode base receiver, setting new standards in all band performance.

RRP: £1749. **Lynch Price: £1569.**

Deposit £269, 12 payments of £119.39.
Cost of loan: £132.70 or
Deposit £269, 24 payments of £65.13.
Cost of loan: £263.12. (APR 19.9%)

SCOOP PURCHASE!

AR-1500EX

My favourite sub-£200 handie scanner. All mode incl SSB/CW (BFO), easy to operate and supplied with Nicads & charger.
RRP £289
ML Price: £189 p&p £10
Limited stock.

Yaesu FRG-100

Retailing at £599, the new receiver from Yaesu takes some beating. At £469, its an even better buy!
RRP: £599.
NEW LOWER ML price CASH/SWITCH £469. Super low cost finance available from only £36.66 p/m!

USED EXAMPLES AVAILABLE FROM ONLY £399
Call for availability

BAYGEN "FREEPLAY' WIND-UP RADIO

No this is no wind-up! Invented by an Englishman, Trevor Baylis, this new AM/FM & SW receiver needs NO BATTERIES or External power! Wind the cranking handle and sit back and enjoy up to 40 minutes of listening, without lining the pockets of your local battery provider! When its run out, simply wind the handle up again.

Exclusive to Martin Lynch £69.95. p&p £10

Garmin GPS-45XL Includes Active Compass

NEW MODEL

Due to an overwhelming demand, we've decided to stock this important device. Locate your latitude/longitude national grid to within an amazing 49ft accuracy! Lots more besides,

ONLY £259.

DIGITAL SIGNAL PROCESSORS

NEW LOW PRICES

DSP 9+ DSP 59 * DSP 599zx * MFJ-784B Digital Signal Processing will enhance any receiver performance by removing one main ingredient - NOISE! If you haven't heard a DSP unit work, then call into the London Showroom for a demo. Alternatively, order by mail order and if it doesn't impress you, return it for a full refund of the purchase price. How's that for confidence?

MFJ-784B All mode Tunable DSP £249
DSP 9+ All mode DSP at only £189
DSP 59+ As above but more features £249
DSP 599zx NEW! Hyper speed processor, alpha display and more £349
DANMIKE DSP-NIR "THE BEST" £329.95

Lowe HF-150

We sell as many to commercial users as we do to enthusiasts. The best built, best performing receiver under £500.

RRP: £419. Deposit £59, 12 payments of only £30, ZERO APR.

Why not add a keypad for fast frequency access? only £44.95.

Global AT-2000

A superbly built SWL antenna tuner for improved receive performance. Built in Q selector.

ONLY £95.

Optima ACARS Receiver

Designed exclusively for Martin Lynch, this new receiver releases your expensive scanner from monitoring1 frequency for reception of ACARS.
All that is required is 12 volts DC input, and an external antenna. The Optima will then give you audio direct into either ACARS decoding software, or our Universal M-400/M-1200 decoder. It's that simple!
RRP: £129.95

Lowe PR-150

Matching the HF-150, a preselector can greatly enhance reception of weaker signals, that would otherwise be lost in the noise caused by stronger signals. They really do work. Suitable for most other receivers. Ask for details.

NEW LOW PRICE: £199.

NEW MVT-9000

"A thoroughbred amongst scanners"

The new MVT-9000 scanner offers performance that is usually reserved for commercial operators. Pocket size and a host of important features. More details next month.

PRICE: £TBA

NOISE REDUCTION

Suffering from power line noise?
Got a noisy street lamp or thermostat clicking away?
Slip in line the ANC-4 and see it disappear.
If not send it back and get a refund!

RRP £195 incl. p&p.

AOR AR-3000A

Lots of different versions being offered, but make sure you are buying one sourced through the U.K. distributor. We only sell this model supplied by AOR U.K. Ask before you buy elsewhere!

RRP: £949. **Lynch Price: £849**
Deposit £149, twelve payments of only £64.28. Cost of loan: £71.45 (APR 19.9%)
Also available the "PLUS" version. Please add £46.

DANMIKE DSP-NIR

"HIGHLY RECOMMENDED" BY CHRIS LOREK

Manufactured by Danmike of Denmark, the DSP-NIR is a premium grade noise reduction unit directly competing with the DSP 599+

INTRODUCTORY PRICE: £329.95

Look-alikes

Police look-alike Lapel speaker
Suitable for most scanners on the market.
Only £11.50 incl. delivery.

Police look alike Earpiece. MyDEL P-300
As used by many government establishments throughout the world, the new MyDEL P-300 easy to wear "over the ear" earpiece is available now, including FREE P&P.
(State which scanner the P-300 is for when ordering).
ONLY £9.95 p&p FREE!

NEW...Opto Xplorer...NOW AVAILABLE

The all new Xplorer. Hear it, see it, Decode it, Map it & record it. A high speed FM close proximity receiver that sweeps continuously from 30MHz to 2GHz in less than one second. All mode decoding includes: CTCSS, DCS, DTMF, LTR, Latitude & Longditude, FM deviation.

ONLY £849!

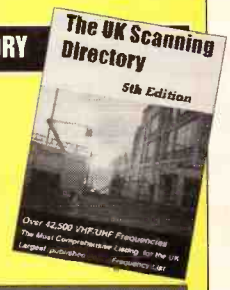
CASIO QV10A - LCD DIGITAL CAMERA

A neat palm size digital storage camera which can store over 90 full colour digital images. Import the picture into your PC with the supplied interface cable & software for IBM compatible (MAC available). Ideal for reprinting images on the Internet, SSTV via JVFAX and lots more. Outputs include direct video and serial for PC connection. Supplied with all accessories including Software & Cables.

NEW MODEL

RRP £799 Lynch Price £399
Deposit: £49, 12 payments of £32.14.
Cost of loan: £35.73 (APR 19.9%)

5th EDITION UK SCANNING DIRECTORY



NEW

Available from stock. Order yours now, before they ban it from sale!
ONLY £18.50 P&P £2

MARTIN LYNCH & Son

THE AMATEUR RADIO EXCHANGE CENTRE

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Please NOTE prices & monthly payments are based on 17.5% VAT & no more price increases! E&OE. £10 p&p on all major items.

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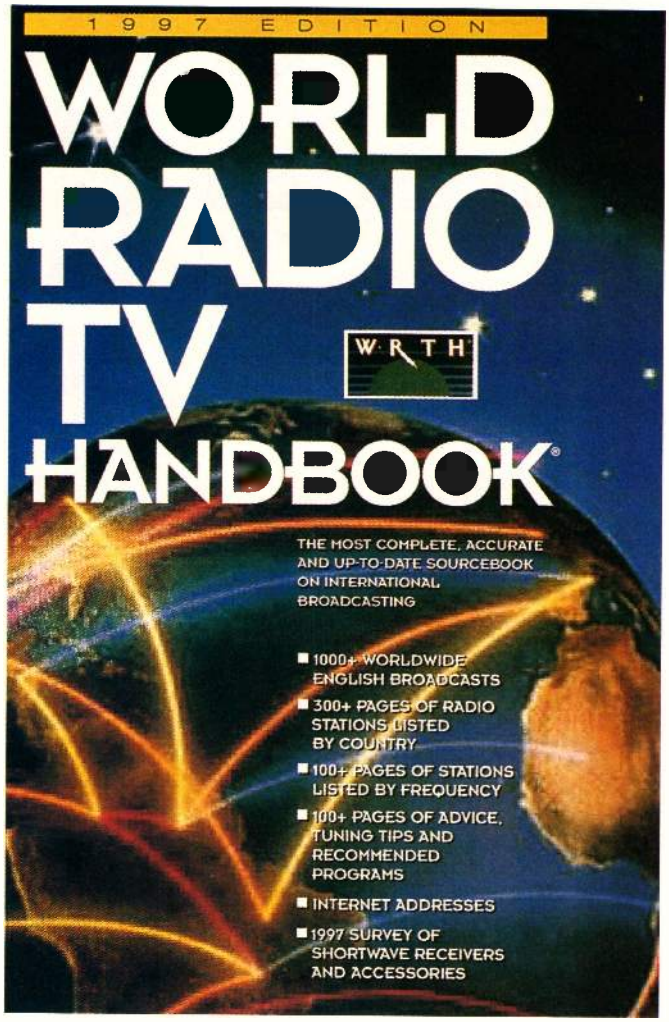
EALING, LONDON W13 9SB

MARTIN LYNCH WEB SITE
http://www.martin-lynch.co.uk
E-mail address: sales@martin-lynch.co.uk

NEW!

World Radio TV Handbook 1997

The World Radio TV Handbook has been called the "authoritative reference for anyone seeking information on radio and television around the world" (Radio Australia). A must-have resource for radio novices and enthusiasts, it is the only complete annual to include the important winter broadcasting schedules. This feature sets this edition of the World Radio TV Handbook apart from all its competitors.



0-8230-7797-7. £19.95

Don't Miss These Features:

- details of stations on the long-, medium-, and short-wave bands, along with contact information;
- mailing addresses, phone and fax numbers, senior personnel, and e-mail addresses;
- listings of medium-wave and shortwave broadcasts in frequency order;
- an hour-by-hour guide to 1,000 broadcasts in English;
- Internet addresses for international broadcasters;
- independent reviews of shortwave receivers and accessories;
- articles with detailed technical information, recommended programs, and tuning tips;
- a directory of international hobby clubs.

Available wherever books are sold, or call 1-800-451-1741

Get the Most Out of Your Radio

WRTH

SWM 1996 Index

Supplements

August - Broadcast Station Guide Centre Pull Out - Peter Shore
What's On The Air
Tuning In
Listening on the Move

October - Numbers Stations Special
ENIGMA
Numbers Station Frequency Directory
Listening to Numbers Stations
Numbers Station Guide

November - Space Special - Lawrence Harris
MIR the Shuttle and ISS
Readers' Pics
GOES-8 The Ultimate WXSAT

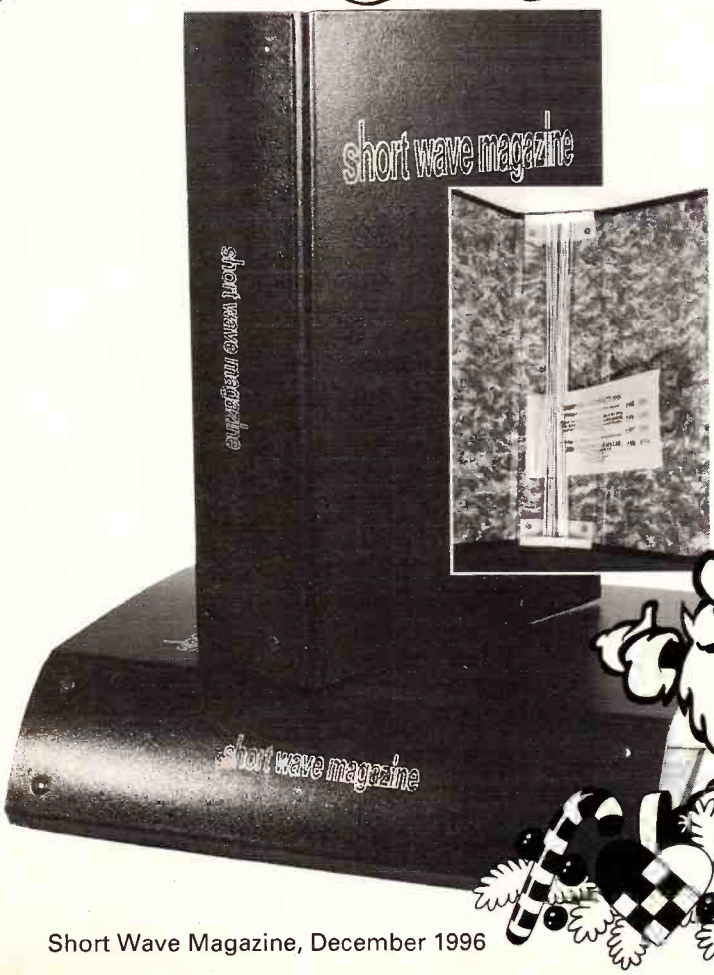
Don't forget that we still have available *SWM* back issues for 1996, as well as 1991, 1992, 1993, 1994 and 1995. But hurry as stocks are limited. To order back issues, either use the Order form on page 79 of this issue or telephone the Credit Card Hotline on (01202) 659930. Back issues for 1991 and 1992 are available for just £1 including P&P, all others £2.60 including P&P.

Xmas Subs

Does someone else read YOUR copy of *Short Wave Magazine* every month? Are you stuck for something to buy your loved-one, your best friend, or do you just feel like treating yourself? If so, here's your chance to place a one year's gift subscription to *Short Wave Magazine* and receive a *FREE SWM* binder.

Order a gift subscription to *Short Wave Magazine* now and we'll send a card telling them that their gift from you will be their own personal copy of *Short Wave Magazine* delivered by the postman every month next year. They'll also receive a **free** *SWM* binder.

The binders are produced from a heavy duty board coloured in a smart navy blue with the *SWM* logo printed in gold lettering on both the front and the spine. Each binder comes complete with a set of year labels and binding bars (see inset photo) and will comfortably hold a year's worth of magazines.



Fill in the form on this page and send it back to us by **December 18** (UK orders only) and the order will be despatched in time for Christmas. But, remember, overseas orders take longer to reach their destination!

To: PW Publishing Ltd., Subscription Offer, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.
Credit Card Orders taken on (01202) 659930.

SHORT WAVE MAGAZINE ONE YEAR SUBSCRIPTION RATES

- ❑ £25 (UK)
- ❑ £30 (Europe Airmail)
- ❑ £32 (Rest of World Airsaver)
- ❑ £37 (Rest of World Airmail)

❑ Please send a one year subscription to *Short Wave Magazine* starting with the January 1996 issue together with a free *SWM* binder to:

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If you do not want to cut your copy of *SWM*, a photocopy of this form is acceptable.

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4E EAST MILL, BRIDGEFOOT,
BELPER, DERBYS DE56 2UA

AR7030 - the DXer's choice...

High dynamic range short wave receiver £799
UK designed & built to high standards, 0 - 32 MHz, all mode, built-in RS232 port and more. Innovative features include auto-tune synchronous detector and automatic filter alignment. Supplied with infrared hand controller, mains power supply and illustrated operating manual.

AR7030 options

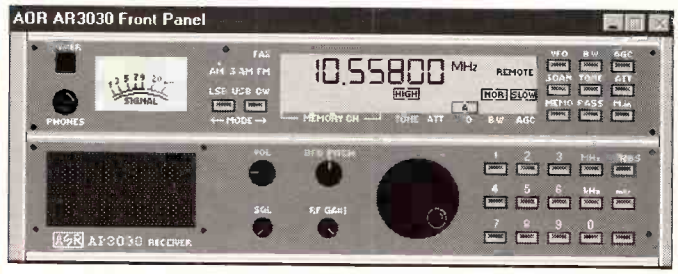
		price	(P&P)
MF500	500 Hz Collins mechanical CW filter	£89.29	(£2)
CFJ455K8	1.0 kHz Murata ceramic data filter	£39.99	(£2)
XTAL2.4	2.4 kHz high quality 8 pole crystal filter (daughter board recommended for fitting)	£129.99	(£2)
FL124	Daughter board for fitting crystal filters	£24.99	(£2)
MF2.5	2.5 kHz Collins mechanical SSB filter	£89.29	(£2)
CFK455J	3.0 kHz Murata ceramic very narrow AM / SSB filter	£29.99	(£2)
MF4	4.0 kHz Collins mechanical AM filter	£89.29	(£2)
CFK455I	4.0 kHz Murata ceramic AM filter	£29.99	(£2)
MF6	6.0 kHz Collins mechanical AM filter	£89.29	(£2)
BP123	(BA7030) Internally mounted battery	£99.99	(£6)
DATA MASTER	PC control software for the AR7030 & AR3030 running under Windows®95. Built-in data base, logbook, MUF, maps and more	£129.00	(£3)
COMP7030	10 page explanation of RS232 control	£3.00	(free)

Planned options to follow:

NB7030	Enhanced multi function audio notch filter plus RF noise blanker. "Features CPU" also supplied as part of the package providing additional memories, alpha-tagged memory, enhanced timer etc... late 1996
Features CPU	Enhanced microprocessor, additional features as supplied with the NB7030 or FM7030
TW7030	Optional telescopic whip for the AR7030
SC7030	Soft carry case for the AR7030
FM7030	Stereo internal converter with RDS display - still under consideration and dependent upon demand
SM7030	Service kit. Circuit diagrams, PC controlled alignment/ test disk supplied, RS232 lead etc £35.00 (£3)

AOR *DATA MASTER* control software for the AR7030 & AR3030 short wave receivers

DATA-MASTER is a brand new Windows®95 software package for control of the AR7030 and AR3030 short wave receivers. You may tune the receiver from a "virtual" receiver front panel and configure memory channels etc.



Transmitter data may be imported from the supplied AOR Data Base Toolkit overlaying it onto a world map for point and click tuning. MUFsight is also bundled for propagation prediction along with several useful tools, SWL logbook, HF Broadcast Stations, Language & Modulation aids etc.

- Virtual front panels with support for the AR7030 & AR3030
- Tile & cascade windowing with multiple memory files
- Comprehensive editing including cut/paste and renumbering
- Send memory date to / get from the receiver
- On-line context sensitive help and quality 100+ page hard copy manual
- Data Base toolkit with import of text reports & map projections
- On-line instant HF predictions using MUFsight
- Selective memory scan, frequency search, spectrum, measure frequency and signal strength with the mouse
- Working Aids: Foreign languages, propagation, modulation, bandplans
- SWL logbook picks up frequency, mode etc from control software
- Broadcast data base.... and more!!! Nearly 10MB of programs

☺ **Requires** Microsoft® Windows®95 and fast PC (Pentium®) with fast graphics, minimum 8Mbytes RAM. *Descriptive leaflet available*

£129 + £3 P&P inc VAT

AR8000 - wide band hand-held receiver, new lower price £349

The **AR8000** UK receiver is still the most full featured wide band hand held receiver on the market today.

Frequency coverage is from 500 kHz - 1900 MHz without gaps with all mode reception... twin frequency display, alphanumeric text comments. **PC-MANAGER** (versions for DOS and Windows) is an optional utility for memory & search bank management. The software (which works in conjunction with the optional CU8232 interface) permits upload, download, editing, renumbering, saving of data, editing of auto-mode bandplan data (plus a built-in terminal driver for DOS and extra features for Windows including spectrum display and sound recording to disk).

AR8000 UK £349.00
CU8232 interface £99 (£3)
PC-MANAGER £49 (£3)
State DOS or WINDOWS
SC8000 soft case £17.95 (£1.50)
CR8000 tape control interface £44.90 (£2)

Short Wave Column - And Here's One We Prepared Earlier...

When I started this piece, I was going to rant on about people buying black boxes, the noble art of home construction being lost and the next answer coming out of a cardboard box. Then I decided the audio from my AOR 7030 was too good to miss and it should be routed across the shack to the Quad II. Yes, it can stand "The Closest Approach to the Original Sound" - valves and all. Mail me if you remember that slogan...

So I came to solder a 5-pin DIN plug. After trading in the soldering iron for a computer mouse three years ago, I found I couldn't do it. Thirty years of experience at the workbench lost in three...

So, my project is a Back-to-Basics Special. Get a yellow ferrite ring from that Rally Bargain Bag. Get a length of enamelled copper wire. Wind four turns on the ring and bring out the ends. Make a second winding of twelve or so turns. Connect the 12-turn winding to your long-wire and a very good earth. Connect the 4-turns to the 50 ohm antenna input of your radio.

At a stroke, you will have a better match to your radio and full static protection. The AOR 7030 already has this and John Thorpe will have given it a lot more thought than I just did. Happy listening and let me have your New Year Radio Resolutions, e-mail **bob@aor.co.uk**

AR5000 high performance in a single wide band receiver...

The AR5000 advances the frontiers of performance providing excellent strong signal handling, high sensitivity and wide frequency coverage with microprocessor facilities to match. A great advancement in wide band front end design has been made, partly due to the introduction of automatic electronic preselection between 500kHz - 999.999999MHz with low pass, band pass and high pass filters for other bands. The preselection may be "manually tracked" when monitoring spot frequencies to help reduce any potential effects of interference caused by nearby monster transmitters. 'True receive' throughout its range, not an up-converter above 1GHz.

There simply is not enough room here to list all the available microprocessor facilities, in fact the whole story of this feature-rich miracle is not revealed until you are able to study the operating manual... alternatively give us a call and "chat through" all the features!

- 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
- TCXO fitted as standard
- Multiple I.F. bandwidths 3, 6, 15, 30, 110 & 220kHz (500Hz optional)
- Auto mode bandplan selection
- Multi-function LCD with 8 character alpha-text comments
- Extensive search & scan facilities
- "Cyber Scan" fast search & scan speeds up to 45 channels / increments per second
- Analogue S-meter
- 1000 memory channels and 20 search banks with EEPROM storage
- Auto memory store
- Extensive RS232 command list
- Sleep timer / alarm
- Standard DTMF decode / display
- Optional CTCSS search & decode
- Two aerial inputs with programmable switching from the front panel
- Flexible BANK LINK menu with enhanced features such as DELAY, PAUSE, VOICE etc
- Built-in squelch tone eliminator
- Audio and discriminator out plus tape recorder control
- SDU ready
- More, more, more...!

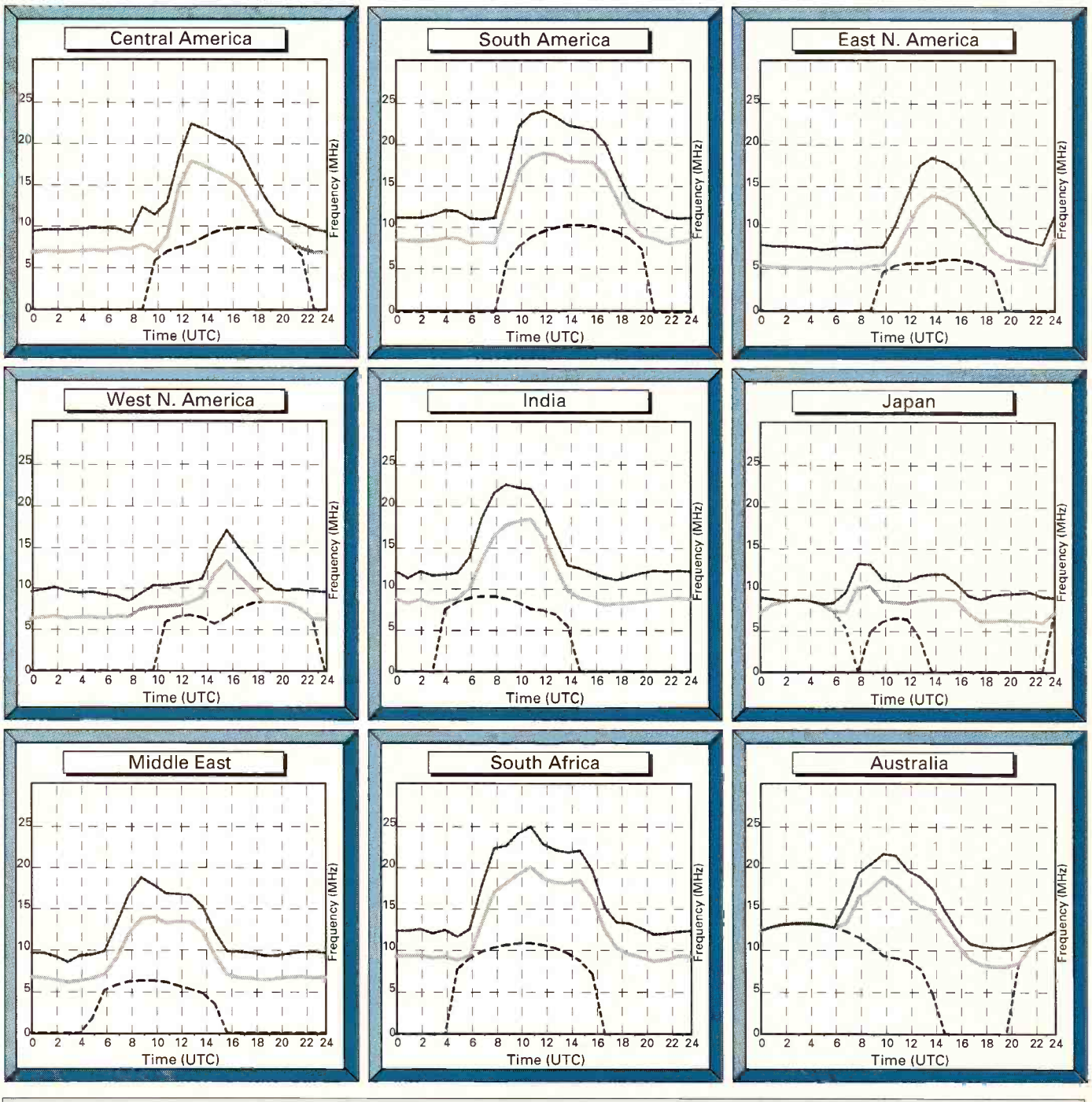
Descriptive leaflet available, please call

RRP £1749

Jacques d'Avignon VE3VIA

World Propagation Forecasts December

Circuits to London



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.

FREQUENCY EXCHANGE

Again a bumper response, your input into this feature is very encouraging. If you haven't seen your contributions appear yet, don't be disheartened, we can only publish highlights due to the volume of logs received. You will help us if you can a provide your logs on disk or via E-mail if possible; if not, then you can save lots of editorial time by keeping **exactly** to the format on this page i.e. same sequence and headings. We look forward to this feature growing - it's all down to you.

If you provide logs on disk, please note that we can read PC and Mac format high density 3.5in disks. Preferred, is MS Word for the Mac. We can, however, accept most mainstream wordprocessing formats. If you have an obscure package, then please submit a plain ASCII file.

Key

CG	Coast Guard
OB	Outside Broadcast
DMBC	Doncaster Municipal Borough Council
USAF	United States Air Force
USN	United States Navy
WX	Weather

MHz	Mode	Time	Call	Location	Monitor	Notes
2.596	u.s.b.	1100	-	Humberside	dp	Humber CG/ Lifeboats.
3.168	u.s.b.	2105	-	North Sea	dp	Oil rig safety vessels.
3.636	c.w.	0700	YMB	Izmir	lvt	Turkey, listed six yrs ago as USN. WX forcast or shipping in English and Turkish.
4.385	u.s.b.	1930	Motorola	Portishead	dab	Portishead Radio, wkg BT Global Challenge yachts.
4.724	u.s.b.	-	-	Incirlik AFB	lvt	USAF, mostly coded and SKYKING messages.
4.730	u.s.b.	H+15	-	Akrotiri	lvt	RAF, WX reports far Akrotiri, Lanaca & Paphos. Other airfields using coded ID.
5.873	u.s.b.	1420	Y10	-	dp	Radio check.
6.9925	u.s.b.	1100	MFJ04	-	dp	Army cadets.
27.69125	n.f.m.	-	MEMOPHIS	Bristol	ca	SAS Security Patrols, wkg RED LEADER.
49.890	n.f.m.	-	-	London	ca	CSM motorcycle training.
70.5625	a.m.	1500	NY	Lincs.	dp	Lincolnshire Fire Brigade.
71.100	a.m.	1600	XT	Humberside	dp	Humberside Fire Brigade.
85.100	n.f.m.	1321	-	Humberside	dp	Anglia water.
85.175	n.f.m.	1154	-	Humberside	dp	BT engs. Lincs.
86.025	n.f.m.	-	SIERRA	Brecon	ca	Mountain Rescue, duplex with 75.525
118.550	a.m.	1420	-	Humberside	dp	Humberside Airport Tower.
122.375	a.m.	0940	-	Humberside	dp	Bond Helicopters - Humberside Airport.
140.215	n.f.m.	1608	-	Humberside	dp	'Gas service'.
141.100	a.m.	1030	-	?	dab	French/Belgium Air Force, air-air.
141.202	n.f.m.	0940	-	Yorks.	dp	BBC Radio York talkback.
141.230	n.f.m.	1209	-	Yorks.	dp	BBC Radio Sheffield tolkback.
141.425	a.m.	1030	-	?	dab	French/Belium Air Force, air-air.
142.775	a.m.	24hr	-	Doncaster	bh	Valley SQNs.
143.900	n.f.m.	-	-	Nationwide	ca	Data Irish Guards Band Convoy.
149.400	n.f.m.	-		Porton Down	ca	MOD Police.
159.4875	n.f.m.	-	-	London	ca	Arsenal FC Box Office.
159.4875	n.f.m.	-	-	London	ca	Plaza Shopping Centre - Shorrock Security, Oxford St.
159.4875	n.f.m.	-	-	London	ca	Warner Bros Store, Regent St.
159.500	n.f.m.	-	-	London	ca	Brent Cross Shopping Centre security.
159.525	n.f.m.	-	-	H/row Airport	ca	Pink Elephant Parking.
159.5875	n.f.m.	-	-	Bristol	ca	Balloon Festival.
163.925	n.f.m.	-	-	London	ca	Oval Cricket Ground stewards.
163.925	n.f.m.	-	-	London	ca	Railtrack Ops.
163.950	n.f.m.	-	-	Chesterfield	ca	Hospital porters.
164.05	n.f.m.	1334	-	Humberside	dp	Boy Scouts ch.1.
164.6875	n.f.m.	-	-	West Country	ca	Brigadier beaters at Pheasant Shoot.
164.8625	n.f.m.	-	-	Swansea	ca	Brano CTL DSS.
165.050	n.f.m.	0915	-	Lincoln	dab	A2B taxis - base.
166.1125	n.f.m.	1112	-	Lincolnshire	dp	N.E. Lincs Council.
166.275	n.f.m.	0950	-	Lincolnshire	dab	Ambulance service - base.
167.3125	n.f.m.	0945	-	Doncaster	bh	Racecourse.
168.0625	n.f.m.	1815	-	Humberside	dp	Hull Daily Mail.
169.3125	n.f.m.	1018	-	Doncaster	bh	Motorcycle Tests.
169.325	f.m.	-	-	Pwllheli	dh	Butlins Camp Security.
169.3625	n.f.m.	24hr	-	Doncaster	bh	TESCO Warehouse.
169.850	n.f.m.	0915	-	Lincoln	dab	A2B taxis - mobile.
171.075	n.f.m.	0950	-	Lincolnshire	dab	Ambulance service - mobile. Lincolnshire Air Ambulance helicopter MEDIC01 is heard on the mobile frequency when in transit to a serious incident.
243.4	a.m.	1055	GOLF72	Bodmin	aj	Culdrose Director.
248.275	a.m.	2030	48FS	Lakenheath	dab	Wkg Ops - USAF.
340.550	a.m.	1045	-	Humberside	dp	Range North Sea show ground.
343.675	a.m.	2030	494FS	Lakenheath	dab	Wkg Ops - USAF.
431.595	n.f.m.	-	-	Battersea Park	ra	Park wardens. It was a major incident for them when thay couldn't find the keys to the cricket pavilion.
440.074	n.f.m.	-	-	Wandsworth	ra	Council workers clearing blocked drains etc.
441.000	n.f.m.	-	-	Cen. London	ra	Traffic Wardens
446.2375	n.f.m.	-	-	London	ca	Apollo Theatre.
446.2375	n.f.m.	-	-	London	ca	RADA.
446.3375	n.f.m.	-	-	London	ca	Buckingham Palace Tours.
446.3875	n.f.m.	-		London	ca	Old Bailey.
447.6875	n.f.m.	-	-	London	ca	Royal Opera House.
448.9875	n.f.m.	-	-	Bucks.	ca	Aldermaston AWE.
449.650	n.f.m.	-	-	Bucks.	ca	Aldermaston AWE.
453.150	n.f.m.	-	-	Uxbridge	ca	Pavaillion Shopping Centre security.
453.500	n.f.m.	-	-	Bromley	ca	Glades Shopping Centre security.
453.575	n.f.m.	0430	-	humberside	dp	Oil control Killingholme.
453.625	n.f.m.	0830	-	Lincoln	dab	Hospital maintenace/security - base.
453.650	n.f.m.	0845	-	Lincoln	dab	City Council workers - base.
453.90	n.f.m.	1310	-	Doncaster	bh	BR Engineers.
453.975	n.f.m.	-	-	London	ca	Kodak Film plant.
455.075	n.f.m.	-	-	Cen. London	ra	'Capital' Eye in the Sky - very useful amusing chat in between 'official' broadcasts.

Don't delay, post your frequencies to the Editorial Offices or E-mail us on: freq@pwpub.demon.co.uk

MHz	Mode	Time	Call	Location	Monitor	Notes
456.275	n.f.m.	2215	-	Doncaster	bh	Power station.
456.350	n.f.m.	-	-	Reading	ca	Campus Reading University security.
456.625	n.f.m.	-	-	London	ca	BBC World Wide Staff security.
456.675	n.f.m.	-	-	Windsor	ca	Windsor Castle Wardens.
456.8625	n.f.m.	-	-	London	ca	Cable and Wireless security.
460.125	n.f.m.	0830	-	Lincoln	dab	Hospital maintenace/security - mobile.
460.150	n.f.m.	0845	-	Lincoln	dab	City Council workers - mobile.
460.450	n.f.m.	-	-	Croughton	ca	USAF Security Police.
460.525	n.f.m.	-	-	London	ca	JP HMP Pentonville.
460.525	n.f.m.	1001	OSCAR	Lincoln	dab	Lincoln Prison.
461.325	n.f.m.	-	-	Nationwide	ca	British Aerospace Security Police.
461.325	n.f.m.	1315	-	Doncaster	bh	DMBC Security.
461.3375	n.f.m.	2130	-	Doncaster	bh	WB Cinema.
461.375	n.f.m.	-	-	Liverpool	ca	Virgin Mega Store.
461.375	n.f.m.	-	-	London	ca	Sports Centre Doormen.
461.400	n.f.m.	-	-	London	ca	Her Maj. Theatre.
461.4625	n.f.m.	1005	-	Doncaster	bh	Traffic Wardens.
462.475	n.f.m.	1330	-	Doncaster	bh	'Yorkshire TV outlet'.
468.84375	n.f.m.	0700-0900	-	Doncaster	bh	'Eye-in-the-sky' OB.
469.0125	n.f.m.	1050	-	-	dp	BBC Radio Humberside OB.
469.2125	n.f.m.	1645	THUNDERBIRD 1	Sheffield	dab	Traffic helio, reporting on the area.

Aircraft Company Frequencies

From Chelsea, RA sent a listening tip in addition to his logs. He suggests that listening around the upper segment of 131MHz will yield some interesting traffic. This is where the airline company frequencies are allocated. You'll find incoming pilots reporting on the condition of the aircraft, how much fuel they'll need, whether they have a VIP or disabled passenger on board and so on. He says its often quite amazing to hear how casually they talk about the bits and pieces that have stopped working or fallen off their aircraft.

UNIDs No More

Now for some identification of some UNIDs from October's 'Exchange. Godfrey Manning our 'Airband' columnist has supplied some answers which follow. If you are able to identify any of the signals we include in this feature, then please feel free to write. We will be pleased to publish the details for all our reader. Don't forget, if you wish to remain anonymous please tell us.

122.75 Danger Area Activity Information Service for:

Pembury D117, D118
Salisbury Plain D123, D124, D125, D126, D128
Cowden D306
Donna Nook D307
Wainfleet D308
Eskmeals D406C
Tain D703
Rosehearty D708

All listed on *RAC 5-0-1* chart, which Godfrey advises is free from the CAA, see the *Airband Factsheet* as plugged on page 62 of this issue.

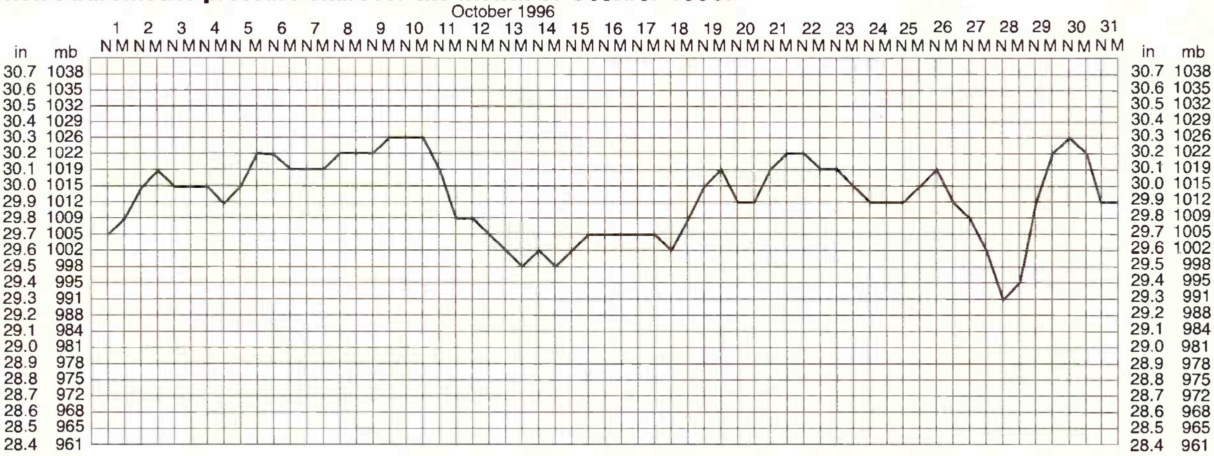
122.95 DEPCOMMShared with HEMS-Ops, London Hospital medical helicopter.

Dick Ganderton, c/o *SWM* Editorial Offices, Broadstone

Propagation Extra

I believe that it is still essential that those readers who have an ongoing interest in propagation still have access to the various pieces of information collated by Ron Ham. I have asked Ron to continue to provide his monthly barometric pressure charts in the same format as before. In the meantime I am trying to arrange for a regular supply of sunspot charts and other similar information. If there are any readers who would be prepared to provide such information **on a regular basis**, please get in touch with me at the Editorial Offices, Broadstone.

Ron's barometric pressure chart for the month of October 1996.



LW Maritime Beacons

Many beacons were logged during July, August and September by the twenty-one listeners who contributed to the chart. Quite a few in the frozen north were received at night by **Peter Rycraft** (Wickham Market) but less than usual were heard by him from the Mediterranean area. Extensive logs were compiled mainly at night by **Robert Connolly** (Kilkeel) and **Steve Cann** (Southampton). Steve heard for the first time Jaroslawiec, Poland (JA) on 295.0 and Myggenaes, Faeroes (MY) on 303.0 - see below. The Faeroes beacons at Akraberg (AB) 381.0 and Nolso (NL) 404.0 were also heard at night by several listeners.

With regard to the beacon at Myggenaes, Faeroes (MY), **Kenneth Buck** (Edinburgh) says "I have never heard it on 303.0 but I can hear it on 337.0. I note that it is listed on 303.0 in the September *SWM* but there is a strong Spanish beacon, also MY, on 304.5."

Many beacons in Scandinavia were received after dark by **Peter Polson** in St. Andrews. Several in Iceland and Greenland were heard after midnight by other listeners. The Icelandic Dalatangi Lt (DA) 305.7 was logged at 0120UTC by **John Eaton** in Woking. It is interesting to note the sky waves from the Prinz Christian Sund, Greenland (OZN) 372.0 were picked up at dawn (0518) by **Dave Dawson** in Birmingham. He heard several beacons for the first time including the Canaries beacon at Punta Lantailla (NA) 291.9. On August 28 the static was so bad that **Brian Heath** (Stapleton) had to close down at 0230UTC. Over in Switzerland **Fritz Nusser** (Arbon) found the maritime beacons were very weak but he heard ten at night.

Very welcome first reports were sent along by **Kenneth Addy** (Hyde) and **Tim McClellan** (Christchurch). Kenneth used a Lowe HF-225 with a loop. He heard the Polish beacon (H) at Hel Lt on 306.5 during seven consecutive nights! Tim used the receiver section of his Kenwood TS-140S plus a 20m wire. He compiled an interesting list during daylight but was surprised that more beacons could not be heard at night.

Some quite distant beacons were picked up during daylight by **Albert Moore** in Douglas, IoM - perhaps the sea paths helped! Quite extensive logs were also compiled by other DXers during the daytime - see chart.

My thanks to everyone who has contributed to this quarterly series during the year. I wish them and all readers a Happy Christmas and good DXing in 1997.

Freq (kHz)	C/S	Station Name	Location	DXer
284.5	LZ	Lizard Lt	S.Cornwall	A*,B,C,D,F,G,H,I,L,P*,R,V
284.5	MA	Cabo Machichaco	N.Spain	A*,C*,D*,E*,F*,I,L,N,P*,U*,V*
284.5	PR	Porkkala	Finland	A*,D*,P*
285.0	NO	Cabo de la Nao Lt	S.Spain	A*,C*,D*,I,V*
285.0	NP	Nieupoort W.Pier	Belgium	C*,E,F,P*
286.0	TR	Tuskar Rock Lt	S.Ireland	A*,B*,C,D,F,H,L,O*,P*,R,U*
286.5	AL	Almagrundet Lt	Sweden	C*,D*,P*
286.5	BY	#Baily Lt	S.Ireland	C,I
286.5	FI	Cala Figuera	Majorca	A*,C*,F*,P*,V*
286.5	FT	Cap Ferret Lt	W.France	A*,C,D*,I,N,P*
286.5	NK	Inchkeith Lt	F of Forth	O*
286.5	PZ	Cozzo Spadaro	Sicily	C*
287.3	BT	Bjargtangar Lt	Iceland	C*
287.3	IB	I.Berlenga	Portugal	C*,P*
287.3	LE	Leba Rear	Poland	C*,P*
287.3	OD	Swinoujscie	Poland	A*,P*
287.3	RO	Rozewie	Poland	C*
287.5	DO	Rosedo Lt	France	C*
287.5	FR	Faerder Lt	Norway	A*,C*,O*,P*
287.5	MD	Cabo Mondego	Portugal	C,P*
287.5	SE	Sete Mt St Clair	S.France	C*
288.0	HH	Hoek van Holland	Holland	C,P*,R
288.0	KL	Sklinna Lt	Norway	A*,C*,O*,P*
288.0	OH	Old Hd of Kinsale	S.Ireland	A*,B,C*,D*,I,L
288.0	FI	Cabo Finisterre Lt	N.W.Spain	A*,B*,C,D,F*,I,P*,V*
288.5	UD	Cabo Salou	S.Spain	P*
288.5	YM	Ijmuiden Lt	Holland	B,C,D,P*
289.0	BL	Butt of Lewis Lt	Is of Lewis	A*
289.0	BY	Baily Lt	S.Ireland	A*,B,C,D,I,P*
289.5	KY	Oksoy Lt	Norway	C*,E*
289.5	LO	Landsort S Lt	Sweden	A*,C*
289.5	MN	Hammerodde	Denmark	A*,C*,P*
289.5	NP	Punta Carena	Italy	C*,V*
289.5	SN	Ile de Sein NW Lt	France	B,C*,L,P*,T,V
290.0	AV	Aveiro	Portugal	C*
290.0	FD	Fidra Lt	F of Forth	C*,O*
290.0	MR	Montedor	Portugal	C*
290.5	DY	Duncansby Hd Lt	NE.Scotland	C,O*
290.5	LL	Hallo Lt	Sweden	C*,P*
290.5	SB	S.Bishop Lt	Pembroke	A*,B,C,D,E,F,G,H,I,L,P*,R,T
290.5	VI	Cabo Villano Lt	N.Spain	A*,B*,C,D,E*,F*,G*,I,J*, N,O*,P*,Q,S*,V
290.5	VY	Visby	Sweden	P*
291.0	CF	Capo Ferro	Sardinia	P*
291.0	OR	Orskar Lt	Sweden	C*,P*
291.0	SN	Cabo San Sebastian	S.Spain	A*,C*
291.0	TG	Torsvag Lt, Koja	Norway	J*,P*
291.5	MN	Maisen Nos	Bulgaria	J*
291.5	SU	South Rock LV	Co.Down	A*,B*,C,D,E,F,I,N,O*,P*,Q,R,T
291.9	LT	La Isleta	Canaries	C*
291.9	NA	Punta Lantailla	Canaries	A*,B*,C*,D*
292.0	MH	Mahon, Minorca	Balearic Is	A*,C*
292.0	SJ	Souter Lt	Sunderland	A*,B,C,D,F,I,M,N,O*,P*,R
292.5	SM	Pt St.Mathieu Lt	France	A*,B,C,D,E,F*,G,I,L,P*,R,T,V
293.0	CP	St.Catherine's Lt	I.o.W.	A*,B*,C,D*,E,F*,G,H,I, N,P*,R,T,U*,V
293.0	RN	Rhinns of Islay Lt	Is of Islay	C,I,O*
293.0	SY	Svinoy Lt	Norway	C*
293.5	RO	Cabo Silleiro Lt	N.Spain	A*,C*
294.0	KU	Kullen High Lt	Sweden	A*,C*,P*
294.0	PH	Cap d'Alprech	France	A*,B*,C,D,E*,F*,G,H,I,L, N,P*,R,S,T,U*,V
294.5	BA	#Black Hd Lt	N.Ireland	Q
294.5	MH	Mohni Lt	Estonia	C*
294.5	PA	Pakrineem Lt	Estonia	C*
294.5	PS	#Pt.Lynas Lt	Anglesey	A*,C,H,I,Q
294.5	UK	Sunk Lt V	Off Essex	B*,D,E*,F*,N,P*,R,S*,T*,U*,V
295.0	DV	Djupivogur	Iceland	A*,C*
295.0	JA	Jaroslawiec	Poland	A*,B*,C*,D*,I
295.0	SN	Sletnes Lt	Norway	C*,P*
295.5	CB	La Corbiere Lt	Jersey C.I.	B,C,L,P*,R,T,V
295.5	CR	Cap Couronne	France	C*,P*
295.5	RE	La Rochelle	France	C
296.0	BH	Blavandshuk Lt	Denmark	A*,B*,C*,D*,I,O*,P*
296.0	GR	Goeree Lt	Holland	B*,D*,P*
296.0	KN	Skrova Lt	Norway	A*,C*,O*
297.0	CH	Civitaveccia	Italy	J*
297.0	FG	Pt de Barfleur Lt	France	A*,B*,C*,D,E*,F*,G,H,I,L, N,P*,R,S,T,U*,V
297.5	MA	Mantyluoto	Finland	A*
297.5	MK	Mys Mikulkin	SSR Arctic	C*
297.5	PS	Cabo Penas Lt	N.Spain	A*,C,I,Q
298.0	GX	Ile de Groix	France	A*,B,C*,E*,L,R,T*,V
298.0	TA	Cabo Gata	S.Spain	P*
298.5	RR	Round Is Lt	Is Scilly	A*,B*,C,D,E,F*,G,H,I,L, N,O*,P*,R,T,U*,V
298.5	SW	Skagen	Denmark	C,P*
298.8	HO	Hornbjarg	Iceland	C*
299.0	AD	Ameland Lt	Holland	A*,C,I,K,N,P*
299.0	BN	Les Baleines	W.France	C*,P*
299.0	O	Tarifa	S.Spain	C*
299.0	UN	Understen Lt	Sweden	C*
299.5	NP	Nash Pt Lt	S.Wales	A*,B*,C,D,E,F,G,H,I,L,P*,R,T,U*,V
299.5	SK	Skomvaer Lt, Rost	Norway	C*
299.5	VR	Utvaer Lt	Norway	A*,C*,N,O*,P*
299.5	VS	Vieste Lt	Italy	P*
300.0	MZ	Mizen Head	S.Ireland	C,D*,I,L,P*
300.0	TI	Cap d'Antifer Lt	N.France	B,E,H,I,P*,R,V
300.5	DU	Dungeness Lt	Kent	A*,B*,D,E*,F,G,H,I, L,N,P*,R,S,T,U*,V
300.5	LA	Lista	Norway	A*,C*,D*,H,I*,O*,P*
301.0	CA	Pt de Creach	France	A*,B*,C,D,E*,F*,G,H,I, L,N,R,T,U*,V
301.0	ER	Eierland Lt	Holland	A*,C*,P*
301.1	HA	Pt. del Hank	Morocco	C*
301.1	RG	Raufarhoefn	Iceland	C*,P*
301.5	KD	Kinnards Hd Lt	NE.Scotland	A*,B,C*,F,I,N,O*,R
301.5	L	Torre de Hercules	N.Spain	A*,B*,C*,P*
301.5	OB	Hoburg	Sweden	A*,C*,P*
302.0	RB	Cherbourg Ft W Lt	France	A*,B*,C,D,E*,F,G,H,I, L,N,P*,R,T,U*,V
303.0	D	Rota	SW.Spain	C*
303.0	FB	Flamborough Hd Lt	Yorkshire	A*,B,C,D,E*,F,I,N,O*,P*,S,V
303.0	FV	Falsterborev Lt	Sweden	A*,B*,C*,O*
303.0	MY	Myggenaes Lt	Faeroes	B*,E*
303.0	YE	Ile d'Yeu Main Lt	France	C*,H,L,P*,V
303.4	SM	Cabo de S.Maria	Portugal	E
303.4	VC	Cape St.Vincent	Portugal	P*
303.5	BJ	Bjornsund Lt	Norway	A*,C*,D*,I*,N,O*
303.5	FN	Feistein Lt	Norway	F,P*
303.5	GR	Gedser	Denmark	A*
303.5	IA	Llanes Lt	N.Spain	A*,C*
303.5	OR	Punta de Llobregat	S.Spain	A*,C*
303.5	VL	Vlieland Lt	Holland	A*,B*,C*,D,E,F,I,K,L, P*,R,S,T,U*,V
304.0	PS	Pt Lynas Lt	Anglesey	A*,B*,C,D*,E,F*,I,N,O*,P*,Q,R
304.0	SB	Sumburgh Hd Lt	Shetland Is	A*,O*
304.5	MY	Cabo Mayor Lt	N.Spain	A*,F*,G*,N,P*,V
305.0	FP	Fife Ness Lt	SE.Scotland	A*,C,F,I,O*,R
305.0	GL	Ile de Giraglia Lt	Corsica	C*,Q
305.5	AL	Pt d'Ailly Lt	France	A*,B*,C,D,E*,F*,G,H,I,L, N,O*,P*,R,S,T,U*,V
305.7	DA	Dalatangi Lt	Iceland	A*,B*,E*
306.0	FN	Walney Is Lt	Off Lancs	A*,B,C,D,F*,I,M,N,O*,P*,R,U*
306.0	TN	Thyboron	Denmark	P*
306.5	GJ	Le Grand Jardin Lt	France	L,V
306.5	H	Hel Lt	Poland	A*
306.5	KL	Kolkasrags	Latvia	A*
306.5	OR	O.Osmussaar	Estonia	C*
306.5	RS	Ristna	Estonia	A*,C*,I*,P*
306.5	SY	Sorve	Estonia	C*
306.5	UT	Utsira	Norway	A*,B*,C*,D*,E*,F,I,N,O*,P*,R
307.0	GL	Eagle Is Lt	Ireland	A*,C,I,P*,Q
308.0	PI	Cabo Espichel	Portugal	C*
308.0	RC	Cabo Roca	Portugal	C
308.0	RD	Roches Douvres Lt	France	C,P*
308.0	SN	Cabo de Sines Lt	Portugal	P*
308.5	NZ	St Nazaire	France	B,C*,I*,L,P*,V
309.0	WW	Ventspils	Latvia	C*
309.5	BA	Punta Estaca Bares	N.Spain	A*,C*,D*,F*,I,N,O*,P*,Q*
309.5	FH	Fruholmen Lt	Norway	C*
309.5	MA	Marstein Lt	Norway	A*,C*,E*,O*,P*
309.5	PB	Portland Bill Lt	Dorset	A*,B*,C*,D,E*,F*,G,H,I, L,P*,Q,R,T,U*,V
310.0	:ER	Pt de Ver Lt	N.France	A*,B*,C*,D,E*,H,L, P*,Q*,R,T,U*,V
310.3	GV	Goltur	Iceland	P*
310.5	AS	Castellon	Spain	C*
310.5	BO	Bokfjord Lt	Norway	C*
310.5	SG	Sjaellands N Lt	Denmark	A*,C,O*,P*
311.0	GD	Girdle Ness Lt	NE.Scotland	A*,C,O*
311.0	NF	N.Foreland Lt	Kent	A*,B*,D,E*,F*,H,I, L,N,P*,R,S,T,U*,V
311.5	LP	Loop Hd Lt	S.Ireland	A*,C,D*,I
311.5	SA	Senigallia	Italy	J*
312.0	HO	Tennholmen Lt	Norway	A*,C*
312.0	OE	Oostende	Belgium	A*,B,C*,D,E,F,H,N,P*,Q,R,S,T,V
312.0	UH	Eckmuhl Lt	France	A*,C*
312.5	AK	Akmenrags	Latvia	A*,C*
312.5	BK	Baltiysk	Russia	A*,C*
312.5	BT	Mys Taran Lt	Russia	A*,C*,J*,P*
312.5	CS	Calais Main Lt	France	B*,C,E,F*,P*,R,S,T
312.5	DB	Doobskiy	Ukraine	C*
312.5	KA	Klaipeda Rear Lt	Lithuania	A*,C*
312.5	LB	Liepaja	Latvia	A*,C*
312.5	SR	Skardsfjara	Iceland	A*,B*,C*
312.5	VS	Cabo Estay Lt	N.Spain	L,N,P*
313.0	HA	Halten Lt	Norway	A*,C*,P*
313.0	PA	Cabo de Palos Lt	S.Spain	A*,B*,C*,N,P*,V
313.0	TY	Tory Is Lt	N.Ireland	A*,C,I,O*,Q
313.5	BR	Cap Bear Lt	S.France	A*,B*,C*,E*,I,J*,P*,T,U*,V*
313.5	CM	Cromer Lt	Norfolk	A*,B*,D,E,F*,I,M,N,P*,R,S,V
313.5	OG	Olands Sodra Grd	Sweden	C*
313.5	WB	Weser Pilot V.	Germany	C*
314.0	HK	Hekkingen Lt	Norway	C*
314.0	PQ	Porquerolles	S.France	A*,C*,J*,P*
314.0	VG	Ile Vierge Lt	France	A*,B*,C,D,E*,G,H,I,L, N,O*,P*,Q,R,T,U*,V
314.5	SK	Strandhofn	Iceland	C*,P*
314.5	TL	Punta D.Penna	Italy	A*,C*,J*,V*
315.5	ND	Nidden	Lithuania	C*
316.0	IN	Ingolfshofdhi Lt	Iceland	A*,B*,C*,P*
319.0	LEC	Stavanger	Norway	A*,B*,C,D*,E*,F*,G,H,I,J*,M, N,O*,P*,Q*,R,S,T,U*,V
328.0	HB	Holsteinborg	Greenland	P*
331.0	FH	Frederikshab	Greenland	P*
367.0	JV	Jakobshavn	Greenland	C*
372.0	OZN	Prins Chris's Sund	Greenland	A*,B*,C*,D,I*,P*
381.0	AB	Akraberg	Faeroe Is	A*,B*,C*,D*,E*,I*,N,P*,U*
404.0	NL	Nolso	Faeroe Is	A*,B*,C*,D*,E*,I*,P*,U*
414.0	FK	Frederikshavn Bkw	Denmark	P*

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

DXers:-

(A) Kenneth Addy, Hyde.
(B) Steve Cann, Southampton.
(C) Robert Connolly, Kilkeel.
(D) Dave Dawson, Birmingham.
(E) John Eaton, Woking.
(F) Brian Heath, Stapleton.
(G) Tim McClellan, Christchurch.
(H) George Millmore, Wootton, IoW.
(I) Albert Moore, Douglas, IoM.
(J) Fritz Nusser, Arbon, Switzerland.
(K) Fritz Nusser, while in Holland.
(L) Fred Pallant, Storrington.
(M) Clare Pinder, while in Appleby.
(N) Peter Pollard, Rugby.
(O) Peter Polson, St.Andrews.
(P) Peter Rycraft, Wyckham Market.
(Q) Tom Smyth, Co.Fermanagh.
(R) Philip Townsend, E.London.
(S) Eric Tubman, Whitstable.
(T) Peter Westwood, Farnham.
(U) John Woodcock, Basingstoke.
(V) Ross Workman, Shoreham-by-Sea.

Paul Essery GW3KFE, PO Box 4, Newtown, Powys SY16 1ZZ

Amateur Bands Round-up

Listening to the Amateurs

Let's have all your news and comments, sent as usual for the start of the month.

A nice little chuckle to start with this month. I think I said some long time ago, that a solar flux figure of 67 was about the bottom of the pit. On the 18, 20 and 21 July, believe it or not, the record shows solar flux as being down to 65, and it is believed that this is the lowest ever recorded. Indeed the packet-cluster software can't take in a flux number lower than 66. Ah, well! Back to the drawing-board.

It's nice to see in the current DX News Sheet that the PJ9T operation for the CQ WW s.s.b. contest has laid it on the line. No partial calls, no list operation, no net operation. Let's hope it becomes the fashion again to insist on complete callsigns - perhaps that way the DX signal could enter more calling stations in the log. Perhaps the DX Advisory Committee in ARRL could go a wee bit further and insist that no operation be accredited for DXCC until they guarantee this, and also insist on accepting cards sent via the Bureau.

Puzzle!

Not quite amateur, but sounding like it, says **Gareth Edwards** of Llangernyw in Clwyd, enclosing a tape of what he heard, and tape-recorded around 4.5MHz. In fact, one could guess that this signal is far from being amateur; the more distant end has a noticeable American accent, while the nearer one was on the edge of receiver and indeed tape recorder overload. Having played the signals back both on the desk tape recorder and then on the domestic hi-fi to get the very best out of it, one comes to the conclusion it is probably some sort of military ground-to-air traffic. What a pity the precise frequency wasn't noted down to give us a bit more data. Actually, one must admit that it was a professional demonstration of bad and sloppy operating!

Next we have a letter from **Mr R. Hubery** who lives in Darlington. He has just bought a Roberts Radio RC818 after years of listening to the 'Donald Duck' noises of s.s.b. on an a.m. receiver - and also for the thought that it would be nice to just dial in a chosen frequency instead of as he aptly put it "spending more time tuning them in than listening to them!". A first foray on to the amateur bands occurred on September 14, where there was a contest in full swing and DL0AR busily calling CQ contest. On the Sunday afternoon, 9A5D was noted working successively VK5GN in Australia and NN3Q in eastern America. Then followed various Europeans calling CQ contest, and - inevitably - a few people who had to be told that on 14MHz there are no points for one's own continent. Later on a switch to 7MHz showed up SP5PBE in contact with UN3AB. By Wednesday 18th, a tune on 3.5MHz yielded GP5KN on Sark working G4UDR and G3OOP. Still on 7MHz, the following evening GW4IMC was noted working DF8CG, at 1850 IV3VER busily calling CQ and receiving no replies - and, believe it or not, still calling CQ on the same spot without replies at 2215!

Our anonymous contributor next. She comments somewhat acidly on the general level of operating in Europe, and contrasts it unfavourably with the JAs. Alas, it is true today, just as it was forty years ago, and just as it was in the pre-WW2 days when my predecessor, the late G6QB was taking the mickey in what was then the *RSGB Bulletin* to great effect. Later he went on to invent Arabackle Oblifork, G1BF and MO1FFI to make us laugh while ramming home a lesson. A lesson, incidentally which all of us have needed at one time or another - none of us are perfect!

She then changes tack entirely and asks whether one should spend money on an antenna tuner, or energy putting metal down into the ground. Really, one needs both if one has the normal 'end-fed piece of wire' which is what most of us can run to. My own methods involve firstly trenching in several random lengths of wire, by opening up a slit in the ground with a spade, dropping a wire into the slit and then treading the disturbed area back down again. With care there will be no visible evidence when the job is completed. Another way is to give the grass a cut with the mower set to cut as short as possible, followed immediately by laying down wire netting pinning it in place, and soldering together the seams. If done carefully, again the result will be invisible as the grass grows through. Ideally everything should all come together at the earth terminal of the tuner or if no tuner the receiver. In practice, though, one usually ends up with the radials coming together outside, and from the junction coming as a single wire to the tuner. In this case, the 'single wire' could in fact well be a piece of coaxial-cable braid. I always keep old coax cable, and usually the inner conductor and the braid end up in different projects. Everything you can organise can help the earth system; for instance all my wire fencing is joined into the radio earth system. That having been said, there seems to be a clear case to show that several insulated quarter-wave above-ground radials forming a ground plane are more effective than buried non-resonant. There is a slight trap here, though, in that both theory and practice seem to agree that each radial should resonate at the same frequency. Remember the standard ground system for broadcasters in USA is 120 half-wave radials, and you have something to aim at! In practice of course the first twenty or so give the most return for one's efforts.

Down south now, to the Isle of Sheppey where **Ted Trowell** sticks to c.w. On 7MHz he found SV9/SV1AD, CN8BK, KP4XX at 0500 while at 0700 there were ZL4AU, TK2FC, and at 1800 XZ2BH and JA7AGO; with time at 2100 to account for PU7AGQ. At 10MHz the 0700 stint yioelded ZL4SEA, while at 1800 it was 9M2TO; and 2100 did the business for EA8CN and 9H3WD. Morning on 14MHz said OH3GZ/OHo, but at 1500 Ted found 9M2JJ, AA7JV, TA2FE, VQ9VK, 9H1DV, SV8/G0KBO, 9V1ZB, ZD8DEZ and N0BSH. Three hours later it was FM5FJ and ZB2FK.From there 18MHz was given a going-over and N6AR, 4S7NR, FG/PA3EWP, JH9ON and 9M2TO were all picked up around 1500. Finally, a foray on 21MHz around the 1500 period gave LU9AUY, PY7XC (Itamaracas Is), J28JD, LU2YA, ET3BN, and ZS6BYE. All times are UTC of course, and all c.w.

Our next is a piece of ISWL headed notepaper which comes from **Colin Dean** in Barnsley. Colin seems to stick entirely to sideband on 14MHz, and he unearthed A41JR, A41LZ, A43AT, A61AN, AP2KSD, AP2N, BY4CH, BV5GQ, CT9F, DU1SAN, ET3BN, EZ8BD, HB0/DL1AZZ, HL5FPL, HS1GUW, HZ1TA, IG9RAI, IG9/I2EOW, IG9/IK1AOD, IH9DX, JY5IN, OD5/TF2MM, OD5/TF1MM, OH3GZ/OI0, SU1GS< SU1SK, NU7L/VE8, VK6APW, VQ9WM, VR96KM, VU2AVG, YB6MF, YI1AS, YI96BIF, IB1AD, 3V8BB, 4J5T, 4L1BW, 4S7RF, 4S7VK, 5A1A, 5Z4RL, 9K2/SP9UAM, 9M2/JA8ELC, 9M6BZ, 9M8HIM, and 9Q5CA.

The noise problem he mentioned previously is still with him, says **Dennis Miller** who lives in Dawlish. Dennis challenges my comments in the October issue on the validity of DX1A and L75AA. Certainly DX1A is a call in the Phillipine series and L75AA in the Argentine series so to that extent they *could* be genuine; but against that I'd have expected a reference in the various DX sheets. This time, Dennis notes EM1KA at 2244-2256 on 7.046MHz with a list being prepared by UT5UDX who repeatedly referred to EM1KA as being in Antarctica. It might well be true, as there certainly is a presence there. For the rest, 21MHz yielded EA9TQ, ZS9MA, ZS5HAM/P, 3V8BB, 5A1A, 5B4MT and 9J2SZ. At 14MHz Dennis picked up C31UA, E21CJN(Thailand), EX3F, EZ8CW, FR5DX, HL1CG, HL1ST, JY5HF, KP4RA, OH3GZ/OI0, PR7CPS, UN7LG, VQ9WM, VR96KM in Hong Kong, VU2AU, XU6WV, YW1A, ZB2GR, ZW5B, 4S7AB, 5A1A, 5Z4BZ, 7J6ACT, 9L1IS, and 9Y4SF.Down again to 7MHz and we find A61AN, CE3HJB, EM1KA in Antarctica, HK5CPH, OH3GZ/P/OH0, T77J, UN2O, VK4MZ, YC0ZOW, ZL4BO, ZS6AW, 5X1T, and 9J2TF. Finally, down again to Eighty, where Dennis managed KE1Y, RW9AY and 4L7AT.

Reverting to this question of tuning the antenna, there are two things to remember. For the transmitting amateur, the idea is to get maximum power 'up the spout' and it is accepted that any benefit on the receive side is incidental - after all, they've got to be audible first for one to even think of working them. On the other hand, the purely receiving station uses the tuner to match his antenna to the receiver, usually by ear alone. A random length of wire so tuned may show an improvement of three or even more 'S-points'. Other things being equal, this means that a signal which lay a couple of 'S-points' below the threshold of audibility before has been brought an 'S-point' clear of the noise. The transmitter is using his tuner to transform the antenna impedance to 50Ω, but the receiving station uses his tuner to transform the antenna impedance to whatever the receiver likes best at this particular frequency - which is not quite the same!

Close-down

That's it again. As ever, please organise your letters to reach me by the beginning of the month - and remember that it's about eight weeks between arrival of your letter in the Box to the column appearing in print - And all letters **do** get a mention - no censorship in this column!

Graham Tanner, 64 Attlee Road, Hayes, Middlesex UB4 9JE. Internet: gmt@delphi.com

SSB Utility Listening

This month, I thought that I would start of by answering some points made by W. R. Semmens in his letter to the Editor which appeared in the September 1996 issue of *SWM*. Mr. Semmens comments that he can hardly pick-up any of the stations mentioned in this column, and all that he hears is noise. The Editor's comments in reply to the letter are perfectly correct, and they are exactly the comments that I would have given in reply to the letter.

Mr. Semmens says that he has two receivers - a Philips D-2999 and a Realistic DX-390 - both of which are capable of receiving the signals mentioned in this column. I, too, have two receivers: My AOR AR3030 is used for about 60% of the time, and my Sony ICF-7600 is used for the rest. I bought the '7600 from an advert in 'Trading Post' (thanks to a reader in Basildon), so that I can ensure that all those 'interesting signals' can still be heard on relatively cheap and simple equipment.

When I hear a weak signal or an interesting station, I connect my Sony to my external antenna to see if I can still hear the signal on the (allegedly) inferior receiver. In almost all cases, the station is still audible, but the tuning is much more critical. The '7600 has a small thumb-wheel control for the b.f.o., and tunes the receiver through about 10kHz, so resolving an s.s.b. signal takes patience and a steady hand. The next 'test' is to see if the signals can still be heard using the small telescopic antenna on the Sony. This is usually not so successful, but that is hardly surprising - it's not really fair to compare over 30m of external wire to about 375mm of telescopic antenna inside a building. The outcome of these tests leads me to one conclusion - an external antenna makes all the difference.

Interestingly, Mr. Semmens lists two receivers in his letter, both of which I would consider to be at least equal or better than my simple Sony ICF-7600. Unfortunately, he does not mention what kind of antenna he is using. Perhaps Mr. Semmens can try some experiments with some kind of external wire antenna, and then let us all know the results.

Patience

Dick, in his reply, says that 'utility listening is all about patience'. I couldn't have put it better myself! As an indication of how much patience is required, I thought that the following might serve as a suitable example.

During the middle of September, the situation in the Middle East flared-up again, and I decided to listen for any air-air refuelling 'traffic' on 6.761MHz. On the first night, I got lucky, and there was about 15 minutes worth of signals from one aircraft talking to another. The following night there was absolutely nothing. On the third night there was less than two minutes worth of signals, as one aircraft called for another but got no reply. On the fourth and fifth nights there was absolutely nothing again! Each evening, I was listening for over five hours, so over the course of a week I monitored a single frequency for nearly 26 hours to hear less than 20 minutes of communications. That is extreme patience.

The secret to this problem is to listen to your receiver, but keep your mind active by doing something else which does not require you to 'listen'. In the example above, I played cards during the evening (actually playing Patience itself!). On other occasions I have read books, typed this column, done some home construction, and even done the ironing. After listening to the same 'inactive' frequency for a few hours, you'll start to think that there is something wrong with your receiver. The answer to this dilemma is to briefly tune to another nearby frequency where you know that there will be activity. My favourites for this are the aeronautical VOLMET frequencies, but you could always 'use' the maritime Distress & Calling frequency (2.182MHz), or even a nearby data signal. The most important factors are patience, patience and yet more patience.

QSL

In the middle of October, I was at the Leicester Amateur Radio Show, 'working' on the PW Publishing stand. It was good opportunity to meet and talk to so many readers of *Short Wave Magazine* and *Practical Wireless*. I was hoping to meet with one of my regular correspondents 'Longwire', but he never identified himself. Oh well, maybe next year!

Eat your heart out,Godfrey! Mrs B visited the *SWM* stand at the recent Leicester Amateur Radio show. She is seen here with Graham.

On one of the other stands were the 'Medium Wave DX Circle'. I spent some time speaking with John Evans, and he had some interesting news concerning utility station addresses, a subject which has been mentioned several times over the past few months in this column. John is also the 'Utilities' editor of the magazine of the 'Danish Short Wave Club International' (DSWCI), and has collected a large amount of information on QSL addresses. You may remember that I mentioned a few 'utility station address' guides/books, and John has provided more details of one of the books recently mentioned.

The *Utility Address Handbook* is a German publication, by Reinhard Klien-Arendt. The book is quite old, and was last published in 1989. It has not been updated since because the author was a student at the time and is now a professor, so does not have the time to update the book. This is where John comes in! Reinhard has given John permission to update and publish the next edition, and has even provided him with the original source on computer disk, along with a huge pile of updates. John is busily updating the original text, and has plans to publish the next edition.

John says that he hopes to make the first sections of the new edition available during 1997. He will be splitting the book into several sections, and updating one or two sections each year. The new (3rd.) edition will contain somewhere in the region of 10000 entries covering Civil, Mil, Diplo, Maritime, Aero, Meteo, PTT, etc. Full listings of vessels of the major Navies of the world together with call signs and MARS c/s (if they are still going!), will also be included.

John asks that readers send him details of any utility addresses that they have. Even if you think that the address has been published before, it is always useful to get a recent confirmation of an address, and it is always better to be told something more than once than to be not told at all. John is active on the Internet (**john.evans@uteshack.demon.co.uk**), or you can send details to me and I will forward them to John. Looking through the 2nd edition, it does contains some pictures of QSL cards from various stations, so maybe John would be interested in hearing about what kind of QSL cards you have received, in case they are suitable for inclusion in the next edition.

Roger Bunney, 33 Cherville Street, Romsey, Hants SO51 8F8

Satellite TV News

Heavenly Sightings.....

Orbital Sightings.....

Late September into October was generally a quiet month for activity across the Clarke Belt. ArabSat 2A at 26°E produced a flurry of excitement across Europe, offering both Ku (Telecom) and C-Band reception. Unfortunately, the Ku beams appeared to be spotted into the near/Middle East, as signal levels across Europe are low, but for those able to view C-Band, ArabSat has provided several good quality signals.

Reader **Stathis Panagiotidis** (Thesaloniki, Greece) comments that even in his region the Ku feeds are very weak, even when using the 15MHz bandwidth selection on his Pace MSS 138G receiver. He has recently re-equipped with the Pace, a Cambridge Gold Universal 0.7dB noise LNB and a 1m dish. Intelsat 707 at 1°W is still carrying greatly improved signal levels of Israeli TV2 and TV3 though the TV1 service is co-frequency with a D2MAC Scandinavian channel which renders the Israeli TV! less clear. The other new satellite now available at high quality in Greece is the Turksat 1C with 'Eurobeam' signals equal level to the Turkish spot beams.

Solar Outage occurs twice a year during the Equinoxes and Autumn 1996 produced signal fallout during October week 2. At such times the sun tracks across the sky directly 'behind' the Clarke Belt and satellite dishes pointing at various birds in geostationary orbit along the Clarke Belt receive both the wanted satellite and unwanted solar radiation from the sun, as the sun tracks 'behind' the satellite. Often the radiation is sufficient to produce interference. **John Locker** (Wirral) calculated that on October 11th the sun outaged at the following times....

68.5°E @ 0653UTC; 28.5°E @ 0930; 7°E @ 1111; 21.5°W @ 1317; 45°W @ 1501.

At 1035 his sons were watching a football match on TV2 @ 1°W when the picture broke into boxes. At that time John worked out that Eutelsat II F3 @ 16°E should be into Outage and sure enough, the digital feed for the TV2 programming was carried via 16°E. Another confirmation of Solar Outage was at 1345UTC when CNN carried via Astra went into severe sparklies and snow. The Astra feed of CNN is carried via Intelsat 601 at 27.5°W in C-Band - and 1345 was the calculated time for Solar Outage at 27.5°W!

Fellow Clarke Belt punters will have noticed the new Arabic JSC captions via Eutelsat II F3 @ 16°E, 11.080GHz horizontal, the caption repeating an alternative downlink via ArabSat 2A, 26°E at 12.521GHz. Checking out a new listing suggets that Qatar TV is using the 12.521GHz downlink.

QVC to most is the shopping, nonstop sales talking channel, there is an equivilent in the United States and October 5/6th saw an ambitious international outside broadcast (OB) stages for QVC (USA). Intelsat K was used on both days for outside broadcast linking between the 'States and Germany, the QVC sales team operating from the streets of Hesse with various European sales items. song and dance - German style - provided by appropriately garbed local musicians.

Backtracking to September 25th and Orion Atlantic 37.5°W carried a corporate offering, the launch of a new software programme for IBM - the OS-2 - which seemed to offer the spoken word, word processing. Though aired in Europe at 1500CET, the San Francisco sourced offering was produced live at 0700 Pacific Coast Time and included early morning shots of the city, roads, etc. Expansive as the production was, unfortunately there has been no attempt to delay the audio path. As a result the picture lagged by almost half a second. This problem often occurs when the pictures pass through frame stores, probably at the OB truck output, then at the Earth Station input, again at their output, then at the receive site which if then followed by extensive terrestrial microwave circuits more frame stores may be introduced. Frame stores allow continuous pictures without sync. distortion should the signal path experience disturbance or source switching *en-route*. To ensure accurate picture/audio sync., it's normal to introduce digital audio delays within the system somewhere and the IBM event clearly had economised in this respect!

Quote of the month, heard on an Intelsat K (21.5°W) programme called *Inside Space Report*, September 25th in which Dr. Shannon Lucid, the MIR/Shuttle astronaut, returned back to Earth after six months in space - the presenter, trying to establish live voice contact between the studio and MIR, comments "I'm hearing clickage in my IFB". The IFB stands for interrupted foldback and is a programme feed from the remote location carrying just the remote signal input.

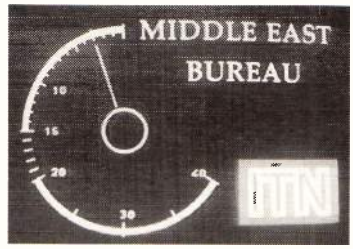
Dave Hawley (W London) comments on the use of SIS signals (sound in syncs), a system for inserting audio information within the picture sync pulses - developed by the BBC in the early '70s (perhaps one of the first digital TV inventions!). The resultant signal when received on a conventional TV is of complete silence plus a wobbly picture that shakes to the carried audio information. A Dutch company manufacture a 'domestic' SIS decoder (often advertised as an EBU decoder) within a plastics box that both stabilises the picture and resolves passable audio - my own decoder produces a rather hard gritty audio with background hash. But in the world of news it's acceptable to sat-zapping enthusiasts. More recently several readers have commented on SIS pictures that carry audible sound - i.e. the digital SIS and standard analogue subcarrier. These signals have proved impossible to stabilise with the Dutch EBU decoders, fortunately such dual audio feeds are rare! The two audio carriers will carry commentary + FX mix and a seperate FX track only.

Golf tournaments seem to appear regularly on either Intelsat K East bound out of the United States or from within Europe via Orion 1 Atlantic @ 37.5°W. **Roy Carman** (Sandown, IoW) over the past few weeks has sighted numerous golfing extravaganzas including the Loch Lomond World International and the *Trophee-Lancome* (both at 12.585GHz vertical), this a busy transponder as a 1200UTC lunchtime sighting carried the BFES *Business Television* corporate programme feed. Over the past few weeks Roy has noted that PAS-3R @ 43°W has been carrying in analogue - colour bars +'Panamsat' identification though no programming has been seen. Check out 3R at 12.732GHz vertical.

Finally, a satellite information and news programme worth checking out on the 2nd Friday of each month is 'Dr DISH' via DFS Kopernikus 2 @ 28.5°E, 11.575GHz horizontal, audio 6.65MHz at 2100CET, 2000UTC time.

Correction....the November 1996 column carried a mistake, spotted by several eagle-eyed zappers - the top off-screen photograph shows the PM5544 test card from the Israeli AMOS-1 satellite at 4°W, it's not Intelsat 707! The long string of numbers on the card is the Budapest phone of the programme uplinking company that will be using the Eastern European footprint on Amos-1.

A gritty JCS test caption via Eutelsat 16°E (11.080GHz) also visible via ArabSat 2A at 26°E at 12.521GHz. Listed as Qatar TV (note - signal via obstructed path at Romsey).



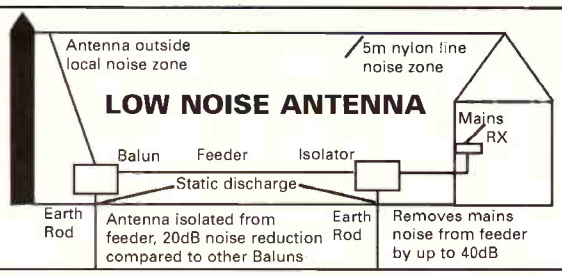
ITN's Middle East Bureau, their VTR clock via Eutelsat II F4 @ 7°E.

MED-TV is a very strong signal via Intelsat 705 @ 18°W.

Unilateral feed for Rabat, Morocco from Atlanta, second hop via Eutelsat II F4 @ 7°E.

German broadcaster ARD with a feed from their Vienna studio.

Not of political interest, but for the detail of IFB lines for their presenters' reverse communication.



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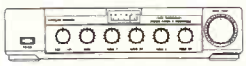

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DX Television

September had its rewards with Sporadic-E openings occurring on several days throughout the month, although the amount of activity failed to match that of August. The best day was the 8th with strong late-afternoon signals from Spain, Finland, Austria and Estonia.

However, tropospheric activity provided the main talking point with an impressive opening to Scandinavia on the 4th and 5th. Even the Pennines failed to stop signals from Norway penetrating the Birkenhead area!

Reception Reports

Ian Milton (Ryton, Tyne and Wear) reports plenty of Norwegian activity on September 3rd and 4th with NRK Band III signals received on channels E5 (Stord), E6 (Bjerkreim) and E8 (Bokn). By turning the aerial towards the west, Irish services from the Kippure transmitter (RTE-1 on channel E and Network-2 channel H), were present over a 10-day period. An off-screen photograph of the Network-2 PM5544 test card, taken at 0630UTC, is shown in **Fig. 1**.

Shaun Taylor (Howden, East Yorkshire) also saw RTE-1 programmes on channel E on September 4th. Reception was identified by the evening news and clock caption.

Andrew Jackson (Birkenhead) has submitted an impressive tropospheric log for September 4th and 5th with many German and Benelux transmitters listed. These include ARD-1 programmes from Germany on channels E7, E8, E9 and E11; ZDF, the second-network, was logged on channels E34 and E35. However, the most startling reception came from Norway with the commercial network TV-2 (not NRK-2) on channels E27, E37, E44 and E47. An unidentified low-power NRK-1 relay was also noted on E41 during the event.

Andrew Burfield (Braintree, Essex) reports many UK transmitters during the early September tropospheric lift, the best being Border TV on channel E29 from Caldbeck and Grampian TV from the Durris transmitter on channel E25. The latter signal swamped Yorkshire Television signals from Belmont for well over 30 minutes.

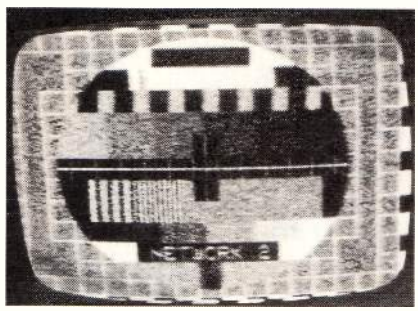

Fig. 1: RTE's 'Network-2' test card from the Kippure transmitter on channel H.

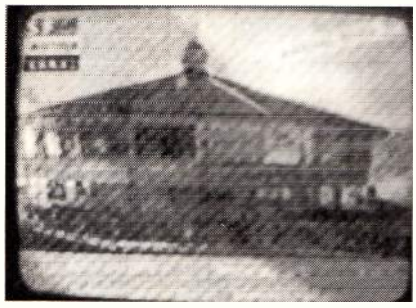

Fig. 2: Swiss TV's 'Weather Channel' service, received by Bob Brooks (South Wirral).

On September 4th, **Peter Barber** (Coventry) identified Band III signals from RTL Luxembourg on channel E7 (Dudelange), RTBF-1 Belgium on channel E8 (Wavre) and NED-1 programmes from the Netherlands on channel E7 (Markelo). Peter encountered several Sporadic-E openings during the month with signals from Portugal (RTP-1 on channel E3), Spain (TVE-1 on channels E2 and E3) and Estonia (ETV on R2) on the 8th, Italy (RAI UNO and TVA, both on channel IA) on the 21st, Spain E4 and Portugal E3 on the 27th and Spain E3 and Italy IA on the 28th. **Tom Crane** (Hawkwell, Essex) also noted the Italian opening on the 21st with RAI UNO signals on 53.760 MHz (channel IA) at 0850UTC.

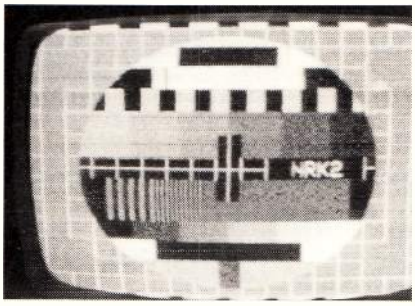

Fig. 3: The new NRK-2 PM5534 test card received at u.h.f. by Ian Milton (Ryton).

FM Reports

On September 4th, Andrew Jackson identified France Info on 105.2MHz and 106.8MHz, Radio France 'Cherbourg' 100.7, Radio 1 'Hulsberg' Holland 105.3 and Radio FFR Germany on 105.1MHz. There were also many unidentified German stations throughout the band.

George Garden (Edinburgh) heard 'Midlands R3' at 103.4MHz on the 6th while on holiday on the island of Gigha just west of the Mull of Kintyre. According to the World Radio TV Handbook, this is from the Tullamore transmitter in the centre of Eire and has an e.r.p. of 1.2kW. On the 14th, **Mike Gaskin** (Launceston, Cornwall) noted RTE 2FM on 91.3MHz from the Kippure (Dublin) transmitter.

Andrew Burfield (Braintree) logged various UK ILR f.m. stations during early September. These included Lincs FM (102.2MHz), Broadland (102.4MHz), Southern FM (102.4MHz) and 2-Ten (102.9MHz).

Light Interference

Shaun Taylor (Howden) comments that channel R1 has been plagued by interference which resembles two sets of sharply defined black and white horizontal bands across the screen. These are present only during the early evening for an hour or so. His description sounds remarkably like interference from a nearby faulty fluorescent light fitting. The dark winter nights should make it easier to track down.

Less Interference

Stephen Michie (Bristol) has noticed that the reception of the Slovakian PM5544 test card from Bratislava on channel R2 is clearer this year with much less patterning now that fewer f.m. stations are using the old 62-72MHz f.m. band.

Dual-Standard TV

After hearing German, Spanish and Russian TV sound on his scanner, **David Johnston** (Enniskillen, Co. Fermanagh) decided to take the plunge and receive pictures. A 15-year-old dual-standard Ferguson TV has been pressed into service, fed from a 5-element Band I antenna. Results have been

Fig. 4: The Hamburg TV tower (Germany), visited by Nick Brown (Rugby).

Mil Air

encouraging with test cards received from Finland, Sweden and Denmark plus watchable programmes from Spain and Portugal. Perfect vision and sound reception was possible over a long period on one occasion. As David comments, 'I really couldn't accept that it was happening!".

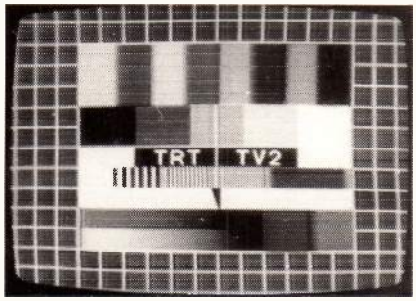

Fig. 5: Turkish FuBK test card radiated via the second network.

Weather TV

Part of Swiss TV's weather-channel transmission was seen by **Bob Brooks** (South Wirral) earlier this season.

Fig. 6: One from the archives! A special festive version of the BBC-2 Test Card "F" radiated on Christmas Day, 1988.

Cameras continually scan various high-altitude tourist spots and relay live pictures and weather data for transmission via cable and local terrestrial transmitters. **Fig. 2** shows the revolving Schilthorn restaurant in the Berner Oberland (which, incidentally, was blown to bits in the James Bond film, *On Her Majesty's Secret Service*. But don't worry - it was all done by special effects so you can still sip a coffee in the restaurant!). The picture was received from the DRS Bantiger (Bern) transmitter on channel E2.

Poor Season

Peter Barber (Coventry) has carefully studied the duration of openings during the 1996 Sporadic-E season and, like so many of us, has concluded that it was not a particularly good year. By coincidence, **Ian Johnson** (Bromsgrove) has been examining the average m.u.f. (maximum useable frequency) of the various openings over a four-year period and finds that the 1996 season has produced the lowest average monthly set of m.u.f.s.

Service Information

Sweden: Text pages precede the Swedish SVT-1 PM5534 test card according to Stephen Michie (Bristol). Colour bars without identification are also shown. Over the next five years, a new digital terrestrial TV network is due to be established throughout the country.

Estonia: The Estonian news programme identifies itself as 'AK' (Aktull Kamera). Stephen Michie saw this during a Sporadic-E opening at 1645UTC on September 8th via the Tallinn transmitter on channel R2.

Norway: The new Norwegian NRK-2 network officially commenced on August 31st. The following transmitters are already operational:- Salten E33 1kW, Skien E34 1kW, Oslo E40 20kW, Mosvik E41 5kW, Stavanger E41 1kW, Bangsberget E47 2kW, Stord E50 1kW and Bergen E53 5kW. The powers quoted are t.r.p.; the e.r.p.s will be considerably higher.

Test transmissions from NRK-2 were noted by Ian Milton (Ryton) towards the end of August on channels E53 and E41 (see **Fig. 3**).

Keep On Writing!

Please send DXTV reception reports, equipment news, off-screen photographs and general information to arrive by the 3rd of the month to:- Garry Smith, 17 Collingham Gardens, Derby DE22 4FS, England.

All Change?

Considering previous comments in *SWM* and from the correspondence I have received in the past month, there is obviously some concern amongst readers regarding the future of the military airbands and the possibility of 'future proofing', impending purchases of new wideband radios. Because of the evident concern shown in these letters I have decided to use part of this month's column to discuss this matter in more detail

Several years ago, a government report suggested that spacing between channels should be reduced to 12.5kHz or 8.33kHz spacing. Also, it was proposed that parts of the military airband be allocated to civil use. The current situation is that the introduction of 8.33kHz spacing will be brought in by the International Civil Aviation Organisation on the 1st January 1998, with the UK adopting this policy one year later.

My personal opinion is that having seen the on-going problems that resulted from the introduction of London Control frequencies in the 136 - 137MHz range two years ago, any such proposed spacing changes of this type would increase those problems tenfold. I am doubtful whether the hardware financing, the sophistication of equipment or the general enthusiasm of the aviation industry would be sufficient to bring in these changes without at least a five year lead time. They may well introduce the new spacing, but that doesn't necessarily mean that any new frequencies away from the current 25kHz spacing, will be allocated for some time.

The reallocation of other military bands, such as 225 - 240MHz has been under review for well over two years. NATO in Europe now seems certain to reallocate this portion of the band to civil use, but as far as I am aware, there are no firm dates for this to happen in the UK. At present there are approximately 60 frequencies in use that would need to be moved to free up the 225 - 240MHz band.

The 'future proofing' of new radios for this spacing is currently a non-event. The manufacturers of radio equipment will have to introduce 8.33kHz spacing on any new receivers and as far as I am aware there are currently none on the market that can achieve this. Even the new, top of the range Icom IC-R8500 which has a very flexible facility for you to select your own spacing anywhere between 0.5 and 199.5kHz, cannot select 8.33kHz as the frequency must end in a five as the radio is programmed for 0.5kHz steps only. AOR, Icom, Yupiteru *et al*, if you are reading this please take note!!!

All Change Again!

The other letters I have received regarding future changes, refer to the dates of mass changes to the currently allocated u.h.f. airband frequencies. For those of you who have joined the hobby in the last few years I will expand further. Every five years or so, the powers that be have made a mass change to all the current frequencies used by military airfields and air traffic control centres. To say the least, this has caused some concern amongst those within the hobby.

Having spoken to several knowledgeable sources it seems that the last such changes were in 1982, 1987 and the last in 1992. If memory serves me correctly, the 1992 change took place in May - Who can remember Mildenhall Tower using 262.6, 243.3 or 250.0, all of which have been used since 1980? Theoretically, the next change may be in the spring of next year, but unfortunately I do not have a crystal ball that can predict if that is to be the case. Before the last change, there was very little advance notice, (just a few days), so with a five week lead time for my copy to be with the Editor it is unlikely that I would be able to put any dates in *SWM*, except belatedly. If any advance information does become known, I will keep you all informed. Alternatively, does anyone out there know something I don't?

Frequency Focus

From the September 'Scanning' column, **259.8** has been identified as a Air/Ground tactical operations frequency, used by NATO aircraft operating from Yeovilton. Mike M. from Croydon heard **376.55** in use whilst on holiday in Tintagel, North Cornwall. It was a weak signal but he thinks this might be a Culdrose frequency - can anyone confirm this? And from October's frequency exchange **274.325** is a Royal Navy Air to Ship frequency. Falcon 20s, using the callsign **Broadway** can often be heard on this.

Autumn Exercises

I have had three reports regarding aircraft heard during the period of the Brilliant Invader and Northern lights exercises, including a detailed report from Keith in Northern Ireland. Hear are some brief details of their notes with more to follow next month. (Not all aircraft were connected with the exercises).

Northern UK frequencies in regular use during this period were: London Military **231.625**. Scottish Military **134.3, 134.475, 249.475, 252.475, 259.175, 259.725, 259.775, 268.575, 268.925, 292.675**. Tactical **231.25, 242.3, 272.075, 290.375, 364.2, 374.25.**

Tornados from 5 Sqn. were noted on several occasions using the callsign '**Carbon Formation**', they were heard refuelling with VC-10 tankers calling **Tartan 31/33** under the control of Buchan radar. **Hammer 31**, lead a flight of four 48 FW F-15Es on an airfield attack on West Freugh and then on through some active Danger Areas. Mildenhall based 7 SOS MC-130E **Talon 66,** linked up with Quid 67 (KC-135R) in refuelling area ARA - 10 using the boom frequency **296.4**. A 15 (R) Squadron Tornado, calling **Baton 3** was heard making an emergency return to Lossiemouth using the distress call PAN PAN PAN. Good report Keith - More on the exercises next month.

Godfrey Manning G4GLM, c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS

Airband

The tables, or rather, lenses, are turned! Responding to **Ernest Marrows** (Grimsby) in September, Chris kindly allowed me to photograph her while enjoying our holiday. Unfortunately, the marine Lynx (in front of which she is standing) wasn't available to take us to the resort!

Follow-Ups and Foul-Ups

Talking of holidays, I discovered that the Editor's computer can't speak French. Each time I put in the French for 'Roger' (eg. October page 60) the computer prints an underscore instead of a c with cedilla accent.

No holiday for **Brian Taylor** (Chobham), but an interesting experience nonetheless. He's hoping to take the flight radio exam, just as **Nigel Haslop** (Cambridge) did in the October issue. Good luck to you and **Mrs. B.** (Isle of Man) who continues her previously-reported flying lessons in Florida (where it's cheaper). Early spring is recommended as the July and August winds make training difficult.

What helicopters did **Roger Thorneywell** (Garston) see (August issue)? A reader living nearby recognises the description of the Sikorsky MH-53J of USAF, based at Mildenhall. I'm told that serials 70-1625 and -1626 were seen visiting various sites in the area. Now that's my idea of a good day out!

'Charlie' (September) could also mean 'Correct' (according to **Colin Nixon** from Stornoway). It's unofficial: would pilots please stop it, the rest of us are getting confused!

More information on Air France Concordes (September) from **Andy Higginbotham** (Bodmin). They can work 126.075 (Berry Head/Land's End sector) and Brest 133.0 (sector QU above FL340) or 133.475 (sector QS FL195-340), also Shannon 131.15MHz (Cork sector). Air France 002 works Shanwick 5.649MHz around 0808-0827Z, finds **Len Woolley** (Bude).

Len's information is filed on a computer database. At present he's re-organising this and will let me know when it's ready (see also last month's issue). **Derrick Hine** (Andover) has researched the Concorde fleets and found that Air France keep six type 101 examples and British Airways have seven type 102 machines.

Information Sources

I'm pleased to announce the release of *Airband Factsheet* Issue 5. It's more than just an update. There has been so much interest in supersonic routes recently that I thought it about time a chart was available. Well, the information's published but not as an easy-to-read chart. I've produced my own version. The *Factsheet* now comes with the supersonic routes chart but at the expense of it taking up two A4 sheets (the extra weight only matters if ordering by airmail).

An explanation about the charts. Concorde operates a cruise/climb profile and so is cleared for a level band rather than one fixed flight level. Also, some decelleration points are further away from land in winter (November to February) than summer (March to October) as the sonic boom travels further in the colder air and would otherwise cause a nuisance. Thanks to **Roger Preston** (Rickmansworth) and **Bob Burdick** (Connecticut) for helping with supersonic information. Perhaps my charts will dispel the idea that supersonic route SO is mysterious, Bob?

To receive the latest copy, send a self-addressed envelope to hold the A4 document, postage paid (IRCs if from abroad), to the Editorial Offices in Broadstone (NOT to me as I don't have a photocopier!). Remember, the *Factsheet* tells you where to obtain basic information such as official frequency lists. All this and the first supersonic routes chart issued for enthusiasts. Not bad for the price of a stamp!

Sorry to move on to a sour note. First, please note that ALL mail must be **fully** stamped or else I pay double out of my own pocket. Also, we columnists work in our spare (what's that?) time. My 'phone number should only be called when you've no choice. Otherwise, please write for basic enquiries. A first-class letter usually arrives overnight. Enough said.

Christine Mlynek with Lynx Helicopter.
Godfrey Manning.

Procedures

Inside information from LATCC now. A reader explains that the Flight Information Service (FIS) is under-provided because they have to release a fully-qualified radar controller from duty to operate it (even though there's no radar). Also, the new *en-route* centre at Swanwick, Fareham, will require more radar controllers but fewer air traffic assistants (that's automation for you).

A deal has been struck. Experienced assistants will be trained as FIS officers; it's promotion, their jobs are saved and I wish my informant all the best for this new rôle. I'm left wondering if the reader in question will be paid the same as the fully qualified staff who are being replaced, or is it a way of filling the post at a lower grade? I hope they pay you well for the extra responsibility!

The London FIS is on 124.6, 124.75, 125.475 and 134.7MHz (topographical charts show the individual sectors, for availability see *Airband Factsheet*). This explains one of the frequencies that **P. J. Salisse** (Highgate) asks about. In fact, the transmissions are sometimes relayed from more than one site and the different relay frequencies are slightly staggered so as to avoid mutual interference. It's quite possible that 124.6MHz would be more clearly received 5kHz lower in some areas because of this.

What coverage is expected (eg. 124.6)? **M. Dendle** (Leicester) wonders if aircraft as low as 3000ft altitude can be heard by ground stations within a reasonable range. Yes! Outside the most mountainous terrain in the UK, LATCC expects that this is the lowest practical limit for coverage by, say, 121.5MHz (distress frequency). The radar transponder sometimes works lower.

Other frequencies that PJS asks me to identify are as follows. Airways (giving the appropriate Area Control Centre): 136.075 Paris, 136.4 London and 136.45MHz Brest Sector KU. Company operations: 136.8 Kestrel (Airtours), 136.85 Britannia and 136.875MHz Monarch. Finally, USAF military call SLAM could be any of A10 or F15 fighters or their associated E3 airborne warning/control aircraft.

I still haven't seen any details of Sheffield City Airport but local resident **J. Barker** sites it to the west of the M1 motorway

Pic 2: Boeing Stearman.
Christine Mlynek

between junctions 33 and 34. I can tell JB that UK balloons were on 129.9, now 122.475, but European ones have 122.25MHz instead.

Rescue!

The two Rescue Co-ordination Centres (run by the military, as distinct from the Coastguard) are at Plymouth and Kinloss. As far as I know, the work is divided between them but I'm not sure where the north/south boundary lies - though **F. J. Hermann** (Hull) would like to know. On h.f. the radio coverage is dependent on propagation, anyway.

I listed rescue helicopter callsigns in October, but it now appears that Brawdy is no longer operational (sorry not to have a note of the reader who pointed this out). The Coastguard have placed an air-sea rescue contract with the private commercial operator Bristow's. Why this is cheaper than a public-funded service I don't know - the costs are the same but the taxpayer has the added burden of the commercial operator's profit margin. Can anyone explain? Coastguard IJ (actually G-BDIJ) is at Lee-on-Solent with HL (G-BBHL) at Portland. On task, the callsigns become Coastguard Rescue IJ etc. Operations are controlled on marine channel 0 (156.0MHz f.m.) and 135.65MHz airband.

The Sikorsky S-61N still can't be beaten in this role. Current equipment includes auto-hover that the winchman can operate to accurately position the aircraft, also infra-red for searching for hot bodies in a cold sea.

Frequency & Operational News

AIC 98/1996 from the CAA reminds us that Machrihanish is now in private hands and has been renamed Campbeltown, the ICAO locator changes to EGEC (was EGQJ).

New airways sector allocations are described in *AIC* 100/1996 and for full details (with a chart) you need a copy. Once again, *Airband Factsheet* tells you where to get one from. The changes apply to airspace roughly between the Trent and Dean Cross beacons, above FL200. The three new sectors will be controlled on 118.775, 129.1, 131.05 and 135.575MHz. Doesn't 118.775 sound familiar? See last month's column. At last we've found out what it's for!

More *AIP* amendments courtesy of **Martin Sutton** (CAA). If readers want to inspect the *AIP* for themselves, your local flying club or aerodrome should have an up-to-date copy. The old Beccles heliport now has a licensed aerodrome, Air/Ground 134.6MHz. Blackpool now 119.95 (was 135.95MHz). London City now has one a.t.i.s. on 127.95MHz. Perth/Scone has an Aerodrome Traffic Zone again.

On the oil and gas rigs, Alwyn (East Shetland Basin) and Dunbar Platform both now 130.2 (were 122.35MHz). Changed n.d.b. frequencies: Lancelot Platform (LNL) now 403.5 (was 392kHz); Pickerill B (PSL) now 431 (was also 392kHz). As these are weak beacons, they might challenge the students of propagation amongst you.

On airways: new reporting points are KARNO and GODAL. Withdrawn reporting points: ANKER, FETLA, KILBA, SELSI, THORN. N862 is a new route replacing N863. UL1 is renamed UL607 and UT9 is now UN609 (both oceanic area). Other new routes: Y98, Y99 and UY98, UY99. UN863 is altered, UN862 extended. From Twickenham, *AVC* explains that UA251 is replaced by the new UN862.

The text of *AIP* amendments is lengthy and I have had to summarise. If you need details of a particular item, eg. the location of a reporting point or airway, write to me and I'll fill in the gaps.

The next three deadlines (for topical information) are December 13, January 17 and February 14. Replies always appear in this column and it is regretted that no direct correspondence is possible. Genuinely urgent information/enquiries: 0181-958 511

Abbreviations

AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
a.t.i.s.	automatic terminal information service
CAA	Civil Aviation Authority
FL	flight level
f.m.	frequency modulation
ft	feet
h.f.	high frequency
ICAO	International Civil Aviation Organisation
kHz	kilohertz
LATCC	London Area & Terminal Control Centre
MHz	megahertz
n.d.b.	non-directional beacon
z	Zone (Universal Co-ordinated

John Griffiths, c/o 22 Ffordd Beibio, Holyhead, Gwynedd, North Wales LL65 2EH.

Scanning

Firstly, merry Christmas and happy New Year to all those who read this but especially to those who have, over the years, contributed to the column. I'd ask you to keep the info coming and to make sure that all your scanning news is sent in. Thanks too, to each of those I've formed a postal friendship with, and who regularly write and telephone - your support and comments are extremely valuable. You're too many to mention but you know who you are. Thanks!

Folk Devils

Right! Let's kick off with something of interest to all of us, old and new alike, and directed at us with the usual misinformation surrounding the hobby and its presentation as the tool of us folk-devils and eavesdroppers! Taken from the September issue of *The Police Review* in an article entitled 'Probationers' Skills Shop. Week 36 Mobile 'phone Crime' by Patrick Hook. In an article which showed, as its illustrating photo three Realistic 10-channel hand-held scanners, Mr. Hook reports on how a £200 scanner can be used to get the ESN - Electronic Serial Number and the MIN - Mobile Identity Number of your average analogue mobile 'phone. Now, from a journalists point of view, it's quite a catchy piece and well researched. It's just a pity that the overall article failed to state that a scanner - whatever its price - cannot on its own get anything other than the displayed frequency and most certainly cannot get the MIN nor ESN of anything! Arguably, it can be used in tandem with an interface and a specialist reader to access these things - but then that's the preserve of the criminal mind and not that of your average user of a hand-held scanner.

Realities Of Mobile 'phone Crime

What makes me angry is that the FCS - Federation of Communications Services - are advising the Police of the realities of mobile 'phone crime, and together with such august bodies as the Home Office, the DTI and the Association Of Chief Police Officers, are asking that the Government do the following:

1 - Change the Telecommunications Act 1984 to make possession and supply of scanning equipment an offence.

2 - Increase the maximum penalty for offences under the Act to 5 years imprisonment to create a power of arrest.

3 - Provide Police with Search and Seize Powers.

4 - Ask dealers - compel is the word used - to create records showing an audit trail of their stock. In Joe Bloggs' speak, that is names, addresses and telephone numbers of you - the buyer -

which makes it easy for your door to be taken off its hinges if there are 'reasonable grounds' for assuming you are operating/acting illegally.

According to the article, six constabularies have a specialist unit in existence with powers to combat mobile 'phone crime.

Nice one, Mr. Hook! Very nice work. In fact, your article is misleading to anyone with no knowledge of scanners - like your average bobby on the beat and I presume that the picture used is of one of these deadly machines which rip off mobile users? Picture the scene. Sun Hill Nick and Bob Cryer talking to the crew: Listen up lads, this is the enemy! If you see one of these - do the geezer!

As a scanner owner who also owns a car, may I ask what the Police are doing about those absolute asses who drive powerful cars and talk on their mobile 'phone at the same time? I mean, your average scanner user isn't likely to lose control of his scanner while listening to it when out walking, is he? He or she isn't going to create an RTA, are they? No mother and child are liable to be killed, maimed or disfigured by the anorak with an MVT-7000 in his hand listening to Heathrow Control - unlike the hard-pressed rep. clogging it down a 'B Road' getting his next order in from 'Megastores' for 89000 cardboard boxes while cruising at 65 m.p.h. Oh, I've seen them. Most of us have. I wonder, what's done about people like that - or have you a blanket amnesty for these poor targets of the criminal fraternity? The mobile user - the hard pressed and always targeted fixture of the warped criminal mind? Seems to me that the industry is losing money because of their inability to maintain secure communications networks and - rather than invest in new technology and thus shoot prices up to the point where we all revert to the glass mirror and a sunny day - go around recruiting the government and the law to their cause. Well, on behalf of those scanner owners I've spoken to, I've got a message for you.

Get a life. What's more, let's see the Police used effectively and prosecuting users of 'phones who do drive and yak at the same time. The danger to the public is caused by the pressure to have to keep in touch and that isn't going to come from the average scanner user. I think every scanner owner who is out driving and who is cut up, overtaken, put in a dangerous position or otherwise hassled by the madman talking with one hand on the wheel who has no regard for other users - because it isn't his car after all - should report the make, colour, time and location to the local Police. Then, maybe, we will see crime put in proportion. That's what it is after all. An offence under the Road Traffic Act - and, as responsible citizens, it's our duty to assist the Police. Sharpen your pencils, citizens and let's fight back! Oh and in case you think this is hysteria, think again. The article contains the immortal words - and I quote:

"What usually happens is that equipment known as scanners (sic) are either bought or stolen from specialist radio shops. This equipment costs around £200 and with a little bit of know-how can be programmed to obtain the ESN and MIN....of an analogue telephone set."

Read 'em and weep, good people. I think we're being targeted unfairly. What do you think?

Enough Of The Misery!

From **PC** of Manchester comes the news that he's been DXing with his scanner above 30MHz and through 48 to 74MHz. As a result he's had continental TV sound when in w.b.f.m. During Sporadic Es, he has heard Katowice in Poland for example and - the good news - you don't need specialist equipment to follow it! According to PC, the set's own telescopic is enough. He's also heard the Soviet MIR space station on 143.625 n.f.m. Who said it's not a real hobby? PC also reports the following heard:

468.79375 Radio City Eye in the sky.

468.74375 Red Rose Eye.

468.69375 Piccadilly Eye.

PC tells me the same aircraft is used - with the three different frequencies downloaded to each studio. As well as this, he tells me that traffic jam news doesn't come via the aircraft as is thought - but via an observer in the studio who has a relay from elsewhere!

He asks what frequency is this, heard in Greater Manchester - 141.08125. He knows that it's studio Outside Broadcast - but from and to where?

A letter from **Alan Burnett-Provan** in Wooton Wawen reports that he hears a great deal on his PRO-2006 with an antenna cut for UK CB and a $3\lambda/4$ at that! Alan has been monitoring ground stations as far afield as Warwickshire, Wiltshire and Leicestershire plus Shropshire and Oxfordshire! Most are low band v.h.f. in the 70MHz portion but his Berkshire

Ambulance on 166.6125 and Hereford and Worcester on 166.4750 are examples of a good system! Mind you, he has a magnetic mount on his outside heating oil tank so that must be a damned good ground plane to say the least!

UK Scanner News

Now, Internet fans stand by! If you're not into UK Scanner News yet, get set! A letter from the organiser, **Paul Jones**, tells me that you can join the list server and access the very best frequencies etcetera via the 'net as follows:

To subscribe: EURO-SCANNER-request@pegasus.ch with the message SUBSCRIBE EURO-SCANNER.

The Web site is **http://www.termcon.demon.co.uk/**

Paul is a serious monitor, and uses the following at his set-up. An AR3000A, AR8000, PRO-2006 and for h.f. an AR7030 and JRC NRD-525. He runs this lot through a log periodic, a 2m/70cm collinear and long wires. His interests are airband and police/pmr. If your interests are scanner or h.f., then this is the place to be! Having seen an example of the stuff produced what can I tell you? I'm impressed! I'm also impressed that there is an ever-growing subscriber list at this site - which says it all, really.

From Warwick, **SH**, sends in some interesting frequencies for the Derbyshire area - worth trying elsewhere by the way in case a local squad have a set-up on the frequencies given.

The Derby 'Flying Squad' - hospital, that is - is on: 166.8125/171.6125 with the base callsigns ZULU and the vehicles - two range rovers - being ZULU 1 & 2 respectively. They can also be heard via Centracom on 164.5250 and 160.0250. SH also goes on to tell me that the traffic spotter 'plane in the Derby and Nottingham area has changed frequency and can now be found on 468.84375 with a studio talkback on 141.11875.

Worth listening out for!

Lastly, I apologise for not continuing with the 'starting scanning' piece that I said I was going to. Due to the misinformation circulated in the august and sober *Police Review* I felt that was of much more interest to us all - especially as it is another example of hysteria targeted at a group that can hardly fight back. Next month we'll look at antenna types suitable for scanners and some bits and bobs - for sure! In the meantime, keep the scanning pieces and letters coming in. I'm currently back on the telescopics and set whips due to a move into a flat but I'm still hanging in! Any manufacturer wishing to review their products on anything to do with scanners - including new sets but preferably hand-helds - do get in touch via the office. You're guaranteed a less-technical but honest end-user appraisal.

Keep the UFO and message interception issues going. If you've seen or heard anything then get in touch.

Mil Air

Good luck to Peter with the 'Mil Air' column too - I hope you get as much gen as I did from the listeners who made it worthwhile and extremely interesting. Thank's to all those who made the column excellent in that respect.

Have a good Christmas and a brilliant New Year! I hope you get the kit you wanted and not some socks darned by Auntie Gladys again. However, if you do sight something in the sky around Christmas Eve - don't tell me. If, however, he's on the mobile 'phone....!

73s and catch you down the log sometime!

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Info In Orbit

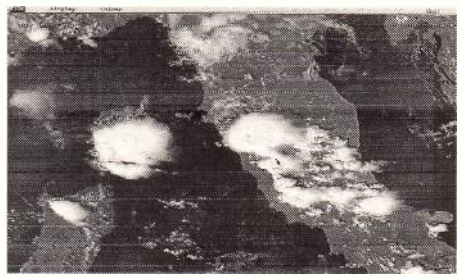


Fig. 1: Italy - NOAA-14 h.r.p.t. from Peter Schoen.

The 'Weather Channel' saw its first day on ASTRA in early October as part of the Sky Multichannels package. I am not a weather fanatic, but I watched the programmes for half-an-hour. They showed satellite pictures, described as the "latest", but which were actually hours old, and I sat bemused while they told the audience that the west country was getting heavy downpours. In fact, Devon and Cornwall were enjoying clear skies and sunshine - as seen on images from METEOSAT-5 - which showed the weather front had passed by earlier that morning. I could not help wondering whether, even as professionals, they had access to the live data which we take for granted.

A number of 'Info' readers have gained some level of access to the Internet, (at least E-mail access,) through their place of work. This has had two effects on 'Info'; the numbers of people sending correspondence by E-mail has risen significantly, and the Kepler mailing lists (beginning and mid-month) have declined slightly. Pictures still arrive in hard-copy form and on disk, so there is little likelihood of a shortage of contributions. More 'foreign' mail arrives via the Internet than was the case a few months ago.

Current WXSATs

Although METEOR 3-5 provides us with a strong signal during its passes across Britain, the images received by my system are degraded by a marginal loss of picture synchronisation. The NOAAs and recent METEOR-3 series WXSATs use a (normally) stable 2.4kHz sub-carrier on to which the image data is modulated. Decoding hardware/software extracts this image data and presents it as a perfectly synchronised image, as long as the frequency of the sub-carrier remains stable. My suspicions are that METEOR 3-5's sub-carrier is drifting somewhat. One way to avoid this problem is to use software which references a fixed point in the image for synchronisation, instead of using the sub-carrier. Consequently, I reverted to the 'non-synchronous' option within my software in order to produce a stable image. The drawback is that image presentation then includes more of the side-calibration markers instead of the complete image display. Those with access to electronic test gear can examine the sub-carrier frequency to check its stability.

As announced by EUMETSAT, METEOSAT-6 was brought into active service around 22 October as the imaging WXSAT. METEOSAT-5 undergoes periodic maintenance, during which it does not scan the earth. Images from METEOSAT-6 are then processed at the ground station but re-broadcast from METEOSAT-5, hence the change in the header information shown on each image.

Letters and Pictures

Peter Schoen of Germany actively monitors NOAA h.r.p.t. telemetry and sent several laser printouts, from which I have selected **Fig. 1**. This is from the channel two (visible-light) sensor, recorded some months ago. Peter monitors a.p.t. (the normal v.h.f. transmissions) as well as the high resolution transmissions.

One ex-patriot 'Info' reader wrote from Kuala Lumpur in Malasia, to tell me of his unusual experiences trying to set-up a WXSAT station. His YU3UMV framestore survived the journey, and connects to his Malaysian TV set. Initial attempts at reception involved a turnstile aerial on the balcony, connected to a Dartcom receiver feeding the framestore. Because of the location within the multi-story block of flats, he planned to go mobile, so invested in JVFAX to interface with a laptop PC. For those unfamiliar with this type of set-up, JVFAX is software which decodes suitably processed a.p.t. signals when fed from a WXSAT receiver. An interface between the receiver and computer is needed, and can be purchased from UK suppliers. With the software and hardware arriving safely, our ex-pat discovered that he needed a power and phono plug to make the unit function. There are no shops or mail order facilities in Kuala Lumpur! Eventually he found the Malaysian Radio Spares outlet was able to help.

The poor receiving location meant that he received little usable signal, but a "screenful" of unsynchronised METEOR 2-21 (on 137.85MHz) was received on 5 October between 0904-0920. Cloud detail on METEOR WXSATSs is distinct; land is difficult to identify without image enhancement. After considering all the problems involved in trying to successfully receive the polar orbiters from such an unfavourable location, he finally decided to go for a geostationary satellite instead! With GMS-5 parked a few degrees east of south, I trust that our distant reader may yet have success.

Images of hurricane Fran obtained by the GOES-E WXSAT (currently GOES-8), and broadcast by METEOSAT-5 in the LZ slot, were collected by George Newport of Canterbury - see **Fig. 2**. The sequence of four images was taken on 1, 4, 5 and 6th September, showing the development and movement of Fran during this period. The image from 4 September has become a classic - reproduced elsewhere because of the clear shape of the central swirl.

A few years ago, a ship was in the news by virtue of having caught fire in the western Mediterranean Sea. It released huge plumes of smoke and, to my surprise, the METEOSAT C03 format had sufficient resolution to reveal this. Another instance of the 'grandstand view', this time of an erupting volcano in Iceland, appeared in an image received from NOAA-12 by **I. J. Curtress** of Cheltenham.

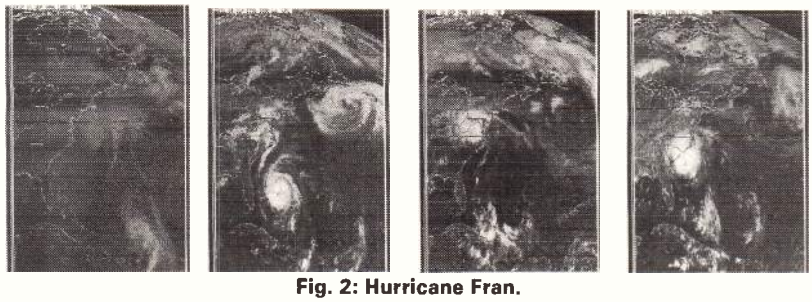


Fig. 2: Hurricane Fran.

WXSAT image transmissions - the move to LRPT

NOAA's Polar-orbiting Operational Environmental Satellite (POES) service currently provides continuous, unencrypted broadcasts of environmental data to direct broadcast users, both amateur and professional, throughout the world. Transmission of this environmental data is done by way of digital and analogue broadcasts, called High Resolution Picture Transmission (h.r.p.t.) and Automatic Picture Transmission (a.p.t.), respectively. These are the transmissions currently received in the 1.7GHz and 137MHz bands. The nature of the 137MHz-band signal has not changed significantly since its inception back in the 1960s, despite enormous advances in electronics and satellite development. This is going to change.

The demands of the Mobile Satellite Service community for frequency allocations in the 137-138 MHz range, illustrates the continuous struggle between NOAA and the private sector for use of this band. Changes in the VHF spectrum are currently under development for use on U.S. and European polar-orbiting environmental satellites starting in late 2001.

During the next 15 years, NOAA plans a cooperative venture with the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT), to share in the global environmental monitoring of the Earth and near-Earth space environment. Both organisations plan to share space assets, such as instrumentation, on each other's satellite missions. Currently, NOAA-12 provides morning imagery and NOAA-14 provides afternoon imagery. Under the new plan, NOAA will provide one satellite constellation (the morning NOAAs) in the year 2002, and EUMETSAT provide the other.

LRPT - The Low Rate Picture Transmission Service

Earlier this year NOAA communicated with many APT users to identify their concerns over the new broadcast link. This dialogue identified many concepts concerning LRPT. "The results of the survey have yielded important information that will be used to formulate the basic structure of the LRPT data stream and help to design a system to satisfy the needs of the direct broadcast community". This last sentence (in quotes) is copied from an article by H James Silva which was presented at the June POES seminar, and showed that the final

format and content of LRPT telemetry had not been determined as at June.

The goal for the future digital LRPT imagery service is to provide higher quality imagery than current a.p.t. by reducing spatial resolution to 1km and increasing the number of channels to three, while being constrained to the current data bandwidth allocation of 72kb.p.s. To achieve this goal, an imaging data compression technique is proposed which will reduce the LRPT raw data rate by a factor of eight.

WXSAT LRPT Image Decompression Software

One concern of a.p.t. users (users currently receiving 137MHz-band images) is the availability of software and hardware to decompress the imagery at the LRPT receiving station. EUMETSAT and NOAA are contemplating supplying the necessary decompression software to all registered direct broadcast users via electronic mail or by regular mail (if appropriate). Since there are over 1000 potential users of LRPT, this proposal would constitute a logistical problem. The idea of distributing the decompression software should be presented to the World Meteorological Organisation for their review.

LRPT ground stations will utilise a receive antenna which can be a circular polarised or omnidirectional Yagi. Both class of antenna will be able to receive the LRPT image requiring a bit rate of 72kb.p.s. Additional requirements will be imposed on the designers of the communications subsystem for the METOP satellites.

Final LRPT Picture Format Near

To meet the scheduled launch of METOP-1 in late 2001, all LRPT system requirements have to be defined by autumn 1996 so that the spacecraft contractor can begin the manufacturing process. The need to compress data before its transmission to users, resulted in the study of different compression methods. After considerable debate over who possessed the better data compression technology, NASA acknowledged that LRPT should use the international standard JPEG system for compressing the imagery. JPEG stands for Joint Photographic Experts Group. It is designed for compressing either full-colour or grey-scale images of natural, real-world scenes. JPEG is a lossy compression scheme.

Frequencies

The 1992 World Radio Administrative Conference (WARC) authorised a new system of satellite communications - the Mobile Satellite Service - to use part of the 137-138 MHz band that has been used for over 20 years by NOAA and Russian weather satellites for direct broadcasting. The Mobile Service Orbcom, a subsidiary of Orbital Sciences Corporation, was granted part of this spectrum. The license from the FCC in 1993 is for a full system of little Low Earth Orbiting (LEO) satellites. These provide low cost, two-way data messaging services and position determination, much like the GPS systems.

The mobile satellite service has been authorised primary allocation in the 137.175-137.825MHz and 137-137.025MHz bands. For this reason, NOAA frequency allocation managers have suggested that NOAA and EUMETSAT designers of the new LRPT link build a system with carrier frequencies of 137.1 and 137.9125MHz. These new frequencies allow enough bandwidth separation (150kHz) without interference from Orbcom or any other Mobile Satellite Service (MSS).

The danger of out-of-band emissions by Orbcom downlinks and the possible interference these may have on the direct broadcasts of the a.p.t. and LRPT services is real. NOAA is particularly worried over sharing the 137.175 - 137.825MHz band with the mobile satellite service during the period prior to LRPT when NOAA satellites are still transmitting a.p.t. signals at 137.5 and 137.62MHz.

LRPT Receivers

Within a few years we can expect to move to LRPT receivers, so with this in mind, I asked Jerry Dahl of OFS WeatherFAX for some preliminary information about his recently advertised LRPT receivers. He told me that the new OFS production receiver is packaged on a small card - a few tens of mm in size and 10mm thick, with both sides fitted with surface mounted parts. Being computer controlled, it can receive all a.p.t. and LRPT frequencies from 135-145MHz. Derivative receivers can be designed to cover any part of the v.h.f. band.

Performance is the same as that of competitive a.p.t. receivers, but because of automated packaging and lower cost components, the receiver will be OEM priced (meaning that manufactures/retailers can buy in the card and build their 'own' receiver around it - adding value by way of user-friendly features). The retail price may be between $200 and $300. My thanks to Jerry for this insight into 'behind the scenes' planning.

To end, I quote H James Silva's final summary. "The recent advances in digital communications systems have made it necessary for NOAA to consider replacing the antiquated analogue a.p.t. system with the new digital LRPT broadcast link. All of the designers who work on the LRPT system are excited about the great improvements in electronics made possible by the latest developments in data compression and circuit technology. NOAA and EUMETSAT can take pride in designing a new broadcast service which promises to serve the needs of the user community well into the 21st century".

My thanks to NOAA and NESDIS staff for making this information freely available.

Advice for Beginners

We seem to be approaching the time when new recruits to the hobby may need to contemplate carefully the timing of the purchase of a WXSAT receiver, to ensure that it is capable of receiving the new telemetry format. My own personal view is that receivers bought now will continue to be able to receive WXSAT signals for some years; on that basis I would not yet refrain from purchase.

To illustrate this view, I must mention a letter from a reader living in Stockport who is currently planning the purchase of a WXSAT receiver. He told me that he balks at the £400 price-tag on the Mapsat-2 receiver. It is two years since I discussed the possibility of my reviewing that system - it never arrived! Meanwhile, UK suppliers of receivers include Martelec's Virtual Satellite Receiver priced around £150 (reviewed some months back), Timestep's PROscan receiver priced around £225, and Dartcom's receiver (which requires some construction) priced around £180. These prices may vary but the companies can provide the latest information.

Listening to MIR and the Shuttle

Last month's Space Special provided the opportunity for me to publish the list of stations and frequencies used for Shuttle rebroadcasts. **Colin Knight** of Eastleigh has been monitoring MIR's 145.55MHz (2m) downlink. The current crew (MIR 22) is Commander Valery Korzun, Flight engineer Alexander Kaleri, and Mission specialist John E. Blaha. Colin tells me that Valery Korzun speaks with very good English and frequently uses the 2m band. From 11 to 15 September he was on the radio for two to three passes every day, and on the 13th, gave a brief status report about MIR activities to all listeners on the 'mission control' frequency - 143.625MHz.

Personally, I have yet to hear voice activity on 145.55MHz, other than from local amateurs!

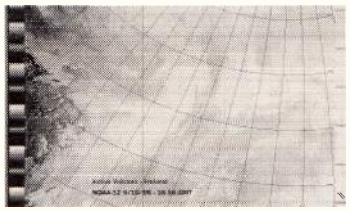


Fig. 3: Icelandic volcano from NOAA-12.

Shuttle Launch Schedule

STS-80 *Columbia*; launch date on or after 8 November into a 28° inclination orbit.

STS-81 *Atlantis*; launch date 12 January 1997 into a 51.6° 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 £1 and stamped s.a.e. for the A4 booklet.

Kepler elements - MIR and Shuttle

1. For a print-out of the latest WXSAT elements, MIR, and the Shuttle (when elements are available), send a stamped addressed envelope and secured 20p coin or separate, extra stamp. Transmission frequencies are given for operating satellites. This data originates from NASA.
2. I also send monthly Kepler print-outs to many people. To join the list please send a 'subscription' of £1 (secured, plus four self-addressed, stamped envelopes) for four editions.
3. You can have the data as a computer disk file containing recent elements for the WXSATs, and a large file holding elements for thousands of satellites. A print-out is included, identifying NASA catalogue numbers (for the WXSATs, Amateur Radio satellites, and others of general interest), ideal for automatic updating of your tracking software. Please enclose 50p with your PC-formatted disk and stamped return envelope.

Frequencies

NOAA-14 transmits a.p.t. on 137.62MHz
NOAA-12 transmits a.p.t. on 137.50MHz
NOAAs transmit beacon data on 137.77 or 136.77MHz
METEOR 3-5 (or 2-21) use 137.85MHz
OKEAN-4 and SICH-1 use 137.40MHz
METEOSAT-5 (geostationary) uses 1691 and 1694.5MHz for WEFAX
GOES-8 (western horizon) uses 1691MHz for WEFAX
MIR uses 145.55 and 143.625MHz.

Mike Richards G4WNC, PO Box 1863, Ringwood, Hants BH24 3XD. Internet: mike.richards@dial.pipex.com.

Decode

All the Data Modes

Leicester Rally

Let me start with thanks to all who took the time to come and see me at the Leicester show in October. It was great to see so many readers and I was grateful that you were so forgiving over the delays in despatching the readers offers. Although the show was great fun, there were very few new items from the decoding world. However, there were some very attractive software deals around for those with IBM PCs. One of the common themes that I picked-up from readers was a wish to see a tutorial on how to get started on the Internet. As this is such a great source of software and support information for the modern listener I've included a section in this column.

Internet Starter

To the listener who's new to both decoding and computing, the Internet often seems a step too far and they won't take the plunge. This is a shame because the Internet can offer so much to supplement our hobby that it's rapidly becoming an essential extra for the keen listener. Probably one of the key ingredients is the ability to talk to other listeners with similar interests through E-mail and newsgroups.

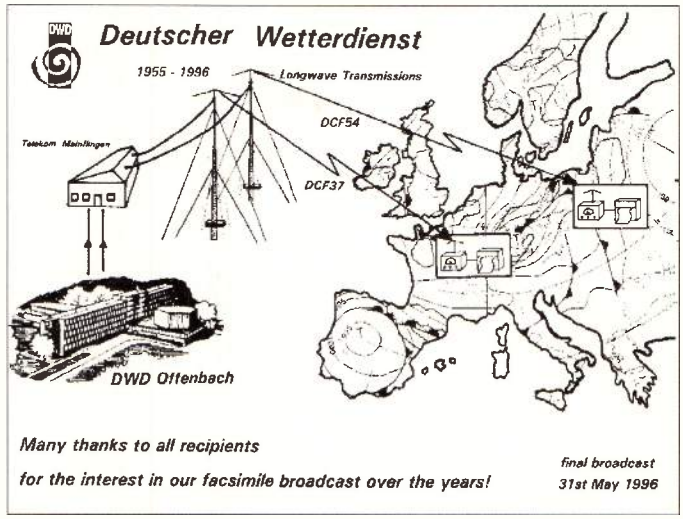
For many, short wave listening is very much a lonely hobby as there's no obvious way to meet with like minded people. This is a notable difference from amateur radio which, by its very nature, encourages hobbyists to talk to each other. In addition to being able to contact other listeners, the Internet is a great place to get all the latest software. Most of the popular software authors deposit demonstration or shareware versions of their programs on the Internet. This is good for the authors as they can get to a very large market at very low cost. It's also good for the listener because you can try- out all the latest software for a minimal cost.

As well as all the uses I've described so far, you can also find frequency lists and all manner of scientific and tutorial information to support your listening interests. A classic example of this is the *WUN Digital Signals FAQ* (Frequently Asked Questions) that can be found at the WUN web site. This document provides a host of information on decoding equipment and signal types.

Having whetted your appetite, let's get down to some detail on how the Internet operates and how to get started. I won't bother trying to describe the low level protocol detail as you really don't need to know this to use the Internet. For the likes of you and I, the only way to get on the Internet is via a telephone line. Now in order to send computer data over a telephone line you need a device called a modem. This is rather like a sophisticated version of the terminal unit I described in the column recently. Its purpose is to convert the digital signal from your computer into an audio signal that can be sent through the normal telephone network. Because the telephone network is rather more predictable than h.f. radio, the transmission speeds available are very much faster than the signals we decode on the radio. The most common modems are able to operate reliably at 28800 bits per second - a bit different to 50 baud RTTY!

So, how do you choose a modem? The simple rule is the faster the better. This is because faster modems get the data from the Internet quicker so you spend less time on the phone and save call charges. A faster modem also makes using the Internet a much more pleasurable experience, as sitting waiting for a page of information to appear is remarkably tedious. So, how fast is fast? My recommendation is that you don't consider anything slower than 9.6k bits/sec and really 14.4k bits/sec is the commonly accepted minimum. Modems for this speed are now quite reasonably priced and you can pick-up the popular US Robotics Sportster 14.4 for around £90. If you want to go really fast try the US Robotics Sportster Vi (available at just under £200). This can run the very latest v34 standard with transfer rates of up to 33600 bits per second.

But wait! Before you rush out and spend all your hard earned cash, you need to understand a little more about your connection to the Internet. So far we have a computer, a telephone line and a modem. The next vital ingredient is what's known as an Internet Service Provider or ISP. These are companies that specialise in providing dial-in access to the Internet and are a vital link between you and the Internet. A look through any of the major



The final transmission from Offenbach was captured by Phil Perkins of Pervisell.

newsagents will reveal a host of Internet magazines packed with adverts for ISPs that claim to offer the world for next to nothing - beware! Other than the connection price the things that are really important when choosing your ISP are ease of access, i.e. do they have plenty of phone lines so you can access whenever you like without getting engaged tone? Secondly, what speed do their modems run at. It's not much good you lashing out on a really fast modem if the ISP's top modems can only handle 9.6k. Finally does the ISP have access to good trans-Atlantic and European links. Most of the information you want to get at is in Europe or the US.

Getting a straight answer to these questions is not easy and you should take a close look at reviews in Internet magazines or speak to friends who already have Internet access. Personally, I've tried many different ISPs and have finally settled on the Pipex Dial service. They provide access at 33.6k from anywhere in the UK at local call charges and I can't remember the last time I hit engaged tone! If you're interested they can be contacted on (0500)474739.

So here we are with the computer modem and an ISP ready to go. But we need some software on the computer so that it will interact with the Internet. All ISPs worth knowing provide the necessary software as part of the connection package, but it's worth just quickly going over the main items. The most important part is the TCP/IP stack which does all the clever work of breaking the data into neat packets to be sent over the Internet. This software also provides a service known as sockets. These can be likened to a multi-way mains socket because it lets you use several different software packages on the Internet at the same time. In addition to the stack the software will contain a dialler which is used to automatically dial-up you ISP whenever you start one of your Internet applications.

Whilst there are lots of applications that you can use over the Internet by far the most popular and easiest to use are Web Browsers. The two most popular browsers are Netscape Navigator and Microsoft's Internet Explorer. In many ways it doesn't matter what your ISP supplies as you can go straight onto the Internet and download either Explorer or Navigator - they're both free. In fact, it's the readily available software that has really powered the rapid growth of the Internet, so much so that even the big companies like Microsoft have realised that they have to give away good quality software in order to support the growth of the Internet.

Now you have all you need to make that first call on to the Internet - computer, modem, ISP and software. Once you're in, the fun really begins and you could start by paying a visit to my home site at:
http://dialspace.dial.pipex.com/mike.richards/ In a later column I'll cover some of the software applications you can use to make

the best possible use of the Internet.

Hot New Decoder

Are you about to splash-out on a new decoder? If so, you'd better take a look at this latest release from Wavecom before making a final decision. Joerg Klingenfuss has just sent me the details and it looks pretty impressive. Like many new decoding developments, the new Wavecom W41PC DSP assumes the buyer has access to an up-to-date PC running Windows '95 or NT. The decoder is supplied as a specialist decoding card that fits in one of the PC's standard expansion slots. The integration of DSP decoding techniques and the popular Windows interface looks set to make this decoder very easy to use. From the descriptions and screen shots I've seen, it looks to be a very powerful combination. The W41PC-DSP also looks to be a good choice for those who can afford to buy a top decoder, but are put off by the high level of technical expertise required to operate them. The use of the Windows environment immediately makes the program look familiar and this is supplemented by a number of very neat analysis tools. For example, the basic signal analysis will identify the centre frequency, shift, speed and mode of many signals. Once complete, the decoder will automatically start decoding the data and adjust its own centre frequency to take account of any minor mis-tuning. You can also continue to use your Windows based receiver control programs whilst decoding.

The secret to the W41PC-DSP's adaptability is the extremely powerful in-built processing. The digital signal processing is handled by two DSP56002 specialist signal processors each running at 64 MIPS (million instructions per second!). This is supplemented by a Texas TMS34010, 32-bit, 50MHz processor that handles all the system processing. This combination enables the W41PC-DSP to handle all the decoding requirements internally with the main PC just used to provide the interface to the operator. A side benefit (for professionals) is the facility to run up to eight W41PC-DSP cards in the same PC! If you're seriously into decoding you have the facility to save all the received data to disk for later evaluation. This looks to be a very mouth-watering package and I'm trying to get my hands on a review model. According to Joerg Klingenfuss the price will be around 5800 DM (6700DM in Europe inclusive of VAT). For more information contact Joerg Klingenfuss (see page 69).

End of an Era

Many of you will have noticed and missed the passing of Offenbach Meteo DCF37 and DCF54 on 117.4 and 134.2kHz respectively. This station has been a reliable source of good quality FAX charts since 1955. Although the station was scheduled to move to satellite back in April 1995 it actually kept going right through until 31 May 1996. **Phil Perkins** of Pervisell even managed to capture the final transmission and I've shown a copy here. Perhaps the most popular FAX images to come from this station were the regular Meteosat visual and infrared pictures of Europe. What we now need is some of you keen listeners to locate alternative sources of good satellite pictures. I doubt there's any that replicate the type of service available from Offenbach, but I know there are lots of stations sending regular satellite images over h.f. If you have any good tips please E-mail or write to the addresses at the head of the column - Watch this space for more information.

FAX DXing

Les Crossan is a very keen FAX listener and has this month contacted me a with a selection of interesting DX loggings. In addition to being a keen listener, Les has been busy writing his own FAX decoding software and all the results here have been achieved with this prototype decoder fed from a Lowe HF-150 receiver. The antenna is a simple 10m random wire with a balun and a.t.u. His development Fax program is called *Wefax for Win* and is currently at version 0.99b. Les will be letting me know when the system is available for more general release (i.e. when it gets to version 1.0). The point of all this is that you don't have to buy top range receivers and decoders to get good results - the most important ingredient is your skill in locating and tuning the required signals. Anyway, lets take a look at Les' log. You will see I've left in Les' comments as they provide some useful background. All frequencies are in MHz, time in UTC and assumes rpm/IOC of 120/576 unless stated.

7.535MHz, AXI33 Darwin Met, AUS coming through at good strength now (1645z - 20th October 1996) has been SINPO 44444 at times.

7.595MHz, AOK USN Rota, ESP, 0030z "AMD"?? FSME LERT 36HR MED SFC PROG 0045 OSME LERT 36 hr sig wave height prog 0100 NOGAPS FNMOC sfc anal. Saturdays 19th /12th Oct. SINPO 55555.

10.865MHz, NAM USN Norfolk, USA, 1900z decent sat pic. Weds. 16th Oct. SINPO 55555. All seems OK with this site, now.

4.560MHz, RLBx Moscow Met 2, 0045z unknown chart of Middle E. 0100z unknown chart of M. East. Occasional unid data bursts.

3.810MHz, RST75 Mensk Met, URS SINPO 22222 90/576 . Too much switched mode p.s.u. QRM for me to copy here.

2.0175, 2.195, 2.342 & 3.231.5MHz DHJ51 Grengel Met, D, SINPO 11111 (night).

4.570 & 4.598MHz SINPO 11111(day) horrendous multi-path with unid data bursts on 4598. Welcome Back, Grengel.

If you want to keep really up-to-date with Les' loggings, he regularly submits information to the World Utility News Club WUN. They can be found on the Internet, either via my Web page or directly at

http://www.leonardo.net/berri/wun

NAVTEX DXing

Keith Hayward of Manchester spends much of his decoding chasing NAVTEX stations on 518kHz. This service is provided by local PTTs and is intended to provide up-to-date navigational, safety and weather information for mariners. The use of 518kHz was specifically to provide a limited coverage so that all stations could operate to a pre-set time slot on the same frequency. The service is extremely effective and popular with mariners as you always get local information. It's a bit like a sophisticated version of the traffic news system that included with most new car radios. Despite the intention to keep coverage local, it's possible to pick-up these signals from a considerable distance. Keith's station comprises a Lowe HF-225 receiver fed by a 10m long wire that runs from an upstairs window down to a garden fence. The computer is an ICL M50 (386/20MHz) running HAMCOMM and JVFAX with a Pervisell interface. Using HAMCOMM for NAVTEX monitoring is very effective especially if you use the logging facility to store all received messages to a file. To activate this you just select RX Logging from the File menu. NB: this is only available in the registered version. Here's a listing of the stations that Keith has logged so far.

Niton Radio, 18 minutes past the hour every 4 hours.

Portpatrick, 0130, 0530, 0930, 1330, 1730, 2130.

Cullercoates, 0048, 0448, 0848, 1248, 1648, 2048.

Oostende, 0248, 0648, 1048, 1448, 1848, 2248.

Lyngby, 1931,2331,0331.

Stockholm, 2340.

Monsanto (Portugal), 2256, 0252.

Unid (Portugal?), 1935, 2337.

La Coruna (Spain), 0030, 0430, 2030.

Brest, 0000, 0400, 2000.

Unid (Canada?) ENG 0220.

Unid (Canada?) FR, 0300, 2300.

Rogaland, 0145, 0545.

Rekjavik, 0410, 0450, 2330.

Netherlands CG.,0050, 0350, 0750, 1150, 1550, 1950, 2350.

Unid (Canaries ?), 0120, 0520, 2120.

If you can help with the unidentified stations please let me know.

Readers Special Offers

Those of you who've ordered recently may well have suffered rather long delays - I'm sorry for that but unfortunately demand has outstripped my ability to supply. I've therefore been trying to find a better way to handle the offers. As a result I've managed to secure a very special offer with the Public Domain and Shareware Library, PDSL. They've put together a library set of all five disks for just £12.00 all inclusive. Using PDSL also makes ordering simpler as they accept all the usual credit cards so you can order by phone. In future, please direct all requests for this disk set to PDSL Winscombe House, Beacon Road, Crowborough, Sussex TN6 1UL. Tel: (01892) 663298 and request library volume H008739abcde. IBM PC Software(1.44Mb disks):
Disk A - JVFAX 7.0, HAMCOMM 3.1 and WXFAX 3.2.
Disk B - DSP Starter plus Texas device selection software.
Disk C - NuMorse 1.3.
Disk D - UltraPak 4.0.
Disk E - Mscan 1.3 and 2.0.

I am still supplying my FactPacks, but am looking at better ways to do this, so watch this space!
Beginners Utility Frequency List (Order Code BL).
Complex Signals Utility Frequency List (Order Code AL).
Decode Utility Frequency List (Order Code DL).
FactPack 1 Solving Computer Interference Problems (Order Code FP1).
FactPack 2 Decoding Accessories (Order Code FP2).
FactPack 3 Starting Utility Decoding (Order Code FP3).
FactPack 4 JVFAX and HAMCOMM Primer (Order Code FP4).
FactPack 5 On the Air with JVFAX and HAMCOMM (Order Code FP5).
FactPack 6 Internet Starter (Order Code FP6).

For the printed literature just send a self-addressed sticky label plus 50p per item (£1.50 for four, £2.50 for seven and £3.00 for nine).

Brian Oddy G3FEX, Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

LM&S

Long, Medium and Short Waves

Many listeners have contributed to this series during the year and to them I send my sincere thanks. At this time I wish them and all readers a Happy Christmas and good listening in the New Year.

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 September.

A weak transmission under DLF via Donebach on 153kHz was observed at 2240UTC on September 15 by **Sheila Hughes** in Morden. It seemed likely that it was coming from co-channel Bechar, Algeria until an orchestra and pianist were faintly heard playing classical music. A female announcer then spoke in a language which Sheila could not recognise. It was not Arabic, so it seemed likely that it was coming from Bod, Romania (1200kW) which also shares 153kHz.
A broadcast from Bod was also heard on the 15th by **Tony Stickells** (Thornton Heath) while he was on holiday in the Loire Valley, France. It was a first time reception for him too. The sky waves from Bod completely swamped co-channel DLF, rating 42342 at 2027. Earlier, he heard the Radiotelevisione Italiana (RAI) 10kW outlet at Caltanisseta, Italy on 189kHz, which rated 35223 at 1910. It was not heard again until 2221 on the 24th, after he had returned home.

Medium Wave Reports

The broadcasts from a number of m.w. stations in E.Canada and E.USA reached the UK during some nights in September - see chart. An early search was made on the 4th, 7th & 8th by **Harry Richards** in Barton-on-Humber. On the 4th WNRB on 1510 peaked to 33233 at 0130UTC and WQEW on 1560 was 33233 at 0150. On the 8th an ident from WBBR on 1130 was heard at 0025. More favourable conditions were around 0330 on the 4th & 5th, 0230 on the 7th & 9th and 2300 on the 16th & 25th by **David Sayles** in Doncaster. His log included two 5kW outlets - WSMN on 1590 at 0347 on the 5th and WARV on 1590 at 0200 on the 9th - both are subject to confirmation by QSL.

Up in Shetland, **John Slater** (Scalloway) heard quite a few stations between 0400 and 0500UTC. CJYQ on 930 was received between 0305 and 0430 on the 3rd, 10th, 17th, 18th & 22nd - typically at SIO222. Much to his surprise **Tony Stickells** could find no trace of transatlantic DX in France, but he did log CBM on 940, CJYQ, WNRB and WQEW before his departure from Thornton Heath.

In theory, the whole length of a transatlantic path must be in darkness before a m.w. transmission can traverse it but there have been rare instances when broadcasts before sunset in E.USA have arrived here, also when reception been possible up to an hour after sunrise in the UK. Such exceptional conditions were noted on October 1 by **Paul Crankshaw** in Troon. Between 0625 & 0650UTC he picked up the broadcasts from eight stations in E.Canada and the E.USA, mainly at good strength.

The sky waves from stations in India, the Middle East and N.Africa were also received in the UK after dark - see chart. During a holiday in the Conway Valley **Brian Keyte** (Bookham) explored the band with his car radio and a home made loop. Reception conditions were good. His extensive log included the broadcasts from Akraberg, Faeroes on 531, rated 34343 at 1740. Over 100 local radio stations were received during daylight - amongst them was the new ILR South Coast Radio outlet at Bexhill (0.75kW) on 945kHz.

A very welcome first report on local radio reception in Somerset came from **Nicola Hutchings** in Wellington. She says "I have picked up many of the m.w. stations on my Sony Walkman with excellent reception". There are some remarkably distant stations in her interesting list - see chart. Up in Galashiels **Ross Lockley** heard several stations which were either new to him or not heard for a long time including ILR Sabras Sound 1260, BBC R.Lincolnshire 1368 and BBC Somerset Sound 1323.

Short Wave Reports

Until the next sunspot cycle is well underway broadcasters may not use the **25MHz (11m)** band.

Unpredictable conditions exist in the **21MHz (13m)** band - often poor but sometimes remarkably good! When favourable R.Australia's broadcast to Asia via Darwin on 21.725 (Eng 0630-1100) has reached the UK. It was rated 43333 at 0810 by Bernard Curtis in Stalbridge; 44433 at 0910 by **Stan Evans** in Herstmonceux; 44434 at 1018 by **John Eaton** in Woking.

Long Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	G*,J*
153	Donebach DLF	Germany	500	A,B*,C*,E*,F,G,I,J,K,M
153	Bod	Romania	1200	C*,K*
162	Allouis	France	2000	A,B*,C,D*,E*,F,G,J,K*,L*,M
162	Agri	Turkey	1000	H
171	Nador Medi-1	Morocco	2000	G*,J*,K*
171	B'shakovo etc	Russia	200	A,B*,C*,E*,F,G*,J,M
177	Oranienburg	Germany	750	A,B*,E*,F,G,J,K*,M
180	Polati	Turkey	1200	H
183	Saarlouis	Germany	2000	A,B*,C,D*,E*,F,G,I,J,K,L*,M
189	Caltanissetta	Italy	10	K*
198	Etimesgut	Turkey	120	H
198	Ouargla	Algeria	1000	K*
198	BBC R-4 via ?	UK	?	A,B*,C,D*,E*,F,I,J,K,L*,M
207	Munich DLF	Germany	500	A,B*,E*,F,G,J,K,L*
207	Al Karanah	Jordan	600	H
207	Azilal	Morocco	800	G*,J*,K*
216	Roumoules RMC	S.France	1400	A,B*,C,E*,F,G,J,K,L*,M
225	Raszyn Resv	Poland	?	A,B*,C*,E*,F,G*,J,K*,L*,M
234	Beidweiler	Luxembourg	2000	A,B*,C,E*,F,G,I,J,K,M
243	Kalundborg	Denmark	300	A,C*,E*,F,G,J,K,M
243	Erzurum	Turkey	200	H
252	Tipaza	Algeria	1500	C*,F*,G*,J*,K*
252	Atlantic 252	S.Ireland	500	A,B*,C*,D*,E*,F,G,I,J,K,L*,M
261	Burg(R.Ropa)	Germany	200	A,C*,F,G,J,K*,M
261	Taldom Moscow	Russia	2500	E*,J*,L*
270	Topolna	Czech Rep	500	B*,C*,E*,F,G,J,K*,L*,M
279	Minsk	Belarus		B*,C*,E*,F*,G*,J*,K

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

Listeners:-
(A) Paul Bowery, Burnham-on-Crouch.
(B) Ted Harris, Manchester.
(C) Sheila Hughes, Morden.
(D) Stephen Jones, Dswestry.
(E) Eddie McKeown, Newry.
(F) George Millmore, Wootton, IoW.
(G) Fred Pallant, Storrington
(H) John Parry, Larnaca, Cyprus.
(I) Tom Smyth, Co.Fermanagh.
(J) Tony Stickells, Thornton Heath.
(K) Tony Stickells, while in Loire Valley, France
(L) Norman Thompson, Oadby.
(M) Phil Townsend, E.London.

Also received during the day were UAER, Dubai 21.605 (Ar to Eur 0615-1030), rated 35332 at 0845 by **Eric Shaw** in Chester; UAER, Dubai 21.605 (Eng to Eur 1030-1055) 24443 at 1040 by Fred Pallant in Storrington; RFI via Issoudun 21.620 (Fr to E.Africa 0800-1300) 22222 at 1050 by **Robert Connolly** in Kilkeel; RFI via Allouis? 21.580 (Fr to Africa? 1100-1500?) 44444 at 1110 in Scalloway; UAER, Dubai 21.605 (Eng to Eur 1330-1355) 44444 at 1333 by **Eddie McKeown** in Newry; REE via Noblejas 21.570 (Sp to S.America 1200-1800) 35444 at 1441 by **Darren Beasley** in Bridgwater; BBC via Ascension Is 21.660 (Eng to W/E/S.Africa 1100-1700) 44333 at 1508 by **Rhoderick Illman** in Oxted; R.Japan via Gabon 21.700 (Jap to Eur, M.East, Africa 1600-1700) SIO222 at 1630 by **Phil Townsend** in E.London; UAER, Dubai 21.605 (Eng to Eur 1600-1640) 24532 at 1637 by **David Edwardson** in Wallsend.

The propagation conditions in the **17MHz (16m)** band vary daily. When favourable, R.Australia's broadcasts to Asia and Pacific areas via Darwin may reach the UK on two frequencies: 17.715 (Eng 0200-0858), rated 45434 at 0728 by **Gerry Haynes** in Bushey Heath; 17.880 (Eng 0200-0758) 15551 at 0637 in Wallsend.

Other broadcasters using this band before noon include R.Austria Int 17.870 (Ger, Eng, Fr to M.East 0500-0800) 44444 at 0745 in Stalbridge; BBC via Masirah Is, Oman 17.790 (Eng to India, W.Asia 0600-0830, 1000-1130) 34553 at 0625 by **John Parry** in Larnaca, Cyprus; China Nat.Radio 17.605 (Chin [CNR-1] 0000-1230) 24332 at 0801 in Oxted; R.Slovakia Int 17.550 (Eng to Australia 0830-0857) 43333 at 0835 by **Chris Shorten** in Norwich; Africa No.1, Gabon 17.630 (Fr to W.Africa 0700-1600) 33333 at 1000 in Chester; AIR via Bangalore 17.387 (Eng to Pacific areas 1000-1100) 44343 at 1040 in Woking; R.Pakistan via Karachi 17.900 (Eng to Eur 1100-1120) 34443 at 1110 in Kilkeel; BBC via Ascension Is 17.820 (Sp to S.America 1100-1130) SIO211 at 1115 by **Philip Rambaut** in Macclesfield; DW via Sines? 17.860 (Eng to W.Africa 1100-1150) 44444 at 1115 in Scalloway.

After mid-day RCI via Sackville, Canada 17.820 (Eng, Fr to Eur, Africa 1330-1500 Mon-Sat) was SIO322 at 1400 in E.London; BBC via Ascension Is 17.830 (Eng to W/C.Africa 0730-2100) 33433 at 1415 in Herstmonceux; R.Nederlands via Bonaire 17.605 (Eng to S/E/W.Africa 1830-2025) 44243 at 1933 in Newry; Monitor R.Int via WSHB 17.510 (Eng to Africa 1800-2000?) 25333 at 1934 in Bridgwater; WYFR Okeechobee, USA 17.845 (Eng to Africa 2000-2300?) 34333 at 2028 by **Ron Damp** in E.Worthing; WYFR via Okeechobee, USA 17.555 (Eng to Eur 1800-2200?) 25532 at 2135 in Storrington.

Daily variations in propagation also occur in the **15MHz (19m)** band. During the early morning Radio Australia may be heard via Shepparton on 15.240 (Eng to Pacific areas 0030-0730); also 15.415 (Eng to Asia, Pacific 0030-0858). They were logged as 25232 at 0556 and 15432 at 0732 respectively in Bushey Heath. Also noted during the morning were the Voice of Malaysia, Kajang 15.295 (Eng, Bahasa, China to S.Asia 0555?-1230?), rated SIO232 at 0800 in Doncaster; R.Pakistan, Islamabad 15.470 (Eng to Eur 0800-0848) SIO333 at 0802 by Francis Hearne in N.Bristol; R.Slovakia Int 15.460 (Eng to Australia 0830-0857) 54444 at 0845 in Norwich; R.Prague via Litomysl 15.640 (Eng to Australia 0900-0930) 33433 at 0900 in Galashiels; RAI Rome 15.240 (It to Africa 0600-1300) SIO322 at 0910

Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
520	Hof/Hurzburg (BR)	Germany	0.2	C*,N*,O*
526	Vatican R.	Italy	5	O*
531	Ain Beida	Algeria	600	I*,N*,O*
531	Torshavn	Faeroe Is.	100	G
531	Leipzig	Germany	100	C*,E*,H*,I*,N*
531	RNE5 via ?	Spain	?	E*,H*,I,N*,O(
531	Beromunster	Switzerland	500	I,N*,O
540	Wavre	Belgium	150/50	A,H*,I,N,O,P
540	Solt	Hungary	2000	H*,N*,O*
540	Sidi Bennour	Morocco	600	B*,C*,F*,I*,O*
540	Vitoria(EI)	Spain	10	O*
549	Les Trembles	Algeria	600	B*,I*,N*,N*
549	Thurnau (DLF)	Germany	200	A,D*,H*,I,N,O,P
558	Rostock(NDR)	Germany	20	H*,M
558	RNE5 via ?	Spain	?	H*,I*,O*
567	Tullamore(RTE1)	Ireland (S)	500	A,C*,F*,G,I,M,N*,O,P
567	RNE5 via ?	Spain	?	O*
576	Bechar	Algeria	400	O*
576	Muhlacker(SDR)	Germany	500	A,C*,H*,I*,N*,O
576	Riga	Latvia	500	I*
576	Barcelona(RNE5)	Spain	50	C*,I*,N*,O*
585	Paris(FIP)	France	8	A,I,N,O,P
585	Madrid(RNE1)	Spain	200	C*,H*,I*,N*,O*
585	Dumfries(BBCScot)	UK	2	G
594	Frankfurt(HR)	Germany	1000/400	A,C*,H*,I*,N*,O*,P
594	Oujda-1	Morocco	100	I*
594	Muge	Portugal	100	H*,N*,O*
603	Lyon	France	300	O
603	Sevilla(RNE5)	Spain	50	F*,H*,I*,M*,N*,O*
603	Newcastle(BBC)	UK	2	G,H*
612	Athlone(RTE2)	Ireland (S)	100	C*,G,I,N*,O*,P
612	RNE1 via ?	Spain	10	I*,N*,O*
621	Wavre	Belgium	80	A,H*,I,N,O,P
621	Batra	Egypt	2000	O*
621	RNE1 via ?	Spain	10	N*,O*
621	Barcelona(OCR)	Spain	50	H*,I*
630	Vigra	Norway	100	H*,N*
630	Tunis-Djedeida	Tunisia	600	B*,H*,I*,N*,O
639	Praha(Liblice)	Czech	1500	C*,I*,N*,O
639	RNE1 via ?	Spain	?	C*,H*,I*,N*,O
648	RNE1 via ?	Spain	10	H*,N*,O*
648	Orfordness(BBC)	UK	500	A,C*,I,N,O,P
657	Neubrandenburg(NDR)	Germany	250	C*,H*,N*,O*
657	Napoli	Italy	120	I*,N*,O*
657	Madrid(RNE5)	Spain	20	H*,I*,N*,O*
657	Wrexham(BBCWales)	UK	2	A,E,H*,N*
666	MesskirchRohrd(SWF)	Germany	300/180	C*,H*,N*,O*
666	Sitkunai(R.Vilnius)	Lithuania	500	H*
666	Lisboa	Portugal	135	H*
666	Barcelona(COPE)	Spain	10	N*,O*
675	Marseille	France	600	H*,N*,O*
675	Lopic(R10 Gold)	Holland	120	A,C*,E,H*,I,N,O,P
684	Sevilla(RNE1)	Spain	500	C*,H*,I*,N*,O*
684	Avala(Beograd-1)	Yugoslavia	2000	H*,I*,N*,O*
693	Tortosa(RNE1)	Spain	2	C*,H*,N*,O*
693	Droitwich(BBC5)	UK	150	A,C*,F*,I*,M,N,O,P
702	Flensburg(NDR)	Germany	5	A,H*,N*
702	Monte Carlo	Monaco	40	I*,O
702	Slovensko 1 via ?	Slovak Rep.	?	N*
702	Zamora(RNE1)	Spain	10	H*,N*,O
711	Rennes 1	France	300	A,H*,I,N,O,P
711	Heideberg	Germany	5	C*,H*,N*,O*
711	Laayoune	Morocco	600	I*,O*
720	Lisnagarvey(BBC4)	Ireland (N)	10	G,I*
720	Norte	Portugal	100	H*,O*
720	Sfax	Tunisia	200	O*
720	Lots Rd,Ldn(BBC4)	UK	0.5	A,C*,F*,I*,M,N
729	Cork(RTE1)	Ireland (S)	10	G,H*,I*,N*
729	RNE1 via ?	Spain	?	C*,H*,I*,N*,O
738	Paris	France	4	A,H*,I,N,O
738	Poznan	Poland	300	H*,I*
738	Barcelona(RNE1)	Spain	500	C*,I*,N*,O*
747	Flevo(Hilv2)	Holland	400	A,C*,H*,I,N,O,P
747	Cadiz(RNE5)	Spain	10	H*,N*
756	Braunschweig(DLF)	Germany	800/200	A,C*,H*,I*,N*,O*
756	Bilbao(EI)	Spain	5	H*,I*,N*,O*
756	Redruth(BBC)	UK	2	I,M
765	Sottens	Switzerland	500	H*,I*,N*,O
774	Sofia	Bulgaria	50	H*
774	Abis	Egypt	500	O*
774	Enniskillen(BBC)	Ireland (N)	1	G
774	RNE1 via ?	Spain	?	C*,H*,I*,N*,O*
783	Burg	Germany	1000	C*,F*,H*,I*,N*,O*
783	Miramar(R.Porto)	Portugal	100	H*,O*
792	Limoges	France	300	I,O
792	Lingen(NDR)	Germany	5	C*,H*,I*,N*,O*
792	Sevilla(SER)	Spain	20	H*,I*,N*,O*
792	Londonderry(BBC)	UK	1	M
801	Munchen-Ismaning	Germany	300	C*,H*,I*,N*,O*
801	RNE1 via ?	Spain	?	H*,I*,N*,O*
810	Madrid(SER)	Spain	20	H*,I*,N*,O*
810	Westerglen(BBCScot)	UK	100	C*,E,G,I*,M,N*,O*
819	Batra	Egypt	450	I*,N*,O*
819	Toulouse	France	50	H*
819	Trieste	Italy	25	N*,O*
819	Warsaw	Poland	300	H*,I*,M*,N*
828	Hannover(NDR)	Germany	100/5	H*,N*,O*
828	Rotterdam	Holland	20	A,H*,J,N,O
837	Nancy	France	200	A,I,M*,O
837	COPE via ?	Spain	?	H*,I*,N*,O*
846	Rome	Italy	540	H*,I*,N*,O*
855	Berlin	Germany	100	H*
855	R.Bucharest	Roumania	750	O*
855	RNE1 via ?	Spain	?	H*,I*,N*,O*
864	Santah	Egypt	500	B*,N*,O*
864	Paris	France	300	A,I,N,O,P
864	Socuellamos(RNE1)	Spain	2	I*,N*,O*
873	Frankfurt(AFN)	Germany	150	C*,E,H*,I*,N*,O*
873	Zaragoza(SER)	Spain	20	H*,I*,N*,O*
873	Enniskillen(R.UI)	UK	1	G
882	Wachenbrunn	Germany	250	N*
882	COPE via ?	Spain	?	H*,I*,N*,O*
882	Penmon(BBCWales)	UK	10	G
882	Washford(BBCWales)	UK	100	A,C*,E,F*,I,M,N,O,P
891	Algiers	Algeria	600/300	B*,H*,N*,O
891	Huisberg	Netherlands	20	A,E,H*,I*,N*
900	Brno(CRo2)	Czech Rep	25	H*
900	Milan	Italy	600	H*,I*,N*,O*
900	COPE via ?	Spain	?	N*,O*
900	Quayyat	Saudi Arabia	1000	N*
909	B'mans Pk(BBC5)	UK	140	A,C*,I,M,N,O
918	Plesivec(Sloven'nR)	Slovenia	600/100	H*,I*,N*,O*
918	Madrid(R.Int)	Spain	20	H*,I*,N*,O*
927	Wolvertem	Belgium	300	A,H*,I,N,O,P
927	Evora(RRE)	Portugal	1	N*
936	Bremen	Germany	100	A,C*,H*,I*,M*,N*,O*
936	Venezia	Italy	20	I*,N*
936	RNE5 via ?	Spain	?	I*,N*,O*
945	Toulouse	France	300	H*,I*,N*,O
954	Brno (CRo2)	Czech Rep.	200	I*,N*
954	Madrid(CI)	Spain	20	E*,I*,N*,O*
963	Pori	Finland	600	H*,I*,O*
963	Tir Chonaill	Ireland (S)	10	I*,M
972	Hamburg(NDR)	Germany	300	A,C*,H*,I*,N*,O*
972	RNE1 via ?	Spain	?	N*,O*
981	Alger	Algeria	600/300	A,I*,N*,O*
981	Coimbra	Portugal	10	N*
990	Berlin	Germany	300	C*,H*,I*,N*,O*
990	Potenza	Italy	10	O*
990	R.Bilbao(SER)	Spain	10	H*,I*,N*,O*
990	Redmoss(BBC)	UK	1	H*
990	Tywyn(BBC)	UK	1	A,G,M,N*
999	Schwerin (RIAS)	Germany	20	H*
999	Torino	Italy	20	N*,O*
999	Madrid(COPE)	Spain	50	H*,N*,O*
1008	SER via ?	Canaries/Spain	?	H*,N*,O*
1008	Flevo(Hilv-5)	Holland	400	A,E,H*,I,N,O,P
1017	Rheinsender(SWF)	Germany	600	A,C*,H*,I*,N*,O
1017	RNE5 via ?	Spain	?	H*,I*
1026	SER via ?	Spain	?	H*,I*,N*,O*
1035	RAI via ?	Italy	?	O*
1035	Lisbon(Prog3)	Portugal	120	H*
1044	Dresden(MDR)	Germany	250	H*,N*,O*
1044	Sebaa-Aioun	Morocco	300	I*
1044	SER via ?	Spain	?	I*,N*,O*
1053	Zarogoza(COPE)	Spain	10	H*,N*,O*
1053	Talk R.UK via ?	UK	?	C*,I,M,N,O,P
1062	Kalundborg	Denmark	250	A,H*,I*,N*,O*
1062	R.Uno via ?	Italy	?	N*,O*
1071	R.France via ?	France	?	H*
1071	Brest	France	20	I
1071	Lille	France	40	A,N,O,P
1071	Riga	Latvia	50	I*
1071	Bilbao(EI)	Spain	5	I*,N*,O*
1071	Talk Radio UK via ?	UK	?	N*
1080	Katowice	Poland	1500	A*,H*,I*,N*,O*
1080	SER via ?	Spain	?	I*,N*,O*
1089	Adrar	Algeria	5	O*
1089	Krasnodar	Russia	300	H*
1089	Talk Radio UK via ?	UK	?	C*,I,M,N,O,P
1098	Nitra(Jarok)	Slovakia	1500	A,H*,I*,N*,O*
1098	RNE5 via ?	Spain	?	H*,O*
1107	AFN via ?	Germany	10	C*,H*,N*,O*
1107	Rome (RAI)	Italy	6	O*
1107	RNE5 via ?	Spain	?	N*,O*
1107	Talk R.UK via ?	UK	?	C*,I,M,N,O,P
1116	Bari	Italy	150	A,N*,O*
1116	Pontevedra(SER)	Spain	5	O*
1125	La Louviere	Belgium	20	A,H*,I*,O,P
1125	Deanovec	Croatia	100	A*,N*,O*
1125	RNE5 via ?	Spain	?	I*,N*,O*
1125	Llandrindod Wells	UK	1	G
1134	COPE via ?	Spain	2	I*,N*,O*
1134	Zadar(Croatian R)	Yugoslavia	600/1200	A,H*,I*,N*,O*
1143	AFN via ?	Germany	1	A*,H*,I*,N*,O*
1143	R.Due via ?	Italy	?	O*
1143	COPE via ?	Spain	2	H*,I*,N*,O*
1152	Cluj	Roumania	950	O*
1152	RNE5 via ?	Spain	10	O*
1161	Strasbourg(Flnt)	France	200	A*,H*,I*,N*,O*
1170	Lipacy	Belarus	150	A*
1170	Tbilisskaya	Russia	1200	O*
1179	SER via ?	Spain	?	N*,O*
1179	Soivesborg	Sweden	600	A,H*,I*,N*,O*
1188	Kuurne	Belgium	5	A,H*,N*,O*,P
1188	Reichenbach(MDR)	Germany	5	H*,N*,O*
1188	Szolnok	Hungary	135	A*,I*
1197	Munich(VOA)	Germany	300	H*
1197	Vitoria(EI)	Spain	5	O*
1197	Virgin via ?	UK	?	C*,I,M,N,O,P
1206	Bordeaux	France	100	A,O
1206	Wroclaw	Poland	200	A*,H*,N*,O*
1215	Virgin via ?	UK	?	C*,I,M,N,O
1224	Vidin	Bulgaria	500	A*
1224	Lelystad	Holland	50	A,H*,J,N,O
1233	Liege	Belgium	5	H*,O*
1233	RFE via ?	Czech Rep.	40	A*
1233	Virgin via ?	UK	?	N,O
1242	Marseille	France	150	A*,H*,N*,O
1242	Virgin via ?	UK	?	N*
1251	Marcali	Hungary	500	A*,H*,N*,O*
1251	Huisberg	Netherlands	10	A*,H*,N*
1260	SER via ?	Spain	?	I*,H*,N*,O*
1260	Guildford (V)	UK	0.5	G,N,O,P
1269	Neumunster(OLF)	Germany	600	A,C*,H*,I*,N*,O*
1269	COPE via ?	Spain	?	N*,O*
1278	Strasbourg	France	300	A,N
1278	Dublin/Cork(RTE2)	Ireland (S)	10	A*,G,I*,M,N,O*
1287	RFE via ?	Czech Rep.	400	H*,I*,N,O*
1287	Lerida(SER)	Spain	10	I*,N*,O*
1296	Valencia(COPE)	Spain	10	A*,N*,O*
1296	Orfordness(BBC)	UK	500	A,G,M,N*
1305	Rzeszow	Poland	100	H*,M*
1305	RNE5 via ?	Spain	?	H*,O*
1314	Kvitsoy	Norway	1200	A,C*,H*,I*,N*,O
1323	Zyyi(BBC)	Cyprus	200	C*,N*
1323	W'brunn (V.Russia)	Germany	1000/150	H*,N*,O*
1332	Rome	Italy	300	H*,I*,O*
1341	Lakihegy	Hungary	300	A,O*
1341	Lisnagarvey(BBC)	Ireland (N)	100	A,C*,G,I*,M,N*,O*
1341	Tarrasa(SER)	Spain	2	N*
1350	Nancy/Nice	France	100	A,C*,H*,I*,N,O
1359	Arganda (RNE-FS)	Spain	600	H*,I*,N*,O*
1368	Foxdale(Manx R)	I.O.M.	20	C*,G,I*,M,N*,O*
1377	Lille	France	300	A,H*,I,N,O,P
1386	Athens	Greece	50	B*
1386	Bolshakovo	Russia	2500	A,E*,H*,I*,N*,O*
1395	TWR via Lushnje	Albania	500	H*,O*
1395	Lopic?	Netherlands	?	A,C*,H*,I*,J,N,O,P
1404	Brest	France	20	A,H*,I*,M*,N*,O
1413	RNE5 via ?	Spain	?	I*,N*
1422	Alger	Algeria	50/25	B*
1422	Heusweiler(DLF)	Germany	1200/600	A,C*,H*,I*,M*,N,O*
1431	Kopani	Ukraine	500	H*
1440	Marnach(RTL)	Luxembourg	1200	A,C*,D*,H*,I,N*,O*
1440	Damman	Saudi Arabia	1500	A*,H*,N*,O*
1449	Squinzano	Italy	50	A,I*,N*,O*
1449	Redmoss(BBC)	UK	2	G,H*,M*,N*
1467	Monte Carlo(TWR)	Monaco	1000/400	H*,I*,N*,O*
1476	Dubai	UAE	1500	O*
1485	AFN via ?	Germany	1	N*
1485	SER via ?	Spain	?	O
1485	Carlisle(BBC)	UK	1	C*,G
1494	Clermont-Ferrand	France	20	N*,O
1494	St.Petersburg	Russia	1000	A*,H*,I*,N*,O*
1503	RNE5 via ?	Spain	?	N*,O*
1512	Wolvertem	Belgium	600	A,E*,H*,I*,K*,N,O,P
1521	Duba	Saudi Arabia	2000	A*,I*,N*,O*
1530	Vatican R	Italy	150/450	C*,I*,M*,N*,O*,Q*
1539	SER via ?	Spain	?	N*,O*
1557	Osijek	Croatia	10/20	A*
1557	Nice	France	300	M*,O
1566	Mjadzel	Belarus	10	A*
1566	Nagpur	India	1000	L*
1566	Samen	Switzerland	300	I*
1566	Sfax	Tunisia	1200	H*,N*,O*
1575	Genova	Italy	50	N*,O*
1575	SER via ?	Spain	5	I*,N*,O
1584	SER via ?	Spain	2	I*,N*,O*
1593	Holzkirchen(VOA)	Germany	150	H*,I*,N*,O*
1602	SER via ?	Spain	?	I*,N*,O*
1602	Vitoria(EI)	Spain	10	I*,O
1611	Vatican R	Italy	15	N,O

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

Listeners:-
(A) Paul Bowery, Burnham-on-Crouch.
(B) John Eaton, Woking.
(C) Ted Harris, Manchester.
(D) Francis Hearne, N.Bristol.
(E) Sheila Hughes, Morden.
(F) Stephen Jones, Oswestry.
(G) Brian Keyte, while in Conway Valley.
(H) Eddie McKeown, Newry.
(I) George Millmore, Wootton, IoW.
(J) Roy Patrick, Derby.
(K) Clare Pinder, while in Appleby.
(L) David Sayles, Doncaster.
(M) Tom Smyth, Co.Fermanagh.
(N) Tony Stickells, Thornton Heath.
(O) Tony Stickells, while in Loire Valley, France.
(P) Phil Townsend, E.London.
(Q) Ted Walden-Vincent, Gt.Yarmouth.

in Macclesfield; BBC via Masirah Is, Oman 15.310 (Eng to S.Asia 0300-0915, 1000-1500) 34433 at 1110 in Kilkeel.

During the afternoon R.Australia via Darwin 15.530 (Eng to S.Asia 1100-1300) was 31532 at 1215 in Newry; R.Tashkent, Uzbekistan 15.295 (Eng to Asia 1200-1230 & 1330-1400) 44444 at 1215 in Scalloway and 34232 at 1350 in Chester; WEWN Vandiver, USA 15.665 (Eng to Eur 1200?-1756) 45533 at 1240 in Herstmonceux; Voice of Vietnam, Hanoi 15.010 (Fr, Eng to Asia 1300-1357) SIO333 at 1330 in E.London; Voice of Greece, Athens 15.630 (Gr, Eng to N.America 1300-1350) 45544 at 1333 in Bridgwater; BBC via Antigua, W.Indies 15.220 (Eng to C/S.America 1100-1400) 24532 at 1343 in Wallsend; RCI via Sines, Portugal 15.325 (Eng to Eur, M.East, Africa 1330-1400) 55555 at 1344 by **Tom Winzor** in Plymouth; VOA via Kavala, Greece 15.255 (Eng to S.Asia 1400-1800) SIO444 at 1500 by **Tom Smyth** in Co.Fermanagh; BBC via Seychelles 15.420 (Som, Eng, Swa 1300-1700) 32242 at 1655 in Woking.

Later, VOA via Selebi-Phikwe, Botswana 15.445 (Eng to Africa 1630-1800 [Sat/Sun add 1600-1630]) was rated 33333 at 1745 by **Vera Brindley** in Woodhall Spa; WEWN Birmingham, USA 15.695 (Eng to Eur? 1800-1900) 25333 at 1826 in Storrington; BBC via Ascension Is 15.400 (Eng to Africa 1430-2330) 43334 at 1845 by **Gerald Guest** in Dudley; HCJB Quito 15.540 (Eng to Eur 1900-2158) 33233 at 1900 by **Clare Pinder** in Appleby; R.Bras, Brazil 15.265 (Eng, Ger to Eur 1800-2050) 22222 at 1912 by **Thomas Williams** in Truro; R.Nederlands via Bonaire 15.315 (Eng to S/E/W.Africa 1830-2025) 43333 at 1950 in Stalbridge; RCI via Sackville 15.150 (Eng to Eur, Africa 2000-2130) 45544 at 2025 in E.Worthing; WWCR Nashville, USA 15.685 (Eng to Eur 1100-0000) SIO333 at 2143 by **Ted Walden-Vincent** in Gt.Yarmouth; VOFC Taiwan via WYFR? 15.600 (Eng to Eur? 2200-2300) 15443

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	A,C,G,I,L,M,N
585	R.Solway	B	2.00	B,C,G
603	Cheltenham R.	I	0.10	B,C,D*,F,G,I,L,N
603	InvictaSG,Litt'brne	I	0.10	A,C,E,I,L,O
630	R.Bedfordshire(3CR)	B	0.20	A,B,C,F,G,I,L,N,O
630	R.Cornwall	B	2.00	B,C,G,I
657	R.Clwyd	B	2.00	B,C,G,I,K,N,O
657	R.Cornwall	B	0.50	B,C,G,I
666	Gemini AM, Exeter	I	0.34	C,G,I,L
666	R.York	B	0.80	B,C,G,H,O
729	BBC Essex	B	0.20	A,C,G,I,L,O
738	Hereford/Worcester	B	0.037	B,C,G,I,L,O
756	R.Cumbria	B	1.00	B,C,G,H,K
756	R.Maldwyn, Powys	I	0.63	B,C,F,G,I
765	BBC Essex	B	0.50	A,C,G,I,L,P
774	R.Kent	B	0.70	A,C,E,I,L,M,N,O
774	R.Leeds	B	0.50	B,C,G,H
774	3 Counties SG, Glos	I	0.14	C,G,I
792	Chiltern SG,Bedford	I	0.27	A,C,G,I,L,N,O
792	R.Foyle	B	1.00	C,G,K
801	R.Devon & Dorset	B	2.00	B,C,D,G,I,L*,O
828	Chiltern SG, Luton	I	0.20	A,C,D,G,N,O
828	Magic 828, Leeds	I	0.12	C
828	R.WM	B	0.20	C,G
828	2CR CG, Bournemouth	I	0.27	C,D,G,I,O
837	R.Cumbria/Furness	B	1.50	C,G,H
837	R.Leicester	B	0.45	A,C,E,G,I,L,N,O
855	R.Devon & Dorset	B	1.00	C,I
855	R.Lancashire	B	1.50	B,C,G,H
855	R.Norfolk	B	1.50	A,C,K,L,O
855	Sunshine 855,Ludlow	I	0.15	A,C,D,F,G,L,P*
873	R.Norfolk	B	0.30	A,C,E,I,L,N,O
936	Brunel CG, W.Wilts	I	0.18	B,C,G,I,L
945	S.Coast R, Bexhill	I	0.75	G
945	Derby (Gem AM)	I	0.20	A,B,C,E*,F*,G,H*,I,L,M*,N
954	Gemini AM, Torquay	I	0.32	C,G,I
954	Wyvern AM, Hereford	I	0.16	A,C,E*,F*,G,H
963	Asian Sd,Manchester	I	?	B,C,G,H
963	Viva, Southall	I	1.00	A,C,G,I,L,M*
990	R.Devon & Dorset	B	1.00	B,C,G,I,J
990	Gt.Yks G, Doncaster	I	0.25	A,C
990	WABC, Wolverhampton	I	0.09	A,C,G,N
999	Gem AM, Nottingham	I	0.25	A,C,G,N
999	Red Rose G, Preston	I	0.80	B,C,G,H*,J
999	R.Solent	B	1.00	A,C,E,G,I,L,M,O
1017	WABC, Shrewsbury	I	0.70	C,G,H,J
1026	R.Cambridgeshire	B	0.50	A,C,E,G,H,L,N,O
1026	Downtown, Belfast	I	1.70	B,C,G,H,J,K
1026	R.Jersey	B	1.00	B,C,F,I,M
1035	RTL Country 1035	I	1.00	A,C,F*,G,H*,I,L,M*
1035	R.Sheffield	B	1.00	C
1035	N.Sound, Aberdeen	I	0.78	B,C,F*,G,H
1035	W.Sound, Ayr	I	0.32	C,G
1107	Moray Fth,Inverness	I	1.50	C,H
1116	R.Derby	B	1.20	B,C,F*,G,H,J,K,L*,N,O
1116	R.Guernsey	B	0.50	A,C,F,G,I,L
1152	Amber, Norwich	I	0.83	A,C*,D*,F*,G,H*,N
1152	Clyde 2, Glasgow	I	3.06	C,H,J
1152	GNR, Newcastle	I	1.80	C,G,H
1152	LBC 1152	I	23.50	A,C,G,I,L,M
1152	Pic'ly 1152,Manch'r	I	1.50	B,C,G,J
1152	Xtra-AM, Birmingham	I	3.00	C
1161	R.Bedfordshire(3CR)	B	0.10	A,G,N,O
1161	Brunel CG, Swindon	I	0.16	B,C,D*,G,I,J
1161	Gt.Yks, Hull	I	0.35	C,F*,G,H*
1161	Southern Counties R	B	1.00	A,C,I,L,M
1161	Tay AM, Dundee	I	1.40	B,C*,F*,G,H,J
1170	Amber SGR, Ipswich	I	0.28	A,C*,G,H*,N
1170	GNR, Stockton	I	0.32	C*,F*,G,H
1170	SCR, Portsmouth	I	0.50	C,E,I,M
1170	Signal G,Stoke-on-T	I	0.20	C,G,H*
1170	Swansea Snd,Swansea	I	0.58	B,C,G,H*,J,L
1170	1170AM,High Wycombe	I	0.25	C*,G,L*,O
1242	InvictaSG,Maidstone	I	0.32	A,C,E,I,L,M,N,O
1242	IoW Radio, Wootton	I	0.50	C,F,G,I
1251	Amber SGR,Bury StEd	I	0.76	A,C,F*,G,H*,L,N,O
1260	Brunel CG, Bristol	I	1.60	C,I,J
1260	Marcher G, Wrexham	I	0.64	C,F*,G,H,J
1260	SabrasSnd,Leicester	I	0.29	C,F*,H,N
1260	R.York	B	0.50	B,C,H
1278	Gt.Yks G, Bradford	I	0.43	C,H,I
1296	Radio XL,Birmingham	I	5.00	A,B,C,F,G,I,L,M*,N
1305	Gt.Yks G, Barnsley	I	0.15	B,G,H,N
1305	Premier via ?	I	0.50	A,C,G,H*,I,L
1305	Touch AM, Newport	I	0.20	C,D*,G,H,I
1323	S.Coast R,Southwick	I	0.50	A,C,E,I,L,M,O
1323	SomersetSnd,Bristol	B	0.63	A,B,C,D,G,H
1332	Premier, Battersea	I	1.00	A,B,C,E,G,H*,I,L,M*
1332	CG 1332, Peterboro	I	0.60	A,C,G,H*
1332	Wiltshire Sound	B	0.30	C,D,G,I
1359	BreezeAM,Chelmsford	I	0.28	A,C,G,H*,L
1359	CG 1359, Coventry	I	0.27	C,G,H
1359	R.Solent	B	0.85	C,G,I,M*
1359	Touch AM, Cardiff	I	0.20	C,D*,H
1368	R.Lincolnshire	B	2.00	A,C,E*,H
1368	Southern Counties R	B	0.50	A,C,E,I,L,O
1368	Wiltshire Sound	B	0.10	C,I
1377	Asian Sound,Manch'r	I	?	C,G,K,L*
1413	Premier via ?	I	0.50	A,C,E,G,H,I,L,M*
1431	Breeze AM, Southend	I	0.35	A,C,D*,G,H*,I,L,M*,O
1431	CG 1431, Reading	I	0.14	C,G,H,I,L
1449	R.Peterboro/Cambs	B	0.15	A,B,C,G,I,N
1458	R.Cumbria	B	0.50	B,C,G,H,J
1458	R.Devon & Dorset	B	2.00	B,C,I
1458	1458 LiteAM Manch'r	I	5.00	C,H,J,P*
1458	R.Newcastle	B	2.00	C,H
1458	Sunrise, London	I	50.00	A,C,D,F*,G,H*,I,L,M*
1458	Radio WM	B	5.00	C,D*
1476	CountySnd,Guildford	I	0.50	A,B,C,D*,F,G,H,I,L,M*,P*
1485	R.Humberside (Hull)	B	1.00	A,C,D*,G,H
1485	R.Merseyside	B	1.20	B,C,E*,G,H,L*
1485	Southern Counties R	B	1.00	A,C,G,I,L,M,O
1503	R.Stoke-on-Trent	B	1.00	A*,B,C,E*,F*,G,H,I*,L,M*
1521	R.1521 Craigavon,NI	I	0.50	B,C,F*,G,H,K
1521	Fame 1521, Reigate	I	0.64	A,C,F*,G,H,I,L,O
1530	R.Essex	B	0.15	A,G,I,L,O
1530	Gt.Yks G,Huddersf'd	I	0.74	C,F*,G,H
1530	Wyvern, Worcester	I	0.52	C,F*,G,H,I,J,L,N
1548	R.Bristol	B	5.00	C,G,I,J
1548	Capital G, London	I	97.50	A,C*,F*,I,L,M
1548	City G, Liverpool	I	4.40	B,C,F*,G,J,K
1548	Gt.Yks G, Sheffield	I	0.74	A*,C
1548	Max AM, Edinburgh	I	2.20	A*,C*,F*,H
1557	R.Lancashire	B	0.25	A*,B,C,G
1557	Mellow, Clacton	I	0.8	A,C*,G,H*,L,O
1557	Northants CG	I	0.76	C,F*,G,H*
1557	S.Coast R, So'ton	I	0.50	A*,C,F*,G,H*,I,M*
1584	KCBC, Kettering	I	0.04	C,G,H*
1584	London Turkish R	I	?	A,C,G,I,L,O
1584	R.Nottingham	B	1.00	C,F*,G,H*
1584	R.Shropshire	B	0.50	B,C,G
1584	Tay, Perth	I	0.21	C,G,F*,H
1602	R.Kent	B	0.25	A,C,E,G,H,I,L,O

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

Listeners:-
(A) Paul Bowery, Burnham-on-Crouch.
(B) Robert Connolly, Kilkeel.
(C) Gerry Haynes, Bushey Heath.
(D) Francis Hearne, N.Bristol.
(E) Sheila Hughes, Morden.
(F) Nicola Hutchings, Wellington.
(G) Brian Keyte, while in Conway Valley.
(H) Ross Lockley, Galashiels.
(I) George Millmore, Wootton, IoW.
(J) Chris Ridley, Co.Sligo, Eire.
(K) Tom Smyth, Co.Fermanagh.
(L) Tony Stickells, Thornton Heath.
(M) Tony Stickells, while in Loire Valley, France.
(N) Norman Thompson, Oadby.
(O) Phil Townsend, E.London
(P) Ted Walden-Vincent, Gt.Yarmouth.

at 2250 by **Ted Harris** in Manchester.

Some of the broadcasts in the **13MHz (22m)** band originate from SRI via Sottens? 13.685 (It, Eng, Fr, Ger, Port to Australia, S.Pacific 0830-1100), logged as 44444 at 0911 in Newry; UAER, Dubai 13.675 (Eng to Eur 1030-1055) 33433 at 1030 in Galashiels; RFI via Fr.Guiana? 13.625 (Eng to C.America 1200-1300) SIO444 at 1200 in Co.Fermanagh; SRI via Sottens? 13.635 (Eng, Fr, It, Ger to S/S.E.Asia 1300-1500) 44333 at 1318 in Woodhall Spa; UAER, Dubai 13.675 (Eng to Eur 1330-1355) 44444 at 1330 in Morden; R.Pakistan, Islamabad 13.590 (Ur, Eng to M.East 1330-1530) 34233 at 1400 by **Roy Patrick** in Derby; R.Kuwait via Kabd 13.620 (Ar to Eur, N.America 0930-1605) 44444 at 1513 in Oxted; WWCR Nashville, USA 13.845 (Eng to E.USA 1400-0100) 34333 at 1627 in Woking; R.Denmark via RNI 13.805 (Da [Eng 1st & 3rd Sun] to Eur, Africa? 1630-1655) 55555 at 1630 in Bridgwater; UAER, Dubai 13.675 (Eng to Eur 1600-1640) 45554 at 1632 in Wallsend; R.Pyongyang, Korea 13.785 (Eng to Eur, M.East, Africa 1700-1750) 33433 at 1715 in Kilkeel.

Those noted later came from WHRI South Bend, USA 13.760 (Eng to E.USA, Eur 1500-2157), rated 32242 at 1734 in Plymouth; R.Vlaanderen Int, Belgium 13.645 (Eng, Fr to Africa 1800-?) 55444 at 1821 in Bushey Heath; Monitor R.Int via WSHB 13.770 (Eng to E.Eur 1800?-1955) 33333 at 1930 in Stalbridge; RCI via Sackville 13.650 (Eng to Eur 2000-2158) 44333 at 2023 in E.Worthing; R.Havana, Cuba 13.715 (Eng to Eur 2100-2200) 33233 at 2100 in Appleby; KAIJ Denton, USA 13.815 (Eng to N/C.America 0200-0000) 23222 at 2145 in Scalloway; UAER, Abu Dhabi 13.605 (Eng to USA 2200-0000) SIO222 at 2225 in Gt.Yarmouth; RCI via Sackville 13.670 (Eng, Fr to USA, Caribbean 2200-0300) SIO444 at 2228 in N.Bristol; Monitor R.Int via WSHB 13.770 (Eng to S.America 2200-0000) 55555 at 2245 by **Norman Thompson** in Oadby.

Although the conditions in the **11MHz (25m)** band are unreliable it is the hub of activity for some listeners. Noted during the morning were R.Australia via Shepparton 11.880 (Eng to Asia 0400-0730) rated 54433 at 0523 in Bushey Heath; BBC via Masirah Is 11.760 (Eng to M.East 0300-0915) 14441 at 0727 in Wallsend; HCJB Quito 11.615 (Eng to Eur 0700-0830) SIO444 at 0738 in N.Bristol; Slovak R.Int, via Velke Kostolany 11.990 (Eng to Australia 0830-0857) SIO333 at 0830 in Co.Fermanagh; R.Korea Int via Sackville, Canada 11.715 (Eng to S.America 1030-1100) 32233 at 1030 in Appleby.

During the afternoon Polish R, Warsaw 11.815 (Eng to Eur 1200-1255) was heard at 1220 by **Julian Wood** in Elgin; WYFR via VOFC Taiwan 11.550 Eng to Asia 1302-1502) was 34323 at 1313 in Woodhall Spa; Vatican R, Italy 11.625 (Eng to Asia, Pacific 1345-1400) SIO333 at 1345 in E.London; R.Romania Int, Bucharest 11.940 (Eng to Eur 1300-1400) 55555 at 1355 in Norwich; R.Pakistan, Islamabad 11.570 (Ur, Eng to M.East 1330-1530) 35333 at 1400 in Derby; FEBC Bocaue, Philippines 11.995 (Eng to India, S.E.Asia 1300-1600) 24231 at 1400 in Chester and 33553 at 1425 in Larnaca, Cyprus; R.Jordan via Al Karanah 11.970 (Eng to W.Eur, E.USA 1400-1630) 43444 at 1500 in Morden; KTWR Agana, Guam 11.580 (Eng to S.Asia 1500-1630?) 33343 at 1532 in Oxted; R.Bulgaria, Sofia 11.720 (Eng to W.Eur 1600-1700) 34433 at 1620 in Manchester.

Later, R.Australia via Shepparton 11.880 (Eng to Asia 1700-2058) was 32432 at 1730 in Bridgwater; R.Bulgaria, Sofia 11.720 (Eng to W.Eur 1900-2000) 44444 at 1900 in Galashiels; REE via Noblejas, Spain 11.775 (Eng to Eur, Africa 2000-2055? Mon-Fri; 2135-2230 Sat; 2105-2200 Sun) 55455 at 2000 in Newry; RCI via Sackville 11.690 (Eng to Eur, Africa 2000-2130) 44343 at 2022 in E.Worthing; R.Kuwait via Kabd 11.990 (Eng to Eur, N.America 1800-2057) 55555 at 2036 in Plymouth; AIR via Bangalore 11.620 (Eng, Hi to Eur 1745-2230) 22342 at 2050 in Oadby; R.Globo, Rio de Janeiro, Brazil 11.805 (Port 0900-0330) 25333 at 2150 by **Paul Bowery** in Burnham-on-Crouch; VOA via Sao Tome 11.975 (Eng to Africa 1800-2230) 44333 at 2200 in Scalloway; BBC via Ascension Is 11.750 (Eng to S.America 2000-0200) 33333 at 2220 in Kilkeel; BBC via Ascension Is 11.835 (Eng to W.Africa 1930-2315) 44434 at 2232 in Woking; R.Gaucha, Porto Alegre, Brazil 11.915 (Port 0900-0400) 21122 at 2305 by **Bill Griffith** in W.London.

Broadcasts from many areas may be heard in the **9MHz (31m)** band. R.Australia via Shepparton 9.860 (Eng to Pacific, Asia 0600-1200) was 33433 at 0715 in Herstmonceux; R.Australia via Shepparton 9.580 (Eng to Pacific 0730-1200) 35533 at 0806 in Wallsend; R.Nederlands via Bonaire, Ned.Antilles 9.720 (Eng to Pacific 0730-1025) SIO322 at 0836 in N.Bristol; R.Australia via Shepparton? 9.770 (Eng to S.Asia 1100-1430) 32332 at 1100 in Bushey Heath; VOA via Poro, Philippines 9.760 (Eng to Asia, Pacific 1100-1500) 34553 at 1315 in Larnaca; R.Veritas Asia, Philippines 9.520 (Eng 1420-1430) 43433 at 1420 in Chester; RRI Jakarta, Indonesia 9.680 (Ind to Asia 0600-1710; 2300-0200) 43433 at 1445 in Scalloway; R.Mediterranee Int via Nardor, Morocco 9.575 (Fr, Ar to N.Africa, S.Eur 0500-0100) 44344 at 1530 in Oxted; R.Australia via Shepparton 9.580 (Eng to Pacific 1430-2058) 43443 at 1600 in Oadby; Channel Africa, Meyerton 9.530 (Eng to Africa 1600-1700) 54444 at 1635 in Plymouth; CPBS Beijing 9.080 (Chin [CNR-1] 1415-1735) 35333 at 1654 in Burnham-on-Crouch; R.Pyongyang, Korea 9.325 (Eng to Eur, M.East, Africa 1700-1750) 44444 at 1700 in Norwich.

Later, the Voice of Vietnam, Hanoi 9.840 (Viet to Eur 1700-1800) was SIO322 at 1735 in Macclesfield; R.Bangladesh 9.548 (Eng to Eur 1745?-1900) was 32442 at 1750 in Bridgwater; TWR Manzini, Swaziland 9.500 (Eng to E.Africa 1600-1830) 24232 at 1819 in Storrington; Voice of Turkey, Ankara 9.445 (Eng to Europe 1830-1920) SIO433 at 1830 in E.London; Israel R, Jerusalem 9.435 (Russ to Russia 1830-1955) 34222 at 1928 in Newry; VOIRI Tehran, Iran 9.022 (Eng to Eur 1930-2027) 44444 at 1930 in Galashiels; VOA via Gloria, Portugal 9.760 (Eng to M.East 1700?-2200) 34433 at 1944 in Manchester; Voice of Indonesia 9.525 (Eng to Eur 2000-2030) 35433 at 2000 in Derby; SRI via Fr.Guiana 9.905 (Eng, Fr, It, Ger to Africa 2000-2200) 33222 at 2000 in Appleby; R.Tashkent, Uzbekistan 9.540 (Ger to Eur 1935-2030) 32333 at 2005 in W.London; R.Thailand, Bangkok 9.555 (Eng to Eur 2030-2045)

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer
3.210	Em.Nacional, Maputo	Mozambique	0100	O
3.215	RRI Manado	Indonesia	2350	C
3.220	Channel Africa	S.Africa	0251	I,O
3.223	AIR Simla	India	1730	K,O
3.230	SABC Meyerton	S.Africa	2345	C,I,O
3.232	RRI Bukittinggi	Indonesia	2230	D
3.240	TWR Shona	Swaziland	0437	O
3.245	R.Clube Varginha	Brazil	2255	O
3.245	AIR Lucknow	India	1720	O
3.255	BBC via Maseru	Lesotho	2040	C,J,O
3.270	SWA8C 1, Namibia	S.W.Africa	2026	C,I,J,O
3.290	Namibian BC,Windhoek	S.W.Africa	2026	C,I,J,O
3.300	R.Cultural	Guatemala	0250	C,I,N,O
3.306	ZBC Prog 2	Zimbabwe	2039	C,I,J,O
3.315	AIR Bhopal	India	1620	K,O
3.316	SLBS Goderich	Sierra Leone	2041	J,O
3.320	SABC Meyerton	S.Africa	2047	C,J,O
3.325	FRCN Lagos	Nigeria	2042	C,E,J,O
3.330	Christian Voice	Zambia	2158	O
3.335	CBS Taipei	Taiwan	1954	J,O
3.340	R.Uganda, Kampala	Uganda	2042	J
3.345	AIR Jammu	India	1630	K,O
3.356	R.Botswana	Gabarone	2047	C,I,J,O
3.359	RTV Malagasy	Madagascar	1710	O
3.365	GBC R-2	Ghana	2206	C,D,I,J,L,O
3.365	AIR Delhi	India	1835	C,K,O
3.375	R.Nacional S.Gabriel	Brazil	2250	C,O
3.390	R.Candip Bunia	Zaire	1715	O
3.395	ZBC Gweru	Zimbabwe	0433	I,O
3.915	BBC via Kranji	Singapore	2105	A,D,I,O,Q
3.940	PBS Hubei Wuhan	China	2205	O
3.950	Qinghai PBS, Xining	China	2225	G,O
3.955	BBC via Skelton	England	2050	I,J,P,Q
3.955	R.Korea via Skelton	England	1838	I,M*,Q
3.955	R.Budapest	Hungary	2240	C,I,P
3.965	RFI Paris	France	2000	B,C,D,G,I,J,P,Q
3.975	R.Budapest	Hungary	2108	G,I,J,M,Q
3.980	VOA via Munich	Germany	0000	Q
3.985	Nexus, Milan	Italy	1905	I,Q
3.985	China R via SRI	Switzerland	2102	G,I,Q
3.985	SRI Beromunster	Switzerland	2014	B,J
3.995	DW via Julich	Germany	2051	B,C,I,J,P,Q,R
4.005	Vatican R.	Italy	1825	C,Q
4.035	Xizang PBS, Lhasa	Tibet	0010	C
4.500	Xinjiang BS, Urumqi	China	0009	C,E,I,O
4.735	Xinjiang, Urumqi	China	0005	C,I,O
4.750	Xizang BS, Lhasa	Tibet	0010	C
4.753	RRI Ujung, Padang	Indonesia	2207	O
4.760	Yunnan PBS,Kunming	China	2220	O
4.760	AIR Port Blair	India	1620	C,O
4.760	ELWA Monrovia	Liberia	0305	I
4.765	R.Integracao	Brazil	2145	O
4.770	FRCN Kaduna	Nigeria	2012	A,C,E,F,G,I,J,M*,O,Q
4.775	AIR Imphal	India	1615	O
4.777	R.Gabon, Libreville	Gabon	2012	D,I,J,L,O
4.783	RTM Bamako	Mali	2135	D,F,O
4.790	Azad Kashmir R.	Pakistan	1801	A,O
4.790	R.Atlantida	Peru	2230	I,O
4.800	CPBS 2 Beijing	China	2225	P
4.800	AIR Hyderabad	India	1728	A,O
4.800	LNBS Lesotho	Maseru	2033	C,I,J,O,Q
4.805	R.Nac.Amazonas	Brazil	0015	C,I,O
4.815	R.diff TV Burkina	Ouagadougou	2011	C,D,J
4.820	AIR Calcutta	India	1820	O
4.825	R.Cancao Nova	Brazil	2235	O
4.828	ZBC R-4	Zimbabwe	2010	C,J,O
4.830	R.Bangkok	Thailand	1545	O
4.830	R.Tachira	Venezuela	0005	C,D,I,O
4.832	R.Reloj	Costa Rica	0418	O
4.835	R.Tezulutlan, Coban	Guatemala	2222	C,D
4.835	RTM Bamako	Mali	2032	C,D,E,F,G,H,I,J,P,Q,O
4.840	AIR Bombay	India	1655	C,K,O
4.845	R.Fides, La Paz	Bolivia	0030	C
4.845	RTM Kuala Lumpur	Malaysia	1646	O
4.845	ORTM Nouakchott	Mauritania	2130	C,O,Q
4.850	R.Yaounde	Cameroon	2152	C,I,Q
4.850	AIR Kohima	India	1405	G,K
4.860	AIR Kingway (Feeder)	India	1400	J,K,O,Q
4.865	PBS Lanzhou	China	2300	E,G,O
4.865	L.V. del Cinaruco	Colombia	0445	O,P
4.870	R.Cotonou	Benin	1755	O
4.875	R.Roraima, Boa Vista	Brazil	0025	C
4.875	VOA via Meyerton	S.Africa	1845	C
4.885	R.Clube do Para	Brazil	2200	O
4.885	R.Difusora Acreana	Brazil	0020	C
4.885	KBC East Sce Nairobi	Kenya	1845	C,O
4.890	R.Port Moresby	New Guinea	2002	J
4.890	ORTS Dakar	Senegal	0425	O
4.895	Voz del Rio Arauca	Colombia	0205	C,O
4.895	Pakistan BC	Pakistan	1645	O
4.900	SLBC Colombo	Sri Lanka	2019	J
4.905	R.Nat.N'djamena	Chad	2005	A,B,H,I,J,O,Q
4.910	RTG Conakry	Guinea	1850	C
4.910	AIR Jaipur	India	1407	K
4.910	R.Zambia, Lusaka	Zambia	2029	D,J,O
4.914	R.Cora del Peru,Lima	Peru	0420	O
4.915	R.Anhanguera	Brazil	0445	O
4.915	GBC-1, Accra	Ghana	2024	C,E,I,J,O,P
4.915	KBC Cent Sce Nairobi	Kenya	0419	I
4.920	R.Quito, Quito	Ecuador	0410	I,K,O
4.927	RRI Jambi	Indonesia	1630	O
4.931	R.Internacional	Honduras	0420	I,O
4.935	KBC Gen Sce Nairobi	Kenya	1958	H,J,O
4.940	AIR Guwahati	India	1642	O
4.945	R.Difusora	Brazil	0425	O
4.950	R.Nacional, Mulenvos	Angola	2210	C,O
4.950	AIR Jammu	India	1705	O
4.950	VOA via Sao Tome	Sao Tome	1900	G,L
4.955	R.Nac. de Colombia	Colombia	0413	C,K,O
4.960	Hanoi 2	Vietnam	2215	O
4.970	PBS Xinjiang	China	0025	C
4.975	Fujian 1, Fuzhou	China	1535	O
4.975	R.Uganda, Kampala	Uganda	1855	C
4.980	PBS Xinjiang, Urumqi	China	0030	C
4.980	Ecos del Torbes	Venezuela	2315	D,I,K,L,O
4.985	R.Brazil Central	Brazil	2336	E,O
4.990	AIR Ext.Service	India	0006	C,I
4.990	FRCN Lagos	Nigeria	2035	C,O
5.005	R.Nacional, Bata	Eq.Guinea	1928	D,E,I,J,O
5.005	R.Nepal, Kathmandu	Nepal	1655	C,O
5.010	AIR Thiru'puram	India	0025	C,I,O
5.020	PBS-Jiangxi Nanchang	China	0013	C,I,O
5.020	Voz del Upano, Macas	Ecuador	0410	O
5.020	La V du Sahel,Niamey	Niger	2035	J,O
5.020	SLBC Tamil Home Sce.	Sri-Lanka	1615	O
5.025	R.Parakou	Benin	2035	J,O
5.025	R.Rebelde, Habana	Cuba	0400	C,O
5.025	R.Uganda, Kampala	Uganda	2035	J,O
5.030	AWR Latin America	Costa Rica	0425	C,N,O
5.035	R.Aparecida	Brazil	0200	O
5.035	R.Bangui	C.Africa	2036	I,J,O
5.045	R.Cultura do Para	Brazil	0115	C,I,O
5.047	R.Togo, Lome	Togo	2014	D,J,O
5.050	Haixia 1	China	2155	O
5.050	AIR Aizawl	India	0040	C
5.050	R.Tanzania	Tanzania	0331	I,O
5.055	RFO Cayenne(Matoury)	F.Guiana	0421	C,I,O
5.060	PBS Xinjiang, Urumqi	China	1640	C,O
5.075	Caracol Bogata	Colombia	0457	C,G,I,N,O
5.097	R.Eco, Iquitos	Peru	0040	C

DXers:-
(A) Paul Bowery, Burnham-on-Crouch.
(B) Vera Brindley, Woodhall Spa.
(C) Robert Connolly, Kilkeel.
(D) John Eaton, Woking.
(E) David Edwardson, Wallsend.
(F) Bill Griffith, S.W.London.
(G) Sheila Hughes, Morden.
(H) Rhoderick Illman, Oxted.
(I) Eddie McKeown, Newry.
(J) Fred Pallant, Storrington.
(K) John Parry, Larnaca, Cyprus.
(L) Roy Patrick, Derby.
(M) Clare Pinder, while in Appleby.
(N) David Sayles, Doncaster.
(O) John Slater, Scalloway.
(P) Norman Thompson, Oadby
(Q) Phil Townsend, E.London.
(R) Ted Walden-Vincent, Gt.Yarmouth.

42432 at 2036 in E.Worthing; R.Romania Int, Bucharest 9.690 (Eng to Eur 2100-2155) 44444 at 2145 in Morden; R.Bulgaria, Sofia 9.700 (Eng to Eur 2100-2200) SIO444 at 2100 in Co.Fermanagh; BBC via Antigua, W.Indies 9.590 (Eng to S.America 2200-0130) 44232 at 2256 in Woking; AIR via Delhi? 9.950 (Eng to NE.Asia 2245-0045) SIO333 at 2300 in Gt.Yarmouth; China R. Int via Mali 9.710 (Eng to N.America 0000-0057) 33333 at 0030 in Kilkeel; HCJB Quito, Ecuador 9.745 (Eng to N.America 0030-0700) 24212 at 0043 in Woodhall Spa.

In the **7MHz (41m)** band RFPI Costa Rica 7.385 (Eng 24hrs) was 44433 at 0456 in Bushey Heath; RCI via Skelton, UK 7.295 (Eng [Report To Peace Keepers] to Eur, M.East, Africa 0500-0530) 43333 at 0524 in Appleby; KTBN via Salt Lake City 7.510 (Eng to N.America 0000-1600) 13221 at 0630 in Chester; TWR Monte Carlo, Monaco 7.115 (Eng to Eur 0640-0820) 54454 at 0743 in Plymouth; WYFR via Okeechobee 7.355 (Eng to Eur, Africa 0600-0800) SIO444 at 0800 in Co.Fermanagh; Monitor R.via WSHB 7.535 (Eng [Various Sat/Sun] to Eur, Africa 0500-0955) 44444 at 0900 in Dudley; R.ABC Denmark via Kaliningrad 7.570 (Eng to Eur 0800-1200 Sun only) 54544 at 1000 in W.London; CPBS via Xian, China 7.504 (Chin [CNR-1] 2000-1735) 44444 at 1630 in Burnham-on-Crouch; R.Korea, Seoul 7.550 (Kor to Eur 1700-1900) SIO433 at 1725 in Macclesfield; Polish R, Warsaw 7.270 (Eng to Eur 1700-1757) 34133 at 1753 in Woodhall Spa; Israel R, Jerusalem 7.465 (Eng to Eur, N.America 1900-1930) 55555 at 1920 in Norwich; R.Australia via ? 7.330 (Eng to S.Asia 1800?-2100) 24232 at 1931 in Oxted; VOIRI Tehran 7.260 (Eng to Eur, M.East 1930-2028) 33343 at 1948 in Woking; RCI via Skelton, UK 7.235 (Eng to Eur, M.East, Africa 2000-2130 Mon-Fri) 43543 at 2030 in Bridgwater; AIR via Aligarh? 7.412 (Hi, Eng to Eur 1745-2230) 44343 at 2225 in Oadby; Monitor R.Int, via WSHB 7.510 (Eng to Eur, Africa 2200-0000?) 43333 at 2225 in Stalbridge; VOA via ? 7.205 (Eng to S.Asia 0100-0300) SIO444 at 0254 in N.Bristol.

Some of the broadcasts to Europe in the **6MHz (49m)** band come from R.Austria Int, via Moosbrunn 6.155 (Ger, Eng, Fr, Sp 0400-2300) 43333 at 0609 in E.Worthing; WEWN Vandiver 5.825 (Eng 2100-1000) 34433 at 0730 in Herstmonceux; Polish R, Warsaw 6.095 (Eng 1700-1755) 44333 at 1702 in Woodhall Spa; China R.Int 6.950 (Eng 2000-2157) SIO222 at 2100 in E.London; R.Ukraine Int 6.010 (Eng 2100-2200) 43333 at 2100 in Appleby; R.Korea 6.480 (Eng 2100-2200) 23322 at 2100 in Galashiels; R.Sweden 6.065 (Eng 2130-2200) heard at 2130 in Truro; AWR via Slovakia 6.055 (Eng 2100-2158) 33333 at 2145 in Morden; BBC via Woofferton, UK 6.195 (Eng 1900-2230) SIO333 at 2222 in Gt.Yarmouth; R.Austria Int 5.945 (Eng, Ger, Fr, Sp 1800-2300) SIO433 at 2237 in N.Bristol; Deutschland R, Berlin 6.005 (Ger 24hrs) 32443 at 2330 in Oadby.

Those to other areas were received from RCI via Sackville 5.960 (Eng, Fr to USA, Caribbean 2200-0100) SIO322 at 2200 in Co.Fermanagh; BBC via Antigua 5.975 (Eng to C/S.America 2100-0800) 55444 at 2242 in Burnham-on-Crouch; WHRI Noblesville 5.745 (Eng to E.USA 2200-0400) 34434 at 2332 in Manchester; R.Nederlands via Ned.Antilles 6.165 (Eng to N.America 2330-0125) 33443 at 0020 in Kilkeel; R.Havana Cuba 6.000 (Eng to N.America 0200-0500) SIO333 at 0408 in Doncaster; ORTM Bamako, Mali 5.995 (Fr to W/C.Africa 0555-0758) 32333 at 0602 in W.London.

DXers:-
(A) Paul Crankshaw, Troon.
(B) Roy Patrick, Derby.
(C) Harry Richards, Barton-on-Humber.
(D) David Sayles, Doncaster.
(E) John Slater, Scalloway.
(F) Tony Stickells, Thornton Heath.

Transatlantic DX Chart

Freq (kHz)	Station	Location	Time (UTC)	DXer	
		USA			
710	WOR	New York, NY	0431	D	
850	WNIS	Norfolk, VA	0631	A	
1010	WINS	New York, NY	0343	D	
1130	WBBR	New York	0025	A,C,D	
1500	WTOP	Washington, D.C.	0445	A,E	
1510	WNRB	Boston, MA	0130	A,C,D,E,F	
1520	WWKB	Buffalo, NY	0435	E	
1560	WQEW	New York	0150	A,C,D,F	
1590	WARV	Warwick, RI	0200	D	
1590	WSMN	Nashau, NH	0347	D	
		Canada			
590	VOCM	St.John's, NF	0426	A,E	
650	CKGA	Gander,NF	0613	A	
700	CHSJ	St.John, NB	0619	A	
920	CJCH	Halifax, NS	0430	A,D,E	
930	CJYQ	St.John's, NF	2252	A,B,D,E,F	
940	CBM	Montreal, PQ	2322	F	
960	CHNS	Halifax, NS	0405	E	
1140	CBI	Sydney, NS	0648	A	
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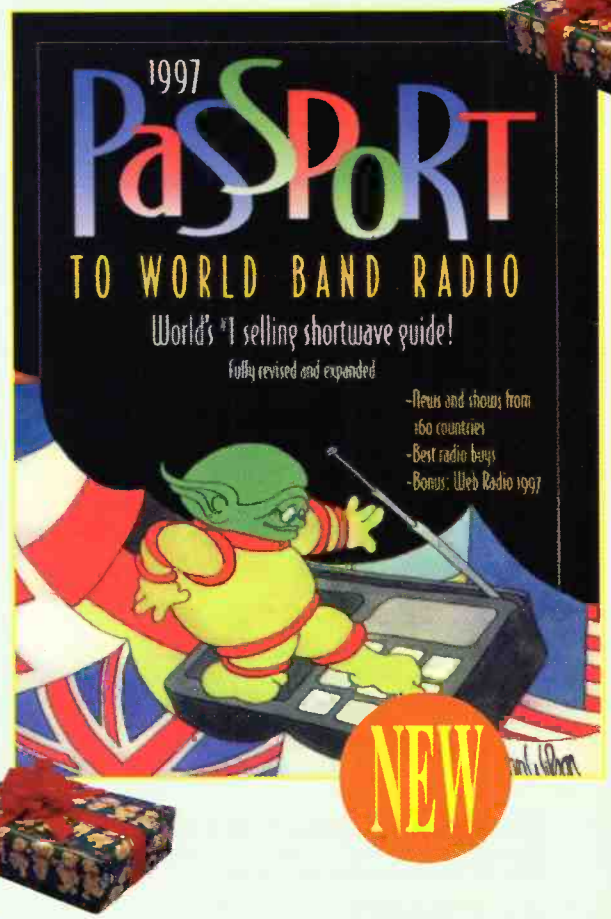
Well, the New Year is nearly upon us, whatever happened to 1996? There are several updated titles now in for 1997. Why not treat yourself for Christmas! Try and get your orders in by December 19th to guarantee getting them in for that long two week break, when we seem to have that 'shut-down' period.

Christmas Present Profiles

This month we have selected titles from the 'Book Store' that we think would make ideal stocking fillers. So, go on solve all your Christmas present worries in one go or why not treat yourself and order your selections today!

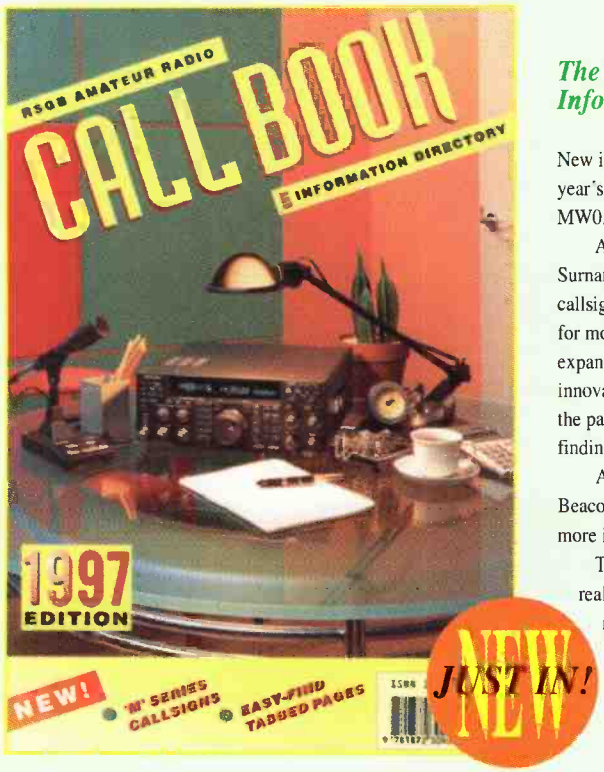


Passport To World Band Radio 1997

This already popular publication is billed as the 'World's No 1' short wave guide and as 'being the closest thing to a TV Guide for world band radio'. It has just been fully revised and updated for 1997.

Passport contains everything from a 'Complete Idiots Guide to Getting Started', through 'What To Listen With' to the famous 'Blue Pages'. The Blue Pages contain the broadcast schedules for the world's short wave broadcasters in a channel by channel format.

In keeping with previous editions there's also the usual authoratative articles and reviews designed to keep you fully up-to-date with the latest in short wave equipment. So, if you are partial to listening to short wave broadcasts from around the world or are just entering the fascinating world of listening then this is the book for you. At only **£15.50** for over 500 informative pages it surely deserves a place on your bookshelf.



The RSGB Amateur Radio Call Book And Information Directory 1997

New in this month is the latest edition of the UK Call Book. This year's edition contains over 61,000 callsigns covering up to MW0AJH, M1AVK and 2E0AOX and 2E1FGD.

As in previous editions the directory continues to carry a Surname and Town index designed to aid in the looking-up of callsigns, together with the WAB square and IARU locator listing for most entires. The IARU locator information has been expanded to include amateurs listed in Northern Ireland. A new innovation for 1997 is the introduction of 'tabs' down the side of the pages (very like that used in address books) to make callsign finding easier.

As well as all this information on Band Plans, Clubs, Beacons, Contests, Licensing, Special Event Stations and much more is included within the Call Book's 480 pages.

The *Amateur Radio Call Book And Information Directory* really is the radio amateur's 'Bible' and is truly an invaluable reference book containing much more than just names, addresses and callsigns. So, go on what are you waiting for? - At only **£13.50** it's well worth it.

To order any of the titles mentioned on these two pages please use the O

The Klingenfuss Selection

In the world of utility communications the name of Joerg Klingenfuss reigns supreme when it comes to information. The fifteenth edition of the *Klingenfuss Radio Data Code Manual* has almost 600 pages of information. .

Broken down into 23 sections the thick book covers the weather organisations, types of code, civil aviation organisations, air traffic messages and how to decode them and the aircraft designators.

There is also many sections covering the method of transmission, modulation methods, and RTTY codes. You can identify the meteorological observation stations throughout the world from their index numbers given in the book.

There's over a hundred pages covering the various teleprinter systems, before dealing with radiotelegraphy terms and definitions, non-standard Morse alphabets cryptography and abbreviations.

If you have any interest in the textual data transmission modes this book is a 'must' for you. Price **£28.**

Check out the weather throughout the world. See storms as they develop around the world with help from the *1996/1997 Guide To Weatherfax Services* from Klingenfuss.

Sections cover equipment, techniques standards and meteorological satellites, amateur stations, radiofax stations (organised in three different ways for clarity).

The final three sections cover schedules, abbreviations and sample charts. Many of the charts are now available over the internet, those that are have the 'homepage' address shown.

There is an offer of off-air transmissions available on CDs to check out your system. These audio recordings allow you to set-up your system without the vagaries of propagation. *1996/1997 Guide To Weatherfax Services* is avialable for **£25**.

The Klingenfuss *1996 Guide To Utility Stations (Edition 14)* incorporating Edition 22 of *The Guide To Radiotelytype Stations* has 24 sections in some 600 pages.

These 24 sections cover topics such as how to monitor the transmissions, how to identify the station you're hearing and the table of international callsigns. If you want to find one particular station, you can search by both frequency or name to winkle it out.

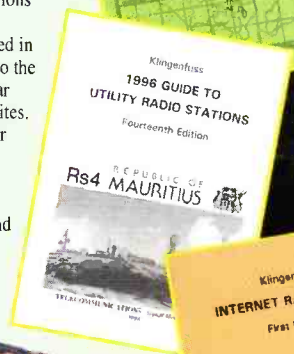
To catch the news before the radio and television transmit it listen to the news services. A list of press service stations is available in both alphabetical and chronological sequence. A short section about NAVTEX transmissions on 518kHz precedes a reference sections with areas such as the 'Z' and 'Q' codes, SINPO and SINPFEMO codes, types and modes of transmissions. Price **£35**.

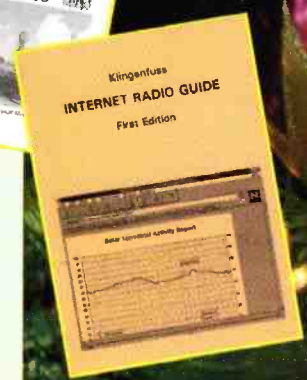
A newcomer to the Klingenfuss stable of reference guides is the *Internet Radio Guide Edition 1*. This new guide is only marginally slimmer that the more well established Klingenfuss guides but is just as well packed with information.

The internet is a vast network (or web) of computers throughout the world. These computers have an immense amount of data available, but finding the 'bit' you want can be like looking for a needle in a haystack. This guide shows you where to look for 'pages' of data and pictures about topics such as: Amateur radio, clubs and newsgroups, geography intelligence, meteorology, navigation publications, radio stations and satellites.

For anyone interested in propagation there's also the page addresses for solar and geophysical data sites.

If you're looking for the radio information needle in a haystack - this book is just the magnet you need to find it and at **£21** is well worth it.





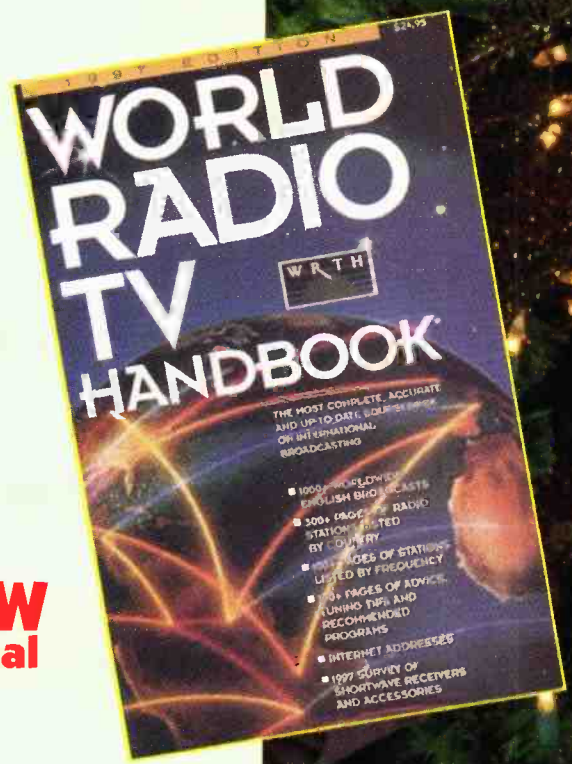
Coming Soon -
World Radio TV Handbook 1997

As always, the *World Radio TV Handbook* provides the most up-to-date schedules and information including: a directory of hobby clubs for international listeners, Internet addresses of international broadcasters, listings in frequency order of medium wave and short wave broadcasts, independent reviews of short wave receivers and accessories and much, much more!

With it's new design, this book is now claimed to be better than ever. It's a must have resource for radio Novices and enthusiasts alike. The re-design, introduced in last year's edition, makes the book very attractive and accessible for first time users.

World Radio TV Handbook costs £17.95 plus £1 P&P UK, order yours from the *SWM* Book Store. Avilable from mid-December.

Please use the Order Form on page 79.



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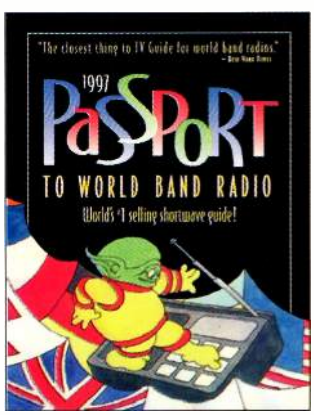

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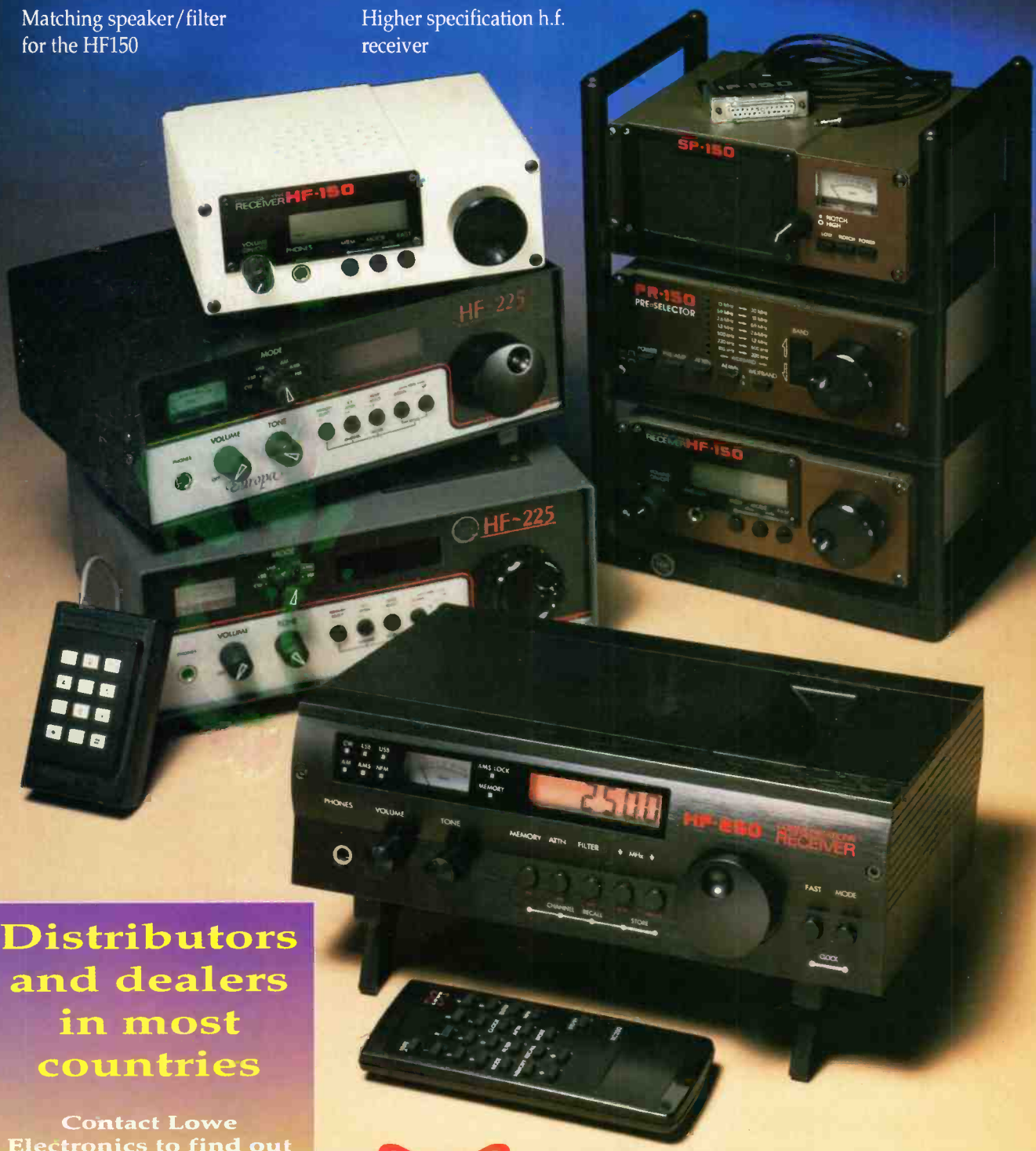

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