You're Just Not A Serious Listener Without SWM!

CONTINUES
also.

The Editor Builds a One-Valve Short Wave Receiver - SO CAN YOU!

AND
Roberts Radio R861 Reviewed by Simon Spanswick
AOR AR8000
Still the No.1 seller
500kHz-1900MHz
Computer control
Data clone
1000 Memories
C/w NiCads & charger
£349

AOR AR2700
500kHz-1300MHz
500 Memories
SPECIAL PRICE £269 £189

YUPITERU MVT7100E
NEW EMC version of this popular radio.
530kHz-1650MHz
AM/FM/WSFM
SSB/CW
1000 Memories
C/w NiCads & charger
£299

TRIDENT 2400
One of the most comprehensive scanners on the market with a superb Rx front end.
100kHz-2300MHz
1000 Memories
AM/FM/AM/FM
Data clone
C/w NiCads & charger
£299

SCANNERS
We’ve got them ALL!!

BEARCAT UBC 3000XLT
New top of the range handheld from Uniden with TURBO SCAN.
25-1300MHz
(with gaps)
TURBO SCAN
400 Memories
AM/FM
Supplied c/w NiCads & charger
SPECIAL PRICE £225

COMMTEL 202
Airband scanner.
66-512MHz
(with gaps)
50 Memories
Covers UK Civil Airband
£99

COMMTEL 204
Top of the range handheld.
68-1000MHz
(with gaps)
200 Memories
AM/FM
Requires NiCads & charger
£169

TRIDENT 980
Triple conversion sensitive receiver.
5-1300MHz
125 Memory storage
AM/FM/WSFM
Direct keyboard rotary control
C/w NiCads & charger, DC cigar lead, earpiece, carry strap
£249

BEARCAT UBC 860XLT
Wideband base scanner with TURBO SCAN.
COVERS CIVIL AIRBAND.
66-956MHz
(with gaps)
100 Memories
AM/FM
12V DC
Mains adaptor supplied.
£149.00

REALISTIC PRO 50
Low cost scanner covers Marine.
Police, etc.
66-512MHz
AM/FM
20 Memories
Required: 5 x AA Batteries
£99

REALISTIC PRO 2037
A NEW Base scanner with triple conversion receiver.
66-960MHz
(with gaps)
200 Memories
AM/FM
Hyperscan
240V/AC or 12V DC operation
SPECIAL!! £179.99

BEARCAT UBC 80XLT
Low cost scanner covering UHF telephone band.
66-956MHz
(with gaps)
10 Memories
AM/FM
Supplied c/w NiCads & charger
SPECIAL PRICE £89.95!!

TRIDENT 980
Triple conversion sensitive receiver.
5-1300MHz
125 Memory storage
AM/FM/WSFM
Direct keyboard rotary control
C/w NiCads & charger, DC cigar lead, earpiece, carry strap
£249
NEVA SCANMASTER Base Stand
A fully adjustable desk top stand for use with handhelds. Fitted coaxial fly lead with BNC and SO239 connectors.
£19.95

NEVA SCANMASTER Mobile Mount
Mounts on the air vent grills on a car dashboard to allow easy and safe operation of most handhelds.
£9.95

NEVA SCANMASTER Drill-Thru Mount Mobile Antenna
A low profile discreet scanner antenna optimised for the UHF bands c/w 10' cable. Receives 25 - 1000 MHz.
£19.95

NEVA SCANMASTER TSC 2601
Handheld scanner, high gain antenna, 29cm long, covers 100 - 1000 MHz with 3.4 dB gain @ 900 MHz.
£15.95

NEVA SCANMASTER SP55 Pre-Amp
Using latest surface mount technology, with variable gain - 6dB to +20 dB and three selectable bandpass filters, this top range Pre-Amp will boost your scanners performance from 24 - 1500 MHz.
£69.95

NEVA SCANMASTER On Glass
Window mounting mobile scanner antenna 25 - 1300 MHz with cable.
£29.95

NEVA SCANMASTER Mobile
A top quality wideband Antenna 25 - 1000 MHz with rubber boot protected magnetic mount and cable/BNC connection.
£29.95

NEVA SCANMASTER Desktop
A complete desktop antenna covering 25 - 1300 MHz just 36" high with 4mtrs of cable and BNC plug.
£49.95

NEVA SCANMASTER Base
Receives 500 KHz - 1500 MHz
- MARINE
- CIVIL AIRCRAFT
- MILITARY AIRCRAFT
- AMATEUR RADIO
- PMR
- 900 MHz BAND
- PLUS MANY MORE PUBLIC SERVICES
Transmits 2m & 70cm Amateur Bands
£39.95

NEVA SCANMASTER Double Discone
A High performance wideband antenna, offering gain over a conventional discone. Stainless steel construction with standard PL259 connector, mounting pole plus brackets.
£59.95

NEW! NEVA SCANMASTER Active Base Antenna
As above with 20 dB Pre-Amp available August
£59.95

BEWARE LOW COST Imitations!
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.

Features & Specifications

- 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 InelOry 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
- Numerical Deviation Display with 1-10kHz and 10-100kHz ranges
- Telescoping Whip full range Antenna included

Haydon Communications
192 High Street • Edgware • Middlesex • HA8 7EL
TEL: 0181-951-5781 FAX: 0181-951-5782

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
TEL: (01705) 662145 FAX:(01705) 690626

Waters & Stanton Electronics
22 Main Road • Hockley • Essex • SS5 4QS
TEL: (01702) 206835 FAX: (01702) 205843

Check Our Web Site:
www.optoelectronics.com
CONTENTS

FREE INSIDE!
16-page Optoelectronics Catalogue

ON SALE NOVEMBER 28
Next issue on sale DECEMBER 27

EDITOR: Dick Ganderton, C Eng., MIEE, G8VFH
ASSISTANT EDITOR: Kevin Nice, BRS95787, G7TZC
EDITORIAL ASSISTANT: Zoe Crabh
ART EDITOR: Steve Hunt
PAGE LAYOUTS: Jon Talbot, Paul Blachford

EDITORIAL
Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW
Telephone: (01202) 659910
Facsimile: (01202) 659950

If you wish to send E-mail to anyone at SWM then our Internet domain name is:
pwpub.demon.co.uk
Simply add the forename of the person you wish to contact! For example:
dick@pwpub.demon.co.uk

BOOKS & SUBSCRIPTIONS:
CREDIT CARD ORDERS: Michael Hurst (01202) 659930
(Out-of-hours service by answering machine)

ADVERTISEMENT DEPARTMENT
ADVERTISEMENT MANAGER: Roger Hall G4TNT
Telephone: 0171-731 6222
Facsimile: 0171-384 1031
Mobile: (0585) 851385

ADVERTISEMENT DEPARTMENT (Broadstone)
Carol Trevarton (Advertisement Production)
Paul Orchard (Advertisement Administration)
Telephone: (01202) 659920
Facsimile: (01202) 659950

© PW PUBLISHING LTD. 1996.
Copyright in all drawings, photographs and articles published in Short Wave Magazine is fully protected and reproduction or imitation in whole or in part is expressly forbidden. All reasonable precautions are taken by Short Wave Magazine to ensure that the advice and data given to our readers is reliable. We cannot, however, guarantee it and we cannot accept legal responsibility for it. Prices are those current as we go to press. Short Wave Magazine, USPS No. 006996, is published monthly for £25 (UK) per year by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Second Class Postage paid at South Hackensack. Postmaster: Send USA address changes to Royal Mail International, c/o Yellowstone International, 2375 Pratt Boulevard, Elk Grove Village, IL 60007-5937.

DISCLAIMER. Short Wave Magazine wishes in no way to either condone, or encourage, listeners to monitor frequencies and services which are prohibited by law. We respectfully refer you all to both the Wireless Telegraphy Act 1949, and the Interception of Communications Act 1985. Some of the products offered for sale in advertisements in this magazine may have been obtained from abroad or from unauthorised sources. Short Wave Magazine advises readers contemplating mail order to enquire whether the products are suitable for use in the UK and have full after-sales back-up available. The Publishers of Short Wave Magazine wish to point out that it is the responsibility of readers to ascertain the legality of or otherwise of items offered for sale by advertisers in this magazine.

FREE INSIDE!
16-page Optoelectronics Catalogue

14 60 Years of BBC TV - Part 2
Keith Hamer & Garry Smith

18 Scancat Gold Review
Kevin Nice G7TZC

22 A Bandpass Tuner Unit
Ray Loveland G2ARU

27 Roberts R861 - Reviewed
Simon Spanswick

32 Quieten it Down
Andy Ikin

37 Simple One Valve Receiver
Dick Ganderton G8VFH

40 IF Transformers for Valved Receivers
Ray Loveland G2ARU

Regular Columns

Airband 62
Amateur Bands 56
Round-up 8
Bandscan Australia 8
Book Store 80
Communicé 4
Decode 70
DXTV 60
Editorial 10
Frequency Exchange 52
Grassroots 9
Index 1996 45
Info in Orbit 67
Letters 10
LM&S 73
Maritime Beacons 54
MilAir 61
Order Form 79
Propagation Extra 53
Propagation Forecast 51
Rallies 8
Satellite TV News 58
Scanning 64
SSB Utility Listening 57
Trading Post 77
What's in PW? 46

Good Listening
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 LCD (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: 2, 2.5, 3kHz.
- CW Offset: 50, 150, 250, 500, 800Hz.
- IF Shift: 3, 6, 8kHz.
- CW Offset: 400, 600, 800Hz.
- IF Shift: ±8.5kHz.
- 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 Caddesdown 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 the 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 Caddesdown 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, 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 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, HAB 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 easy to tune up on 18m from the internal a.t.u., and on this band, Brian G4DF had c.w. contacts with HAB and EA6, with 569 reports received!

A 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 GOXG had EA1, UA4 and ES1 in the bag during this session.

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


**NEW DESIGN 8-WAY CONNECTOR**

Following the long tradition established by the Bulgin PXOS51/2 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 PXOS51/2 series currently in service, PXOS56, 7 and 8 have been up-graded to 10A 250V power handling capacity, over an operating temperature range -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.

---

**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 DTT's industry development objectives, have been agreed with Channel 5 Broadcasting (CSB) 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 CSB can maximise its launch audience. The key proposals are - CSB 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 CSB 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 CSB's audience in the crucial start-up phase. Its five year span sets a firm but fair arrangement for CSB 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 CSB viewers on channel 35 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 Ardach, Gregorin, Innervoulin 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 station opened on 27 August 1996, about 3km west of Penzance, 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 (ITV): 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 480 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 Hanock Youth Hostel. It is designed to bring good television and teletext reception to approx. 630 people in Alverton, to include Alexandra Road, Hawkins Road and Treworthy 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

---

**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 system. 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, Storrington, Pulborough and Petersfield. To the north west, the service extends to Bordon and Froyle.

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.

Leaving 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 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 a 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 signal, originated by the National Physics 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 i.e.d. digital clock display can be dimmed for nighttime 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 G77WHO, 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 Beumont Conference Centre in Old Windsor. The prizes were presented by Roger Louth on behalf of the RA, Peter Sheppard G4EIP President of the RSGB, Peter Simpson of Wray Castle, 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 Novice licence under the direction of Dave Whalley G4EX. Sitting the full RAE at the age of 13 he waited until he passed his 12 w.p.m. Morse test before applying for his full Class A callsign. A year later he became MOAAU. 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.

---

Short Wave Magazine, December 1996
MORE SPECTRUM FALLS TO GSM

The RA have announced yet more spectrum to be handed over to the ever increasing 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 Agency tell us that they recognise 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.

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 RS232. 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 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: 14,200 or 57,000 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 setup 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.b. MDS 0.1μV a.m. 1μV for 10dB S/N (50Ω antenna input) 500kHz - 30MHz
IF Filters: s.s.b. 2.4kHz. wide 0kHz, n.b.f.m. 25kHz +12dB
Third Order Intercept: >65dB rejection of images, i.f.s etc.
Spurious Responses: 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
Cassette recorder control. Provided via the rear mounted DIN socket, control can be triggered by the receiver squelch.
PC Software: Included, receiver control, back-up and editing package.
Power Supply: 12V d.c. @ 600mA.
Dimensions: 205 x 65 x 193mm (w x h x d) excluding protrusions.
Weight: 600g

Short Wave Magazine, December 1996
December 7: 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. Hodson (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 usual traders, radio amateurs, computer, 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 and cold drinks and light snacks. Talk-in will be provided by Strathclyde Raynet on S22. Fees: Adults, £2.00; U60 holders, £1.50. Senior Citizens, £1.50 and children under 14, free of charge with adult. John Dundas G0COMS on 0141-638 7670 or_Details from Walter G3PMF on (01923) 265572.

December 15: The Verulam ARC Rally is being held at the Watford Leisure Centre, Horsepool Lane, Garston, Watford, Herts. off A404 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) 265572.

January 19: The Oldham ARC Mobile Amateur Radio Society Radio Rally is being held at the Boulevard Leisure Centre, Cross Street, Oldham. Doors open at 11am (10.30am for disabled visitors). This event will feature all types of amateur radios and a Bring & Buy stand. Morse tests are available on demand. Talk-in on S22 via G84ORC, commencing at 7.30pm. Mobile contact prize up to 2pm. Refreshments and free parking available. (01706) 846143 or 0161-652 4164.

February 1: The 12th South Essex Amateur Radio Society Radio Rally is being held at the Paddocks, Long Road, Canvey Island, Essex. The Paddocks is situated at the end of the A130. Doors open at 10am. This event will feature all types of amateur radios and a Bring & Buy stand. Morse tests are available on demand. Details from Walter G3PMF on (01923) 265572.

February 2: The Horwell Amateur Radio Society Radio Rally & Computing Rally is being held 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, bring & buy, light refreshments. Admission is £1. Children are free. Arthur GOKOC on (01235) 815399 or http://www.mpi.co.uk/eduweb/sits/niaylar/rally.html

T

his 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. 6.00MHz 0930-1800; 7.330MHz 1800-2100; 9.615MHz 1130-1430 and 1530-1800; 11.640MHz 0300-0400; 11.855MHz 2100-0100; 15.510MHz 0000-0400; 15.530MHz 0600-0800; 17.750MHz 0100-0500; 17.880MHz 0010-0800; 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 ratax@radioaus.abc.net.au

Health issues Bowing to public concern the Federal Australian 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 Australian 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 of this study I really wonder how for the available licence 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: 9.705MHz Mon.-Thu. 16.50-2006, Sat 1900-2006 and Sun 1850-1952, 11.735MHz Sun.-Thu. 1953-2135, Fri. 2007-2206 and Sat 1959-2206, 11.935MHz Mon.-Fri. 0459-0715 and Sat-Sun 0459-0758; and 11.15MHz Sun.-Thu. 2135-0458 and Fri. Sat. 2206-0458. RNZI is closed from 1200-1630. For QSLs RNZI is PO Box 1 Wellington New Zealand email QSLs are accepted through confirmation is also via email. RNZI e-mail address is: rnziloadcast.gen.nz and more RNZI information and schedules can be found at http://www/actrix.gen.nz/biz/rnz/

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 coordination centre at Edinburgh RAAF Base near Adelaide. When completed the system will scan Australia’s northern coastline which is one of the least densely 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 RNZI and other transmitters on 2135-0458 with RNZI being the caller and RNZI issuing a QSL from PO Box 1. RNZI is PO Box 1 Wellington New Zealand email QSLs are accepted through confirmation is also via email. RNZI e-mail address is: rnziloadcast.gen.nz and more RNZI information and schedules can be found at http://www/actrix.gen.nz/biz/rnz/...
AVON
Bristol International RC: Tuesdays, 8pm. The Black Horse Public House, West Street, Old Market, Bristol. Visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.l. or CBers can get together and have a good natter and do things that your local club is not doing.

Radio New Zealand on 9.700MHz at around 0900 and 4.890MHz at around 0900 and 4.835MHz local nights and also provide A$7 million (£3.4 million) over four years to provide communications, talk by John GOTLK. 0181-777 0420

Buckinghamshire
Aylesbury Vale RC: Wednesdays, 8pm. Harnham Village Hall, Harnham. The club is situated on the A413 between 'Asda' and Three Mile Bignold Road, Off Drayton Road. Bermuda. December 4 - G4NB construction contest. Gerry Somers G413 on (01582) 861926.

Devon


Greater London
Southgate DARC: 2nd and 4th Thursdays. Winchmore Hill Cricket Club, The Paulin Ground, Firs Lane, Winchmore Hill. Visitors are welcome. The club has been formed so that all radio enthusiasts, whether they be Licensed Amateurs, s.w.l. or CBers can get together and have a good natter and do things that your local club is not doing. The club is situated on the A413 between 'Asda' and Three Mile Bignold Road, Off Drayton Road. Bermuda. December 4 - G4NB construction contest. Gerry Somers G413 on (01582) 861926.

North Yorkshire
Harrogate: 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 GOVX1 on (01439) 574757.

Somerset

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.

Yorkshire
Mid Yorkshire ARS: 2nd and 4th Tuesdays, 8pm. St Johns HG, Warwick Div. 61 Emnalls Road, Wargrave. December 11 - Christmas meeting. GB4R1 on (01926) 424465.

Warwickshire
Mid Warwickshire ARS: 2nd and 4th Tuesdays, 8pm. Stratford-upon-Avon, Warwickshire.

Leamington Spa: Shakespeare Club, Mr A. Chapman, 1 St Andrew’s Ave, CV31 2PB. Tel: 01926 622202 or G3WWF@GB7WRG.

Telford: Details from John GOVX1 on 01743 788251 to 0121-772 6807. Gloucester
Hereford & Worcestershire
Bromsgrove ARS: 2nd & 3rd Tuesdays, 7.30pm. The Key End Social Club, Acoaster Road, Burcot, Bromsgrove. December 10 - Night on the air. Barry Taylor. 01527 542266.

Hereford ARC: 1st & 3rd Fridays, 8pm. Many talks and interesting evenings including, December 6 - Isalons on the air. 20th - Informing a mince pie and Christmas spirit. Tom G0JWI. QTH. Tel: 01432 729435 or Paul G0DJF on (01432) 353765.

Malvern Hills ARC: 2nd Tuesdays. Red Lion, St Ann’s Rd, Jim Davis GOOWS. 01684 576338.

Hertfordshire
Hoddesdon RC: Alternate Thursdays, 8pm. Conservative Club, Ryo Road, Hoddesdon. December 5 - AGM. 19th - Christmas social. Don G3JN on 0181-292 3678.

Kent

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 G3G3H. 18th - Club Christmas social evening. Brian Hancock G4PNN on (01304) 822007.

Medway AR & TS: Fridays, 7.30pm, Tumbrun Hall, Cark Close, Timperley Avenue, Walderslade, Chatham, Kent. December 6 - Video Recorder Service. 8.30pm, 20th - Christmas party. G3VUN. 40 Linwood Avenue, Shore Road, Kent ME2 3TR. (01634) 710023.

Lancashire
Preston ARS: Thursdays, 8pm. The Lansdale 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 G1GWCQ. 01772 680706.

Norfolk
North Norfolk ARC: Wednesdays, 7.30pm. Formal and informal meetings at The Normans Centre, Bignold Road, Off Drayton Road between ‘Asda’ and Three Mile Bignold Road, Off Drayton Road. Bermuda. December 4 - Science for all by G3P1B. 11th - Night on the air/construction QRP/Morse practice. 18th - Christmas dinner. Mike G4QEL (01603) 789792.
Greetings before Christmas I will wish you all 'nuff said!

get an equal chance of winning - backwards to ensure that all entries conducted and that we bend over our competitions that they are fairly to be excluded, and I'm sure that from entering. If the winner is employed by Short that there is a rumour circulating that while on the subject of years ago. This project is the Well-known 'one-valve' exponent, the re-introduction of the Denco in one of the columns, would have having a letter published in the appointed day, stirred well and a fair way. All the correct entries are the winner is employed by Short that there is a rumour circulating that while on the subject of years ago. This project is the Well-known 'one-valve' exponent, the re-introduction of the Denco in one of the columns, would have having a letter published in the appointed day, stirred well and a fair way. All the correct entries are

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 G8VFM

In this issue you will find an interesting project - a replica Denco One-valve short wave receiver. With the reintroduction 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 G8VFM

Dear Sir
I have recently come into possession of a Trios receiver (model SR 590). 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 RX125 (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 for your magazine that is very close to my interests, I have three scanners too.

Gallissi 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 to help. The coils that you refer to 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 Gallissi 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, making 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 Rascal 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 Rascal RA17L and a Drake R8B, both fed from an outside long wire, (approx 25m long), via a magnetic balun situated outside under the ayes. This has been checked to ensure that all coiling 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 cramped 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 Rascal's results.

The computer is situated in the downstairs room as is the TV and the Rascal 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 Defcom 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

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.
Dear Sir

I am writing to you in defence of Short Wave Magazine (SWM), which I have been reading for over three years. It is a valuable source of information and entertainment for all amateur radio enthusiasts. It is a great shame to see your circulation figures declining, as it is such an excellent magazine! I would love to see it flourish and continue to be of interest to new readers. However, it seems that SWM is on the decline. Why is this? I would love to find out more.

I was very disappointed to read your latest issue. It seems that the magazine is no longer as good as it once was. The articles are not as well written and the content is not as varied as before. I feel that the magazine is losing its appeal to the readers, and I think that the editors should consider making some changes to improve the quality of the magazine.

I hope that you will take my comments into consideration and make some changes to your magazine. I am sure that your readers would appreciate it.

Sincerely,

[Signature]

---

I have a new collection of QSL cards. I have found a new QSL card from an unknown station. It is a rare card from a station in the Far East. I hope that you will be interested in my findings and I would be happy to share them with you.

Best regards,

[Signature]
**RCON - AVAILABLE NOW!**

RCON is our new receiver control program designed to control many short wave receivers and scanners, offering enhanced control options and a wide range of memory management options.

Running under Windows 95 (or 3.1), RCON makes full use of Microsoft's easy to use operating system, making it easy to use. Full facilities available will obviously depend on the receiver you are using but included are:

- Control of all receiver functions from the keyboard / mouse
- Direct tuning using spin wheels, up/down controls and direct entry from the keyboard
- Upload / download receiver memory banks
- Built-in Microsoft Access database engine allowing full SQL searches, allowing you to import, export, edit, create and delete your own databases
- Transmissions in English database included, courtesy World DX Club
- Airband database included, courtesy Photavia Press
- Access Klingeffuss Super Frequency List on CD-ROM
- Receiver can be tuned direct from any database
- On screen S-meter Spectrum display
- Off air record and playback sound files (needs SoundBlaster card)
- PlayList Function - up to 20 station times and frequencies can be pre-programmed for automatic listening

There's obviously a whole lot more which you can find out by asking for our datasheet or by downloading the manual from our Website!

Or you can just buy it! RCON only costs £49.95 (plus £3.00 p&p) which is great value for money compared with similar applications! RCON will set new standards in functionality and value for money!

Currently RCON will control the HF250, HF150 NRD535, R72E, R7100, AR3000A, AR8000, AR5000 and drivers for newer (and older!) receivers will be added according to demand.

---

**BRISTOL OPEN DAY**

**Saturday 14th December, 1996**

Come and help us celebrate our Bristol branch's 5th birthday

Once again, Tony and Dave at our Bristol branch are having their annual open day. This time it's our fifth and there will be lots of great special offers on the day, plus free snacks and drinks for the thirsty and hungry!

Also on hand will be representatives from ICOM, YAESU and KENWOOD ready to answer your questions on all their great new products.

You'll also be able to see demonstrations of RCON, our great new Windows based receiver control program, plus all other software including Modemaster and Airmaster.

We'll be able to give you the low-down on our complete range of scanners, receivers, antennas and other accessories, including the world famous JPS digital audio filters.

We've also got our usual free prize draw with some great prizes, plus the DX prize for the person travelling the farthest to the event and you can enter for this by just turning up!

79/81 Gloucester Road
Patchway, Bristol
Telephone 0117 931 5263
for more information

---

Need more info? We've got some great information packs available to help you choose the most suitable products for your needs. Packs include Short Wave Receivers & Accessories, Scanning Receivers & Accessories, Software Products and GPS Units.

To receive any of our info packs just send us four first class stamps for each one requested plus your name, address and telephone number and we'll do the rest.
**AN AMAZINGLY TINY SELECTION OF OUR OTHER GOODIES...**

### LOWE HF150

**HF150**
Simply the best value-for-money short wave receiver in the world! Superb performance coupled with a wide range of facilities - don't let its simple appearance fool you - this one has performance that bites!

**HF150 - just £419.00**

### LOWE HF250

**HF250**
The HF250 goes from strength to strength. Why not join with the top DXers and pick one up now? Superb performance and great ergonomics combine with advanced features to make the HF250 a real winner and its probably the best way of spending £799.00 if you want a top class receiver today!

### MVT7100EX

Whether you want to monitor airband, marine or ham radio frequencies the MVT7100EX is the one for you! As well as a complete range of memory control and scanning facilities, it also has excellent receive performance. Our best selling scanner.

**Now just £299.00!**

### DATONG

- AD370 active antenna £79.95
- AD270 active antenna £59.95
- FL3 audio filter £149.95

### JPS COMMUNICATIONS

- ANC4 £189.95
- NTR1 £199.95
- NRF7 £249.00
- NIR10 £299.00
- NIR12 £399.00

### RF SYSTEMS

- MLB £45.00
- MLBMK1 £65.00
- MLBMK2 £75.00
- SP1 splitter £65.00
- SP2S splitter £125.00
- SP3 splitter £69.95
- MTA £175.00
- GMDSS1 £175.00
- DX10 active antenna £175.00
- DX7G £215.00
- DX1PRO £375.00

### SCANNER BITS

- GS200 mount £10.00
- WEP3000 earhanger £10.00
- Airband antenna £10.00
- Telescopic antenna £10.00
- WSC1 Universal case £19.95

### SOFTWARE

- AIRMASTER 3 £89.95
- Upgrade V2 to V3 £29.95
- MODEMASTER 2 £139.95
- SYNOP £149.95
- Klingensfuss CD-ROM £24.95

### BOOKS

- UK Scan Dir 5th ed £18.50
- Understanding ACARS £9.95
- Passport 1996 £14.95
- AIRWAVES 96 £8.95
- CALLSIGN 96 £8.95
- Scanning Secrets £16.95
- Weather Radio £14.95
- Pooley’s Flight Guide £7.00

### NEW!!

**Garmin GPS45XL**

Now with new firmware giving - Maidenhead locator squares - surely the best GPS in the world for amateur radio use

**GPS45XL NOW just £259.00!**

**BOOKS**

- UK Scan Dir 5th ed £18.50
- Understanding ACARS £9.95
- Passport 1996 £14.95
- AIRWAVES 96 £8.95
- CALLSIGN 96 £8.95
- Scanning Secrets £16.95
- Weather Radio £14.95
- Pooley’s Flight Guide £7.00

### COMPLETE PRODUCT RANGE

We've got the lot! Cable, Connectors, antennas, SWR/PWR meters, wave meters, mobile antennas and mounts, rotators plus books and maps and a full range of accessories for all main items. Everything from HF to UHF. Voice and data under one roof!

### CONTACT INFORMATION

**There's a Lowe Branch near you, crammed full of goodies!**

- **Avon** - 0117 931 5263
- **East Anglia** - 01223 311230
- **North East** - 0191 214 5424
- **Yorkshire** - 0113 232 8400
- **South East** - 01444 400786
- **South West** - 01752 257224

- **79 Gloucester Road, Patchway, Bristol BS12 5QJ**
- **152 High Street, Chesterton, Cambridge, CB4 1NL**
- **Unit 18B Airport Industrial Estate, Newcastle, NE3 2EF**
- **12 Station Road, Crossgates, Leeds, LS15 7JX**
- **High Street, Handcross, West Sussex, RH17 6BW**
- **117 Beaumont Road, St Judes, Plymouth PL4 9EF**
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 Thurso and 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 1956. 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 replanning 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-

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.
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. 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.

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.
<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOR AR-8000</td>
<td>The ultimate handheld scanner covers everything from 500kHz-1900MHz without gaps. All mode AM, NFM, WFM, USB, LSB + CW. RRP £1695.</td>
<td>OUR PRICE £339.00</td>
</tr>
<tr>
<td>YUPITERU MVT-7100EX</td>
<td>100kHz-1650MHz. Wideband scanner with SSB.</td>
<td>OUR PRICE £269.95</td>
</tr>
<tr>
<td>ICOM IC-R10</td>
<td>Wideband scanning receiver covers 0.5MHz-1300MHz (all mode). Full computer access capability.</td>
<td>OUR PRICE £TBA</td>
</tr>
<tr>
<td>NEW OPTO SCOUT 3.1-Mk2</td>
<td>Latest mini frequency finder from Optoelectronics. It will capture and memorise up to 400 frequencies that can be recalled directly into the AR-8000. Supplied with ant, nicads and fast charger.</td>
<td>SPECIAL OFFER £679</td>
</tr>
<tr>
<td>NEW OPTO CUB</td>
<td>The Cub is ideal for communication, surveillance and recreational monitoring applications. From 10MHz-2.8GHz. The Cub has maximised sensitivity for detecting RF in the near field and displaying the frequency detected. The cub features a digital filter that reduces false counts and random noise, digital auto capture that acts like an intelligent hold button allowing any frequency captured to remain displayed as long as needed.</td>
<td>RRP £139</td>
</tr>
<tr>
<td>AOR AR-5000</td>
<td>Wideband all mode base receiver. Covers 10kHz-2600MHz (all mode).</td>
<td>RRP £1474. OUR PRICE £1549.95</td>
</tr>
<tr>
<td>DB-770H</td>
<td>Telescopic antenna with wideband RX 25 – 1300MHz RRP £24.95</td>
<td>P &amp; P £1</td>
</tr>
<tr>
<td>HOME BASE CARTRIDGE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TSC-2602</td>
<td>Flexible Wideband Antenna 25 – 1300MHz 14' Long. Superb for scanners.</td>
<td>OUR PRICE £22.95 P &amp; P £1</td>
</tr>
<tr>
<td>NEW DB-32</td>
<td>A miniature wideband antenna. Receives 30 - 1200MHz, BNC fitting only 1.5&quot; long. It's superb (for its size). RRP £29.95</td>
<td>P &amp; P £1</td>
</tr>
<tr>
<td>OPTOLINX</td>
<td>A universal interface which allows multiple radio connection for PC control. Full and half duplex device compatibility. Can connect to radios incl AR-8000/2700/3000A/ R-7000/R-7100. SPECIAL OFFER £899.95</td>
<td>RRP £899.95</td>
</tr>
<tr>
<td>ACCESSORIES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCANMASTER SP-55</td>
<td>Boost reception of your scanner with this pre-amp. 25-1500MHz, variable gain, band pass filters. RRP £69.95 P &amp; P £3.50</td>
<td></td>
</tr>
<tr>
<td>MULTI-BUY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EP-300</td>
<td>Deluxe over the ear earpiece. Buy 1 £9.95 + £1 P&amp;P. Buy 2 £15.00- £1 P&amp;P.</td>
<td></td>
</tr>
<tr>
<td>MA-339</td>
<td>Mobile holder for handhelds</td>
<td>OUR PRICE £9.99</td>
</tr>
<tr>
<td></td>
<td>Air vent holder</td>
<td>£9.99</td>
</tr>
<tr>
<td></td>
<td>Desk stand</td>
<td>£19.95</td>
</tr>
<tr>
<td></td>
<td>P&amp;P £2 on all mounts</td>
<td></td>
</tr>
</tbody>
</table>
COMMUNICATION RECEIVERS

**AOR AR-7030**
Brilliant new all mode short wave receiver with synchronous AM + remote control. RRP £249.95
OUR PRICE £729.95

**YAESU FRG-100**
UK's best selling SW receiver. RRP £599
OUR PRICE £449.00

**TARGET HF-3**
Communication receiver covers 30kHz-30MHz. Complete with power supply and long wire aerial. RRP £159.95
**ORDER YOUR TODAY AND CLAIM FREE DELIVERY.**

**NEW DX-394**
General coverage receiver. Frequency coverage: LW 150-509 kHz, MW 510-1739kHz, SW 1.73-29.999MHz. Special offer £249.95

POWER SUPPLIES

**PORTABLE 12V POWER STATION**
Will deliver 50 amps peak. Charges from AC mains or trickle charge from car cigar lighter using lead supplied. Has 12AH sealed cell and dramatically reduces HF car electronics noise. RRP £46.95
OUR PRICE £46.95
NEXT DAY DELIVERY £8.00

COMMUNICATION RECEIVERS

**SANGEAN ATS-818**
Award winning portable SW receiver. (All mode 0-30MHz). RRP £199.95
OUR PRICE £139.95

**SONY SW-100E**
Award winning miniature SW receiver. RRP £219.95
OUR PRICE £199.95

**POWER STATION**
500kHz-30MHz ATU with built in balun. Ready built £69.00
CTU-8 our price £49.00 P&P £5
AT-2000 ATU with 0 selector £59 P&P £5

**NEW SP-1 SPYWIRE**
Ideal for any receiver. Receives all short wave bands. All mode, no ATU required. Built in balun. SO239 connection.
£24.95
P&P £3

**INTRO PRICE £19.99 P&P £1**

SECONDHAND & EX DEMO BOARD

**LOWE HF-150 & pre selector + speaker. As new** £649.95 complete with rack

**ICOM IC-R7100**
Comms receiver 25kHz-2GHz. As new. £949.95

**AOR AR-3030**
Comms receiver + VHF converter. As new £549.95

---

**NOTICE:**
Not all advertisers in this magazine are authorised stockists for the products they sell. Manufacturers advise customers to purchase from authorised dealers to ensure full company guarantee back-up. Haydon Communications sell only brand new factory sealed stock direct from the manufacturers and are authorised for all its brands.

**WARNING!!**
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 a 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 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 than 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!

**Listening Habits**

You see, if your interests lie with non-broadcast listening, then you have a very basic problem. This boils down to what I mean, 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 may well still be with me on this.

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.

**Getting Going**

Scancat Gold is supplied in a sealed envelope which contains a single 720KB 3.5in 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 therefore possible to create a batch file that specifies log file, radio type...
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. 1. To proceed and begin driving you radio there are a

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 and whistles that shows Scancat at its best.

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

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/banks from a disk file. You can then reload the sorted data back into the radio.

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.
### Receivers

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOR</td>
<td>AR8000</td>
<td>£299.00</td>
</tr>
<tr>
<td>AOR</td>
<td>AR7030</td>
<td>£720.00</td>
</tr>
<tr>
<td>AOR</td>
<td>AR5000</td>
<td>£159.00</td>
</tr>
<tr>
<td>AOR</td>
<td>AR3000+</td>
<td>£875.00</td>
</tr>
<tr>
<td>AOR</td>
<td>AR3000A</td>
<td>£815.00</td>
</tr>
<tr>
<td>BEARCAT</td>
<td>9000XLT</td>
<td>£259.00</td>
</tr>
<tr>
<td>YUPITERU</td>
<td>MVT-7100EX</td>
<td>£259.00</td>
</tr>
<tr>
<td>KENWOOD</td>
<td>R-5000</td>
<td>£895.00</td>
</tr>
<tr>
<td>SONY</td>
<td>SW-77</td>
<td>£359.00</td>
</tr>
<tr>
<td>WELZ</td>
<td>WS-1000</td>
<td>£299.00</td>
</tr>
</tbody>
</table>

### Used Equipment

**WE NEED YOUR USED EQUIPMENT**

**TOP PRICES PAID . . . Guaranteed!!!**

Let us sell your equipment for you. 0% commission.

---

### Multicom 2000 Used Equipment

**12 MONTHS WARRANTY ON OUR USED EQUIPMENT**

**100s OF DISCOUNTED BOOKS**

5th UK SCANNING DIRECTORY £17.50

---

*Collection arranged*
HOKA CODE3 GOLD
THE ULTIMATE MONITORING TOOL USED BY PROFESSIONALS
Anyone used to using our professional package, Code30, will be amazed at how we managed to achieve such high performance from so little hardware.
Over a year of hard development work at our Netherlands HQ has resulted in this latest decoder product. Code3 Gold uses the very best of software DSP filtering and detection technology (borrowed from our professional Code30) and the very latest surface mount miniaturised electronics for the hardware interface.

“The performance is stunning, the compactness remarkable and the price is simply unbelievable!”
We are unique in the decoder market because we put all the DSP software onto the PC. This makes it much easier to fully combine the DSP filters with the software signal detectors and the system decoders. This makes on-the-fly adjustments to the shift or baudspeed completely seamless to the decoding process. All decoding is optimised for every possible combination of keying speed and bandwidth. All of this DSP filtering means your receiver does not need to have expensive narrow filters for RTTY. Simply use your wideband SSB setting for SW monitoring and AM or FM for VHF.

Short Wave and VHF Option
Systems supplied as standard: ACARS, POC-SAG, DTMF, PACKET, BAUDOT, ASCII, SITOR, NAVTEX, PACTOR, FAX, SSTV
This allows you to receive nearly every decodable system there is on shortwave and VHF. Diplomatic stations, Customs, Police, Military & Weather Stations sending 5 figure groups, Decode “Annex 10” Aircraft selcals, Morse, Hellscreiber, ARQ-S, ARQ-E, ARQ-N, ARQ6 9098, ARQ-E3, ARQ-SWE, ARTRAC, POL-ARQ, F7BBN Baudot, Twinplex, CCIR242 TDM, CCIR342-2 TDM, FEC-A, FEC-S, Autopec, Spread, HC-ARQ, TORC1/01, ROU-FEC, HNG-FEC.

COQ8, COQI3, Piccolo Mk6, SYNOP (AAXX, BBXX with 10,000 stations).

Upgrading from a previous version of Code3?
We have all the latest upgrades for Code3, or why not upgrade your old decoder for a competitive upgrade to the new Code3 Gold.

PRICE FOR THIS REMARKABLE FULL DECODE PACKAGE £399 inclusive

ACCESSORIES

SHORTWAVE ANTENNAS
MILLER HF1 COMPACT £65.00
SONY AN-1 ACTIVE £59.00
SONY SWA-30 £POA
GSRV DIPOLE HALF £25.00
WATSON BALUN £19.95

VHF/UHF ANTENNAS
BSS-1300 NEST OF DIOPOLES £65.00
DSS-1300 DESK NEST £41.00
MESS-1300 MOBILE NEST £41.00
SKYSCAN MOBILE £25.00
SCANMASTER DISCONE £85.00
SCANMASTER DISC/DISC £56.00
SCANMASTER SBA-100AIR £65.00
DIAMOND D-707 ACTIVE £139.00

WHIPS
WATSON REGULAR £12.95
WATSON TELEGAINER £14.95
WATSON SUPER £19.95
DIAMOND MINI £28.00
DIAMOND MICRO £29.95

TIMEWAVE DSP-899ZX £325
TIMEWAVE DSP-9v3 £189
MFJ-784B DSP £235
VECTORICS AT-100 £75
GLOBAL AT-2000 £90
REALISTIC DX-394 s/w receiver £225

CTU 9 ATU £35.00
AA2 SW ACT ANT £8.90
AA4 VHF ACT ANT £19.90
ASL5 AUDIO FILTER £29.90
SPA-4 PRE AMP £8.90
AB-118 AIRBAND ANT £18.80
AOR SOFT CASE £17.00
CPRD MASTER SP-55 £69.00
VECTORICS AT-100 £76.00
AOR SBU-5000 £599.00
OPTO SCOUT £395.00
OPTO CUB £135.00
OPTO INTERCEPTOR £179.00
AOR CU-8232 INTERFACE £99.00
GARMIN GPS-38 £199.00
GARMIN GPS-45 £289.00
ICOM SP-3 SPEAKER £69.00
ICOM SP-7 SPEAKER £35.00
ICOM SP-12 SPEAKER £POA
LOWE KEYPAD £45.00
YUPITERU SOFT CASE £17.00

UNIT 3, 86 CAMBRIDGE STREET, ST. NEOTS, CAMBS PE19 1PJ
Tel: 01480 406770 E-Mail: multicom@intecc.co.uk

Short Wave Magazine, December 1996
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 brought 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...
YOU WILL NEED

**CAPACITORS**
- Trimmers
  - 2-8pF
  - 3-30pF
- Two-gang variable
  - 120pF

**INDUCTORS**
- Toko KANK3333R
- Toko KANK3334R
- Toko KANK3335R

**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.

**Alignment**

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 i.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-metallic 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.

**Internal Construction**

The 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.

**Alignment**

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 i.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-metallic 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.

**Internal Construction**

The 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.

**Alignment**

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 i.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-metallic 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.

**Internal Construction**

The 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.

**Alignment**

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 i.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-metallic 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.
New 1997 Catalogue Out Now!

144 pages packed with products, illustrations and every product priced. Get the full specification of thousands of items. See the kind of accessories that you don’t often see advertised, and the bargains to be had simply by purchasing a copy of this book. You’ll also be first with the news on new products, some that have not even been introduced yet. There’s also topical items, technical data etc. Plus free 12 page industry price list and Watson colour catalogue.

FM, WFM & AM
500kHz - 1300MHz

WS-1000E World’s Smallest Scanner

WS-1000E £349

Ham Radio Today says:
“This is a superb design - brilliant performance.”

SWM Review July issue:
“Tomorrow’s technology today - A new dimension in portable scanners.”

True pocket size, designed by one of the world’s largest communications manufacturers. Up to 24 hour’s continuous operation from AA cells, programmable power off, 400 memories, fabulous sensitivity, excellent strong signal handling. Send today for full details.

WEP-400 US Police Model

£14.95

- Soft Earband
- Adjustable Height
- Adjustable Angle
- Left or Right Adjust

- Washable Pad
- Right angle Plug
- 3.5mm fitting

ONLY OUR Model "EX" YUPITERU SCANNERS ARE LEGAL!

If you are buying a Yupiteru Scanner, make sure it is the latest legal CE version and not old stock! Just check the back and look for the CE label and the "EX" model number.

MFJ-784B Filter

£259

The best receiver filter in the world - at least that’s what users say!

Long Wire Balun

£22.95

Watson LWB-1 lets you end-feed your wire aerial with coax cable Post £1.50

Xplorer Monitor

25 - 1300MHz

Professional Near-field Monitor

There’s nothing else like it!

Locks onto any frequency in less than a second
Gives digital readout
Decodes audio and reads tone frequencies

£249

NEW MVT-7000EX

100kHz to 1300MHz

WFM-NFM-AM Maplin Ref CD00

A great scanner if you don’t need SSB. This model gives great performance on UHF & UHF. Phone for free brochure and details of all our accessories.

£899

NEW MVT-7200EX

SSB - FM - AM - CW Narrow SSB filter
AM Ferrite Aerial
Yupiteru’s latest model and includes a ferrite aerial for low frequency reception. Also included is a new narrow band SSB filter. AM reception has also been improved by the addition of a new narrower filter and a circuit revision has reduced total battery consumption.

£359

Plus FREE Damage

GOT A COPY OF OUR NEW CATALOGUE?
1997 CATALOGUE OUT NOW!

Lowe Receivers

- **HF-150 30kHz - 30MHz**
  - £419.00
- **AP-150 Speaker plus filter**
  - £219.00
- **HF-225 30kHz - 30MHz**
  - £499.00
- **HF-250 30kHz - 30MHz**
  - £799.00
- **WA-250 Active antenna.**
  - £35.00

**Yaesu FRG-100**

- **FRG-100 12V DC**
  - £499.95
- **KP-100 keypad**
  - £49.95
- **FM Unit**
  - £33.95
- **PA-100 AC adaptor**
  - £44.95

**NEW Icom ICF-8500**

- Icom's super new receiver that goes from 100kHz to 2GHz. This is a fabulous new design that puts all your receiving requirements into one very compact package.

**AR-7030**

- Short Wave Receiver

**Yaesu FRG-100**

- **FRG-100 12V DC**
  - £409.95
- **KP-100 keypad**
  - £49.95
- **FM Unit**
  - £33.95
- **PA-100 AC adaptor**
  - £44.95

**NEW Icom ICR-10**

- **New Scanner from Icom**
  - **IC-R10**
  - 500kHz - 1300MHz
  - **SSB - FM - AM**
  - £99

**AOR-8000**

- **Special Offer**
  - Save £80
  - 500kHz - 1.9GHz
  - **SSB - FM - AM**
  - £69.95
  - **N-cards & Charger**
  - £69.95

**AT-2000 Receiver ATU.**

- **WSM-1900**
  - 25MHz - 1.9GHz
  - Features black 400mm wideband whip, latest micro multi-pole magnet, and 2.75m coax fitted BNC plug.
  - Just place on car roof and hear the improvement! Light and compact with super strong magnet.

**NEW Icom ICR-10**

- **ATU-2000 Receiver ATU.**
  - 500kHz - 30MHz
  - **Long wire - coax - balanced**
  - SO-239 sockets & terminals
  - "Q" control for ultimate reception
  - Connects between short-wave aerial and receiver socket and adjust the controls for best reception. The most popular receiver ATU on the market - and no wonder!

**WHB-1 Belt Clip**

- Complete with micro technology mag-mount, cable and BNC plug.

**Price Match**

- **Why not trade up?**
  - Give us a call for a deal on your old receiver. It may be worth more than you think when traded against a new model. We can arrange collection anywhere in the UK. Give us a call.

**NEW AKD HF-3 Short-wave Receiver**

- **25kHz - 30MHz LSB, USB & AM**
  - An exciting new receiver for short-wave listening. Switched LSB & USB with digital readout. Fly-wheel dial and quick memory function.
  - RSGB Review Nov. 1996 says: "very sensitive indeed - audio quality was excellent - is it worth it? very definitely yes - easier to tune than similar priced Japanese radios - At the price you can't go wrong"

**Kenwood R-5000**

- **GPS-38**
  - £189

- **GPS-45XL**
  - £259
- **GPS-68**
  - £289
- **GPS-40**
  - £219
- **Cigar cable (45)**
  - £14.95
- **Cigar cable (38)**
  - £17.95
- **Mobile mount**
  - £17.95
- **PCX-5 software**
  - £79.95
- **Data cable (45)**
  - £16.95
- **Data cable (38)**
  - £14.95
- **Mag Mount**
  - £34.95

**VHF - UHF Frequency Guides**

- The UK Scanning Directory
  - Latest edition
  - £17.95

**VHF - UHF Frequency Guides**

- Spiral bound flip style guide - used by professionals!

**GARMIN**

- **GPS-38**
  - £189

**VHF - UHF Frequency Guides**

- The UK Scanning Directory
  - 5th edition with even more frequencies. Covers VHF and UHF in detail.

VISA Tel: (01702) 206835 / 204965 Fax: (01702) 205843 ACCESS

Shop & Mail Order 22, Main Road, Hockley, Essex. SS5 4QS

24 Hour Answerphone and Fax. Open Mon-Sat. 9am - 5.30pm

GOT A COPY OF OUR NEW CATALOGUE?
SONY RADIOS ARE ON SPECIAL OFFER

YOUR SONY SPECIALIST
All products covered by a total manufacturers guarantee

NEW FROM SONY
ICF-SW100T RRP £149.95 . ASK price £360.00
ICF-SW77150 £299.95 . ASK price £329.00
ICF-SW55 £299.95 . ASK price £235.00
ICF-SW100E £219.95 . ASK price £159.95
ICF-SW100S KIT inc active antenna £299.95 . ASK price £235.95
ICF-SW7600G £189.95. ASK price £129.95
ICF-SW33 £149.95 . ASK price £135.00
AN1 Active SW antenna £74.95 . ASK price £59.95
AN-71 Wire antenna £4.99
AN-100 Active antenna for ICF-SW100 or ICF-SW7600G £49.95
AN-102 Compact active antenna £59.95

GRUNDIG AT ASK
Satellit-700 £320.00
Yachtboy-500 £159.95
Yachtboy-400 £120.00
Yachtboy-207 £32.95
Yachtboy-217 £42.95

MAGELLAN
GPS 2000 £175.00
GPS 3000 £199.00
Trailblazer £249.00
Trailblazer XL £299.00

MAIL ORDERS WELCOME ON THE ABOVE PHONE NUMBERS.
FAST-EFFICIENT-CONVENIENT TO YOUR DOORSTEP!!

How TO INTERPRET FACSIMILE WEATHER MAPS & CHARTS £8.95
WEATHER REPORTS FROM RADIO SOURCES £6.00

We also have in stock a range of Frequency Scanning Guides and Books
UK Scanning Directory 5th Edition £18.50
Shortwave International Frequency H/Book £14.95
Ham Tool Kit – CD ROM £9.95
Shortwave Maritime Communications £16.50
QRZ Call Sign Data Base (CD ROM) £9.95
Global Radio Guide £3.95
Passport To World Band Radio £14.95

HANDHELD & BASE SCANERS

YUPITERU
MVT-125H air band £169.95
MVT-150 FM marine £169.95
VT-225 civil & military airband £240.00
MVT-7000 100kHz-1300MHz (no gaps) £255.00
MVT-7100EX 500kHz-1650MHz £279.95
MVT-7200 £345.00
MVT-8000 home base 8MHz-1300MHz £335.00

REALISTIC DX-394 £249.00

ALINCO
DJ-X1D 200KHz-1300MHz £240.00
IWR-100 50Hz-30MHz £509.95
IWR-9600 60MHz-905MHz £525.00

ICOM
ICR-7100 homebase £1279.00

For the best prices give us a call on: 0171-637 0353

PLEASE MAKE ALL CHEQUES PAYABLE TO: ASK ELECTRONICS AT 248-250 TOTTENHAM COURT ROAD, LONDON W1P 9AD
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 marketplace, 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, 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.

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 tuned 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.

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
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., I.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 SS6 4QS Tel: (01702) 206835 for the loan of the review model.
SKY SCAN DX V1300 Discone

Most discones only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically mounted antennas. The Sky Scan V1300 discone has both vertical and horizontal elements for maximum reception. The V1300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.

£49.95
+ £3.00 p&p

SKY SCAN Magmount MKII

For improved performance, wide band reception, 25 to 1300MHz. Comes complete with protective rubber base, 4m RG58 coax cable and BNC connector. Built and designed for use with scanners.

£24.95
+ £3.00 p&p

SKY SCAN Desk Top Antenna Model Desk 1300

Built and designed for use with scanners. Coverage: 25 to 1300MHz. Total height: 36ins - 9ins at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector fitted. Ideal indoor - high performance antenna and can also be used as a car antenna when your car is static. REMEMBER YOUR SCANNER IS ONLY AS GOOD AS YOUR ANTENNA SYSTEM!

£49.00
+ £3.00 p&p

New DX-394

MAJOR FEATURES
- Frequency Coverage
  LW 150 - 509.9kHz
  MW 510 - 1729.9kHz
  SW 1.73 - 29.9999MHz
- Fine Tune
  Fine tunes the reception signal, especially when you tune to SSB and CW

Step A, Step V
Selects the 0.1, 1.5, or 10 (9) kHz tuning frequency step sequentially

Band
Selects LW (150-509.9kHz), MW (510-1729.9kHz), or SW (1.73-29.9999MHz) sequentially

LCD
Large LCD display with LCD signal strength meter

SALE PRICE ONLY
WAS £349.99
£249.99 + £10 p&p

PRO-2042

1000 channel with hyperscan

£359.99 FREE P&P

1000 memory channels (100 channels x 10 banks)
10 limit search banks 100 monitor channels
Accessories: Telescopic antenna and owner's manual
Display: Large l.c.d. with l.e.d. backlighting
Large rotary or keypad frequency control
Dimensions: Approx 232 (W) x 210 (D) x 90 (H) mm
Receiving wave mode: Wide FM TV sound
FM broadcast
Narrow FM Business
Communication
Ham radio
Aircraft
CB radio

Scan and search speed: Approx 50 channels/sec. and 50 steps/sec.

FREQUENCY RANGE AND MODE

<table>
<thead>
<tr>
<th>Freq (MHz)</th>
<th>Step</th>
<th>Mode</th>
<th>Freq (MHz)</th>
<th>Step</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.000-29.995</td>
<td>5.0kHz</td>
<td>a.m.</td>
<td>37.000-324.995</td>
<td>5.0kHz</td>
<td>n.f.m.</td>
</tr>
<tr>
<td>30.000-87.495</td>
<td>5.0kHz</td>
<td>n.f.m.</td>
<td>225.000-400.000</td>
<td>12.5kHz</td>
<td>a.m.</td>
</tr>
<tr>
<td>87.500-107.995</td>
<td>50.0kHz</td>
<td>w.f.m.</td>
<td>400.005-520.000</td>
<td>12.5kHz</td>
<td>n.f.m.</td>
</tr>
<tr>
<td>08.00-136.995</td>
<td>12.5kHz</td>
<td>a.m.</td>
<td>760.000-1300.000</td>
<td>12.5kHz</td>
<td>n.f.m.</td>
</tr>
</tbody>
</table>

★ ROBERTS R861 Short Wave Receiver now in stock ★ ROBERTS R861 Short W
**QS-300 Base Stand**
A full adjustable desk top stand for use with all handhelds. Fitted coaxial fly lead with BNC and SO239 connectors.
£19.95 + £1 P&P

**QS-200 Mobile Mount**
Mounts on the air vent grills on a car dashboard to allow easy and safe operation of most handhelds.
£9.95 + £1 P&P

**KS-240**
Police style over the ear earpiece.
£9.95 FREE P&P

**REALISTIC PRO-44**
50 channels
£149.99

**REALISTIC PRO-26**
200 channels continuous coverage
£219.99

**TELESCOPIC SCANNER ANTENNA**
Extends portable scanner range. Nine sections, centre loaded. For 1-1300MHz BNC connector.
£9.99 + £1 P&P

**UNIDEN UBC-220XLT**
200 channels
£169.95 + £5 P&P

**UNIDEN UBC-3000XLT**
400 channels
£239.95 + £5 P&P

**YUPITERU MVT-7100**
SUPER DEAL
£9.99 + £1 P&P

**CLIP-ON MINI SPEAKER**
Ideal for portable scanners. Swivel clip attaches to your collar or lapel for easier listening while you carry your portable on its belt-clip. With 3.5mm plug.
£9.99 + £1 P&P

**UNIDEN UBC-9000XLT**
500 channels
£299.95 + £5 P&P

**AER-I**
Portable short wave aerial
A retractable long wire aerial that can be used with all short wave receivers. The aerial is provided with a 3.5mm plug for receivers with a suitable socket and an adaptor to clip the aerial to the telescopic rod aerial of sets with no aerial socket.
£14.95 + £1 P&P

**REALISTIC PRO-2039**
£149.95 + £5 P&P

**OPTO CUB**
£139.00 + £5 P&P

**OPTO SCOUT**
£369.99 + £5 P&P

**AOR AR-3000A**
£839.99 FREE P&P

**B115**
Miniature wide band antenna receives 10 - 1300MHz. BNC fitting only 50mm long.
£19.95 FREE P&P

**REALISTIC PRO-26**
200 channels continuous coverage
£219.99

**TELESCOPIC SCANNER ANTENNA**
Extends portable scanner range. Nine sections, centre loaded. For 1-1300MHz BNC connector.
£9.99 + £1 P&P

**UNIDEN UBC-220XLT**
200 channels
£169.95 + £5 P&P

**UNIDEN UBC-3000XLT**
400 channels
£239.95 + £5 P&P

**YUPITERU MVT-7100**
SUPER DEAL
£9.99 + £1 P&P

**CLIP-ON MINI SPEAKER**
Ideal for portable scanners. Swivel clip attaches to your collar or lapel for easier listening while you carry your portable on its belt-clip. With 3.5mm plug.
£9.99 + £1 P&P

**UNIDEN UBC-9000XLT**
500 channels
£299.95 + £5 P&P

**AER-I**
Portable short wave aerial
A retractable long wire aerial that can be used with all short wave receivers. The aerial is provided with a 3.5mm plug for receivers with a suitable socket and an adaptor to clip the aerial to the telescopic rod aerial of sets with no aerial socket.
£14.95 + £1 P&P

**REALISTIC PRO-2039**
£149.95 + £5 P&P

**OPTO CUB**
£139.00 + £5 P&P

**OPTO SCOUT**
£369.99 + £5 P&P

**AOR AR-3000A**
£839.99 FREE P&P

**B115**
Miniature wide band antenna receives 10 - 1300MHz. BNC fitting only 50mm long.
£19.95 FREE P&P

**Nickel Metal Hydride (NiMH) Batteries.**
Super Syncro 1100 Rechargeable AA Cell battery 1100 MAH voltage 1.2 £3.00 each incl. P&P.

The new generation of rechargeable "NiMH" or Nickel Metal Hydride cells, free of toxic or hazardous elements such as cadmium, lead, mercury or lithium, can be used repeatedly and disposed of safely when finally thrown away. A service life of 500 to 1000 charge/discharge cycles can be expected, and the capacity related performance is normally 30 to 50% better than that of the best equivalent NiCad cells.

---

ve Receiver now in stock ★ ROBERTS R861 Short Wave Receiver now in stock ★
**Low Noise Performance From Longwire Antennas**

**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.

S
ome 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 9m 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 to 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 broadband 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 issue of SWM.
SOUTH MIDLANDS COMMUNICATIONS

THIS MONTH’S SPECIALS

SANGEAN WORLD BAND SHORTWAVE RECEIVERS

ATS-818
FM, LW, MW and SW. 1711kHz to 29.999MHz 45 memory channels
ONLY £129.95

ATS-202
FM, MW. SW1 2.3-7.3MHz. SW2 9.5-26.1MHz. 20 pre-set channels
ONLY £69.95

HF RECEIVERS

YAESU
FRG-100
50kHz-30MHz AM, USB, LSB, CW, FM, 100 memory channels.
OUR PRICE £499

AOR AR-7030
0-32MHz. AM (SYC), AM, USB, LSB, CW, DATA & NBFM. 100 memory channels. Made in UK.
OUR PRICE £729 (HF RX)

KENWOOD
R-5000
10kHz – 30MHz. SSB, CW, AM, FM. 100 memory channels.
OUR PRICE £939
SAVE £120

ICOM R-72DC
AM, SSB, CW, FM, RTTY (optional). 99 memory channels.
OUR PRICE £775
SAVE £120

SCANNING RECEIVERS

AOR AR-8000
50kHz - 1900MHz. AM, FM, FM wide, SSB, CW. 1000 memory channels.
OUR PRICE £369
SAVE £41

AOR AR-5000
10kHz-2600MHz. All mode, AM, FM, USB, LSB, CW, 100 memory channels.
OUR PRICE £1559 (Scanning RX)

MVT-7100E
530kHz-1650MHz. AM, FM, WFM 1000 memory channels.
NEW LOW PRICE only £299

AOR AR-3000A
10kHz - 2036MHz. SSB, CW, AM, FM, FM wide. 400 memory channels.
OUR PRICE £859 SAVE £90

ICOM ICR-7100DC
25MHz - 2GHz. AM, FM, WFM, SSB. 900 memory channels.
OUR PRICE £1249 SAVE £200

DATA PRODUCTS

We offer the widest range in the UK

AEA
PK12 1200 baud TNC.............£129
PK96 9600 baud TNC.............£219
PK232/MBX Multimode data modem...£319
PK900 Multimode data modem...£479
*Free Pack – Win software

PacComm
Tiny 2 1200 baud TNC...............£139
PicoPacket 12 baud portable TNC......£119
Spirit 2 9600 baud TNC............£219

Symek
TNC2H 9600 baud TNC...............£179

Kantronics
KPC3 1200 baud TNC...............£139
KPC9612 1200+9600 dual port TNC....£275
Kam+ Multimode data modem...£395

ICOM
ICR-7100DC
Carr C

All discounts are based on recommended retail prices.

CARRIAGE: A = £2.75  B = £5.50  C = £9.50  D = £13.50

Showroom/Mail Order 9.30-5pm, 9-1pm Sat Tel: (01703) 251549 Service Dept Tel: (01703) 255111 9-5 Mon-Fri Email: amateur@smc.comms.com

SMC Siskin (SMC HQ) Data Communications Hotline Tel: (01703) 252427 3.30pm - 5pm for personal callers 9.00 - 11.45pm for telephone queries.

SMC Ltd HQ Southampton: S M House, School Close Chandlers Ford Ind Estate, Eastleigh, Hants SO53 4BY. Tel: (01703) 255111 Fax: (01703) 263507

ARE Communications: 6 Royal Parade Hanger Lane, Ealing, London W5 1ET. Tel. 0181-997 4476 9.30am - 5.30pm Mon-Fri. 9.30am - 1.00pm Sat.

Reg Ward & Cee 1 Western Parade, West Street, Axminster, Devon EX13 5NY. Tel. (01297) 34918 9.00am - 5.15pm Tues-Sat

SMC (Northern): Nouvell Lane Ind. Estate, Nouvell Lane Leeds. Tel. (0113) 235 0606 9.30am - 5.00pm Mon-Fri. 9.00am - 1.00pm Sat.

* TELEX * AEA * TOKYO HY-POWER * MFJ * MIRAGE KLM * HENRY * MANSON * REXON * AOR * KENWOOD * YAESU *
## DRAE Products

### DRAE Wire Antennas

DRAE wire antennas use the very best quality components and "Flex Wave" wire with 90 strands of 36 gauge solid copper wire to give high strength and flexibility. This wire won't kink, tangle or fray. DRAE antennas are guaranteed to give years of outstanding performance.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAE-200</td>
<td>20 meter s/w receive and led wire antenna. Robust fed, uses high quality &quot;Flex Wave&quot; copper wire. 100WHz</td>
<td>£59.95</td>
</tr>
<tr>
<td>DRAE-350</td>
<td>35 meter s/w receive and led wire antenna. Robust fed, uses high quality &quot;Flex Wave&quot; copper wire. 100WHz</td>
<td>£79.95</td>
</tr>
<tr>
<td>DRAE-500</td>
<td>50 meter s/w receive and led wire antenna. Robust fed, uses high quality &quot;Flex Wave&quot; copper wire. 100WHz</td>
<td>£99.95</td>
</tr>
<tr>
<td>DRAE-800</td>
<td>80 meter s/w receive and led wire antenna. Robust fed, uses high quality &quot;Flex Wave&quot; copper wire. 100WHz</td>
<td>£119.95</td>
</tr>
</tbody>
</table>

### BEARCAT UBC 65XLT

**NOW A SCANNER AT A PRICE YOU CAN AFFORD!**

**OUTSTANDING VALUE FOR MONEY**

**JUST LOOK AT THESE FEATURES**

- Covers Police, marine, Land mobile etc
- 66-512MHz (with gaps)
- 10 memories

**SPECIAL PRICE**

£59.95

**(plus 20 pence)**

**R10 from ICOM**

Now is the time to dump your existing scanner - THIS ONE IS THE BUSINESS! Just look at the specifications - then call us for a part exchange deal or simply use our cheque spread scheme to write 3 post dated cheques of £145 each (includes £6 p&p)

- All modes
- 5000Hz - 1300MHz no gaps
- 1000 memory channels with Alpha Tag
- Real time band scope
- 100kHz resolution
- Tumable band pass filters for the very best image and intermediate rejection
- Noise blanker & auto noise limiter
- Full computer interface compatibility

£429

**(plus £6 p&p)**

We stack the very BEST digital filters from TIMEWAVE USA - Just connect the unit to your speaker socket and hear DX signals easily.

### DSP-9 PLUS

- 100Hz resolution
- Real time band scope
- Deluxe digital filters, self test, switches between 2 loops
- 10 memories
- 66-100MHz no gaps
- 1000 memory channels with Alpha Tag
- Real time band scope
- 100kHz resolution
- Tumable band pass filters for the very best image and intermediate rejection
- Noise blanker & auto noise limiter
- Full computer interface compatibility

£199

### DSP-599ZX

The NEW & most powerful noise and QRM filter in Amateur Radio.

- Double screened from polyethylene insulation, good to 3GHz - this is the cable to use to cut those losses! For HF try our 5D-FB or 8D-FB.
- Good to 3GHz - this is the cable to use to cut those losses! For HF try our 5D-FB or 8D-FB.
- Accuracy - 1 MHz.
- Full computer interface compatibility

£269

### ERA Microreader

- Decodes RTTY/AMTOR/CW/STOR/FEC
- Includes CW tutor mode
- 12V Supply req.

£369

**ORDER HOTLINES:**

TEL: (01705) 662145
FAX: (01705) 690626

**SHOWROOMS:** 1A MUNSTER ROAD, PORTSMOUTH PO2 9TB
MAIL ORDER: 189 LONDON ROAD, PORTSMOUTH PO2 9AE
NEW! ICOM R8500

Our first shipment has now arrived - YES, we've got them IN STOCK! This receiver is everything we hoped it would be, covering 100kHz - 260GHz and lots of features.

Price £1548.00

The NEW AR 5000

Professional grade ultra wideband scanner.

Price £449!

SAVE £150 ON THE RRP!

SONY SW7600G World Receiver

SONY SW1000T NEW Worldwide Receiver.

Price £389.00

SONY SW777 Digital World Receiver

Price £399.95

SONY SW755 Compact World Receiver

Price £299.00

SONY SW1000U Miniature World Receiver

Price £199.00

SONY SW760UG World Receiver

Price £179.00

SONY AN 1 Active antenna 150kHz-30MHz

Price £59.95

SONY AN 3 General purpose antenna

Price £59.95

We are a SONY SHORTWAVE CENTRE and carry the full range of Receivers IN STOCK! All our stock is guaranteed by SONY (UK) and not low cost European grey imports.

SONY Radios

SPECIAL PURCHASE!

AR 1500

Handheld Scanner with SSB!

Price £219.95

CONTINUOUS COVERAGE 500KHz - 1300MHz

SAVE £100

ROBERTS R827 Multi-band Digital Pre-set Stereo World Radio

Price £159.95

Includes SSB & CW

Includes SW, MW, LW, FM

4.5 preset stations

5 tuning methods

DIAMOND D707 ACTIVE WIDEBAND ANTENNA for the serious listener, active antennas give the ultimate reception.

Price £19.95

Post them to us, enclosing your name & address & we will (subject to stock) send your goods immediately.

£9.95 + £4.75 p&p

COMPLETION OF SELECTIONS SUPPLIED FREE

CARDIOGRAM M1 Special VHF/UHF section 100kHz - 2GHz and lots of features.

Price £249

Vanguard 500kHz - 1500MHz

Price £179

Variable pre-amp gives 20dB gain.

VASTLY IMPROVES RECEPTION ON SHORT WAVES - FULLY ADJUSTABLE TO SUIT YOUR WAVES

NEW LOW PRICE!

SKYVIEW WX CHART Receive on screen weather pics with SYNOP OPTION for Fax III users

Price £95

Receive the very latest news & weather Faxs from around the globe. PC based package with on screen help & manuals. Decodes RTTY, CW, FEC, NAVTEX & FAX

Price £159.95

SYNOP WEATHER PLOTTING

Receive and decode RTTY Signals on Shortwave to produce live on screen weather pictures

Price £99

NEW LOW PRICE!

SKYVIEW FAX III

Receive on screen weather pics with SYNOP OPTION for Fax III users

Price £99

INTRODUCTORY OFFER

SYNOP WEATHER PLOTTING

Price £95

Price £18.50 free p&p

NEW LOW PRICE!

EURASIA D15

Price £16.50

Receive the full range of Receivers IN STOCK!

Price £15.00

Frequencies listed!

VICTRONICS AT 100

A combined, tunable preamp and active antenna. Boost reception of your existing antenna or use as a stand alone indoor active antenna.

Price £79.99

GLOBAL AT 2000

Antenna or use as a stand alone indoor active antenna.

Price £79.99

350 kHz - 30 MHz

£349

INTRODUCTORY OFFER

ROBERTS R827

Price £159.95

Includes SSB & CW

Includes SW, MW, LW, FM

4.5 preset stations

5 tuning methods

DIAMOND D707 ACTIVE WIDEBAND ANTENNA for the serious listener, active antennas give the ultimate reception.

Price £19.95

Post them to us, enclosing your name & address & we will (subject to stock) send your goods immediately.

£9.95 + £4.75 p&p

COMPLETION OF SELECTIONS SUPPLIED FREE

CARDIOGRAM M1 Special VHF/UHF section 100kHz - 2GHz and lots of features.

Price £249

Vanguard 500kHz - 1500MHz

Price £179

Variable pre-amp gives 20dB gain.

VASTLY IMPROVES RECEPTION ON SHORT WAVES - FULLY ADJUSTABLE TO SUIT YOUR WAVES

NEW LOW PRICE!

SKYVIEW WX CHART Receive on screen weather pics with SYNOP OPTION for Fax III users

Price £95

Receive the very latest news & weather Faxs from around the globe. PC based package with on screen help & manuals. Decodes RTTY, CW, FEC, NAVTEX & FAX

Price £159.95

SYNOP WEATHER PLOTTING

Receive and decode RTTY Signals on Shortwave to produce live on screen weather pictures

Price £99

NEW LOW PRICE!

SKYVIEW FAX III

Receive on screen weather pics with SYNOP OPTION for Fax III users

Price £95

INTRODUCTORY OFFER

SYNOP WEATHER PLOTTING

Price £95

Price £18.50 free p&p

NEW LOW PRICE!

EURASIA D15

Price £16.50

Receive the full range of Receivers IN STOCK!

Price £15.00

Frequencies listed!
HF RECEIVER
NEW FROM AKD
CE APPROVED

The first of a whole new range
Target HF receiver for the shortwave listener

- Frequency range 30kHz - 30MHz
- 1kHz steps with clarity control
- Audio output 2 watts
- Bandwidth SSB = 4kHz AM = 6kHz
- Modes USB/AM/LSB

Signal strength meter
Favourite frequency memory
Large, silky smooth tuning control knob
Fully synthesised employing a phase lock loop VCO to ensure stable and accurate signal reception
Headphone socket

£159.95
inc VAT
Add £6 P&P

The above price includes 12V power supply and aerial.

NOW AVAILABLE

AKD internet details:
Web site: http://www.kbnet.co.uk/akd
E-mail: akd@kbnet.co.uk

UNIT 5
PARSONS GREEN ESTATE
BOULTON ROAD
STEVENAGE, HERTS SG1 4QG.
TEL: 01438 351710
FAX: 01438 357591


C.M. HOWES
COMMUNICATIONS

SSB & CW Filter - £29.80!
Clean up your reception!
- Reduce noise and interference
- Sharp SSB/CW Speech filter with faster roll-off than IF crystal filters
- 300Hz bandwidth CW filter
- Printed and punched front panel
- All aluminium case
- Simply connects between radio and external speaker or headphones
- Suits all general coverage receivers & transceivers
- ALS5 Kit plus HA5OR hardware: £29.80

DC2000 built in HA22R hardware option
HOWES DC2000 Electronics kit: £22.90
(includes either standard 80MHz, or your choice of band module)
HA22R Hardware (pictured): £18.90
Extra band module kits: £7.90 each.

Enjoy your radio more with great projects from HOWES!
Multiband SSB/CW Receiver
The DXR20 covers 20, 40 & 80M bands as standard. You can add any other SW band with optional plug-in band modules (same type as DC2000). Versatile and popular!

Top Value Receiving ATUs
CTU8. Covers 500kHz to 30MHz. Matches antenna impedance and helps reduce spurious signals and interference with extra front-end filtering for the receiver. 50S29 sockets. Factory Built: £49.90. Kit (including case and all hardware): £29.90.
CTU9. As CTU8 plus balun, bypass switch and terminal posts. The fully featured Rx ATU! Factory Built: £69.90. CTU9 Kit (including case and all hardware): £39.90.

Please add £4.00 P&P, or £1.50 P&P for electronics kits without hardware.
HOWES KITS contain good quality printed circuit boards with screen printed parts locations, full, clear instructions and all board mounted components. Sales, constructional and technical advice are available by phone during office hours. Please send an SAE for our free catalogue and specific product data sheets. Delivery is normally within seven days.

Mail Order to: Eydon, Daventry, Northants, NN11 3PT
01327 206178

NEW! HOWES DC2000
Beginner’s SSB/CW Receiver Kit - £22.90
The ease of construction, the sensitivity and the low quiescent current consumption make this a great little receiver for both the first time builder and for holiday and portable use! It covers a single band at a time, but uses the same interchangeable band modules as the DXR20, to give the choice of any HF band on a simple plug-in basis. Choose from 160, 80, 40, 30, 20, 15 & 10M amateur bands. Also suitable for BM11 and BM54 HF air-band modules.

Like our other receivers, the DC2000 will interlink with many of our other kits to form a complete station. Fancy a digital frequency display, "S" meter, sharp CW filtering, a matching transmitter? There are many reasons why building the DC2000 is a great way to start your station!

73 from Dave G4KQH, Technical Manager.
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 1.8 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.

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.

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

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 ‘threshold 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 210pF variable capacitor, mounting it directly on the front panel instead of the chassis. In this instance the panel should be aluminium.

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’.
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-O 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-O 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 'condensers' 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 enthusiast, 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.
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.

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, jumble 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.

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

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

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

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 it 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.

Short Wave Magazine, December 1996
THE RF SPECTRUM TERMINATOR HAS ARRIVED

Offered with 5 years parts and labour now 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%)
INNOVATIVE PRODUCTS FOR A MODERN PLANET
The New Xplorer!

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, through 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.

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)

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.

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 |
| Indicators: Key Pad Switches 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 |
| Rapid Charging: Less than one hour with Reverse Slope, Time Out, Temperature, and Voltage Sensing |
| Charge: End Determination |
| Serial Data: CLI-V compliant RS232 interface protocol |

Haydon Communications
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

Waters & Stanton Electronics
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626
**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/Calendar 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

<table>
<thead>
<tr>
<th>Parameter Selection Knob</th>
<th>Controls volume and squelch setting</th>
<th>Switch between all modes with F1 &amp; F2 function button combinations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard BNC Connection</td>
<td>Includes Telescoping Whip Antenna</td>
<td>Xplorer shown with DB32 mini antenna</td>
</tr>
<tr>
<td></td>
<td><strong>See our full line of compatible antennas and filters</strong></td>
<td></td>
</tr>
<tr>
<td>Eight Pin Din</td>
<td><strong>Built-in PC interface</strong></td>
<td><strong>GPS Interface</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Built-in Speaker</strong></td>
<td>Instantly demodulates received frequencies</td>
</tr>
<tr>
<td>Two Line LCD Display</td>
<td>Frequency display</td>
<td><strong>Second line switches between CTCSS, DCS, DTMF, Deviation, and Signal Strength</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Automatic EL Backlighting</strong></td>
<td><strong>Hold / Store</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Power On/Off</strong></td>
<td><strong>Shift Control</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Skip / Lockout</strong></td>
<td><strong>F1 • F2 Menu Select</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CTCSS Mode</th>
<th>DCS Mode</th>
<th>DTMF Mode</th>
<th>Deviation Mode</th>
<th>Signal Strength Bargraph Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="CTCSS Mode" /></td>
<td><img src="image2" alt="DCS Mode" /></td>
<td><img src="image3" alt="DTMF Mode" /></td>
<td><img src="image4" alt="Deviation Mode" /></td>
<td><img src="image5" alt="Signal Strength Bargraph Mode" /></td>
</tr>
</tbody>
</table>

---

**Haydon Communications**
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781  Fax: (0181) 9515782

**Waters & Stanton Electronics**
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835  Fax: (01702) 205843

**Nevada Communications**
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145  Fax: (01705) 690626
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 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.
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

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

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

Waters & Stanton Electronics
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626

Haydon Communications
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782
The OptoScan 456/535 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 scan 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 OptoScan 456/535 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 OptoScan 456/535 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 OptoScan 456/535 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 OptoScan 456 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.

**SPECIFICATIONS**

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

(specifications cover both OS456 and OS535)
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.

Haydon Communications
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626
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.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range</td>
<td>30MHz - 2GHz</td>
</tr>
<tr>
<td>Modulation</td>
<td>FM, Deviation &lt; 100KHz</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>50 - 3000MHz</td>
</tr>
<tr>
<td>Auto Tune Time</td>
<td>&lt; 1 Second</td>
</tr>
<tr>
<td>Input</td>
<td>50 Ohm. -45dBm @100KHz</td>
</tr>
<tr>
<td>Max Input</td>
<td>+15dBm</td>
</tr>
<tr>
<td>Output</td>
<td>Internal Speaker, Audio Earphone</td>
</tr>
<tr>
<td>Controls</td>
<td>Audio Level/ Power, Squelch, Skip, Deviation 10kHz/100kHz</td>
</tr>
<tr>
<td>Indicators</td>
<td>LEDs: Lock, Power, LED Bargraphs</td>
</tr>
<tr>
<td>Power</td>
<td>Internal NiCad Pack, 7.2V 600mA</td>
</tr>
<tr>
<td>Size</td>
<td>5.1&quot; High x 2.8&quot; Wide x 1.5&quot; Deep</td>
</tr>
</tbody>
</table>

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 staked 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.

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

The

**CF802**
Cellular Band
Pass Filter and Amplifier. 825-845MHz
pass band filter with 10dB gain amplifier. Use with **AD800 Antenna** to increase typical reception distance between 750 - 1000 feet for **Interceptor®, HandiCounters®, and Scout®**.

**Haydon Communications**
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781  Fax: (0181) 9515782

**Waters & Stanton Electronics**
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835  Fax: (01702) 205843

**Nevada Communications**
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145  Fax: (01705) 690626
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:** 50Hz - 2.5GHz
- **Outputs:** Earphone Jack for Demodulated Audio Out
- **Indicators:** 10 Segment LED Bargraph
- **Power:** Internal 9V battery powered with easy access compartment
- **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.

**Haydon Communications**
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

**Waters & Stanton Electronics**
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

**Nevada Communications**
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626
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.

**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.

**ACQUISITION TIME**
- CTCSS: 600mS
- DCS: 350mS
- DTMF Decode: 10 characters per second.

**SPECIFICATIONS**

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

<table>
<thead>
<tr>
<th>Modes</th>
<th>Display</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>All Decode</td>
<td>*CTCSS: __. __ *&quot;/ DCS: __ __ <em>/ ON THE AIR</em></td>
<td></td>
</tr>
<tr>
<td>CTCSS Decode</td>
<td><em>CTCSS DECODE</em></td>
<td></td>
</tr>
<tr>
<td>CTCSS Period</td>
<td><em>CTCSS PERIOD</em></td>
<td></td>
</tr>
<tr>
<td>DCS Decode</td>
<td><em>DCS DECODE</em></td>
<td></td>
</tr>
<tr>
<td>DTMF Recall</td>
<td><em>DTMF RECALL</em></td>
<td></td>
</tr>
</tbody>
</table>

*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.

**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.

**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.

Haydon Communications  
132 High Street • Edgware • Middlesex • HA8 7EL  
Tel: (0181) 9515781 Fax: (0181) 9515782

Waters & Stanton Electronics  
22 Main Road • Hockley • Essex • SS5 4QS  
Tel: (01702) 206835 Fax: (01702) 205843

Nevada Communications  
189 London Street • Portsmouth • Hampshire • PO2 9AE  
Tel: (01705) 662145 Fax: (01705) 690626
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 datalogging 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
- *Power Switch
- *8 pin PC Serial Port connection
- *JP switch radio setting
- *Auxiliary jack for audio/squelch status
- *8 pin mini DIN connector for single cable custom radio connection
- *Interface multiple radios in a star network configuration
- *Software controlled tape recorder output

Haydon Communications
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

Waters & Stanton Electronics
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626
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 0.05ppm 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.

**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 pickup distance
- Dual 500Ohm 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**

<table>
<thead>
<tr>
<th>Model</th>
<th>Freq. Range</th>
<th>Accuracy Standard</th>
<th>Battery</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optoelectronics 8040</td>
<td>3GHz</td>
<td>.05ppm Oven</td>
<td>Rapid Charge NiCad</td>
<td>$999.00</td>
</tr>
<tr>
<td>Phillips PM6666</td>
<td>1.3GHz</td>
<td>.2ppm TCXO</td>
<td>NiCad</td>
<td>$2250.00</td>
</tr>
<tr>
<td>Hewlett Packard 53181A</td>
<td>3GHz</td>
<td>.025ppm Oven</td>
<td>None</td>
<td>$3675.00</td>
</tr>
</tbody>
</table>

**KVG OVEN SPECIFICATIONS**

- **Frequency Stability:**
  - Temperature range - 10 degrees C to 55 degrees C, +/- 2x10^-8
  - Temperature range - 40 degrees C to 70 degrees C, +/- 5x10^-7

- **Aging after 24 hrs. continuous operation:**
  - < +/- 5x10^-9 / day
  - < +/- 5x10^-7 / year

Haydon Communications
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

Waters & Stanton Electronics
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel (01705) 662145 Fax (01705) 690626
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 microprocessor 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.

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.

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 datalogging
- 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 Backlight Display

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

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.

Haydon Communications
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

Waters & Stanton Electronics
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626
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.

**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 |
| Time Base: Frequency: 10MHz, Initial Accuracy: +/- 1 ppm |
| Display: 9 Digit: 1.75" character height Liquid Crystal |
| Annunciators: Frequency, MHz, Low Batt, Prescale, Filter, Capture |
| 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**

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

**Input Sensitivity (Typical)**

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

Haydon Communications
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

Waters & Stanton Electronics
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626
The Optoelectronics M1 MicroCounter is a full range 20Hz - 2.8GHz, pocket sized frequency counter. The M1 uses an imbedded microcontroller 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.

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 500hm amplifiers for full range 20Hz to 2.8GHz coverage

SPECIFICATIONS

<table>
<thead>
<tr>
<th>INPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amplifier:</td>
</tr>
<tr>
<td>Impedance:</td>
</tr>
<tr>
<td>Range:</td>
</tr>
<tr>
<td>Sensitivity:(typical)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Maximum Input:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequency Display Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Least significant digit displayed (LSD) as a function of gate time and range.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range</th>
<th>Gate Select</th>
<th>Gate Time</th>
<th>Measurement Time</th>
<th>LSD Resolution</th>
<th>Sample Display (MHz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>1</td>
<td>100µS</td>
<td>13µS</td>
<td>10kHz</td>
<td>150.00</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1µS</td>
<td>13µS</td>
<td>1kHz</td>
<td>150.000</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>10µS</td>
<td>13µS</td>
<td>100kHz</td>
<td>150.0000</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>100µS</td>
<td>110µS</td>
<td>1kHz</td>
<td>150.00000</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1S</td>
<td>1S</td>
<td>0.1Hz</td>
<td>150.0000000</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>10S</td>
<td>10S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2400</td>
<td>1</td>
<td>6.4µS</td>
<td>13µS</td>
<td>10kHz</td>
<td>2000.00</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>64µS</td>
<td>76µS</td>
<td>1kHz</td>
<td>2000.000</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>640µS</td>
<td>640µS</td>
<td>100Hz</td>
<td>2000.0000</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>6.4S</td>
<td>6.4S</td>
<td>10Hz</td>
<td>2000.00000</td>
</tr>
</tbody>
</table>

Haydon Communications
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

Waters & Stanton Electronics
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

Nevada Communications
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626
Add the gift of accessories to your Optoelectronics Christmas.

**ANTENNAS**

**CARRY CASES**

**SOFTWARE**

**PROBES & CABLES**

**FILTERS**

*Accessories shown are not actual size.*

--

**Haydon Communications**
132 High Street • Edgware • Middlesex • HA8 7EL
Tel: (0181) 9515781 Fax: (0181) 9515782

**Waters & Stanton Electronics**
22 Main Road • Hockley • Essex • SS5 4QS
Tel: (01702) 206835 Fax: (01702) 205843

**Nevada Communications**
189 London Street • Portsmouth • Hampshire • PO2 9AE
Tel: (01705) 662145 Fax: (01705) 690626

Seasons Greetings from the entire staff at Optoelectronics.
**ICR-7000, AOR-3000 & ICR-7100**

Due to the enormous success of the ICR-8500 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.

---

**ICOM ICR-10E**

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!

---

**Scoop Purhase!**

**AR-1500EX**

My favourite sub-£200 handle 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.

---

**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%)

**NEW... 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!

---

**NEW PRODUCT**

**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 hobbyist and commercial user.

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

---

**NEW... 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!**

---

**SPECIAL OFFER ONLY £299 incl. VAT & FREE postage**

---

**Eliza B.**

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 wiring the pockets of your local battery provider! When it runs out, simply wind the handle up again.

Exclusive to Martin Lynch
£69.95 p&p £10

Garmin GPS-45XL includes Active Compass

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 £299.

Digital Signal Processors

NEW LOW PRICES

DSP 9+ DSP 59
* DSP 599zx
* MFJ-7848
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-7848 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 monitoring 1 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: £849. Lynch Price: £649
Deposit: £49, twelve payments of only £64.28. Cost of loan: £71.45 (APR 19.9%)

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 & Longitude, 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 JVFX and lots more. Outputs include direct video and serial for PC connection. Supplied with all accessories including Software & Cables.

RRP £799
Lynch Price: £399

NEW... Available from stock.

5th Edition UK Scanning Directory

Available from stock. Order yours now, before they ban it from sale!

ONLY £18.50 P&P £2

Martin Lynch & Son, 140 - 142, Northfield Avenue, Ealing, London W13 9SB

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

OPTIMAX

NOW AVAILABLE


NEW 2GHz in less than one second. All mode decoding includes: CTCSS, DCS, DTMF, LTR, Latitude & Longitude, FM deviation.

ONLY £849!

NEW... Available from stock.

5th Edition UK Scanning Directory

Available from stock. Order yours now, before they ban it from sale!

ONLY £18.50 P&P £2

Martin Lynch & Son, 140 - 142, Northfield Avenue, Ealing, London W13 9SB

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

http://www.martin-lynch.co.uk
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.

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
SWM 1996 Index

Constructions
- Audio Signal Processor Pt 1 Robert Penfold
  - Apr 31
- Audio Signal Processor Pt 2 Robert Penfold
  - May 12
- Band Pass Tuner Unit (A) Ray Loveland G2ARU
  - Dec 22
- Beginners Simple Short Wave Receiver Dick Ganderton GBVFH
  - Aug 37
- Billboard Bill Wilson
  - Jun 22
- Ferrite Loop Converter (A) R. O. Marrs
  - Jun 26
- IF Transformers For Valve Receivers Ray Loveland G2ARU
  - Dec 40
- Inexpensive Passive Preselector Dr F. J. Crossley
  - Jun 20
- Making Connections Pt 1 Joe Carr K4IVP
  - Nov 32
- Making Connections Pt 2 Joe Carr K4IVP
  - Jul 45
- Remote Tuned Loop (A) Andrew Howlett G1HBE
  - Jun 32
- Snubbing Medium & Long Wave Broadcast Band GRM Pt 1 Joe Carr K4IVP
  - Sep 38
- Snubbing Medium & Long Wave Broadcast Band GRM Pt 2 Joe Carr K4IVP
  - Oct 32

Features
- Ambition Unfulfilled J. Worthington GW3C01
  - Feb 22
- Calibration Lab (The) B. A. Berry G4JSB
  - Jan 54
- Familiar Voice From Africa (A) Philip Gebhardt
  - Aug 47
- Forecasting The Next Sunspot D. A. Whakuter
  - Feb 45
- Global Positioning System George Wheatley Mk RN49HJN
  - Mar 28
- GMDOSS - The System Explained Jeff Harris G3LW3
  - Sep 17
- Listening Through Anatolia M. Osborn
  - Aug 37
- Little Wonder Man Andy Allford
  - Feb 46
- Man Who Picked Up The Galaxy (The) Robert Newman
  - Feb 46
- Maritime FAX Mike Richards G4WNC
  - Mar 36
- NAVTEX How & Why Mike Richards G4WNC
  - Mar 33
- NAVTEX Using It Robert Connolly 6171VX
  - Aug 26
- Plain Language John Worthington GW3C01
  - Aug 48
- Radio Astronomy For The Amateur George Gee G2UK.
  - Jun 41
- Radio By Numbers Ian Knox
  - Jan 31
- Radio Close Up J. Worthington GW3C01
  - Feb 26
- Sources Of Aeronautical Info Godfrey Manning G4GJM
  - Jul 26
- SWM 001 Squawk 2841 Mode C Colin Goodall
  - Jul 16
- Tagging A Refit Update The BayGen Freeplay Clockwork Radio Dick Ganderton GBVFH
  - May 49
- Tape Ads For The DXer Dick Moon
  - Apr 16
- There's A New Sound On The Terraces Pt 1 A. Gale
  - Sep 44
- There's A New Sound On The Terraces Pt 2 A. Gale
  - Oct 43
- Tuning Accurately Don Phillips
  - Aug 49
- Were You A Vi During The War? Ray Faulty G3ASG
  - Jan 16
- West Pacific Airband Scene - 1 Bob Ball
  - Jul 20
- West Pacific Airband Scene - 2 Bob Ball
  - Aug 22
- What Is Utility Listening? Graham Tanner
  - Sep 12
- When I Win The Lottery... Mike Richards G4WNC
  - Sep 26

Historical
- 60 Years of BBC TV Pt 1 Keith Hamer & Garry Smith
  - Nov 14
- 60 Years of BBC TV Pt 2 Keith Hamer & Garry Smith
  - Dec 14
- Baby Edystone S670 Receiver (The) Ben Nock G4BXXD
  - Aug 34
- Colossus Rebuild Project (The) David White G3ZPA
  - May 49
- Command Set Revisited (The) Ben Nock G4BXXD
  - Jan 24
- First Radio Over The Atlantic David White G3ZPA
  - Jul 12
- Haunted Radio Of Laurel Cottage (The) Eric Westman
  - Aug 33
- Man Ahead Of His Time (A) Pt 1 John Cave GW0UM
  - May 33
- Man Ahead Of His Time (A) Pt 2 John Cave GW0UM
  - Jun 44
- Post War Radio System (A) David White G3ZPA
  - Sep 50
- Radio Secrets Of The War - The Young Linguists David White G3ZPA
  - Jan 37
- Royal Signals Museum Philip Mitchell
  - Jan 49
- Story of the Bombe (The) David White G3ZPA
  - Oct 28

Reviews
- Active Solution? Andrew Ikin
  - Oct 22
- AKO Target Ff I 5300 Alan Gardener
  - Nov 22

AOR AR5000 Alan Gardener
  - Jun 12
- AOR AR7030 HF Receiver John Wilson G3PCY
  - Mar 16
- AOR DDS-2A John Wilson G3PCY
  - Oct 14
- Barlow Wadley XCR-30 Receiver Ben Nock G4BXXD
  - Feb 17
- BayGen Freesplay Clockwork Radio Dick Ganderton GBVFH
  - Feb 16
- Icom IC-R8600 John Wilson G3PCY
  - Sep 28
- MFJ-748B Tunable DSP Filter Mike Richards G4WNC
  - Apr 40
- Momentum Synop Decoder Mike Richards G4WNC
  - Feb 27
- Optoelectronics Xplorer Alan Gardener
  - Nov 37
- PC Track Version 3.1 Lawrence Harris
  - Jan 42
- Roberts R861 Synthesised Portable Receiver Simon Sparrow
  - Dec 27
- Scantac Gold (Computer Control Is Golden) Kevin Nice G7TWZC
  - Dec 18
- Sony ICF-SW1000T World Band Radio Peter Shore
  - Apr 47
- Weiz WS51000 Wide Band Receiver Alan Gardener
  - Jul 33
- WINRAD/G Mike Richards G4WNC
  - May 20

Berry Geoffrey Manning
- Amateur Bands Round-up Paul Esery
  - Jun 66, Feb 60, Mar 60, Apr 60, May 60, Jun 64, Jul 60, Aug 60, Sep 60, Oct 71, Nov 79, Dec 56
- Bandscan Australia Greg Baker
  - May 59, Jun 58, Sep 59, Dec 8
- Bandscan Europe Peter Shore
  - Jun 65, Apr 52, Jul 58, Oct 8
- Bandscan USA George Deeter
  - Feb 69, May 51, Aug 58, Nov 8
- Book Bonanza/Book Reviews
  - Mar 45, May 22, Aug 16, Nov 53
- Bookstore
- Competition
  - Apr 55, May 56, Jun 56/57, Jul 56, Aug 55, Sep 49/57
- Decode Mike Richards
  - Jul 75, Feb 70, Mar 70, Apr 70, May 70, Jun 70, Jul 70, Aug 70, Sep 70, Oct 68, Nov 76, Dec 70
- DXZone Keith Harmer & Gary Smith
  - Jan 59, Feb 54, Mar 54, Apr 54, May 54, Jun 54, Jul 54, Aug 54, Sep 55, Oct 56, Nov 68, Dec 60
- Editorial
  - Jan 4, Feb 4, Mar 4, Apr 4, May 4, Jun 4, Jul 4, Aug 4, Sep 8, Oct 10, Nov 10, Dec 10
- Frequency Exchange
  - Oct 51, Nov 64, Dec 52/3
- Grassroots
  - Jan 6, Feb 6, Mar 6, Apr 6, May 6, Jun 6, Jul 6, Aug 6, Sep 7, Oct 9, Nov 9, Dec 9
- Info in Orbit Lawrence Harris
- Junior Listener Elaine Richards
  - Jan 7, Feb 7, Mar 7, Apr 7, May 7, Jun 7, Jul 7, Aug 7, Sep 7
- Letters
  - Jan 4, Feb 4, Mar 4, Apr 4, May 4, Jun 4, Jul 4, Aug 4, Sep 8, Oct 10, Nov 10, Dec 10
- LMS & Brian Oddy
  - Jan 80, Feb 74, Mar 73, Apr 73, May 73, Jun 73, Jul 73, Aug 74, Sep 74, Oct 74, Nov 82, Dec 74

Index
Index

Maritime Beacons Brian Oddy
Mar 49, Jun 60, Sep 73, Dec 54

Mil Air
Nov 71, Dec 61

News/Communique
Jan 6, Feb 6, Mar 6, Apr 6, May 6, Jun 6, Jul 6, Aug 6, Sep 4, Oct 4, Nov 4, Dec 4

News Extra
April 13

Off the Record Andy Cadier
Jan 79, Apr 51, Jul 77, Oct 73

Propagation Extra
Feb 57, Mar 51, Apr 59, May 57, Jun 52, Jul 52, Aug 52, Sep 54, Oct 52, Nov 64, Dec 53

Propagation Forecast Jacques d’Avignon

Radio and TV DX News Roger Bunney
Jan 8, Feb 8, Mar 8, Apr 8, Jun 8, Sep 4, Oct 4, Dec 4

Rallies
Jan 6, Feb 6, Mar 6, Apr 6, May 6, Jun 6, Jul 6, Aug 6, Sep 6, Oct 8, Nov 8, Dec 8

Reflections Ron Ham
Jan 57

Satellite TV News Roger Bunney
Jan 63, Feb 58, Mar 53, Apr 57, May 52, Jun 56, Jul 54, Aug 57, Sep 58, Oct 55, Nov 66, Dec 58

Scanning John Griffiths
Jan 70, Feb 64, Apr 64, May 64, Jun 57, Jul 64, Aug 84, Sep 64, Oct 62, Nov 60, Dec 64

Second Post
Mar 13

Shackware Jerry Glenwright
Feb 73, May 69, Aug 73, Nov 66

Special Offers
Jan 51, Feb 53, Mar 51, Apr 59, May 57/78, Jul 52, Aug 52, Sep 54, Oct 57, Dec 47

SSB Utility Listening Graham Tanner
Jan 67, Feb 61, Mar 61, Apr 61, May 60, Jun 59, Jul 59, Aug 59, Sep 61, Oct 58, Nov 61, Dec 57

Trading Post
Jan 84, Feb 78, Mar 77, Apr 77, May 77, Jun 77, Jul 78, Aug 78, Sep 78, Oct 78, Nov 86, Dec 77

Wood Norton Listeners’ Convention
Apr 49, May 63, Jun 83

Supplements

August - Broadcast Station Guide Centre Pull Out - Peter Shore
What’s On The Air
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 WXSA

THE UK’S BEST SELLING AMATEUR RADIO MAGAZINE

COMING IN JANUARY’S PW

ANTENNAS IN ACTION

The First of a Bi-monthly 8 page special devoted to antennas and associated products- don’t miss it!

FREE!
Office, Shack or Home - DON’T RUSH OUT AND BUY A YEAR PLANNER FOR 1997! There’s one FREE with next month’s PW

EXCLUSIVE! - REVIEW
The New Kenwood TS-570D HF Transceiver
Plus all your regular favourites

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) 699530. Back issues for 1991 and 1992 are available for just £1 including P&P, all others £2.60 including P&P.

THE UK’S BEST SELLING AMATEUR RADIO MAGAZINE

COMING IN JANUARY’S PW

ANTENNAS IN ACTION

The First of a Bi-monthly 8 page special devoted to antennas and associated products- don’t miss it!

FREE!
Office, Shack or Home - DON’T RUSH OUT AND BUY A YEAR PLANNER FOR 1997! There’s one FREE with next month’s PW

EXCLUSIVE! - REVIEW
The New Kenwood TS-570D HF Transceiver
Plus all your regular favourites

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) 699530. Back issues for 1991 and 1992 are available for just £1 including P&P, all others £2.60 including P&P.
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:

RECIPIENT'S NAME & ADDRESS
Name: 
Address: 
Postcode: 

NAME, ADDRESS AND PAYMENT DETAILS OF PERSON GIVING GIFT
Name: 
Address: 
Postcode: 

I enclose cheque/PO (payable to PW Publishing Ltd.) £ 
Charge to my Access/Visa card the amount of £ 
Card No: 
Valid from to 
Signature 
Date 

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

<table>
<thead>
<tr>
<th>AR7030 options</th>
<th>price (P&amp;P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF500</td>
<td>£89.29 (£2)</td>
</tr>
<tr>
<td>CFJ455K8</td>
<td>£39.99 (£2)</td>
</tr>
<tr>
<td>XTAL2.4</td>
<td>£24.99 (£2)</td>
</tr>
<tr>
<td>FL124</td>
<td>£29.99 (£2)</td>
</tr>
<tr>
<td>MF2.5</td>
<td>£89.29 (£2)</td>
</tr>
<tr>
<td>CFK455J</td>
<td>£39.99 (£2)</td>
</tr>
<tr>
<td>6.0 kHz Collins</td>
<td>£24.99 (£2)</td>
</tr>
<tr>
<td>MF6</td>
<td>£29.99 (£2)</td>
</tr>
<tr>
<td>BP123</td>
<td>£39.99 (£6)</td>
</tr>
<tr>
<td>DATA MASTER pc</td>
<td>£129.00 (£3)</td>
</tr>
<tr>
<td>COMP7030</td>
<td>£3.00 (free)</td>
</tr>
</tbody>
</table>

Planned options to follow:

<table>
<thead>
<tr>
<th>Planned options to follow:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NB7030</td>
</tr>
<tr>
<td>Features CPU</td>
</tr>
<tr>
<td>TW7030</td>
</tr>
<tr>
<td>SC7030</td>
</tr>
<tr>
<td>FM7030</td>
</tr>
<tr>
<td>SM7030</td>
</tr>
</tbody>
</table>

AR7030 options

<table>
<thead>
<tr>
<th>AR7030 options</th>
<th>price (P&amp;P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF500</td>
<td>£89.29 (£2)</td>
</tr>
<tr>
<td>CFJ455K8</td>
<td>£39.99 (£2)</td>
</tr>
<tr>
<td>XTAL2.4</td>
<td>£24.99 (£2)</td>
</tr>
<tr>
<td>FL124</td>
<td>£29.99 (£2)</td>
</tr>
<tr>
<td>MF2.5</td>
<td>£89.29 (£2)</td>
</tr>
<tr>
<td>CFK455J</td>
<td>£39.99 (£2)</td>
</tr>
<tr>
<td>6.0 kHz Collins</td>
<td>£24.99 (£2)</td>
</tr>
<tr>
<td>MF6</td>
<td>£29.99 (£2)</td>
</tr>
<tr>
<td>BP123</td>
<td>£39.99 (£6)</td>
</tr>
<tr>
<td>DATA MASTER pc</td>
<td>£129.00 (£3)</td>
</tr>
<tr>
<td>COMP7030</td>
<td>£3.00 (free)</td>
</tr>
</tbody>
</table>

Planned options to follow:

<table>
<thead>
<tr>
<th>Planned options to follow:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NB7030</td>
</tr>
<tr>
<td>Features CPU</td>
</tr>
<tr>
<td>TW7030</td>
</tr>
<tr>
<td>SC7030</td>
</tr>
<tr>
<td>FM7030</td>
</tr>
<tr>
<td>SM7030</td>
</tr>
</tbody>
</table>
**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 band plan 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

© Bob Ellis

---

**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 - 999,999,999MHz 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 band plan 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
FREE 32 page full colour Computer Equipment Catalogue with the Winter 96/97 Cirkit Catalogue

The Winter 96/97 Edition brings you:

- Even further additions to the Computer section extending our range of PC components and accessories at unbeatable prices.
- WIN! a 28,800 Fax Modem in our easy to enter competition.
- 100’s of new products including: Books, Connectors, Entertainment, Test Equipment and Tools.
- New Speakers, Mixers and In-Car Amplifiers in the Entertainment section.
- £25 worth discount vouchers.
- 248 Page main Catalogue, plus 32 Page full Colour Computer Catalogue, incorporating 24 Sections and over 4000 Products from some of the Worlds Finest Manufacturers.
- Available at WH Smith, John Menzies and most large newsagents, or directly from Cirkit.
- Get your copy today!

Cirkit Distribution Ltd
Park Lane - Broxbourne - Hertfordshire - EN10 7NQ
Tel: 01992 448899 - Fax: 01992 471314
Email: mailorder@cirkit.co.uk

TL Loop Active Receiving Antenna 10kHz - 30MHz Untuned
A unique broadband design which has already won praise with DXer's:

"It is wonderful not having to tune it . . ."

"I was most impressed with the TL's performance overall."
- AWR Broadcaster & World DX Club, Gordon Bennett.

Available at £79 in the UK & EU.
Write for full details.

P.O. Box 2356
Reading RG6 7FQ
Tel/Fax: 01734 261972
FORSTER
Radio Technologies

MOMENTUM

MCL 1100 DATA DECODER
FOR THE SERIOUS UTILITY LISTENER WITHOUT A COMPUTER
From £255

STANDARD FEATURES:
- SMARTLOCK system for easy tuning.
- Full screen of readable text with on-screen tuning indication.
- Automatic decoding of RTTY, CW, FEC (NAVTEX) and ARQ.
- Auto or manual selection of transmission speeds.
- Extremely rapid lock onto signal.
- Connection for a parallel type printer.

RECEIVERS AT DISCOUNTED PRICES

SYNOPTIC UPGRADE

L-1100 and DM-1000's

COMPLETE ANTENNA KITS

01384 896879
6 & 7 Clarkson Place, Dudley Road,
Lye, West Midlands DY9 8EL

THE VINTAGE WIRELESS LISTING
Published regularly containing titles of out of print and collectible wireless and amateur radio books and magazines and now re-publishing. The Vintage Wireless Listing contains descriptions, photographs and basic details of the world's military communications equipment. Brand new. Published at over £100. SPECIAL PRICE £35 postage £5.50. Overseas postage extra.

Eddystone Communications Receiver Data 1950-1970
A facsimile reprint of the original manuals compiled by the War Department on captured enemy wireless equipment. - Volume 1 contains photos, technical data, weights, dimensions and tactical information on German and Italian military receivers and transmitters, etc. 150 pages, large format. Volume 2 covers additional German equipment and contains hard-to-obtain information and photos on Japanese military equipment. Approx. 88 pages, large format. The two volume set £35 including carriage. UK only. Overseas postage extra.

Forster
Radio Technologies
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.
A
again a bumper response,
your input into this feature
is very encouraging. If you
haven't seen their
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 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
 formats. If you have an obscure
mainstream wordprocessing
format high density 3.5in disks.

Preferred, is MS Word for the Mac.

Notes

<table>
<thead>
<tr>
<th>MHz</th>
<th>Mode</th>
<th>Time</th>
<th>Call</th>
<th>Location</th>
<th>Monitor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.596</td>
<td>u.s.b.</td>
<td>1100</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.160</td>
<td>u.s.b.</td>
<td>1200</td>
<td></td>
<td>North Sea dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.625</td>
<td>c.w.</td>
<td>0700</td>
<td>WVR</td>
<td>Izmir ht</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.085</td>
<td>u.s.b.</td>
<td>1300</td>
<td>Waterloohdp</td>
<td>Portishead db</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.724</td>
<td>u.s.b.</td>
<td></td>
<td></td>
<td></td>
<td>Inish Aft</td>
<td></td>
</tr>
<tr>
<td>4.730</td>
<td>u.s.b.</td>
<td>1615</td>
<td></td>
<td>Aixirthe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.873</td>
<td>u.s.b.</td>
<td>1420</td>
<td>YIO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.995</td>
<td>u.s.b.</td>
<td>1100</td>
<td>M/15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.6925</td>
<td>n.f.m.</td>
<td>MEMPHIS</td>
<td>Bristol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49.890</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70.2655</td>
<td>a.m.</td>
<td>1500</td>
<td>NY</td>
<td>Lincs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>71.100</td>
<td>a.m.</td>
<td>1600</td>
<td>XT</td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85.100</td>
<td>n.f.m.</td>
<td>1321</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85.375</td>
<td>n.f.m.</td>
<td>1154</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>86.050</td>
<td>n.f.m.</td>
<td>SIERRA</td>
<td>Brown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>118.550</td>
<td>a.m.</td>
<td>1420</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122.375</td>
<td>n.f.m.</td>
<td>0940</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>140.215</td>
<td>n.f.m.</td>
<td>1608</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>141.100</td>
<td>a.m.</td>
<td>1030</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>141.200</td>
<td>n.f.m.</td>
<td>0940</td>
<td></td>
<td>Yorks dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>141.230</td>
<td>n.f.m.</td>
<td>1209</td>
<td></td>
<td>Yorks dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>141.275</td>
<td>a.m.</td>
<td>1030</td>
<td>130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>142.775</td>
<td>a.m.</td>
<td>24hr</td>
<td></td>
<td>Doncaster bh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>143.900</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>Netsriode ce</td>
<td></td>
<td></td>
</tr>
<tr>
<td>149.420</td>
<td>n.f.m.</td>
<td>Porton Down ca</td>
<td>MOD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>159.485</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>London ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>159.485</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>London ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>159.485</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>London ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>159.500</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>London ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>159.525</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>159.587</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>H/a Airport ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>159.825</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>London ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>163.925</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>London ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>163.925</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>London ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>163.925</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>London ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>163.950</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>Chesterfield ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>164.950</td>
<td>n.f.m.</td>
<td>1834</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>164.950</td>
<td>n.f.m.</td>
<td>1834</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>164.950</td>
<td>n.f.m.</td>
<td>1834</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>144.825</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>West Country ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>144.825</td>
<td>n.f.m.</td>
<td></td>
<td></td>
<td>West Country ca</td>
<td></td>
<td></td>
</tr>
<tr>
<td>145.020</td>
<td>n.f.m.</td>
<td>0915</td>
<td></td>
<td>Lincoln db</td>
<td></td>
<td>A2B taxis - base.</td>
</tr>
<tr>
<td>146.125</td>
<td>n.f.m.</td>
<td>1112</td>
<td></td>
<td>Lincoln db</td>
<td></td>
<td>A2B taxis - base.</td>
</tr>
<tr>
<td>146.275</td>
<td>n.f.m.</td>
<td>0950</td>
<td></td>
<td>Lincoln db</td>
<td></td>
<td>Ambulance service - base.</td>
</tr>
<tr>
<td>167.325</td>
<td>n.f.m.</td>
<td>0945</td>
<td></td>
<td>Darcaster bh</td>
<td></td>
<td>Rescure.</td>
</tr>
<tr>
<td>168.625</td>
<td>n.f.m.</td>
<td>1815</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td>ResQ Daily Mail.</td>
</tr>
<tr>
<td>169.325</td>
<td>n.f.m.</td>
<td>1015</td>
<td></td>
<td>Darcaster bh</td>
<td></td>
<td>Motorcycle Tests.</td>
</tr>
<tr>
<td>169.325</td>
<td>f.m.</td>
<td></td>
<td></td>
<td>Pwllheli dh</td>
<td></td>
<td>Bellies Camp Security.</td>
</tr>
<tr>
<td>169.325</td>
<td>f.m.</td>
<td>24hr</td>
<td></td>
<td>Doncaster bh</td>
<td></td>
<td>TESCO Warehouse.</td>
</tr>
<tr>
<td>169.850</td>
<td>n.f.m.</td>
<td>0915</td>
<td></td>
<td>Lincoln db</td>
<td></td>
<td>A2B taxis - mobile.</td>
</tr>
<tr>
<td>169.850</td>
<td>n.f.m.</td>
<td>0915</td>
<td></td>
<td>Lincoln db</td>
<td></td>
<td>Ambulance service - mobile.</td>
</tr>
</tbody>
</table>

Key

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

Notes

<table>
<thead>
<tr>
<th>MHz</th>
<th>Mode</th>
<th>Time</th>
<th>Call</th>
<th>Location</th>
<th>Monitor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>243.4</td>
<td>a.m.</td>
<td>1055</td>
<td>BOLTV</td>
<td>Becken aj</td>
<td></td>
<td></td>
</tr>
<tr>
<td>248.275</td>
<td>a.m.</td>
<td>2030</td>
<td>485</td>
<td>Lakeshore db</td>
<td></td>
<td></td>
</tr>
<tr>
<td>305.550</td>
<td>a.m.</td>
<td>1045</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>343.675</td>
<td>a.m.</td>
<td>2030</td>
<td>4945</td>
<td>Lakeshore db</td>
<td></td>
<td></td>
</tr>
<tr>
<td>431.393</td>
<td>n.f.m.</td>
<td></td>
<td>Battersea Park ro</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>440.074</td>
<td>n.f.m.</td>
<td></td>
<td>Waterton cr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>441.000</td>
<td>n.f.m.</td>
<td></td>
<td>Cen. London re</td>
<td>Tramway Warden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>446.205</td>
<td>n.f.m.</td>
<td></td>
<td>London ca</td>
<td>Accrington Theatre.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>446.205</td>
<td>n.f.m.</td>
<td></td>
<td>London ca</td>
<td>RADA.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>446.337</td>
<td>n.f.m.</td>
<td></td>
<td>London ca</td>
<td>London Palace Tours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>446.287</td>
<td>n.f.m.</td>
<td></td>
<td>London ca</td>
<td>Old Bailey.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>446.287</td>
<td>n.f.m.</td>
<td></td>
<td>London ca</td>
<td>Royal Opera House.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>448.985</td>
<td>n.f.m.</td>
<td></td>
<td>Lincoln db</td>
<td>Aldermaston AWE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>449.650</td>
<td>n.f.m.</td>
<td></td>
<td>Lincoln db</td>
<td>Aldermaston AWE.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.150</td>
<td>n.f.m.</td>
<td></td>
<td>London db</td>
<td>Powellite Shopping Centre security.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.500</td>
<td>n.f.m.</td>
<td></td>
<td>London db</td>
<td>Glades Shopping Centre security.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.575</td>
<td>n.f.m.</td>
<td>0430</td>
<td></td>
<td>Humberside dp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.625</td>
<td>n.f.m.</td>
<td>0830</td>
<td></td>
<td>Lincoln db</td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.650</td>
<td>n.f.m.</td>
<td>0845</td>
<td></td>
<td>Lincoln db</td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.900</td>
<td>n.f.m.</td>
<td>1210</td>
<td></td>
<td>Doncaster bh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>453.975</td>
<td>n.f.m.</td>
<td></td>
<td>London ca</td>
<td>Kodak Film plant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>455.075</td>
<td>n.f.m.</td>
<td></td>
<td>Cen. London ro</td>
<td>'Capital Eye' in the Sky - very useful amusing chat in between 'official' broadcasts.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
All listed on RAC 5-0-f chart, which Godfrey advises is free from the CAA, see the Aithand Factsheet as plugged on page 62 of this issue. 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.

UNIDs No More
Now for some identification of some UNIDs from October's 'Exchange.' Godfrey Mooning 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
Saltburn Plate D123, D124, D125, D126, D127
Coward D96
Donkey Hook D967
Wheatfield D968
Eskmeals D406
Tate D703
Ruthsby D708

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

122.95 DEP/COMM/Shared 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.
May 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 (Kilkile) and Steve Cam (Southampton). Steve heard for the first time Jaroslawiec, Poland (L) on 295.0 and Myggenaes, Faeroes (MY) on 303.0 - see below. The Faeroes beacons at Akkraberg (L) 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 337.1. I note that it is listed on 303.0 in the September 1995 issue of QRP and there is a strong Spanish beacon, also MY, on 304.5."

Many beacons in Scandinavia were received after dark by Peter Poison in St. Andrews. Several in Iceland and Greenland were heard after midnight by other listeners. The Icelandic Dalangtli (DT) 305.7 was logged at 0130UTC by John Eaton in Woking. It is interesting to note the sky waves from the Frizz Christian Sund, Greenland (OZJ 372) 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 Lantalla (NA) 291.9. On August 28 the static was so bad that Brian Heath (Stapleton) had to close down at 0230UTC. Over in Sweden 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 McClean (Christchurch). Kenneth used a Lowe HF-225 with a loop. He heard the Polish beacon (H) at Hel Lt on 306.8 during seven consecutive nights! Tim used the receiver section of his Kenwood TS-1405 plus 20m wire. He compiled an interesting daytime chart 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 1995, I wish them and all readers a Happy Christmas and good DXing in 1997.
GAREX ELECTRONICS

All major brands available, with the all-important service back-up from a company who pioneered the UK scanner market; we are completely independent so contact us for impartial advice.

WIDEBAND SCANNER AERIALS

"REVCONE" quality British VHF/UHF Dipole 16 element for all-round coverage. £50.29

"REVCONE PLUS" with improved low frequency coverage £48.95. "REVCONE EXTRA" ready to go package; discone, 10m co-ax filled PL259, mast clamps. BNC plug £48.95.

"RADAC" NEST OF DIPOLES

Imitated but not equalled. Receive 25-1300MHz, outperforms discones: £74.95. Special VHF/UHF Airband RADAC 108-136MHz and 220-400MHz £74.95.

"NOMAD" PORTABLE SCANNER AERIAL

Lightweight design using ribbon cable elements; rolls into a small bundle for ease of transport, hang from any convenient point, ideal for travelling, with 4m co-ax and BNC plug £29.95.

NEW ACTIVE "NOMAD"

With built-in wideband preamp complete with supply/pump/lifter box (internal battery or external 9V supply) £29.95.

VHF PREAMPLIFIERS

Model GA4-B. Covers 25-1300MHz, typical gain 12dB in 300MHz; other details as Airband model) £35.95.

WIDEBAND PREAMPLIFIER

Model GA4-B. Covers 25-1300MHz, typical gain 12dB in 300MHz; other details as Airband model £35.95.

MAINS ADAPTOR

Suits our preamps, Active "NOMAD", etc. 240V/60Hz/12Vregulated at 300mA £8.95.

FLEXIBLE 4 Wave AERIALS

Discover a whole new world of signals: full-length 'A' wave are several dB better than "rubber ducks". BNC plug. Available for VHF Airband, UHF Airband, 2m, 70cms also other VHF & UHF bands to order. BNC models £11.88. UHF £9.95. Write, phone or fax for lists. Callers by appointment only, please. All PRICES INCLUDE UK CARTRIDGE AND VAT AT 17.5%.

GAREX ELECTRONICS

Unit 8, Sandpiper Court, Harrington Lane, Exeter EX4 8NS

Phone: (01392) 466899 Fax: (01392) 466887

VISA

WIDEBAND SCANNERS

If space is tight get an Active Antenna from Datong Electronics.

If your garden is a bit like this advert, lacking in space, then you're probably not able to erect the best antennas for the H.F. bands. Or maybe you don't want to advertise the fact that you have expensive equipment in your house.

The AD270 and AD370 Active Receiving Antennas from Datong Electronics offer an ideal solution to your problems. Offering compact size they have a frequency coverage of 200kHz to well over 30MHz. Their performance is comparable to a full size dipole, without the disadvantage of being tuned to a specific frequency.

The use of dipoles in the AD270/370 design eliminates any noise that is picked up by the coaxial cable, unlike a mono-pole antenna. A switchable pre-amplifier enables an extra 12dB of gain to be added if required.

The AD270 is for indoor use while the AD370 is designed to withstand the British weather.

At a cost of £70.44 for the AD270 and £93.94 for the AD370 they offer excellent value for money. The price also includes a Power Supply, VAT and Postage.

For Converters, Filters and Active Antennas call now for a catalogue and information.

Datong Electronics

Clayton Wood Close, West Park, Leeds. LS16 6QE

Tel: 0113-274 4822 Fax: 0113-274 2872

Listen to Your World!

Subscribe to Monitoring Times and Satellite Times Magazines

Do you own a radio, a shortwave receiver, a scanning receiver, or a ham radio? Then Monitoring Times is your magazine! Each monthly issue of MT offers 20 pages of worldwide, English language, shortwave broadcast schedules; departments on aero, military, government, public safety communications; broadcast band, satellite television, long-wave coverage; reviews of new products and radio-related software; technical articles and projects for the hobbyist; feature articles, and much, much more.

Satellite Times is the world's first and only full-spectrum satellite monitoring magazine, exploring all aspects of satellite communications, including commercial, military, broadcasting, scientific, personal and governmental communications as well as private satellite systems. The satellite industry's most respected experts contribute to every bi-monthly issue of Satellite Times, addressing both amateurs and experts alike.

If it's on the radio, it's in Monitoring Times

If it's in orbit, Satellite Times covers it!

Mail this subscription form to: PW Publishing Ltd., FREEPOST, ARROWSMITH CT. STATION APPROACH, BROADSTONE, DORSET BH18 8PW.

Subscription rates include speedy AIR MAIL SERVICE!

I YEAR MONITORING TIMES - £32 (6 ISSUES)
I YEAR SATELLITE TIMES - £32 (6 ISSUES)

NAME______________________________

ADDRESS _____________________________________________

POSTCODE______________________________

TELEPHONE______________________________

I enclose cheque/PO (payable to PW Publishing Ltd.) £__________

OR CHARGE TO MY ACCESS/visa card the amount of £__________

CARD#______________________________

VALID FROM Thru______________________________

SIGNATURE______________________________

TELEPHONE______________________________

CREDIT CARD ORDERS TAKEN ON (01202) 659930

FAX ORDERS TAKEN ON (01202) 659950

SUBSCRIPTION RATES INCLUDE SPEEDY AIR MAIL SERVICE!
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 should not fix a flux reading of 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 PJ3T operation for the CQ WW s.s.b. contest has been

in the net, no list operation, no net operation. Let’s hope it becomes the fashion to respond to complete callsigns—perhaps that way the DX signal could enter more calling stations in the log. Perhaps the DX Advisory Committee in ARL also wants to see a go a bit further and insist that no operation be accredited for DXCC until they guarantee this, and also insist on accepting calls 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 somewhere in 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 SBSE in contact with UN3AB. By Wednesday 18th, a tune on 3.5MHz yielded G6/PK on Sarker working G4/DUD and G3/OPP. Still on 7MHz, the following evening G4/WM1C noted working DBCS, at 1850 IV3/VER 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 acutely 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 we had a predecessor, the late G0B was taking the mick in what was then the RSG Bulletin to great effect. Later he went on to invent Arablek Obilark, G18F and both on the desk tape recorder and indeed tape recorder overload. Having played the signals back and indeed tape recorder overload. American accent, while the nearer end has a noticeable distant end has a noticeable one could guess that this signal is 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 somewhere in 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 SBSE in contact with UN3AB. By Wednesday 18th, a tune on 3.5MHz yielded G6/PK on Sarker working G4/DUD and G3/OPP. Still on 7MHz, the following evening G4/WM1C noted working DBCS, at 1850 IV3/VER 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 acutely 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 we had a predecessor, the late G0B was taking the mick in what was then the RSG Bulletin to great effect. Later he went on to invent Arablek Obilark, G18F and MO1FF 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 more 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 use. My own method involves firstly trenching in several random lengths of wire, by opening up a slit in the ground with a spade, dropping in the wire 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 radii coming together outside, and from the junction coming 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 coaxial cable and use it as an inner conductor and the braid end up in different projects. Everything you can organise can help the earth system; for instance all my wire fences are 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-continuous. There is a slight trap here, though, in 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 Trewoll sticks to c.w. On 7MHz he found 5V8SV/1AD, CN8SK, KP4XX at 0500 while at 0700 there were 2LAU, TK2FC, and at 1800 X28NB and J7AGG. With time at 2100 to account for PJ7AGQ. At 10MHz the D07t stint yielded 2LS4EA, while at 1900 it was 9N2TO and 2100 did the business for EABCN and H7SDW. Morning on 14MHz said OH30Z/OHO, but at 1500 Ted found 9M2JU, AX7JY, TAE2F, YB9VK, BHIDV, SVB8/GKBO, 8Y1ZB, ZD8DEZ and N0BSH. Three hours later it was FM5JF and 2BZKF. From there 18MHz was given a go-over and N6AR, 457NN, FG5A3/PN, JHSQG and 9MW2 were all picked up around 1600. Finally, a foray on 21MHz around the 1500 period gave LUL8UV, PSYXIC (Tamaramacas Is.), Z7JO, LU2YA, ET3BN, and ZS6BEY. 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, AX2AT, A61AN, A2PKSD, AP2N2, BY4CH, BV6EG, CT5F, DU1SAN, ET3BN, E28BD, HB0DL/1A2Z, HS5FLP, HS1GQW, HZ1TA, HR5AL, I0GIO/DH, IG9X/1AOD, IH9DX, JY5IN, OD5TF2M, OD5TF1M, OH3G2/1IO, SU1GS-/-SU1SK, NUT1LVEB, VK8APW, VQ8WM, VR696K, VU2AVG, Y86MF, Y11AS, Y16BIF, IB1AD, 3V8BB, 4J5T, 4L1BW, 857RF, 457VK, 5A1A, 5Z2R, SK2/3P9AM, 9M2JABELC, 9O1B, 9M8HM, and 9Q5CA. The noise problem he mentioned previously is still with him, says Dennis Miller who lives in Dawlish. Dennis and challenges my comments in the October issue on the validity of DX1A and L75AA.

Certainly DX1A is a call in the Phillipeine series and L75AA in the American series to that extent they could be genuine, but against that I’d had expected a reference in the various DX sheets. This time, Dennis is noting EM1KA at 2244-2256 and that’s it. 14MHz Dennis picked up CT31UA, E0D/UXW, E3X/EX2ZCOW, F8DX, H1CLG, H1ST, JY8F, KP4RA, OH3G2/OIO, PR7CPS, UN7LG, VQ8WM, Y86K/M in Hong Kong, VU2A9, XU66W, YW1A, Z62GR, Z62B, 457TB, 5A1A, 5Z2BZ, 7L7J, UN2O, KV4M3, YC0ZW, ZL4B, ZS6AW, 9X7T, and 9J2TF. Finally, down again to Eighty, well managed KEY1, 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, a bit higher 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 50Z, but the receiving station uses his tuner to transform the antenna impedance to 50Z. 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 response—none a censorship in this column!

Short Wave Magazine, December 1996
T
	his month, I thought that I would start by answering some points made by W. F. 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 that all he hears is noise. The Editor's comments in reply to the letter are perfectly correct, but 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-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

large amount of information on QSL addresses. You may remember that I mentioned a few 'utility station address' guidelines last year, 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 is not always better to be 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 somewhat 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 (johnevans@teshock.dem on.co.uk), or you can send details to me and I will forward them to John. Looking through the 2nd edition, it does contain 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.

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

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

Short Wave Magazine, December 1996

57
Late September into October was generally a quiet month for activity across Europe. Paradoxically, Clarke Belt, Intelsat 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 (Thessaloniki, 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 1.8dB noise LNB and a 1m dish. Intelsat 707 at 1°W is still carrying greatly improved signal levels of Israeli TV2 and TV through 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 @ 0036UTC 15.6°E @ 0930, 7°E @ 1111, 21.5°W @ 1317, 45°W @ 1501.
- 1993 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 Eutelsat II F3 @ 16°E was the carried via Intelsat 601 at 27.5°W in snow. The Astra feed of CNN is confirmation of Solar Outage was at carried via 16°E. Another Outage and sure enough, the digital Eutelsat II F3 @ 16°E should be into Outage when the picture broke into boxes.

A gritty JCS test caption via Eutelsat II F3 @ 16°E (11.050GHz) also visible via ArabSat 2A at 26°E at 12.521GHz. Listed as Qatar TV (note - signal via obstructed path at Romsey).

Reader Roger Bunney, 33 Cherville Street, Romsey, Hants SO51 8F8 comments on the use of SIS signals (sound in sync), 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 separate 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 golfer extravaganzas including the Loch Lomond World International and the Trophee-Lancome (both at 12.685GHz 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 @ 45°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 reported a mistake, spotted by several eagle-eyed zoomers - the top off-screen photograph shows the PM6544 test card from the Israeli AMOS-1 satellite at 4°W, it's not Intelsat 701! 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.
**SALE SALE SALE**

We are closing our small warehouse and have a large number of items for disposal, incl.

- Large SA.E. (1st class stamp) for Data Sheets
- AIRPORT BIRMINGHAM CENTRE
- International Hobby AIN
- ALL MUST GO. COME AND MAKE A SENSIBLE OFFER FROM 'ALADDIN'S CAVE'
- We are dosing our small transformers, crystals, boxes of PCBs for components, cable, resistors, trimmer caps, etc.
- Handset new boxed, C13 PSUs, scopes, signal gens, components - tuning caps,
- WE ARE NORMALLY OPEN MON TO FRI (CLOSED WED) 9AM TO 5PM. SAT 9AM TO 1PM.
- To make dissaopointment please ring us first. Ask for Tony.

**CONSUMER**

- **LOW NOISE ANTENNA**
- **Balun**
- **Antenna Feeder Isolator**
- **Removes mains noise from feeder by up to 40dB**

**UMB 130**

- **10.1 BALUN** for T2FD, LONGWIRE
- **Isolated feeder winding rejects noise** 100kHz-30MHz
- **ANTENNA FEEDER ISOLATOR** 50kHz-30MHz

**FACSIMILE**

- **AERIAL FEEDER ISOLATOR** 50kHz-30MHz.
- **winding rejection** 100kHz-30MHz.
- **Link conversion:** to 625 lines, to 525 lines
- **Field conversion:** to 50 lines, to 625 lines
- **AC radio powered**

**£18.95 EACH**

**WELLBROOK COMMUNICATIONS**

- Wellbrook House, Brookside Road, Bransgore Christchurch BH23 8NA
- Phone 01425 671474

**THE AVIATION HOBBY CENTRE**

- VISITOR CENTRE MAIN TERMINAL
- **BIRMINGHAM INTERNATIONAL AIRPORT B26 3QJ**
- **TEL:** 0121-782 2112
- **FAX:** 0121-782 6423

**WHICH?° MULTISYSTEM DIGITAL CONVERTER**

- **Professional quality, full digital processing**
- **No internal time systems of MSC 96, PAL and SECAM (options 4.43 or 6.66MHz)**
- **Output systems:** NTSC 2.5kHz, PAL 4.45 and PAL
- **40kHz to 6MHz, Digital resolution 500 lines, dynamic resolution 300 lines**
- **Accurate dates in two parts and two outputs**
- **Built in new flux conversion IT/CY**
- **Link conversion:** to 625 lines, to 525 lines
- **Field conversion:** to 50 lines, to 625 lines
- **AC radio powered**

**£40.00 inclusive of VAT**

**AERIAL TECHNIQUES**

- **VISITOR CENTRE**
- **BIRMINGHAM**

**ADVANCED KNOWLEDGE**

- **RF-50 MANUALLY TUNED SATELLITE RECEIVER**
- Full communication facilities such as television 12MHz down to a very narrow 20kHz. Variable audio bandwidths 100kHz-300kHz, FM radio with switching for CB/Ga band, 14/15kHz options, 6.2MHz modulation

**£199.00 inclusive of VAT**

**DEMEX MODE:**

- **Tuned with Threshold Assistance Device** (TAD), tuned Threshold to between 2-4kHz, movable and adjustable, a must for very weak signal users.

**£250.00 inclusive of VAT**

**Worldwide covers 10 Standards**

**AKX VS JIMX-GEN MULTISYSTEM VCR**

- **Outputs:** PAL, PAL/DV, PAL, SECAM B & G, SECAM D & G, SECAM J, SECAM K (for France), NTSC 3.58MHz and NTSC 4.43MHz. SHV-UHF. Improved Tuner. CBM Head with Low cost, NTSC/blanked as a PAL B or C/B, Syst. PAL B or C/B, 1 year.

**£499.00 inclusive of VAT**

**1996 UPDATED CATALOGUE**

- Features all the usual popular specialist products, together with many new items, Satellites, Multisystem TVs & VCRs, Converters, Decoders, Amplifiers and Aerials.

**AVAILABLE BY RETURN OF POST FOR ONLY £1**

- or ring with your credit card.

**Solid State Electronics (UK)**

- **PSU-101A Mk5**
- JIM PSU-101A Mk5. UK manufactured regulated 230V AC power supply with ADJUSTABLE radio base holder, combined. For use with most pocket scanners. (Please state radio type). 2 DC output sockets, one for radio the other for accessories. 12 volt DC output. A 9 volt output version for Tandy, Comet, Netset etc available. (PSU - 101ATA). PRICE £34.95. CE Approved

- **JIM PSU-101AC Mk5**
- As above but includes 12" fitted 500ohm coaxial cable assembly with BNC plug and socket for base antenna connection. PRICE £36.95.

- **JIM BH-A3A**
- Universal base holder. With ADJUSTABLE radio base holder, combined. Convenient, safe support of radio. Adjustable front stop. Heavy duty chromed base. TWO models: "If you don’t need the cable why pay for it". PRICE ONLY £13.95.

- **JIM BH-A3AC**
- As above includes 12" fitted 500ohm coaxial cable assembly with professional BNC plugs and sockets for base antenna connection TNC type plug available on request. Ideal RX and TX up to 4GHz. PRICE ONLY £17.95.

**Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**

- **Car Holder, S Meter, Notch Filter, Flexi Antenna & postage (UK). Other high quality products available:**
- **Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**
- **Car Holder, S Meter, Notch Filter, Flexi Antenna & postage (UK). Other high quality products available:**
- **Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**
- **Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**

**Solid State Electronics (UK)**

- **6 The Orchard, Bassett Green Village, Southampton S016 3NA**
- Tel: (01703) 761598

**Solid State Electronics (UK)**

- **Solid State Electronics (UK)**
- **Solid State Electronics (UK)**
- **Solid State Electronics (UK)**
- **Solid State Electronics (UK)**
- **Solid State Electronics (UK)**

**The Jim logo is a registered trade mark of SSB (UK)**

---

**Short Wave Magazine, December 1996**

- **WE ARE NORMALLY OPEN MON TO FRI (CLOSED WED) 9AM TO 5PM. SAT 9AM TO 1PM.**
- To make dissaopointment please ring us first. Ask for Tony.

**AJH ELECTRONICS**

- Unit 12, Hunters Lane, Rugby, Warwickshire CV21 1EA
- Phone: 01788 576473. Evenings: 01788 571066

**WHICH?° MULTISYSTEM DIGITAL CONVERTER**

- **Professional quality, full digital processing**
- **No internal time systems of MSC 96, PAL and SECAM (options 4.43 or 6.66MHz)**
- **Output systems:** NTSC 2.5kHz, PAL 4.45 and PAL
- **40kHz to 6MHz, Digital resolution 500 lines, dynamic resolution 300 lines**
- **Accurate dates in two parts and two outputs**
- **Built in new flux conversion IT/CY**
- **Link conversion:** to 625 lines, to 525 lines
- **Field conversion:** to 50 lines, to 625 lines
- **AC radio powered**

**£40.00 inclusive of VAT**

**PSU-101A Mk5**

- JIM PSU-101A Mk5. UK manufactured regulated 230V AC power supply with ADJUSTABLE radio base holder, combined. For use with most pocket scanners. (Please state radio type). 2 DC output sockets, one for radio the other for accessories. 12 volt DC output. A 9 volt output version for Tandy, Comet, Netset etc available. (PSU - 101ATA). PRICE £34.95. CE Approved

- **JIM PSU-101AC Mk5**
- As above but includes 12" fitted 500ohm coaxial cable assembly with BNC plug and socket for base antenna connection. PRICE £36.95.

- **JIM BH-A3A**
- Universal base holder. With ADJUSTABLE radio base holder, combined. Convenient, safe support of radio. Adjustable front stop. Heavy duty chromed base. TWO models: "If you don’t need the cable why pay for it". PRICE ONLY £13.95.

- **JIM BH-A3AC**
- As above includes 12" fitted 500ohm coaxial cable assembly with professional BNC plugs and sockets for base antenna connection TNC type plug available on request. Ideal RX and TX up to 4GHz. PRICE ONLY £17.95.

**Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**

- **Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**
- **Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**
- **Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**
- **Payment by postal order or cheque. Price includes postage (UK). Other high quality products available:**
September had its rewards with sporadic-E openings occurring over 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 Dutch transmitters listed. These include ARD-1 programmes from Germany on channels E7, E8, 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 E9 from Caldbeck and Grampian TV from the Durriss transmitter on channel E25. The latter signal swamped Yorkshire Television signals from Belmont for well over 30 minutes.

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 NDR 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.

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 Lincks FM (102.2MHz), Broadland (102.4MHz), Southern FM (102.4MHz) and 2-Ten (102.5MHz).

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
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 couldn't accept that it was happening!".

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

Cassolas continue scanning various high-altitude tourist spots and relay live pictures and weather data for transmission via cable and local terrestrial transmitters. This suggests that the 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 a particularly good year. By coincidence, Ian Johnson (Bromsgrove) has been examining the average m.u.f. (maximum usable 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.

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 transponder 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 1988, 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 up to 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. Indeed, 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 modulation width in a five as the radio is programmed for 0.5kHz steps only. AOR, Icom, Yupiteru etc. if you are reading this please take note!!

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 Collingburgh Gardens, Derby DE22 4FS, England.
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 deceleration 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 50 is mysterious, Bob?

To receive the latest copy, send a self-addressed envelope to Godfrey Manning. My 'phone number should only be used when you've no choice. Otherwise, please write for basic enquiries. A first-class letter usually arrives overnight. Enough said.

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 on-route centre at Swannick, 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 role. 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 and 134.75MHz (topographical charts show the individual sectors, for availability see Airband Factsheet). This explains one of the frequencies that P. J. Salesse (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 kHz 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 (Airbuses), 136.86 Britannia and 136.875MHz Monarch. Finally, USAF military call SLAM could be any of A10 or F15 fighters or their associated E3 airborne warning/contol 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!
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 used (I'm not sure if you pointed this out). The Coastguard have placed an air-sea rescue contract (we don't know - the costs are cheaper than a public-funded operator Bristow's). Why this is with the private commercial sector I don't know - the costs are operational (sorry not to have a note from 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-DBUJ) is at Lee-on-the-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, and 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 Campbelltown, the ICAO locator changes to EGEC (was EGJOJ).

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 Beeches heliport now has a licensed aerodrome, Air/Ground 134.6MHz, Blackpool now 119.95 (was 135.65MHz). 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 130.425 (were 122.35MHz). Changed n.d.b. frequencies: Lancelot Platform (LNL) now 403.5 (was 352kHz); 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
f.h. 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)

Most advertisements are legal, decent, honest and truthful. A few are not, and, like you, we want them stopped.

If you would like to know more about how to make complaints, please send for our booklet: 'The Do's and Don'ts of Complaining'. It's free.

The Advertising Standards Authority.
We're here to put it right.

ASA Ltd., 2 Torrington Place, London WC1E 7HW

This space is donated in the interests of high standards of advertising.
Scanning

Firstly, merry Christmas and a 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 law-breakers. 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 journalist’s point of view, it’s quite a catchy piece and extremely valuable. You’re too many to mention but you know who you are. Thanks!

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 stock.

In Joe Bloggs’ speak, that is names, addresses and telephone numbers of you - the buyer - of one of these deadly machines - cannot on its own get anything other than the displayed frequency and most certainly cannot get the MIN or 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.

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 operating/acting illegally. According to the article, six constabularies have a specialist unit in existence with powers to combat mobile ‘phone crime. 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, chugging 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 average 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 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 off, overtaken, 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:

468.73975 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 from and to where?

A letter from Alan Burnett-Provan in Wooton Waven reports that he hears a great deal on his PRO 2006 with an antenna cut for UK CB and a 31/4 at that! Alan has been monitoring ground stations as far afield as Warwickshire, Wiltshire and共生 plus Shropshire and Oxfordshire! Most are low band v.h.f. in the 70MHz portion but his Berkshire...
Ambushed 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, PR0-2006 scanner or h.f.
- A log periodic, a 2m/70cm NRD-525. He runs this lot through a magnetic mount on his outside
- Magnetic wire spiral bound. Airwaves Europe lists well over 5000 VHF/UHF civil and military aviation
- The Derbyshire area worth trying elsewhere by the way in case a local squadron have a set-up on the frequencies given.
- The Derby 'Flying Squad' hospital, that is - is on: 166.8125/171.8125 with the base callsign ZULU and the vehicles - two range rovers - being ZULU1 & 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 486.84375 with a studio talkback on 141.1875.

Worth listening out for! Lastly, I apologise for not continuing with the 'start your Xmas scanning' piece that I said I was going to. Due to the transinformation 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 telescopes and yet whips due to a move into a flat but I'm still hanging in!

Verulam Rally 96

Sunday 15th December
10am to 4pm
WATFORD LEISURE CENTRE
Horseshoe Lane, Garston, Watford
5mins M1 junction 6, M25 junction 21A
off junction A405/412
Food and Bar
Trade stands, Bring and Buy
RSGB stand, PW & SWM stand. Morse Tests
Admission £1.50
(concessions £1.00 - Children under 14 free)
Talk-in S22
INFORMATION 01923 265572
**GET REGISTERED**

After you’ve tried the shareware versions of HAMCOMM DL4SAW SSTV and PD2.03 you can now buy the full VERSIONS from your newly authorised UK outlet.

HamComm 3.1 at £19.99
DL4SAW (GSHPC) SSTV at £34.99
PD2.03 (POCSAG) at £19.99.

JVFAX HAMCOMM PKTMON12
DL4SAW SSTV & POCSAG

Use our Demodulator for these popular programs – connect it to your audio output, plug the 25 way connector into your PC and then monitor Fax RTTY Morse Packet and SSTV at a REALISTIC price.

25 way to 9 way Adaptor UK/Eire £3.00 inc. – Overseas £5.00

For non-EU deduct 17.5% VAT from above prices.

JVFAX7 + HAMCOMM + PKTMON12 + POCSAG on 3.5" HD £2.50
DL4SAW SSTV SHW £2.50 DL4SAW REGISTERED VERSION £34.99

ALL PRICES INCLUDE POST AND PACKING
Minimum Credit Card order £15.00

**THE NEXT GENERATION**

The world’s most popular receive demodulator is now joined by the
TRANSMIT version at £24.99 and the IMPROVED (Adjustable hysteresis) version for receiving POCSAG at £19.99

Pervisell Ltd, 8 Temple End, High Wycombe, Bucks HP13 5DR
Tel: (01494) 443033 Fax: (01494) 448236
http://www.pervisell.com e-mail ham@pervisell.com

---

**JAVIATION**

**THE AIRBAND SPECIALISTS**

Carlton Works, Carlton Street, Bradford BD7 1DA
01274 732146

Frequency & Callsign List – Together

The latest edition of our most successful publication ever is due to be published during December 1996 - in time for Christmas and the New Year. Fully updated with this years frequency changes together with a comprehensive update on the Military Callsign section. Same format as all previous editions and from customer feedback still the best airband guide there is.

£12.50 including postage

**AR8000 Owners**

Want to improve performance on the AM Broadcast bands?

We now have available a small PCB that fits internally within the AR8000 and allows the narrower SSB filters to be selected when in AM mode. This can greatly assist with AM listening on crowded Shortwave bands. Once the PCB is fitted the narrower SSB filters can be selected by pressing the LOCAL button and deselected in the same way.

For further details please give us a call.

Robust leather carry cases also available for the AR8000 - £15.00 inc P&P.

If you have internet WWW access then surf along to our Web Site at: http://www.demon.co.uk/javiation

---

**SHORTWAVE-EAVESDROPPER**

A huge step forward in the accessibility of shortwave utility information has been made with the Shortwave Eavesdropper CD-ROM. It gives instant access to well over 32,000 frequencies and 42,000 calligns listing military, tactical, ship - naval and merchant, embassies, aeronautical, press agencies, weather stations and countless more. In-depth country by country information containing QSL addresses, schedules, examples of traffic, and maps, DX Edge are also included.

Price: £25.00 including UK post and airmail worldwide.

**SCANNER BUSTERS 2**

Explains the new technology and encryption used in the VHF/UHF bands
Price: £7.00

**SCANNING THE MARITIME BANDS**

Lists all the VHF channels and frequencies in UK and Europe and shows how to monitor local shipping
Price: £9.50

**SHORTWAVE MARITIME COMMUNICATIONS**

All the world’s coastal stations and shipping frequencies are listed as well as detailed chapters on how best to monitor all the maritime bands
Price: £7.50

**EAVESDROPPING ON THE BRITISH MILITARY**

The only book that shows you how to monitor the military, their communication systems and has large frequency lists
Price: £18.75

**INTERNATIONAL CALLSIGN DIRECTORY**

The most exhaustive list of tactical calligns and identifications
Price: £18.50

**COMPUTERIZED RADIO MONITORING**

Explains how to monitor the bands with a PC
Price: £9.50

**FAX AND RTTY WEATHER REPORTS**

Weather reports from Radio Sources
Price: £6.00

**INTERCEPTING NUMBER STATIONS**

Interception Number Stations
Price: £19.50

**CLAUDESTONE BROADCASTING DIRECTORY**

World Below 500 KiloHertz
Price: £6.45

**LONG WIRE ANTENNAS**

Price: £10.95

---

**SYNOPTIC DECODER**

The easy way to translate the five figure code groups from meteo weather stations around the world into plain English. Messages can be displayed on home PC, dumb terminal or printed using a serial printer.

Write or ring today for more information with example print-outs.

For years the Microreader has been one of the most successful and widely used decoders in Britain. With the Microreader you don’t need computers, monitors or any special equipment simply plug into your speaker socket and turn on. Please call or write for more information as space limits a full description.

**UPGRADES**

**TERMINAL PROG**

£10.00

**UK/EIRE**

£20.00

**OVERSEAS EU**

£20.00

**ALL PRODUCTS GUARANTEED FOR 2 YEARS & PRICE INC. VAT & DEL P&P**

---

**INTERPRODUCTS**

(S126)

8 Abbot Street, Perth PH2 0EB, Scotland
Tel & Fax: 01738 441199

---

**26 Clarendon Court • Winwick Quay**

**Warrington • WA2 8QP**

Tel: (01295) 573118
Fax: (01295) 812117

**Merry Christmas and a happy new year.**

**SYNOPTIC DECODER**

£99.50

**MKII (V4.2)**

Microreader
£199.50

---

**JAVIATION**

**THE AIRBAND SPECIALISTS**

Carlton Works, Carlton Street, Bradford BD7 1DA
01274 732146

---

**Get for FREE catalogue.**

---

**AR8000 Owners**

Want to improve performance on the AM Broadcast bands?

We now have available a small PCB that fits internally within the AR8000 and allows the narrower SSB filters to be selected when in AM mode. This can greatly assist with AM listening on crowded Shortwave bands. Once the PCB is fitted the narrower filters can be selected by pressing the LOCAL button and deselected in the same way.

---

**AR8000 Owners**

Want to improve performance on the AM Broadcast bands?

---

**26 Clarendon Court • Winwick Quay**

**Warrington • WA2 8QP**

Tel: (01295) 573118
Fax: (01295) 812117

**Merry Christmas and a happy new year.**

**SYNOPTIC DECODER**

£99.50

---

**MKII (V4.2)**

Microreader
£199.50

---

**JAVIATION**

**THE AIRBAND SPECIALISTS**

Carlton Works, Carlton Street, Bradford BD7 1DA
01274 732146

---

**Frequency & Callsign List – Together**

The latest edition of our most successful publication ever is due to be published during December 1996 - in time for Christmas and the New Year. Fully updated with this years frequency changes together with a comprehensive update on the Military Callsign section. Same format as all previous editions and from customer feedback still the best airband guide there is.

£12.50 including postage
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 however, the present 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 NOAA-12 (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 EUROMET, METEOR 6 was brought into active service around 22 October as the imaging WXSAT. METEOR 5 undergoes periodic maintenance, during which it does not scan the earth. Images from METEOR 6 are then processed at the ground station and re-broadcast from METEOR 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 Malaysia, to tell me of his unusual experiences trying to set-up a WXSAT receiver. His YUVUM 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 Dualcom 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 ISP 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 0930-0932. Cloud detail on METEOR WXSATs 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 marked 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 L2 slot, were collected by George Newport of Canterbury - see Fig. 2. The sequence of four images was taken on 1, 4, 5 and 8th September, showing the development and movement of Fran during this period. The image from 4th 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 O3B format had sufficient resolution to reveal this. Another instance of the 'grandstand view', this time of an erupting volcano in Iceland, and a print in an image received from NOAA-12 by I. J. Curtress of Cheltenham.

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
Photographic Experts Group. It is that LRPT should use the better data compression debate over who possessed the transmission to users, resulted in compressing data before its manufacturing process. The need spacecraft contractor can begin the defined by autumn 1996 so that the METOP-1 in late 2001, all LRPT To meet the scheduled launch of Format Near will be imposed on the designers 72kb.p.s. Additional requirements LRPT image requiring a bit rate of antenna will be able to receive the LRPT raw data rate by a factor of eight. Derivative receivers can be made 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 137.625MHz.

LRPT Receivers

Within a few years we can expect to move to LRPT receivers, so with this 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 135-146MHz. 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 Mappers-2 receiver. It is two years since I last discussed the possibility of my reviewing that system - it never arrived! Meanwhile, UK suppliers of receivers include Martelec's Virtual Satellite Receiver which costs around £150 (reviewed some months back), Timestar'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 be expected to 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 - 143.825MHz. Personally, I have yet to hear voice activity on 145.55MHz, other than from local amateurs!

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 or separate, extra stamp.

2 Transmission frequencies are given for operating satellites. This was originated from NASA.

3 Transmission frequencies are given for operating satellites. This was originated from NASA.

Frequencies for Shuttle satellites

NOAA-14 transmits a.p.t. on 137.62MHz
NOAA-12 transmits a.p.t. on 137.50MHz
NOAA transmits beacon data on 137.77 or 136.77MHz
METEOR 3 (or 2-21) use 137.85MHz
OKEAN-4 and SICHI-1 use 137.40MHz
METEOSAT-5 (geostationary) use 1591 and 1994.5MHz for WEFAX
GOES-8 (western horizon) uses 169.1MHz for WEFAX
MIR uses 145.55 and 143.825MHz.

Fig. 3: Icelandic volcano from NOAA-12.
If you really are serious about Weather Satellites, phone or write us now for a colour catalogue and try outlines from NOAA, and national broadcasters on shortwave, compiled by top expert Michiel Schaay from the Netherlands - now available as a standard .dhf file for open access! 1997 Guide to Utility Radio Stations now includes all broadcast stations worldwide! £ 27 or DM 60 (including airmail) 13,800 upper - to - date frequencies from 0 to 30 MHz are listed, including the very latest frequencies used now during the sunspot minimum. We are the world leader in advanced teleprinter systems monitoring - and decoding! This unique reference book lists just everything: abbreviations, codes, features, broadcast schedules, modulation types, plans, meteofax and NAVTEX - and press schedules, international broadcast stations worldwide from our 1997 Super Frequency List on CD-ROM (see below). Another 13,800 frequencies cover all utility stations worldwide. A solid introduction to real shortwave monitoring is included as well, plus 1,160 abbreviations. The right product at the right moment for worldwide listeners, radio amateurs and professional monitoring services alike - at a sensational low price! Advanced Weather Satellite users will by now have read about our new TRACK II prediction software. Full screen colour graphics and 6 simultaneous satellites are just some of the amazing features. For the ultimate in detail we offer HRPT digital systems with five 1.1km ground sensors, towns and rivers are clearly visible. For everyday use we also have the PDUS digital Meteosat system that takes 2.5km data every 30 minutes. Timestep PDUS colour animate is used several times a day by Anglia Television because of its very high resolution combined with spectacular colour. Forecasters will appreciate temperature calibrated 30 minute interval images.

A full range of separate Antennas, Preampifiers, Cables, Receivers and accessories are held in stock.
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 meet so many readers and I was grateful that you were so forgiving over the delays in dispatching 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 dealers 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 a 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 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 28000 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 V1 (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 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 lines. 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

Many thanks to all recipients for the interest in our facsimile broadcast over the years!

31st May 1996

The final transmission from Offenbach was captured by Phil Perkins of Pervisell.
Short Wave Magazine, December 1996

End of an Era

Many of you will have noticed and missed the passing of Catchmetoo 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 Penregel 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 Meteostat 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 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 program is called Wexflo 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, let's 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 otherwise stated.

7.535MHz, AX33 Darwin Met, AUS coming through at good strength now (1845z - 20th October 1996) has been SINPO 4444 at times.

7.959MHz, AOK USN Rota, ESP, 0300 2000 (38620MHz) running HAMCOMM and JFVAX with a Perversil 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 facility from HAMCOMM, you simply select RX Logging from the File menu. NB: this is only available in the registered version.

End of an Era

USA. 1900z decent sat pic. Weds. 18th Oct. SINPO 55555. All seems OK with this site, now.

4.560MHz, RLBx Moscow Met 2, 0045z unknown chart of Middle E.

1002z unknown chart of M. East. Occasional unid data bursts. 3.810MHz, RST75 Mensk Met, URS SINPO 22222 91575. Too much switched mode p.s.u. ORM for me to copy here. 2.017S, 2.195, 2.342 & 2.321 MHz DHJU Grangel Met, D. SINPO 11111 (night).

4.570 & 4.598MHz SINPO 111111 (day) horrendous multiple-pat unid data bursts on 4598.

Welcome Back, Grangel.

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/berlin/wun

NAVTEX DXing

Keith Hayward of Manchester spends much of his decoding chasing NAVTEX stations on 518kHz. This service is provided by local PFTs and is intended to provide up-to-date navigational, safety and weather information for mariners. The use of 518kHz was specifically intended 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 service that included with some of the 6.6MHz FAX services. 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 JFVAX with a Perversil 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.


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 of handling orders. 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: (01982) 663298 and request library volume H00873abcede. IBM PC Software(1.44Mb disks): Disk A - JFVAX 7.0, HAMCOMM 3.1 and WEXFAX 3.2. Disk B - DSP Starter plus Texas device selection software. Disk C - NuMorse 1.3. Disk D - UltraPak 4.0. Disk E - Miscan 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 JFVAX and HAMCOMM Primer (Order Code FP4).
FactPack 5 On the Air with JFVAX and HAMCOMM (Order Code FP5).
FactPack 6 Internet Starter (Order Code FP6).

For the printed literature just drop me a line for a full list of available material. For the fully searchable electronic literature just send me a self-addressed, stamped,惹然 label plus 50p per item (£1.50 for four, £2.50 for seven and £3.00 for nine).
Is noi**Se a problem?

THEN TRY ONE OF THESE!

NRF-2 Noise Reduction Filter Simply plug it in with your headphones or LS. No batteries required. Cuts down hum, hiss and sideband splatter. ..............................................................£16.50 plus £1.00 postage.

CT400 Long - Wire Coupling Transformer (Sometimes known as a "Magnetic Balun"). Use your wire antenna with a screened down lead .........................................................ONLY £6.75 plus £1.00 postage.

TU3 Antenna tuning unit. A very versatile ATU with a special mode switch. Quality aluminium case. £54 plus £4.00 postage. Low frequency version (below 500kHz). Only £64 plus £4.00 postage.

SEND SAE FOR BROCHURE OF OUR COMPLETE RANGE

LAKE ELECTRONICS 7 Middleton Close, Nuthall, Nottingham NG16 1BX
0115 - 938 2509 - E-mail 100775.730@compuserve.com

THE SCANNER SPECIALISTS
New scanners from £79.95-£975
Call and discuss which part of the Radio Spectrum you wish to monitor and we will advise you on the most cost effective way of doing it.
- Full range of new and secondhand equipment available.
- We stock all famous brands.
- AOR, VHF/ UHF, BEACON, SCANMASTER + many other ACCESSORIES

AMATEUR RADIO
We are the Kenwood main dealer for the south coast and appointed dealers for Yaesu and Icom equipment.

Plus Amateur- SWL - Novice - Airband - Marine

Same day despatch on orders & sales, quoting your Visa/Access number.

FOR DOS
SCANCAT GOLD
FOR WINDOWS
SCANCAT GOLD

Also available in the UK from your favorite dealer inc. LOWE ELEC. & JAVIATION
We are the Kenwood main dealer for the south coast and appointed dealers for Yaesu and Icom equipment.
Call and discuss which part of the Radio Spectrum you wish to monitor and we will advise you on the most cost effective way of doing it.

FOR DOS
SCANCAT GOLD
FOR WINDOWS
SCANCAT GOLD

Since 1989, The Recognized Leader in Computer Control

Once you use SCANCAT with YOUR radio, you'll NEVER use your radio again WITHOUT SCANCAT!
SCANCAT supports almost ALL computer controlled radios by:
- AOR, DRAKE, KENWOOD, ICOM, YAESU and JRC (NPRD)
including AR-600/2700/P/PRO 205/575/535/42 (with 0S456/535),
Low HF-150, and Waterstone HF-1000.

SCANCAT - GOLD FEATURES
- Link up to 100 frequency dials (file).
- D-BASE: IMPORT n/Duplicate dials.
- Scan HF & VHF Icom's simultaneously.
- PRINT to ANY printer, or disk file.
- Exclusive "SLIDE RULE tuner. Click or 'skate' your mouse over our Slide-Tuner to change frequencies effortlessly! OR use our graphical tuning knob.
- MAPS - Load virtually ANY map or GRAPHIC image in "BMP° format (several included with Scancat). Program 'hot spots' with your mouse over images in "BMP° format (several included with Scancat).
- MULTIPLE search lists.
- TUNE to ANY printer, or disk file.
- Automatc FREQUENCIES LOCKOUT.

EXCLUSIVE WINDOWS FEATURES
- All the features you EXPECT from a true Windows application such as:
  - NO MORE CONVERSION DIRECT scanning of mostDBASE, FOXPRO, ACCESS, BITREVE files WITHOUT expiring*!
  - UNIQUE database management system with moveable SPLIT columns for easy viewing.
  - VERSATILE "Functional" spectrum analyser. Simpy "mouse over" to read frequency of spectrum location. "CLICK" to immediately tune your receiver.
- No hardware, software, or any other equipment required.
- SCANCAT is not copy protected - use on as many computers as you need**

Requires Windows 3.1 or greater - 8 meg ram - 4 meg harddrive space - 386/387 processor - RS-232C serial port. Manufacturer's interface not included.

SCANCAT GOLD
FOR WINDOWS ..........$99.95 + s&h
UPGRADE TO GOLD .........$29.95 from any version

SCANCAT GOLD
FOR DOS ..................$94.95 + s&h

INTERNET WEB ADDRESS - http://www.scancat.com WEB E-MAIL - scancat@scancat.com

COMPUTER AIDED TECHNOLOGIES
P.O. Box 18285 Shreveport, LA 71138
(318) 636-1234 (24 hrs) FAX (318) 686-9449 (24 hrs)

Also available in the UK from your favorite dealer inc. LOWE ELEC. & JAVIATION

SHORT WAVE MAGAZINE

PCB SERVICE

Printed circuit boards for SWM constructional projects are available from the SWM PCB Service. The boards are made in 1.5mm glass-fibre and are fully tinned and drilled. For a list of boards see May '95 issue of Short Wave Magazine (p.48).

Orders and remittances should be sent to: Badger Boards, 87 Blackberry Lane, Four Oaks, Sutton Coldfield B74 4JF Tel: 0956 374918 (Mon-Fri 9am-5.30pm) marking your envelope SWM PCB Service.
Cheques should be crossed and made payable to Badger Boards. When ordering please state the Article Title as well as the Board Number. Please print your name and address clearly in block capitals and do not enclose any other correspondence with your order.

Please allow 28 days for delivery. Only the P.C.B.s listed are available.
BADGER BOARDS, 87 BLACKBERRY LANE, FOUR OAKS, SUTTON COLDFIELD B74 4JF Telephone 0956 374918
Many listeners have contributed to this series during the year and to them I send my sincere thanks. At this time to reach them and all readers a Happy Christmas and good listening in the New Year.

Long Wave Reports

Note: I.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC

A weak transmission under DLF via Donebach on 153kHz was observed at 2240UTC on September 15 by Sheila Hughes in Barton-on-Humber. It was heard at 0025. More on 1560 was 33233 at 0150. On the 4th WNRB on 1510 peaked 42342 at 2027. Earlier, he heard the waves from Bod completely.

A broadcast from Bod was also received during daylight - typically at S10222. Much to his surprise Tony Stickells could find no trace of transatlantic DX in 1989. He was on holiday in the Loire Valley, France. It was a first time he was on holiday in the Loire Valley.

The propagation conditions in 1990 were good, and there have been rare instances when broadcasts before sunset in E.USA have arrived here, also when reception has been possible up to an hour after sunset in the UK. Such exceptional conditions were noted on October 1 by Paul Creagh in Tiverton.

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 (Booham) explored the band with his car radio and a home made loop. Reception conditions were good. His extensive log included the broadcasts from Akarkab, Faeroes on 31, rated 34343 at 1740. Over 100 local radio stations were received during daylight - amongst them was the new ILR broadcast from eight stations in 15MHz (19m) band.

The sky waves from stations in Algeria, India, the Middle East and N.Africa were either new to him or stations which he had not heard for a long time including ILR broadcast from Akraberg, R.Dubai 21.620 (Fr to E.Africa 0800-1300) 44444 at 1333 by Eddie McKeown in Newry; REC via Nobeljas 21.570 (Sp to S.America 1200-1800) 35444 at 1837 by David Edwardson in Wallsend.

The propagation conditions in the 17MHz (16m) band vary daily. When favourable, R.Australia’s broadcast to Asia and Pacific areas via Darwin may reach the UK on two frequencies: 17.715 (Eng 0000-0858), rated 45434 at 0728 by Garry Haynes in Bushey Heath; 17.880 (Eng 0200-0758) 15551 at 0637 in Wallsend.

If long wave broadcasters using this band before noon include Australia 17.870 (Ger, Eng, Fr to M.East 0500-0900) 44444 at 0745 in Woking, Pakistan via Karachi 17.900 (Eng to E.Africa 0900-1100) 34443 at 1110 in Kilkeet; BBC via Ascension Is 17.820 (Sp to S.America 1100-1300) SI0211 at 1115 by Philip Rambaut in Macciesfield; DW via Sines 17.860 (Eng to Eur 1400-1500) 44444 at 1115 in Scalloway.

After mid-day RCi via Sackville, Canada 17.820 (Fr to Eur 1300-1500 Mon-Sat) was SI0322 at 1400 in E.London; BBC via Ascension Is 17.830 (Eng to W.Africa 0700-1200) 34343 at 1415 in Hermstonnau; R.Australia 17.870 (Eng to Asia, Pacific areas 0030-0730); also in 15MHz (19m) band.

Daily variations in propagation also occur in the 15MHz (19m) band. During the early morning Radio Australia may be heard via Shepparton on 15.244 at (Eng to Pacific areas 0300-0730), also 15.415 (Eng to Asia, Pacific 0030-0858). They were logged as 26222 at 0550 and 15432 at 0732 respectively in Bushey Heath. Also noted during the morning were the Voice of Malaysia, Kajang 15.295 (Eng, Fr to Asia, Pacific areas 0030-0730) was also heard on 15.545 (Eng to Asia, Pacific 0030-0858).

The propagation conditions 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 43343 by Andrew Currie in St Albans; 44443 at 0910 by Stan Evans in Herstmonceux; 44443 at 1010 by John Eaton in Woking.

In the evening, the 21MHz (13m) band is often used by broadcasters who may use the 38MHz (9m) band.

Additional information from: (F) Eddie McKean, Storrington; (G) Fred Pallant, Storrington; (M) John Parry, Llanasa, Caernarvon; (T) Tony Bowden, Larnaca, Cyprus. (H) Tony Stickells, while in Loire Valley, France.

Boston 17.387 (Eng to Pacific areas 0208-0443), 15.645 at 1940 in Woking, Pakistan via Karachi 17.900 (Eng to E.Africa 0900-1100) 34443 at 1110 in Kilkeet; BBC via Ascension Is 17.820 (Sp to S.America 1100-1300) SI0211 at 1115 by Philip Rambaut in Macciesfield; DW via Sines 17.860 (Eng to Eur 1400-1500) 44444 at 1115 in Scalloway.

After mid-day RCi via Sackville, Canada 17.820 (Fr to Eur 1300-1500 Mon-Sat) was SI0322 at 1400 in E.London; BBC via Ascension Is 17.830 (Eng to W.Africa 0700-1200) 34343 at 1415 in Hermstonnau; R.Australia 17.870 (Eng to Asia, Pacific areas 0030-0730); also in 15MHz (19m) band.

Daily variations in propagation also occur in the 15MHz (19m) band. During the early morning Radio Australia may be heard via Shepparton on 15.244 at (Eng to Pacific areas 0300-0730), also 15.415 (Eng to Asia, Pacific 0030-0858). They were logged as 26222 at 0550 and 15432 at 0732 respectively in Bushey Heath. Also noted during the morning were the Voice of Malaysia, Kajang 15.295 (Eng, Fr to Asia, Pacific areas 0030-0730) was also heard on 15.545 (Eng to Asia, Pacific 0030-0858).

The propagation conditions 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 43343 by Andrew Currie in St Albans; 44443 at 0910 by Stan Evans in Herstmonceux; 44443 at 1010 by John Eaton in Woking.

In the evening, the 21MHz (13m) band is often used by broadcasters who may use the 38MHz (9m) band.

Additional information from: (F) Eddie McKean, Storrington; (G) Fred Pallant, Storrington; (M) John Parry, Llanasa, Caernarvon; (T) Tony Bowden, Larnaca, Cyprus. (H) Tony Stickells, while in Loire Valley, France.

Boston 17.387 (Eng to Pacific areas 0208-0443), 15.645 at 1940 in Woking, Pakistan via Karachi 17.900 (Eng to E.Africa 0900-1100) 34443 at 1110 in Kilkeet; BBC via Ascension Is 17.820 (Sp to S.America 1100-1300) SI0211 at 1115 by Philip Rambaut in Macciesfield; DW via Sines 17.860 (Eng to Eur 1400-1500) 44444 at 1115 in Scalloway.
<table>
<thead>
<tr>
<th>Freq (kHz)</th>
<th>Station</th>
<th>Country</th>
<th>Power (kW)</th>
<th>Listener</th>
</tr>
</thead>
<tbody>
<tr>
<td>74</td>
<td>Cadiz(RNE5)</td>
<td>Spain</td>
<td>504</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>75</td>
<td>Venice(RNE5)</td>
<td>Italy</td>
<td>104</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>76</td>
<td>Valencia(COPE)</td>
<td>Spain</td>
<td>204</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>77</td>
<td>Barcelona</td>
<td>Spain</td>
<td>260</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>78</td>
<td>Lisbon</td>
<td>Portugal</td>
<td>330</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>79</td>
<td>Madrid</td>
<td>Spain</td>
<td>435</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>80</td>
<td>Milan</td>
<td>Italy</td>
<td>660</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>81</td>
<td>Brussels</td>
<td>Belgium</td>
<td>825</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>82</td>
<td>Paris</td>
<td>France</td>
<td>1200</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>84</td>
<td>London</td>
<td>UK</td>
<td>1200-1800</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>85</td>
<td>Berlin</td>
<td>Germany</td>
<td>1200-1800</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>86</td>
<td>Rome</td>
<td>Italy</td>
<td>1800-2100</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>87</td>
<td>Madrid</td>
<td>Spain</td>
<td>2330</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>88</td>
<td>Paris</td>
<td>France</td>
<td>2800</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>89</td>
<td>London</td>
<td>UK</td>
<td>3320</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>90</td>
<td>Berlin</td>
<td>Germany</td>
<td>3840</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>91</td>
<td>Rome</td>
<td>Italy</td>
<td>5000</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>92</td>
<td>Madrid</td>
<td>Spain</td>
<td>6390</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>93</td>
<td>Paris</td>
<td>France</td>
<td>7500</td>
<td>1/1/0 N'</td>
</tr>
<tr>
<td>94</td>
<td>London</td>
<td>UK</td>
<td>10000</td>
<td>1/1/0 N'</td>
</tr>
</tbody>
</table>

Note: Entries marked ** were logged during the daytime. All other entries were logged during copyright or airbreaks.
### Local Radio Chart

<table>
<thead>
<tr>
<th>Station</th>
<th>Frequency</th>
<th>m.g.s.</th>
<th>Listener</th>
</tr>
</thead>
<tbody>
<tr>
<td>1170 Amber FM (Ipswich)</td>
<td>0.28</td>
<td>N, H, J, N</td>
<td></td>
</tr>
<tr>
<td>1170 DRS, Epsom</td>
<td>0.32</td>
<td>G, H, I, M</td>
<td></td>
</tr>
<tr>
<td>1170 SW London</td>
<td>0.22</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Surrey (Westminster)</td>
<td>0.20</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Wiltshire</td>
<td>0.25</td>
<td>C, G, H</td>
<td></td>
</tr>
<tr>
<td>1170 HKW (Stoke-on-Trent)</td>
<td>0.32</td>
<td>A, B, C, H</td>
<td></td>
</tr>
<tr>
<td>1170 Bolton (SE)</td>
<td>0.17</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Manchester</td>
<td>0.30</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Newcastle</td>
<td>0.37</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Tamworth</td>
<td>0.20</td>
<td>C, H, J</td>
<td></td>
</tr>
</tbody>
</table>

Note: Entries marked "were logged during the afternoon."

### Listeners

<table>
<thead>
<tr>
<th>Station</th>
<th>Frequency</th>
<th>m.g.s.</th>
<th>Listener</th>
</tr>
</thead>
<tbody>
<tr>
<td>1170 Amber FM (Ipswich)</td>
<td>0.28</td>
<td>N, H, J, N</td>
<td></td>
</tr>
<tr>
<td>1170 DRS, Epsom</td>
<td>0.32</td>
<td>G, H, I, M</td>
<td></td>
</tr>
<tr>
<td>1170 SW London</td>
<td>0.20</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Surrey (Westminster)</td>
<td>0.22</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Wiltshire</td>
<td>0.25</td>
<td>C, G, H</td>
<td></td>
</tr>
<tr>
<td>1170 HKW (Stoke-on-Trent)</td>
<td>0.32</td>
<td>A, B, C, H</td>
<td></td>
</tr>
<tr>
<td>1170 Bolton (SE)</td>
<td>0.17</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Manchester</td>
<td>0.30</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Newcastle</td>
<td>0.37</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Tamworth</td>
<td>0.20</td>
<td>C, H, J</td>
<td></td>
</tr>
</tbody>
</table>

### Broadcasts

- **1170** AM (Ipswich): From 1600 to 1700.
- **1170** MW (Manchester): From 1600 to 1700.
- **1170** SW London: From 1600 to 1700.
- **1170** Surrey (Westminster): From 1600 to 1700.
- **1170** Wiltshire: From 1600 to 1700.
- **1170** Bolton (SE): From 1600 to 1700.
- **1170** Manchester: From 1600 to 1700.
- **1170** Newcastle: From 1600 to 1700.
- **1170** Tamworth: From 1600 to 1700.

**Note:** These timings are approximate, and actual times may vary depending on the local situation.

### Local Radio Chart

<table>
<thead>
<tr>
<th>Station</th>
<th>Frequency</th>
<th>m.g.s.</th>
<th>Listener</th>
</tr>
</thead>
<tbody>
<tr>
<td>1170 Amber FM (Ipswich)</td>
<td>0.28</td>
<td>N, H, J, N</td>
<td></td>
</tr>
<tr>
<td>1170 DRS, Epsom</td>
<td>0.32</td>
<td>G, H, I, M</td>
<td></td>
</tr>
<tr>
<td>1170 SW London</td>
<td>0.22</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Surrey (Westminster)</td>
<td>0.20</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Wiltshire</td>
<td>0.25</td>
<td>C, G, H</td>
<td></td>
</tr>
<tr>
<td>1170 HKW (Stoke-on-Trent)</td>
<td>0.32</td>
<td>A, B, C, H</td>
<td></td>
</tr>
<tr>
<td>1170 Bolton (SE)</td>
<td>0.17</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Manchester</td>
<td>0.30</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Newcastle</td>
<td>0.37</td>
<td>G, M, N</td>
<td></td>
</tr>
<tr>
<td>1170 Tamworth</td>
<td>0.20</td>
<td>C, H, J</td>
<td></td>
</tr>
</tbody>
</table>

### Broadcasts

- **1170** AM (Ipswich): From 1600 to 1700.
- **1170** MW (Manchester): From 1600 to 1700.
- **1170** SW London: From 1600 to 1700.
- **1170** Surrey (Westminster): From 1600 to 1700.
- **1170** Wiltshire: From 1600 to 1700.
- **1170** Bolton (SE): From 1600 to 1700.
- **1170** Manchester: From 1600 to 1700.
- **1170** Newcastle: From 1600 to 1700.
- **1170** Tamworth: From 1600 to 1700.

**Note:** These timings are approximate, and actual times may vary depending on the local situation.
For Sale

3-band s.a. radio, made by 'Hoevers', cost £300, will sell £100 or swap hand-held CB radio or hand-held amateur radio or what have you! Tel: Lincoln (01522) 783239.

96 copies of Short Wave Magazine. January 1988 to December 1995, in good condition, buyer collects, offer to Telford (01827) 894471.

AOR AR1000 hand-held scanner 6 to 900MHz and 902 to 1480MHz, 1000 memories, chargers, manual, mag. mount, aerial, £170. Tel: Staffs (01782) 205569.

AOR AR2000 receiver, 50kHz to 1300MHz, mint condition, unused, all accessories. Tel: Leeds (0113) 267109.

AOR AR3000A Plus wideband receiver, full AOR operating manuals, boxed. Tel: (01234) 648590.

AOR AR6000 Nicads and charger, as new, £300. Buy now! Real Pro 9500 400kHz. hyperscan, better than new, £270. Eddystone TS-440, new, £250. Century 301 digital 21st sub-system, built-in preselector, very stringent, £140. Panasonic DR-290 digital s.a., £400. Tel: (01202) 319139.

Kenwood R-5000 v.h.f. manual, v.q.c., £300. Icom IC-7100, all 25000 MHz, boxed, manual, £550. JRC NRD-535, like new, boxed, £350. JRC NRD-525, £150, 25-200MHZ, £250, boxed with manuals, all boxed. Tel: Maidstone (01622) 262125. AOR AR 8000, £150. £180, EC10 £80, FL3 £80. All good working order. Tel: (01202) 668689.

Sanyo CYF-281 TV monitor screen, manual and power supply. £80.

Ericsson T-8000, £800. £1500, £2500 digital ss.b., v.g.c., £180. £900. £300.

For Sale

ICS FA5 (1MHz) weather sensitive NAVTEX radio link encoder (including printer), including kit, l.p.s., manual, etc., £200, approx 5 years old, £150. Eddystone receiver, brand new and packing. Bob Fullord, Eversley Tel: (01327) 203214 after 6pm.

JRC NRD-535 f.s.t. receiver, cvw pre-selector, filter system, external speaker, excellent condition, £250, v.g.c., £200. AOR AR2000 receiver, 50kHz to 1300MHz, boxed, manual, £150.

Kenwood R-9090 receiver with s.w. converter, f.s.b.w. and a.m. filters, anten and speaker and s.t.e., excellent condition, boxed with manuals, £250. Eddystone receiver/printer, £150. Panasonic 0829 digital ss.b., v.g.c., £120. JRC NRD-525, boxed, £120. JRC NRD-535, £150.

Kenwood R-9090 receiver with s.w. converter, f.s.b.w. and a.m. filters, anten and speaker and s.t.e., excellent condition, boxed with manuals, £250. Eddystone receiver/printer, £150. Panasonic 0829 digital ss.b., v.g.c., £120. JRC NRD-525, boxed, £120. JRC NRD-535, £150.

Kenwood R-5000 v.h.f. manual, v.q.c., £300. Icom IC-7100, all 25000 MHz, boxed, manual, £550. JRC NRD-535, like new, boxed, £350. JRC NRD-525, £150, 25-200MHZ, £250, boxed with manuals, all boxed. Tel: Maidstone (01622) 262125. AOR AR 8000, £150. £180, EC10 £80, FL3 £80. All good working order. Tel: (01202) 668689.

Sanyo CYF-281 TV monitor screen, manual and power supply. £80.

Ericsson T-8000, £800. £1500, £2500 digital ss.b., v.g.c., £180. £900. £300.

For Sale

ICS FA5 (1MHz) weather sensitive NAVTEX radio link encoder (including printer), including kit, l.p.s., manual, etc., £200, approx 5 years old, £150. Eddystone receiver, brand new and packing. Bob Fullord, Eversley Tel: (01327) 203214 after 6pm.

JRC NRD-535 f.s.t. receiver, cvw pre-selector, filter system, external speaker, excellent condition, £250, v.g.c., £200. AOR AR2000 receiver, 50kHz to 1300MHz, boxed, manual, £150.

Kenwood R-9090 receiver with s.w. converter, f.s.b.w. and a.m. filters, anten and speaker and s.t.e., excellent condition, boxed with manuals, £250. Eddystone receiver/printer, £150. Panasonic 0829 digital ss.b., v.g.c., £120. JRC NRD-525, boxed, £120. JRC NRD-535, £150.

Kenwood R-5000 v.h.f. manual, v.q.c., £300. Icom IC-7100, all 25000 MHz, boxed, manual, £550. JRC NRD-535, like new, boxed, £350. JRC NRD-525, £150, 25-200MHZ, £250, boxed with manuals, all boxed. Tel: Maidstone (01622) 262125. AOR AR 8000, £150. £180, EC10 £80, FL3 £80. All good working order. Tel: (01202) 668689.

Sanyo CYF-281 TV monitor screen, manual and power supply. £80.

Ericsson T-8000, £800. £1500, £2500 digital ss.b., v.g.c., £180. £900. £300.
NORTHERN SHORTWAVE CENTRE
BLACKDYKE RD, KINGSTOWN IND EST, CARLESE, CUMBRIA CA3 0PJ
Phone/Fax: 01228 590011
David Brown G4KFN
New and used short wave receivers, scanning radios, amateur radio equipment and accessories plus books and magazines.

HARD TO FIND SPECIALISED AND UNUSUAL PC SOFTWARE
We have the largest range of specialised technical, scientific and rare programs for DOS and Windows in Europe, on CD ROM or floppy disk. 1000s of programs in 250+ categories including Electronics, Radio, Audio, Maths, Chemistry, Music, Education, Engineering etc. SEND STAMPS SAE for FREE PRINTED CATALOGUE of 4000+ ITEMS.

JAYCEE ELECTRONICS LTD
20 Woodside Way, Glenrothes, Fife, Scotland KY7 5DF
Tel: 01592 756962 (Day or Night) * Fax No. (01592) 610451
Open: Tuesday-Friday 9-5; Saturday 9-4
KENWOOD, YAESU & ICOM APPROVED DEALERS
A good stock of new and secondhand equipment always in stock

Don’t get mad if you can’t obtain your copy of Short Wave magazine.
SUBSCRIBE TODAY.
Phone 01202 659930 to place a regular order.

PUBLISHED on the fourth Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Southprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (01202) 623228. Distributed by Seymour, Windsor House, 1270 London Road, Norbury, London SW16 4DH. Tel: 0181-879 8927, Fax: 0181-879 8907, Telex: BH1245. Sole Agents for Australia and New Zealand - Gordon and Gotch (Australasia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £25, EUROPÉ £28, OVERSEAS (by ASIP) £30, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

ATTENTION! All ‘Air Master’ users
Announcing FLIGHT DATABASE 2 for WINDOWS
Partial decoding and analysis of ACARS messages.
Announcing FLIGHT DATABASE 2 for WINDOWS
386PC min, 4mb RAM, Windows 3.11+, £62.95 inc P&P

¿TODAY.
Don’t get mad if you can’t obtain your copy of Short Wave magazine.

SUBSCRIBE TODAY.
Phone 01202 659930 to place a regular order.

SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Southprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (01202) 623228. Distributed by Seymour, Windsor House, 1270 London Road, Norbury, London SW16 4DH. Tel: 0181-879 8927, Fax: 0181-879 8907, Telex: BH1245. Sole Agents for Australia and New Zealand - Gordon and Gotch (Australasia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £25, EUROPÉ £28, OVERSEAS (by ASIP) £30, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

ATTENTION! All ‘Air Master’ users
Announcing FLIGHT DATABASE 2 for WINDOWS
Partial decoding and analysis of ACARS messages.
Announcing FLIGHT DATABASE 2 for WINDOWS
386PC min, 4mb RAM, Windows 3.11+, £62.95 inc P&P

¿TODAY.
Don’t get mad if you can’t obtain your copy of Short Wave magazine.

SUBSCRIBE TODAY.
Phone 01202 659930 to place a regular order.

SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Southprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (01202) 623228. Distributed by Seymour, Windsor House, 1270 London Road, Norbury, London SW16 4DH. Tel: 0181-879 8927, Fax: 0181-879 8907, Telex: BH1245. Sole Agents for Australia and New Zealand - Gordon and Gotch (Australasia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £25, EUROPÉ £28, OVERSEAS (by ASIP) £30, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.

ATTENTION! All ‘Air Master’ users
Announcing FLIGHT DATABASE 2 for WINDOWS
Partial decoding and analysis of ACARS messages.
Announcing FLIGHT DATABASE 2 for WINDOWS
386PC min, 4mb RAM, Windows 3.11+, £62.95 inc P&P

¿TODAY.
Don’t get mad if you can’t obtain your copy of Short Wave magazine.

SUBSCRIBE TODAY.
Phone 01202 659930 to place a regular order.

SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Southprint (Web Offset), Factory Road, Upton Industrial Estate, Poole, Dorset BH16 5SN. Tel: (01202) 623228. Distributed by Seymour, Windsor House, 1270 London Road, Norbury, London SW16 4DH. Tel: 0181-879 8927, Fax: 0181-879 8907, Telex: BH1245. Sole Agents for Australia and New Zealand - Gordon and Gotch (Australasia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £25, EUROPÉ £28, OVERSEAS (by ASIP) £30, payable to SHORT WAVE MAGAZINE, Subscription Department, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. SHORT WAVE MAGAZINE is sold subject to the following conditions, namely that it shall not without the written consent of the publishers first having been given, be lent, re-sold, hired out or otherwise disposed of by way of trade at more than the recommended selling price shown on the cover and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition or in any unauthorised cover by way of Trade, or affixed to or as part of any publication or advertising, literary or pictorial matter whatsoever.
**SUBSCRIPTION RATES**

<table>
<thead>
<tr>
<th></th>
<th>SHORT WAVE MAGAZINE - 6 MONTHS</th>
<th>SHORT WAVE MAGAZINE - 1 YEAR</th>
<th>SPECIAL JOINT SUBSCRIPTION WITH PRACTICAL WIRELESS (1 YEAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>£13.15 (UK)</td>
<td>£25.00 (UK)</td>
<td>£45.00 (UK)</td>
</tr>
<tr>
<td></td>
<td>£16.00 (Europe)</td>
<td>£36.00 (Europe)</td>
<td>£54.00 (Europe)</td>
</tr>
<tr>
<td></td>
<td>£17.00 (Rest of World Airmail)</td>
<td>£32.00 (Rest of World Airmail)</td>
<td>£58.00 (Rest of World Airmail)</td>
</tr>
<tr>
<td></td>
<td>£19.50 (Rest of World Airmail)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please enquire for airmail rates.

Please start my subscription with the .......................issue.

**THREE YEAR SUBS OFFER**

<table>
<thead>
<tr>
<th></th>
<th>£66.00 (UK only)</th>
</tr>
</thead>
</table>

**BINDERS**

- Please send me .... SWM Binder(s)
  - £6.50 each.
- Postal charges: £1 for one, £2 for two or more
  (UK & overseas surface)

**STAR BUY**

- Please send me........copy(ies) of More Out Of Thin Air @ £6.95 inc. P&P (UK).
- Please send me........copy(ies) of More Out Of Thin Air @ £8.95 inc. P&P (overseas).

**PAYMENT DETAILS**

Name ..........................................................
Address ..................................................................
Telephone No. ....................................................
Postcode ..........................................................

I enclose cheque/PO (Payable to PW Publishing Ltd.) £
Or,
Charge to my Access/Visa Card the amount of £

Card No. ..................................................................
Valid from .........................................................
Signature .........................................................
Tel: ........................................................................

Orders are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. Please note: all payments must be made in Sterling.

**NEW FASTER NEXT DAY SERVICE (UK)**

(For orders received before noon) £4.00

**GRAND TOTAL**

£

---

**More Out Of Thin Air** is a compendium of antenna theory, design and construction that no antenna enthusiast should be without! Contained within its 112 pages you'll find articles on the theory behind all types of antenna, for all frequencies, together with constructional features to aid you in building your own h.f., v.h.f. and u.h.f. antennas.

The popular designs from the late Fred Judd G2BCX such as the Slim Jim and ZL Special are featured, as are articles on Antenna Ideas for Novice, Antenna Data and many more. If you enjoy designing, building and experimenting with antennas, then More Out Of Thin Air is an essential book for your book shelf.

Copies of More Out Of Thin Air are available from the SWM Book Service for just £6.95 including P&P (UK only), overseas readers please add £2 P&P. And at that price wouldn't it make an ideal Christmas present for a fellow antenna enthusiast?

To order your copy of this essential antenna book please use the order form above or call the Credit Card Hotline on (01202) 659930 and quote SWM12.

Offer open until 31 December 1996.
LISTENING GUIDES

AIRBAND
AIR TO GROUND RADIO FREQUENCIES Ron Davies 96 pages £4.99
AIRWAYS 96 108 pages £8.95
CALLSIGN 96 144 pages £8.95
INTERNATIONAL AIR BAND RADIO HANDBOOK David J. Smith 102 pages £8.99
THE AIRBAND JARGON BOOK Ron Swinburne 72 pages £5.95
THE POCKET UK AIRBAND FREQUENCY GUIDE Ron Swinburne 6 pages £4.95
WORLDWIDE AERONAUTICAL COMMUNICATIONS FREQUENCY DIRECTORY 2nd Edition. John Breeds 180 pages £15.95
WORLDWIDE AERONAUTICAL HF RADIO HANDBOOK. Mervyn R. Cooke 125 pages £6.95

BROADCAST
A GUIDE TO THE WORLD’S RADIO STATIONS BP55. Peter Short 266 pages £4.95
GLOBAL RADIO GUIDE 1996: The Association of International Broadcasting. 38 pages £4.95
RADIO LISTENERS GUIDE 1997. Clive Woodcock 81 pages £4.95

DATAMODES
FAX & RTTY WEATHER REPORTS. Philip Mitchell 62 pages £4.25
GUIDE TO UTILITIES STATIONS. 1st Edition. Jorg Klingerfus 60 pages £4.95
GUIDE TO WORLDWIDE WEATHER SERVICES. 10th Edition. Jorg Klingerfus 436 pages £24.95
WEATHER REPORTS FROM RADIO SOURCES. Philip Mitchell 52 pages £4.95
PREFERRED GUIDES TO RTTY AND FAX STATIONS. Bill Laver 7 pages £4.95
INTERCEPTION NUMBERS STATION. Langesleyreve 56 pages £3.95

DXTV
DXTV FOR BEGINNERS. Simon Hunter 31 pages £3.95
GUIDE TO DXTV. Keith Hunter & Gary Smith 30 pages £3.95
THE ATV COMPENDIUM. Mike Wooding G6IQM 104 pages £4.95

FREQUENCY GUIDES
1996 SUPER FREQUENCY LIST. Jorg Klingerfus 425 pages £4.95
HERBELL’S CONFIDENTIAL FREQUENCY LISTINGS 9th Edition. 856 pages £17.95
PASSPORT TO WORLD BAND RADIO 1997 338 pages £13.95
UK SCANNING DIRECTORY 5th Edition. 540 pages £15.95
VHF-CH/CH SCANNING FREQUENCY GUIDE. Bill Laver 512 pages £12.95
WINNING REPORTS FROM RADIO SOURCES. Philip Mitchell 32 pages £6.95
WORLD RADIO TV HANDBOOK 1997 608 pages £17.95

GENERAL
EARESPOTTING ON THE BRITISH MILITARY. Michael Carson 47 pages £4.95
THE COMPLETE SHORT WAVE LISTENER’S HANDBOOK 4th Edition. Han Bennett, Harry Holmes & David Hardy 521 pages £18.95
SHORT WAVE COMMUNICATIONS. Peter House GUIDED 18 pages £4.90

MARINE
MARINE SSB OPERATION. J. Michael Gale 96 pages £4.95
SCANNING FOR THE MARINE BANDS: F.F. O’Brian 80 pages £4.90
SCANNING THE MARINE BANDS. F.F. O’Brian 152 pages £4.90
SHORTWAVE MARITIME COMMUNICATIONS. B. E. Richardson 195 pages £11.90
SHIP TO SHORE RADIO FREQUENCIES Ken Davies 95 pages £5.95
SIMPLE GPS NAVIGATION. Mike Chinery 50 pages £9.95

SATELLITE
AN INTRODUCTION TO AMATEUR COMMUNICATIONS SATELLITES: BP290. A. Pickard 102 pages £5.95
AN INTRODUCTION TO SATELLITE COMMUNICATIONS: BP226. F.R. A. Wilson 230 pages £4.95
ARRL SATELLITE ANTHOLOGY 4th Edition. 150 pages £8.95
NEWYES GUIDES TO SATELLITE TV. Derek Stephenson 77 pages £4.95
SATELLITE EXPERIMENTER’S HANDBOOK 2nd Edition. Martin Davidoff K2ULC 513 pages £4.95

AMATEUR RADIO
ANTENNAS & TRANSMISSION LINES
25 SIMPLE AMATEUR BANDS TP125. E. M. Yoll 63 pages £4.95
25 SIMPLE INDOOR AND WINDOW AERIALS TP136. E. M. Yoll 30 pages £4.95
25 SIMPLE SHORTWAVE BAND BANDS TP132. E. M. Yoll 63 pages £4.95
25 SIMPLE TROPICAL AND MW BAND AERIALS TP145. E. M. Yoll 51 pages £4.95
ALL ABOUT LARGE ANTENNAS TP142. W. & S. D. Cowan W2LX 192 pages £8.95
ANTENNAS & TECHNIQUES FOR LOW BAND ILLUX ORR. 651 pages £14.95
ANTENNA IMPEDANCE MATCHING CARROLL. J. W. Kerr 175 pages £4.95
ANTENNAS FOR VHIF AND UHF TP301. J. D. Poole 104 pages £4.95
ARRL ANTENNA BOOK 17th Edition. 72 pages £2.95
ARRL ANTENNA COMPENDIUM Volume One. 75 pages £4.95
ARRL ANTENNA COMPENDIUM Volume Two. 170 pages £4.95
ARRL ANTENNA COMPENDIUM Volume Three. Edited by Jerry Hall K4TD 268 pages £12.95
ARRL ANTENNA COMPENDIUM Volume Four. 201 pages £14.95
BUILD YOUR OWN SHORTWAVE ANTENNAS 2nd Edition. Andrew Voder 288 pages £14.95
CUBICAL QUAD ANTENNAS 3rd Edition. William Orr K6SAI 196 pages £8.95
EXPERIMENTAL ANTENNAS TP278. H. C. Wright 70 pages £4.95
G-CHAPLAIN ANTENNA HANDBOOK. Compiled and edited by P. Linzer G3GEP & R. Richardson K6PBG 355 pages £4.95
HF ANTENNA COLLECTION (ARRL). Ed Jones G3RIP 270 pages £14.95
HF ANTENNAS FOR ALL LOCATIONS (ARRL). Les Moxon G6XN 324 pages £6.95
MORE OUT OF THIN AIR (ARRL). Erwin David G4LQI 112 pages £4.95
PRACTICAL ANTENNAS FOR NOVICES. John Heys G3BDQ 75 pages £4.95
SIMPLE SHORT WAVE BROADCAST BAND ANTENNAS TP132. E. M. Noll 288 pages £4.95
SATELLITE TRUMPET ANTENNAS (ARRL). John Wise G3QIP 106 pages £4.95
SIMPLE, LOW-COST WIRE ANTENNAS FOR RADIO AMATEURS. W. J. Lin Victoria D. Cowan W2LX 192 pages £6.95
WEATHER REPORTS FROM RADIO SOURCES. Philip C. Mitchell 80 pages £4.95

BEGINNERS (Inc. RAe)
AMATEUR RADIO FOR BEGINNERS (RSGB). Victor Brand G3JNB 65 pages £4.95
AN INTRODUCTION TO AMATEUR RADIO TP257. J. D. Poole 150 pages £4.95
AN INTRODUCTION TO THE ELECTROMAGNETIC WAVE TP135. F. A. Wilson 122 pages £4.95
THE NOVICE RADIO AMATEUR HANDBOOK (ARRL). Doug DeMaw W1FB 208 pages £8.95
HOW TO PASS THE RADIO AMATEURS’ EXAMINATION (RSGB). Michael R. Collins G3BHR 208 pages £8.95
THE NOVICE LICENCE STUDENT’S HANDBOOK. John Case GW4HWR 208 pages £8.95
END BELLS & RINGS (ARRL). Doug DeMaw W1FB 208 pages £8.95
SATELLITE COMMUNICATIONS OPTIMIZED (ARRL). John Gifford K6GZ 208 pages £8.95
THE NOVICE RADIO AMATEUR HANDBOOK (ARRL). Doug DeMaw W1FB 208 pages £8.95

SHORT WAVE MAGAZINE, December 1996
TRAINING FOR THE NOVICE LICENCE A MANUAL FOR THE INSTRUCTOR (RSGB)
(John Case GW1VHP) .................................................. 101 pages. £6.75
WIFI'S HELP FOR NEW HAMS (ARRL)
Doug DeMaw W1FB .................................................. 171 pages. £6.95

CALLBOOKS
AMATEUR RADIO CALL BOOK AND INFORMATION DIRECTORY (RSGB)
1997 edition .......................................................... 520 pages. £13.90

COMPUTING
ACCESS 95 ONE STEP AT A TIME BP48 .................................. 115 pages. £4.99
AN INTRODUCTION TO COMPUTER COMMUNICATIONS BP177
R. A. Penfold .......................................................... 2 pages. £3.95
HOW TO EXPAND, MODERNISE AND REPAIR PCs AND COMPATIBLES BP271
R. A. Penfold .......................................................... 166 pages. £6.95
INTERFACING PCs AND COMPATIBLES BP272, R. A. Penfold ........................................ 86 pages. £4.95
MS-OFFICE ONE STEP AT A TIME (BP402) ........................................ 86 pages. £4.95
MS WORD 95 EXPLAINED BP406 ........................................ 75 pages. £4.95
MS WORKS FOR WINDOWS EXPLAINED BP405 ........................................ 75 pages. £4.95
NEWNES ENGINEER'S COMPUTER POCKET BOOK Third Edition
Michael Tooley .......................................................... 216 pages. £12.95
PCs MADE EASY, Second Edition, James Turner .................................................. 38 pages. £5.95
THE INTERNET AND WORLD WIDE WEB EXPLAINED, J. Shelley .................................................. 150 pages. £6.95
WINDOWS 95 EXPLAINED (BP400) ........................................ 173 pages. £5.95

EMC
INTERFERENCE HANDBOOK, Wilhm R. Nelson W6QG .................................................. 150 pages. £9.90
THE RADIO AMATEUR'S GUIDE TO EMC (RSGB), R. A. Page Jones G3JW1 .................................................. 117 pages. £6.95

HISTORICAL
PANS OFFICIAL SHORT WAVE RADIO MANUAL
Edited by Hugo Grenfell .................................................. 250 pages. £11.85
EXPERIMENTAL TELEVISION (1932) .................................................. 342 pages. £11.75
SECRETS OF HOMEBUILT REGENERATIVE RECEIVERS (Rockey) .................................................. 127 pages. £7.95
THOSE GREAT OLD HANDBOOK RECEIVERS (1929 + 1934) .................................................. 94 pages. £6.95
THE BRIGHT SPARKS OF WIRELESS (RSGB), G. R. Jessop G6JOL .................................................. £5.45
VISION BY RADIO (1925) (Glasgow) .................................................. 140 pages. £4.95

MAPS AND LOG BOOKS
AMATEUR RADIO LOG BOOK (RSGB) .................................................. £5.95
NORTH ATLANTIC ROUTE CHART .................................................. £45.00
WEST EUR ROUTE MAP .................................................. £38.00
AMATEUR RADIO MAPS OF THE WORLD .................................................. £38.00
RECEIVING STATION LOG BOOK (RSGB) .................................................. £5.95

MICROWAVES
AN INTRODUCTION TO MICROWAVES (BP152), F. A. Wilson .................................................. 154 pages. £4.95
ARRL MICROWAVE EXPERIMENTS MANUAL Various Authors .................................................. +10 pages. £4.15
ARRL MICROWAVE PROJECT MANUAL .................................................. £3.95

OPERATING AND HANDBOOKS
AMATEUR RADIO OPERATING MANUAL, R. A. Wilson, W6CQ .................................................. £4.35
ARRL HANDBOOK FOR RADIO AMATEURS 1997 (ARRL) .................................................. £2.95
COMPLETE DXER Bob cocher .................................................. 206 pages. £6.95
HINTS AND KINKS FOR THE RADIO AMATEUR
Edited by Charles L. Hutchinson and David N. Newcomb .................................................. 129 pages. £6.95
AMATEUR RADIO COMMUNICATION HANDBOOK (RSGB)
6th Edition, Dick Redfield G6FTQ .................................................. £7.95
SETTING UP AN AMATEUR RADIO STATION BP300, L. D. Poole .................................................. £6.95

PACKET
PRACTICAL GUIDE TO PACKET OPERATION IN THE UK
Mike Mansfield G6AWD .................................................. 312 pages. £11.75
PACKET RADIO PRIMER (RSGB), Dave Coleman GW9BP & Martin Curf GW9YU .................................................. 266 pages. £8.95
PACKET SPEED, MORE SPEED AND APPLICATIONS (ARRL) .................................................. £1.95
YOUR GATEWAY TO PACKET RADIO, Stan Harris WA2LCS .................................................. £7.95
YOUR PACKET COMPANION, Some Rand V8BWSF .................................................. £175 pages. £4.95

PROPAGATION
AN INTRODUCTION TO RADIO WAVE PROPAGATION BP255, J. G. Lee .................................................. 116 pages. £6.95
LOW PROFILE AMATEUR RADIO - OPERATING A HAM STATION FROM ALMOST ANYWHERE (ARRL), Jim Keenan KB3JS .................................................. 131 pages. £4.95

QRP
QRP CLUB CIRCUIT HANDBOOK
Edited by Rev. G. Dobbs G8JWV .................................................. 96 pages. £2.00
QRP CLASSICS (ARRL) Edited by Bob Schiegen .................................................. £7.45
W1FB'S QRP NOTEBOOK (ARRL) 2nd Edition, Doug DeMaw W1FB .................................................. £175 pages. £7.45

TEST EQUIPMENT
GETTING THE MOST FROM YOUR MULTIMETER BP259, R. A. Penfold .................................................. £112 pages. £4.95
HANDY GUIDE TO OSCILLOSCOPES, Barry Emsley, W3AQR .................................................. £225 pages. £4.95
HOW TO USE OSCILLOSCOPES & OTHER TEST EQUIPMENT BP267, R. A. Penfold .................................................. £108 pages. £6.95

ORDER NOW ON (01202) 659930 OR PLEASE USE THE ORDER FORM ON PAGE 79.

Short Wave Magazine, December 1996
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 authoritative 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 MWOAJH, MIAVK and 2E0A0X 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 entries. 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.
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 available for £25.


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 I. 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.


Please use the Order Form on page 79.

ORDER NOW
Save £2 on normal retail price
Listen... as history unfolds.

Unparalleled news and perspectives, plus every sort of music and diversion: That's world band radio, from as many as 165 countries.

**Passport to World Band Radio** is jammed with just what you need to eavesdrop on this world: Best and worst radios (**Passport Reports**), Station and Internet addresses and giveaways (**Addresses PLUS**), Schedules, too – the way you want them. What shows are on, hour by hour (What’s on Tonight)... country by country (Worldwide Broadcasts in English and Voices from Home)... frequency by frequency (the renowned Blue Pages).

With **Passport**, you’ll have the world at your fingertips.

**Passport to World Band Radio**
The must-have guide to your must-hear world.


Available from dealers and bookstores throughout the United States, Canada and the United Kingdom, or write:

IBS, Box 300, Penn’s Park, PA 18943 USA

http://www.passport.com/

“*This is the user-friendly book about shortwave radio...very authoritative... very thorough.*”

BBC World Service

“*The best. Comparative ratings tell you what’s good about the good, bad about the bad, and advertisers be damned.*”

Outside Magazine

“The bible among shortwaves.”

Forbes
This latest handheld receiver from ICOM covers 0.5MHz–1300MHz in all-modes (including CW capability).

The IC-R10 is the first handheld in the world to boast a real-time bandscope function! This makes it easy to find busy frequencies and observe the receiving frequency band conditions, also, the passband width of the scope is selectable. Voice-scan function (VSC) pauses scan, only when modulated signals are received.

Other functions and features include; bank and memory functions plus new SIGNAVI function. This is an additional feature to speed up scanning that adds to the already impressive range of scan modes available in this power-packed ICOM handheld. We know the IC-R10 has appeal so why not take one out, and see for yourself just how appealing this little handful can be!

WANT TO KNOW MORE?
CONTACT YOUR LOCAL DEALER TODAY!

ICOM... manufacturers of top performing base-stations, mobiles, handheld transceivers and receivers.

ICom (UK) Ltd. Sea Street Herne Bay Kent CT6 8LD. Telephone: 01227 741741. Fax: 01227 741742.
INTERNET: http://www.icomuk.co.uk/ E-MAIL: icomsales@icomuk.co.uk.

Count on us!
The Lowe receiver range

- **HF-150**
  Your first 'real' receiver
- **HF-150M**
  Marine version of the HF150
- **SP-150**
  Matching speaker/filter for the HF150
- **PR-150**
  RF preselector for the HF150
- **RK-150**
  Stack and rack system
- **HF-225**
  Higher specification h.f. receiver
- **HF-225E**
  Super high performance model
- **HF-250E**
  New top line receiver

Manufactured by:
Lowe Electronics,
Chesterfield Road,
Matlock, Derbyshire, DE4 5LE, UK