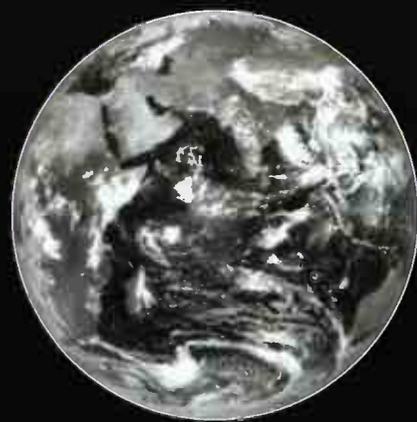


# The SHORT WAVE Magazine SWW

## METSAT



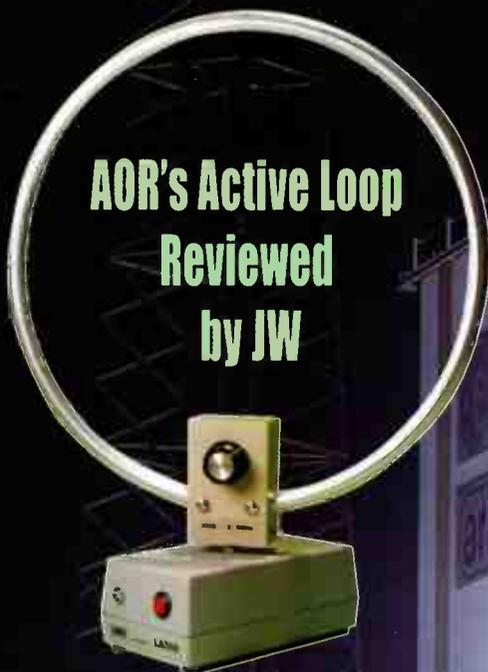
### The First Image

## & Scanning Scene

### MSG-1 - Orbits

## WXSAT SPECIAL

### Plus UK Radio Clubs Listed!



AOR's Active Loop  
Reviewed  
by JW



November 2002  
£3.25



9 770037 426074

the POWER to perform

# ALINCO

wideband scanning receivers



## DJ-X10E

ADVANCED FEATURED SCANNING RECEIVER

- Receives: 100kHz - 2000MHz
- Multi mode reception AM - WFM - NFM - SSB - CW
- 1200 memory channels
- Channel scope spectrum analyser that allows monitoring of 40 channels
- Advanced scanning features:
  - Programmed scan (up to 10 groups)
  - Programmed memory scan
  - Any memory scan
  - Mode scan (not found on many scanners!)
  - VFO search
  - Dual VFO search
  - Band excursion scan
  - Priority scan
  - Any channel ship scan
- Battery save facility
- Facilities for cloning another set
- Built-in 24 hour clock
- Switchable attenuator

£299.95

## DJ-X2000

THE 'INTELLIGENT' SCANNING RECEIVER

- Covers 100kHz - 2,149.99MHz
- 2000 channel memory
- Modes: AM/NFM/WFM/LSB/USB/CW auto mode position
- 'Flashtune' reads the frequency of a nearby transmitter and instantly takes your receiver to it
- Transweeper - Instantly locates hidden transmitters that may be used for eavesdropping
- Record - Up to 160 seconds with the digital memory of audio direct from the receiver or voice via the built in microphone
- Descrambler
- Channel scope
- Bug detector
- CTCSS decoder built in
- CTCSS - Search facility
- Frequency counter
- Field strength meter
- S Meter
- FM Stereo receive
- Two level attenuator
- PC programmable
- 24 hour timer

£499

Includes FREE:

- Multi voltage 110V to 240VAC mains charger for easy use anywhere in the world
- 4.8V DC 700mAH NiCad battery pack
- Belt clip • Carrying strap
- Flexible low profile antenna

ALINCO products are available from our dealers throughout the UK or direct



## DJ-X2

THE ULTIMATE LIGHTWEIGHT SCANNER

New micro-sized scanner from Alinco. If you are looking for a scanner that goes anywhere. Fits in your shirt pocket, or handbag so you can take it to the air show, boat show, on holiday in fact just about anywhere you like, then the DJ-X2 has got to be the radio to have. Easy to operate but with enough power for the more demanding user.

- Receives: 522kHz - 999.995MHz
- AM WFM NFM
- Selectable scan modes
- 700 memories
- Audio descrambler
- Bug detector - detects presence and frequency of bug giving audible warning
- Selectable internal / external antenna
- Internal or external supply
- Program Search banks
- Illuminated backlight display
- 2 performance mode, easy and expert
- RX attenuator
- Auto power off mode
- Priority channel monitoring
- Squelch control
- Volume control

£169.95

## DJ-X3

ULTRA MODERN SCANNING RECEIVER

- 100kHz - 1300MHz
- AM/FM/WFM
- 700 memory channels
- Steps: 5/6.5/8.33/10/12.5/15/20/25/30/50/100kHz
- Auto descrambler
- Bug detector
- Stereo FM (with headphones)
- Attenuator
- SMA Antenna
- Battery saver cct
- Size: 56w x 102h x 23d mm
- Weight: 14.5g (without batteries)
- Supplied c/w: 3 AA dry cell battery case carrying strap

£129.95

Optional extras

- Lithium ion battery pack
- Ni-Mh battery pack
- Drop in mains charger
- Earphone



NEVADA

available from our dealers throughout the UK or direct

RETAIL ENQUIRIES: 023 9231 3090 DEALER ENQUIRIES: 023 9231 3095

Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT • website: www.nevada.co.uk

NEVADA - Official UK Distributors of Alinco

World Radio History

**NEW EUROPEAN VERSION**



**UBC 780XLT**

The NEW BC 780XLT offers almost continuous band coverage from 25 - 1300 MHz. It's Bearcats most comprehensive "feature packed" model including Trunktracking, a 2 line display, full backlit controls, SmartScanner, PC Control cloning, CTCSS/DCS, record and attenuate. This model is a "must have" for the enthusiasts!

- Frequency: 25 - 1300 MHz (with gaps)
- 500 channels
- Modes: AM, FM, WFM
- Steps: 5/7.5/10/12.5/20/25/50/100Hz
- Trunktracker - includes Motorola/EDACS/LTR VHF/ 400 / 500 / 800/ 900
- 2 line alpha display
- Smartscanner™ interface
- Alpha tagging
- Auto store
- PC control
- Control channel only mode
- Full frequency display and backlit controls
- Clone feature
- CTCSS/ DCS
- Beep alert
- Record functions
- VFO control
- Power: 12 Volts,
- Supplied C/W: UK Mains Adaptor, Telescopic antenna, Mobile antenna, Car Cigar adaptor, mounting bracket

**£349.00**  
Bearcat Scanners

**UBC 278CLT**

**NEW BASE SCANNER WITH MW/FM RADIO & ALARM CLOCK**

A stylish base Scanner that can sit by the bedside and double as an Alarm clock radio - keep the wife happy!

- Freq: 25 to 956 MHz (with gaps)
- VHF Radio : 88 to 108 MHz
- 100 Memories
- 20 Radio Presets
- Full frequency LCD readout

**NEW!**



- Fully Programmable
- Channel Lockout
- Priority Channel
- Scan Delay
- Alarm Clock

**£159.00**  
Bearcat Scanners

**UBC 280XLT**

**SPORTCAT TWIN TURBO HANDHELD**

Get inside the action with this NEW smaller and easier to programme Handheld. Jump from car to car at a race meeting, hear the cockpit action at an air show, or use the Sportscat as a traditional scanner

- Triple conversion Receiver
- 25 - 956 MHz (with gaps)
- 200 memories
- CTCSS/DCS Tone Search facility
- CTCSS/DCS receive
- Alpha-numeric display
- Turbo search 300 steps /sec
- Turbo Scan 100 ch/sec
- Supplied c/w Antenna, Earphone, Belt Clip, Nicad battery, 240V UK Mains adaptor

**£179.95**  
Bearcat Scanners

**NEW!**



**UBC 9000xt**

- 25 - 1300 MHz (with gaps)
- 500 memory channels
- VFO Control
- Selectable Attenuator
- Selectable Delay
- Selectable Mode AM/WFM/NFM
- TURBO SCAN 100 Ch/Sec
- TURBO SEARCH 300 St/Second
- Alpha Numeric Display
- Automatic Store • Frequency Transfer
- Auto Tape Record • Data Skip facility
- Programmable Search



**£269.00**  
Bearcat Scanners

**Bearcat Scanners**

**UBC 60xt-2**

**A BRAND NEW LOW COST SCANNER THAT COVERS MARINE, LAND MOBILE AND MORE!**

- 66 - 512 MHz (with gaps)
- 80 memories
- Channel or Freq display
- Priority Channel
- Channel Lockout
- Scan Delay

**NEW UPGRADED MODEL**  
Now with 80 memories for the same price!

**£79.95**  
Bearcat Scanners

**UBC 120xt**

- 66 - 512 MHz (with gaps)
- AM/FM/WFM
- 100 memory channels
- TURBO SCAN 100 Channel/Second
- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Programmable Search
- Channel Lockout Key

**£129.95**  
Bearcat Scanners

**UBC 220xt**

- 66 - 956 MHz (with gaps)
- AM/FM
- 200 memories
- TURBO SCAN 100 Ch/Second
- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Memory Backup
- Supplied c/w earphone, belt clip, charger and rubber duck antenna

**£149.95**  
Bearcat Scanners

**UBC 3000xt**

- 25-550, 760-1300 MHz
- AM/FM/WFM
- 400 memory ch
- TURBO SCAN 100 Channels/Second
- TURBO SEARCH 300 St/Second
- Automatic Freq Storage
- Selectable Attenuator
- Automatic Freq Sorting
- Data Skip
- Delay Key
- Channel Count Key
- Supplied complete with earphone, case, belt clip, charger and rubber duck antenna

**£199.95**  
Bearcat Scanners



available from our dealers throughout the UK or direct  
RETAIL ENQUIRIES: 023 9231 3090 DEALER ENQUIRIES: 023 9231 3095

Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT • website: www.nevada.co.uk

NEVADA - Official UK Distributors of Uniden Bearcat  
World Radio History

# contents

## November 2002

- Vol. 60 Issue 11 November 2002 ISSN 0037-4261
- ON SALE October 24
- December issue on sale NOVEMBER 28

### Editor:

Kevin Nice, G7TZC, M3SWM, BRS95787

### News & Production Editor:

Zoë Shortland

### Art:

Steve Hunt & Bob Kemp

### Editorial Address:

Short Wave Magazine  
PW Publishing Ltd., Arrowsmith Court,  
Station Approach, Broadstone,  
Dorset BH18 8PW  
Telephone: (01202) 659910 Fax: (01202) 659950

If you wish to send E-mail to anyone at SWM then our Internet domain name is: [pwpublishing.ltd.uk](mailto:pwpublishing.ltd.uk)  
Simply add the name of the person you wish to contact.  
For example: [kevin.nice@pwpublishing.ltd.uk](mailto:kevin.nice@pwpublishing.ltd.uk)  
Web site: [www.pwpublishing.ltd.uk/swm](http://www.pwpublishing.ltd.uk/swm)

### Books, Back Issues & Subs (all orders):

(01202) 659930 (Out-of-hours service by answering machine)

### Finance/Accounts

Alan Burgess, Finance/Office Manager  
Telephone: (01202) 659940 Fax: (01202) 659950

### Advertising Dept.

Eileen Saunders  
Telephone: (01202) 659920 Fax: (01202) 659950

### Advertising Typesetting & Production:

Peter Eldrett  
Telephone: (01202) 659920 Fax: (01202) 659950

### Advertisement Manager:

Roger Hall G4TNT  
PO Box 948, London SW6 2DS  
Telephone: 020-7731 6222 (Mobile: 07885 851385)  
Facsimile: 020-7384 1031

## Broadcast

- 11 LM&S  
15 Bandscan America

## Features

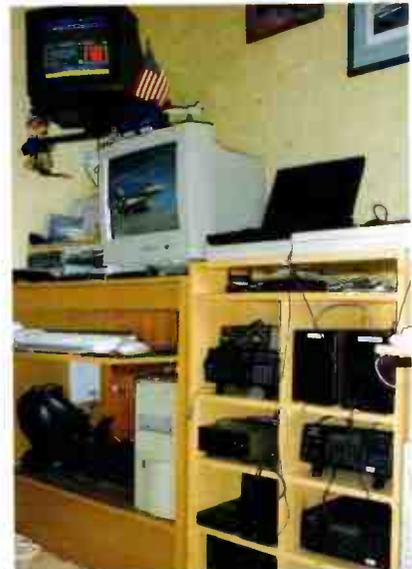
- 29 **The Other Man's Shack**  
The bank of the River Clyde provides the location for this month's remote radio room, that of Dougie Coull.

- 30 **The AOR LA-350 Loop Antenna**

More loops from John Wilson. This month it's the turn of AOR's mini LA-350, which can be happily located and rotated in the shack.

- 38 **Roberts Radio 70th Anniversary**

Kevin Nice G7TZC/M3SWM looks back at Britain's oldest domestic radio company's history over the past 70 years.



cover subject:  
**MSG-1 - the launch!**  
Image copyright  
**EUMETSAT.**

**Amateur Bands**  
Clive Hardy G4SLU,  
c/o SWM Editorial Offices  
E-mail: [clive@pwpublishing.ltd.uk](mailto:clive@pwpublishing.ltd.uk)

**Attention 123!**  
Enigma, 17-21 Chapel Street,  
Bradford, West Yorkshire BD1 5DT.  
E-mail: [enigma@pwpublishing.ltd.uk](mailto:enigma@pwpublishing.ltd.uk)

**Bandscan**  
**Bandscan America**  
Gerry Dexter,  
c/o SWM Editorial Offices.  
E-mail: [gdxeter@pwpublishing.ltd.uk](mailto:gdxeter@pwpublishing.ltd.uk)

**Bandscan Australia**  
Greg Baker, PO Box 3307, Manuka,  
ACT2603, Australia. E-mail:  
[greg.baker@pwpublishing.ltd.uk](mailto:greg.baker@pwpublishing.ltd.uk)

**Bandscan Europe**  
Martin Peters, c/o SWM Editorial  
Offices. E-mail:  
[martin.peters@pwpublishing.ltd.uk](mailto:martin.peters@pwpublishing.ltd.uk)

**Decode**  
Mike Richards G4WNC,  
349 Cloughs Road,  
Ringwood,  
Hampshire BH24 1UU. E-mail:  
[decode@pwpublishing.ltd.uk](mailto:decode@pwpublishing.ltd.uk)

**DXTV**  
Keith Hamer and Garry Smith,  
17 Collingham Gardens,  
Derby DE2 4FS  
E-mail: [keith@test-cards.fsnet.co.uk](mailto:keith@test-cards.fsnet.co.uk)

**Info In Orbit**  
Lawrence Harris,  
55 Richville Road,  
Shirley,  
Southampton SO16 4GH.  
E-mail: [info.orbit@pwpublishing.ltd.uk](mailto:info.orbit@pwpublishing.ltd.uk)

**LM&S and  
Maritime Beacons**  
Brian Oddy G3FEX,  
Three Corners,  
Merryfield Way, Storrington,  
West Sussex RH20 4NS.

**Off The Record**  
Andy Cadier,  
28 Romney Avenue,  
Folkstone, Kent CT20 3QJ  
E-mail:  
[off.therecord@pwpublishing.ltd.uk](mailto:off.therecord@pwpublishing.ltd.uk)

**Propagation**  
Jacques d'Avignon VE3VIA  
E-mail:  
[jacques@pwpublishing.ltd.uk](mailto:jacques@pwpublishing.ltd.uk)

**Satellite TV News**  
Roger Bunney,  
35 Grayling Mead,  
Fishlake,  
Romsey,  
Hampshire  
SO51 7RU.  
E-mail:  
[roger.bunney@pwpublishing.ltd.uk](mailto:roger.bunney@pwpublishing.ltd.uk)

**Scanning**  
Dave Roberts,  
c/o SWM Editorial Offices.  
E-mail:  
[scanning@pwpublishing.ltd.uk](mailto:scanning@pwpublishing.ltd.uk)

**ShackWare**  
Jerry Glenwright,  
56 Denbigh Road, Norwich,  
NR2 3HH.  
E-mail: [shackware@pwpublishing.ltd.uk](mailto:shackware@pwpublishing.ltd.uk)

**Sky High**  
Peter Bond,  
c/o SWM Editorial Offices.  
E-mail: [skyhigh@pwpublishing.ltd.uk](mailto:skyhigh@pwpublishing.ltd.uk)

**SSB Utilities**  
Graham Tanner,  
64 Attlee Road, Hayes,  
Middlesex UB4 9JE.  
E-mail: [ssb.utilis@pwpublishing.ltd.uk](mailto:ssb.utilis@pwpublishing.ltd.uk)

**SWM Author Info**

# Info in Orbit

# Special

- 16 Weather Satellites - An Introduction to the 'WXSAT Special'**  
Lawrence Harris with some good reasons why you should take up the hobby of weather satellite monitoring.
- 23 METEOSAT Second Generation WXSAT in Orbit**  
Lawrence takes a brief look at Europe's brand new WXSAT.
- 25 Weather Satellite Software Guide**  
A trip around David Taylor's website next, where Lawrence reports on the many programs freely available for the WXSAT enthusiast.



## TURN TO PAGE 60 NOW FOR OUR NEW SWM UK RADIO CLUB LISTING!

## Regular Columns

Amateur Bands	49	Info In Orbit	54	Scanning	41
Bandscan America	15	LM&S	11	ShackWare	58
Book Store Catalogue	66	Order Form	70	Sky High	39
Communiqué	7	Propagation Extra	47	SSB Utilities	57
Decode	43	Propagation Forecast	46	Trading Post	69
DXTV	53	Rallies	9		
Editorial	6	Satellite TV News	51		

## Coming Next Month

*in SWM Nov 2002*

- **Satellite TV News Special by Roger Bunney**
- **John Wilson looks back over the year and answers a few issues raised**
- **Trunked Radio in Depth.**
- **and much more...**

\* contents subject to change

Check out the SWM web site  
[www.pwpublishing.ltd.uk/swm](http://www.pwpublishing.ltd.uk/swm)  
 Join the SWM Readers' E-mail Forum - send an E-mail to  
[swm\\_readers-subscribe@yahoo.com](mailto:swm_readers-subscribe@yahoo.com) to subscribe -  
 don't miss the on-line action!

Share your thoughts

© PW PUBLISHING LTD. 2002. 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 £36 (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 or otherwise of items offered for sale by advertisers in this magazine.



## SWM Services

### Subscriptions

Subscriptions are available at £36 per annum to UK addresses, £43 in Europe and £48 (Airsaver), £54 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £60 (UK) £73 (Europe) and £81 (rest of world), £93 (airmail).

### Components For SWM Projects

In general all components used in constructing SWM projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article. The printed circuit boards for SWM projects are available from the SWM PCB Service, **KANGA PRODUCTS, Sandford Works, Cobden Street, Long Eaton, Nottingham NG10 1BL. Tel: 0115 - 967 0918. Fax: 0870 - 056 8608.**

### Photocopies & Back Issues

We have a selection of back issues, covering the past three years of SWM. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for SWM are £3.25 each and photocopies are £3.25 per article. Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

A complete review listing for SWM/PW is also available from the Editorial Offices for £1 inc P&P.

### Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: **PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone (01202) 659930. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone (01202) 659950. The E-mail address is [bookstore@pwpublishing.ltd.uk](mailto:bookstore@pwpublishing.ltd.uk)

### Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by SWM, then please write to the Editorial Offices, we will do our best to help and reply by mail.

# ED'S



## Comments

Earlier this year I was exclaiming the virtues of the recently introduced Radio Amateur Foundation Licence. I also mentioned that SSL were struggling to keep up with issuing new licences to those who had successfully completed the course. Well, now I have some more positive news. The 5000th Foundation Licence has been issued! Not bad going in less than a year. I think it's fair to say that the Foundation Licence has proved to be a success. It has certainly boosted both the number of amateur callsigns issued and certainly the number actually active. Well done all those involved.

### Clubs

In the October issue of SWM, I mentioned that we were planning this month to feature a listing of UK radio clubs. I thought this worthwhile due to the lack of a regular guide of this type featuring anywhere else and the resultant level of reader enquiries as to details of the nearest club to the home. Our design chaps have managed the impossible and fitted the entire compliment of UK clubs (those we are aware of) into three pages. You can find the directory on page 60 of this issue. If your club hasn't been included, or there are missing or out-of-date details listed, then please let me know so that we can ensure this valuable resource is kept as current as possible.

### Decode Frequency List

I had a letter from a reader whose sight is not quite 20:20 - I know what he means! - wondering if I could supply him with a copy of the 'Day Watson - Complex Frequency List' that was featured in the September **Decode Special** issue of SWM. After a little consideration, I decided that we should include this listing on the SWM website so that everyone can benefit. If you would like to read the Decode list on line, you can find it at [www.pwpublishing.ltd.uk/swm/decode/](http://www.pwpublishing.ltd.uk/swm/decode/) I hope that this extra service is of use - please let me know what you think.

### Readers Queries

We're a little strapped for pages this month and therefore the letters page is missing. Instead I'll answer some queries here. Firstly an answer. RC Fleet who last month asked if anyone could furnish him with information regarding a Jaybeam Antenna type 7035. Mr Fleet had been incorrectly informed that Jaybeam had ceased manufacturing in the 1980s. Setting the story straight, was a letter from MJ Wilkins, Managing Director of Jaybeam of

Wellingborough. It was a sell-off of the domestic television antenna business to Blake Aerials in Sheffield that occurred in the 1980s. Jaybeam Ltd. continue to trade, concentrating on their core business of professional communications antennas. Together with their French sister company MAT Equipment, they form the communications branch of the FHB Group. Their website is located at [www.jaybeam.co.uk](http://www.jaybeam.co.uk) and can be contacted by 'phone on: (01933) 408408. Jaybeam tell me that the type 7035 antenna is a 3-element end-fed Yagi which was supplied to the MOD, Home Office and other OEMs in the UK and Europe.

I received this query in an E-mail from Frank Collins MORPM who comments that he's enjoyed SWM for many years long before he became licensed. Frank says that whilst waiting to make sked with a friend in France working on 14.220MHz he was surprised by strong c.w. traffic, especially as the callsigns were not those of radio amateurs. The transmissions were heard on 9 and 10 September at around 1100. On both occasions RIW requested QSA reports from the following stations RJF94 - RJF97 - RJCC - RJC62 - RJS - RJE - RJU62 - the signal from RIW was '15 over 9' with me in North Bucks.

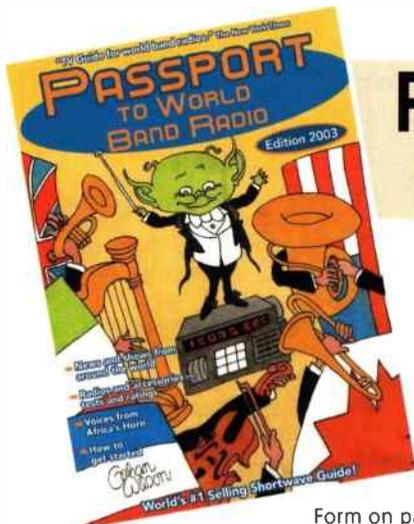
Well Frank, the station you heard is a Russian Naval HQ. Consulting *Ferrell's CFL* I see they operate on other amateur frequencies too. They certainly shouldn't be there and perhaps you should contact the RSGB Intruder watch. Though in reality it can be very difficult to have such intruders moved on.

### Art

Lastly, I've just had an enthusiastic telephone call from reader Michael Cook, who reports having prior to calling, toured *Americans*: an exhibition of Paintings and Photographs From The National Portrait Gallery, Washington. Which is currently being held at the National Portrait Gallery, St Martin's Place London. The reason for Michael's excitement was a self portrait of Samuel Morse.

If you'd like to see this too, then here are the details you'll need. Opening hours: Monday, Tuesday, Wednesday, Saturday, Sunday: 1000 - 1800 (Gallery closure commences at 1750). Late Opening: Thursday, Friday: 1000 - 2100, (Gallery closure commences at 2050). Recorded information: **020 7312 2463**. General information: **020 7306 0055**. Website: [www.npg.org.uk](http://www.npg.org.uk)

AVY 73 Kevin



## Passport 2003

That perennial broadcast listeners' favourite is back in its 2003 colours. The latest *Passport To World Band Radio* is now available from the SWM Book Store. Still priced at £15.50, this broadcast bible contains listening tips, receiver low-downs and the essential international broadcasters' schedule details. Make sure you get yours and order a copy today. Call Clive G4SLU on (01202) 659930 or use the Order

Form on page 70 of this issue.

## Club Corner

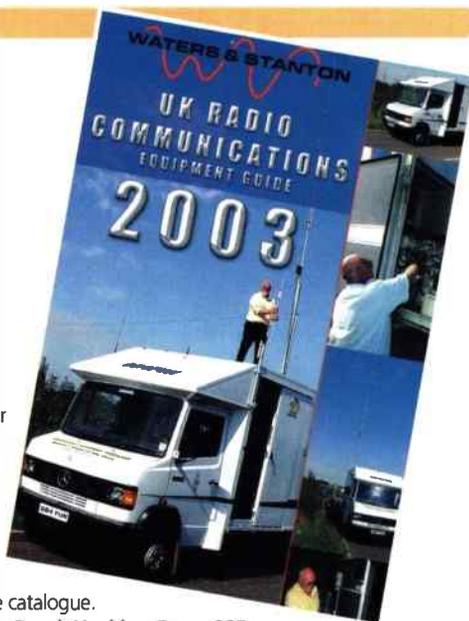
The **Radio Society of Harrow** meet every Friday at The Harrow Arts Centre, Hatch End, Near Harrow, from 2000. All visitors are most welcome to attend. Friday 25th October is video evening, Sunday 3rd November is GB2DHH Operating Day. Further information about club activities from **Jim Ballard G0AOT** on (01895) 476933 or E-mail: [g0aot@thersgb.net](mailto:g0aot@thersgb.net)

The **Maltby & District Amateur Radio Society** meet on Friday evenings, 1930 to 2130, at the Centenary Hall, Clifford Road, Hellaby, Rotherham (just off the M18, J1). The club's first foundation course has just been completed and further courses will be run as required. The club can also offer Morse assessment facilities for existing 'B' licencees wishing to take out an M3 callsign. Both these facilities are open to non-members. The Society also have antennas installed for h.f., 2m & 6m and 70cm, so the club station G4SKM/G7SKM is able to get on air most weeks. Visitors and prospective members are always welcome to attend any of the meetings. More information from **Keith G1PQW** on (01709) 798098, E-mail: [g7skm@qsl.net](mailto:g7skm@qsl.net) or visit [www.qsl.net/g7skm](http://www.qsl.net/g7skm)

## 2003 Equipment Guide

**W**aters & Stanton PLC are pleased to announce that their 2003 Product Guide & Catalogue is now available for £2.95 plus £1.25 postage direct from them. The 2003 catalogue has more products than ever before, plus many changes and updates to existing entries, not to mention money saving delivery vouchers at the back of the catalogue.

W&S PLC can be reached at **Spa House, 22 Main Road, Hockley, Essex S55 4QS**, Tel: (01702) 206835/204965, FAX: (01702) 205843 or visit [www.wsplc.com](http://www.wsplc.com)



## Dundee's New Site

The **Dundee Amateur Radio Club** now have a web site - [www.dundee-amateur-radio.co.uk](http://www.dundee-amateur-radio.co.uk) - which is continually updated by **Martin Higgins MM3AWM**. The club are also proud to announce the success of their first Foundation Licence Class where seven members were successful in completing their exam. Club meetings take place every Tuesday evening during college term time at the Graham Street College Campus in Dundee at 1900 and outwith these times at the North Carr Lightship, moored in Dundee Docks. All amateurs and s.w.l.s are welcome, as is anyone interested in the fascinating hobby of radio. More information from Martin Higgins MM3AWM, Secretary, at **Dundee ARC, c/o Duns Crescent, Dundee DD4 0RZ**.

(from back left) - Peter MM3PMH, Instructor Tom Harrison GM3HNQ, Colin (no callsign yet), Jim MM3KKT, Martin MM3AWM, Stuart MM3AXE and Kevin MM3GDO. All new MM3's would like to thank all members who assisted with their tuition.



## R&S FSH3 Budget Analyser



Even though the Rohde & Schwarz FSH3 Spectrum Analyser is the first of their 'low-cost' hand-held test instruments, you'll need deep pockets to afford the £4500 price tag. R&S say the FSH3 offers a spectacular price/performance ratio, features the tried and tested r.f. characteristics of Rohde & Schwarz analysers, an upper frequency limit of 3GHz and numerous measurement functions.

The analyser has been specifically designed for wide-base customer applications where the focus is on portability and mobility. This includes areas of mobile communication, such as installation, maintenance, servicing and field-strength measurements, as well as use in labs and universities or by electronics hobbyists.

A hand-held spectrum analyser needs to feature low weight, small dimensions and as large a display as possible. With this new product, Rohde & Schwarz now believe they've done it.

The R&S FSH3 is available in two basic versions: as a pure spectrum analyser from 100kHz to 3GHz and as a spectrum analyser with a tracking generator for scalar network analysis. When equipped with a v.s.w.r. bridge, the R&S FSH3 can be used for scalar network analysis or for distance-to-fault measurements on cables. The addition of an external power sensor enables the R&S FSH3 to carry out high-precision r.f. power measurements up to 8GHz.

The R&S FSH3 with all its accessories can be stowed in a carrying bag. An operating time of four hours from a fully charged battery makes it ideal for mobile applications. The conveniently arranged keys and direct access to all basic functions at a keystroke make the instrument easy to use. Even if you hold the spectrum analyser with both hands, you can easily operate it by means of the 'rollkey'. The menu structure is so simple and straightforward that operating the analyser quickly becomes second nature. The internal memory can store up to 100 measurement traces or instrument set-ups for easy retrieval later on.

As the functions of the R&S FSH3 are integrated in customer-specific ASICs, the analyser features large-scale integration and low power consumption. A total of six different ASICs perform all the functions required of a high-end spectrum analyser with a built-in tracking generator. These functions and features include resolution bandwidths from 1kHz to 1MHz and video bandwidths from 10Hz to 1MHz in 13 steps, precise detection and logarithmic conversion of the filtered i.f. signal as well as various detectors for signal weighting (autopeak, peak, sample and RMS). Signal processing from the last intermediate frequency is purely digital and takes place in real time.

The RMS detector is of great advantage, especially for power measurements on modulated signals that occur in mobile radio. The R&S FSH3 measures the channel power of WCDMA signals accurately and reproducibly in a single sweep, for example. Digital signal processing also makes for high measurement speed, despite low power consumption. The minimum time for a sweep over the entire frequency range is as low as 100ms. The third-order intercept of typically 15dB at a noise figure of 32dB typical approaches that of high-end desktop analysers.

The FSH3 features integrated Windows™ software which provides relevant documentation allowing the user to track changes in the case of recurring measurements. The measurements can be stored in common graphics formats, as text files or in Excel™ format, complete with date and time and all analyser settings. For more information visit the Rohde and Schwarz website: [www.rohde-schwarz.com](http://www.rohde-schwarz.com)

## Two Awards

Peter Chadwick G3RZP, past president of the RSGB, recently presented the first two Chelmsford Awards to club members Jim 2E1GUA and Martyn M3VAM. The Chelmsford Award is open to all amateurs and s.w.l.s and for every Award issued a donation will be made to the 'Essex Air Ambulance' which is an emergency helicopter completely funded by sponsorship and fund raising events.

Further details about the award may be found on the club website <http://www.g0mwt.org.uk/> or for information about the club contact the secretary David Bradley M0BQC on (01245) 602838 or E-mail: [cars@g0mwt.org.uk](mailto:cars@g0mwt.org.uk)



Peter Chadwick G3RZP presents Jim 2E1GUA with award.



Peter Chadwick G3RZP presents Martyn M3VAM with award.

## Times & Frequencies

International short wave broadcasters start their winter schedule on October 27th. The World DX Club publishes a 12 page pamphlet listing the times and frequencies of English broadcasts in country order. Over 100 broadcasters are listed and the pamphlet is constantly updated so that information is as fresh as possible. The guide is available for just 50p or two IRCs from Arthur Ward, 17 Motspur Drive, Northampton NN2 6LY.

## Annual Surplus Sale

The Bangor and District Amateur Radio Society meet on the 1st Wednesday of every month in 'The Stables', Groomsport, at 2000. At 2000 on Wednesday November 6th 2002 they are holding their annual Surplus Sale. This excellent event is always a popular way to make some space in your shack. There will be a small admission charge, but there is no charge for tables. The sale will be held at the 'Crawfordsburn Country Club' - not their usual venue. Visitors and new members are (as always) most welcome. More information from Mike G14XSJ on 0284-277 2383 or visit <http://welcome.to/bdars>

## New Catalogue

**M**aplin Electronics has just launched its new 2002/2003 catalogue, introducing over 2,300 new products, over £100 worth of money-off vouchers and 1,400 price reductions, plus exciting new product ranges for the radio enthusiast.

New to the 2002/2003 edition, which is in its 30th year, is the Information Centre, packed with over 50 pages of hints and tips, including how to connect your communications equipment. The casual browser will appreciate the easy-to-use colour coded sections whilst electronics enthusiasts will benefit from the detailed product information.

Maplin say that internal changes mean it is now even easier to order, with their call centre now open seven days a week. This means customers have the freedom to purchase 24 hours a day, 365 days a year via mail order and the website ([www.maplin.co.uk](http://www.maplin.co.uk)) as well as by visiting one of the 65 stores nationwide. Orders placed before 1930 will be despatched the same day.

Maplin's specialist staff are available both in-store and through a technical helpline to offer help with technical and product enquiries. To receive a copy of the catalogue, which costs £3.99, call the mail order line on (0870) 2646000, visit the website at [www.maplin.co.uk](http://www.maplin.co.uk) or visit your local Maplin Electronics store.



## London Show

**T**he London Communication & Computer Show is to be held at Wodson Park, Wadesmill Road, Ware, Herts, on **Saturday 26** and **Sunday 27th April**

**2003.** Doors open 1000-1700 (Saturday) and 1000-1600 (Sunday) - 0945 for disabled visitors. This is a Trade Show that features a Bring & Buy, Talk-in (2m and 70cm), Specialist Interest Groups, Morse Tests, Morse Assessments, licensed bar, catering, disabled facilities and free parking. More information from **Steve G3ZVW** at [spwhite@radiosport.co.uk](mailto:spwhite@radiosport.co.uk)

**November 2/3:** The Sixteenth North Wales Radio & Electronics Show will be held at the North Wales Conference Centre, Llandudno. The show opens at 1000 both days and the entrance fee is £2 for adults, under 14s go free when accompanied an adult. There will be a club room and an extensive Bring & Buy. More information about the show from **M. Mee GW7NFY** on (01745) 591704 (combined telephone and FAX number).

**November 10:** The 12th Great Northern Hamfest will take place at the Metrodome Leisure Complex, Queens Road, Barnsley, South Yorkshire. Doors open at 1000. The Leisure Complex is in the town centre and is less than two miles from junction 37 on the M1 motorway, five minutes walk from the train and bus station (follow the brown Metrodome signs from all directions). The venue is on one level with excellent disabled facilities. Features include all the usual trade stands, component and specialist interest groups and a large Bring & Buy. This year, tables will be allocated to radio amateurs to sell their own equipment at a nominal charge. Talk-in will be via GB3NA on 145.675MHz and admission is £2.50. More details from **Ernie Bailey G4LUE**, 8 Hild Avenue, Cudworth, Barnsley, S. Yorkshire S72 8RN or telephone (01226) 716339, mobile (017787) 546515 - between 1800 and 2000 please.

**November 17:** The Midland Amateur Radio Society are holding their 14th Radio and Computer Rally at King Edwards Grammar Camp Hill School, Vicarage Road, Kings Heath, Birmingham, junction A4040/B4122. There will be

trade stands, local clubs, special interest groups, large free car park, refreshments and a Bring & Buy stall. Doors open 1000 and admission is just £1. Trader details from **Norman G8BHE** on 0121-422 9787/(07730) 132726, E-mail: [nlgutteridge@aol.com](mailto:nlgutteridge@aol.com) or from **Peter G6DRN** on 0121-443 1189.

**December 1:** The Bishop Auckland Radio Amateurs Club (BARAC) Rally will take place at Spennymoor Leisure Centre. Please note that this is a venue suited for both trader and disabled as it boasts good parking and access to a large ground floor hall. There will be the usual radio, computer, electronics, as well as a Bring & Buy, catering and bar facilities. Morse tests will be available on demand. As you can imagine, there is a lot to do for all the family within the confines of the Leisure Centre. Doors open 1100 (1030 for disabled visitors) and admission is £1, under 14s free of charge if accompanied by an adult. Talk-in on S22. **Mark G0GFG** on (01388) 745353 or **Brian G7OCK** on (01388) 762678.

**December 8:** The Red Rose Radio Rally will be held at Lowton Civic Hall, Lowton, near Leigh. Doors open 1100, (1045 for disabled visitors). There will be car parking for approx. 200 cars and it is easy to find from junction 23 of the M6 motorway. There will be catering, disabled access, computer stalls, licensed bar, car parking and also a visit by Santa Claus. More information from **Stephen Daniels** on (01942) 888900 or write to Stephen Daniels, **Astley House, Johnson Street, Tyldesley, Manchester M29 8AB.**

**December 8:** The Worcester Radio Rally is being held at the Worcester Rugby Club, M5 Junction 6, Worcester. Doors open 1000, admission is £2, car parking free. There will be trade stands, Special Interest Groups, a licensed bar, catering and free raffle. For more details contact **John G8MGK** on (01527) 545823/(07762) 203355 or visit [www.qsl.net/gb2tr](http://www.qsl.net/gb2tr)

## 2003

**February 2:** The 18th South Essex Amateur Radio Society are holding their Rally and Computer Rally at The Paddocks, Long Road, Canvey Island, Essex - The Paddocks are situated at the end of the A130. Admission is £1.50 and doors open at 1030 - features include amateur radio, computer and electronic component exhibitors, there will also be home-made refreshments, free car parking with disabled access, RSGB Morse tests (two passport photos and fee required). More information from [www.southessex.ars.btintern.et.co.uk](http://www.southessex.ars.btintern.et.co.uk) or from **Brian G7IIO/M3IIO** on (01268) 756331, E-mail: [briang7iio@yahoo.com](mailto:briang7iio@yahoo.com)

**February 14:** The Cambridge & District Amateur Radio Club are holding their rally at Britten Arena, Wood Green Animal Shelter, King's Bush Farm, London Road, Godmanchester at 1000. Entrance fee is £2, concessions £1.50. There is enough free parking for 2000 cars, there will also be two bars, a restaurant, animal shelter, water garden and lake. A great day out for all the family. More information at [www.cdarc.org.uk](http://www.cdarc.org.uk)

## Step Into Spring

**A** Spring Radio Fair, (Amateur Radio, Electronics, Computing & Tools), is to be held on **Saturday 8th March 2003** from 1030 'till 1300 at St. John's Hall, Sylvan Road, London SE19. Admission (includes one free drink) is just £1 - children under 16 free. Refreshments will be available. Contact **Bob** on (01737) 552170 if you would like more information.

new

# AR200 Mark3 RECEIVER

EVOLUTION PRODUCES THE VERY BEST - NATURALLY

On release of the AR200, it was apparent that a new bench mark had been set encompassing features and performance. Evolution led to the AR200 Series-2 and now to the **NEW AR200 Mk3**.

The AR200 has continuously providing exactly what customers have been yearning for... excellent full coverage all mode receive, computer control, reaction tune, tape record facilities, optional cards (CTCSS, external memory, on-chip recording, analogue voice inversion and tone eliminator). Add to this free PC control software, discriminator output with optional OS200 AUX connecting lead, data clone and you will see what a **COMPLETE** package is provided.

Some of the components used for the RF signal path have been made obsolete (still available for service but not for volume production) so the opportunity was taken to introduce some changes as recently applied to the AR8600-2. The changes are in the following areas:

1. As the RF components have been changed, there is a positive performance advantage with sensitivity and strong signal handling increasing on some frequencies.
2. The frequency coverage has been extended to 3GHz.
3. The AR200 Mk3 is supplied with 1500mAh NiHi batteries (in place of NiCads) for extended operation.

4. The LCD illumination may be switched to AUTO so that the illumination will automatically switch-on (for just a few seconds) when the squelch opens, ideal for noting the active frequencies at night time.

will automatically switch-on (for just a few seconds) when the squelch opens, ideal for noting the active frequencies at night time.



## FIRST STOCK EXPECTED IN OCTOBER'02

**Still looking for the small print, there isn't any, price remains unchanged from that of the earlier model at £439.00 inc VAT.**

**Summary:** A Temperature Compensated Crystal Oscillator (TCXO) forms the heart of the AR200 Mk3 resulting in **high stability** with **minimal internal spuri**. RF preselection in the mid-VHF bands ensures **best sensitivity and strong signal handling** with a wide coverage up to 3GHz (all mode receive without gaps).

**Flexible tuning steps including 8.33kHz**, programmable in all modes down to 50Hz. LCD illumination is nice and bright with sharp display of LCD characters and adjustable contrast, the beep is also configurable.

**Flexible power**, a set of 4 x 1500mAh AA rechargeable high capacity NiHi are provided, a DC lead with cigar plug is also provided along with AC charger which doubles up as a power supply. The receiver may also be powered from standard dry batteries such as alkaline.

**Computer control**, nearly all functions can be controlled via computer (optional 8200PC interface required), free PC control software is available from the AOR web site.



# AR8600 Mark2 RECEIVER

wider coverage all mode receiver  
100 kHz - 3000 MHz with RS232 port



The **AR8600 Mark2** is an amazingly versatile receiver which can be used mobile, base or trans-portable... powered from an external 12V d.c. power supply, 12V vehicle or from an optional internally fitted NiCad battery pack. Due to continuous development of our products, the AR8600 Mark2 has been enhanced in several areas. The upper frequency range has been extended to **3000MHz** (3.0GHz), lower band sensitivity has been increased (now officially covering to 100kHz) with an **enhancement to short wave performance** by the addition of further bandpass filters and revision to I.F. filters. **Mini-Circuits RMS1 / RMS2 mixers** have been employed with **active SPM aerial switching devices** (not diode-switching) abundantly employed throughout the signal path. **[Technical boffins will recognise the significance of such devices in minimising signal loss & maximum spurious free range, and will be versed with the quality of Mini-Circuits parts].** The AR8600 Mark2 provides remarkable short wave performance, making other similar wide band competitors mediocre by comparison. When the AR8600 Mark2 arrived in the UK, **short wave listeners were amazed at how the AR8600 Mark2 sounds so much like a dedicated short wave receiver** with pleasant audio on SSB and good CW tone with Radio Japan rolling in on a simple telescopic whip, much less like the usual expectations of a scanning receiver! A strong twin metal case with die cast front panel characterises the multi-purpose role. All mode receive capability is provided including Single Side Band with programmable tuning steps down to a resolution of 50Hz with the frequency established by a highly accurate **Temperature Compensated Crystal Oscillator (TCXO)**. An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites. **The all important 8.33 kHz airband channel step is correctly implemented.**

**Computer control** is available via a standard 9-pin RS232 D-type connector on the rear chassis, just a standard RS232 cable is required for connection to a PC, the extensive RS232 command list is printed in the operating manual. A **FREE software package** is available as a download from the AOR web sites.

In addition, **'optional internal SLOT CARDS'** (which fit into the rear chassis of the AR8600 Mark2) extend the capabilities even further, five cards may be fitted with two operational simultaneously. **•Memory slot card** (increase storage to 4,000 memories, 160 search banks). **•CTCSS slot card** squelch & search. **•Record chip slot card** (records up to 20 seconds of audio) with 'continuous loop' capability. **•Tone eliminator slot card**. **•Voice inverter card**. *The slot cards are common to the AR8600, AR8600 Mark2, AR200 and AR200 Series-2.*

**Portable operation** is a reality, when the optional BP8600 battery is fitted, **several hours operation** is provided away from the base or vehicle power supplies. **£719.00 inc VAT.**



**AOR (UK) LTD** 4E East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA England



Tel: 01773 880788 Fax: 01773 880780  
info@aoruk.com www.aoruk.com E&OE

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

# LM&S

No doubt many listeners will be surprised and disappointed to learn that Radio Finland (YLE) will be closing down their international short wave service in English, German and French on October 27 - a few days after this edition of *SWM* is on sale in the UK. The YLE broadcasts in Russian will continue, but in future they intend to concentrate on providing a s.w. service for Finnish nationals abroad.

Unfortunately, there is no governmental funding for an external radio service in Finland. The s.w. service provided by YLE has been financed mainly by television usage fees paid by viewers in Finland. The closure of the English, German and French services will result in substantial cost savings.

Visitors to the greater Helsinki area of Finland will be still able to receive news in English and relays of broadcasts in other languages via the Capital FM radio service - parts of this service can also be heard via YLE stations in Turku, Tampere, Lahti and Kuopio.

## Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless otherwise stated, all logs were compiled during August.

Favourable conditions were noted during the night of the 7th by **Simon Hockenhuil** in E.Bristol. At 0105 the Rikisutvarpid (RUV) outlets at Gufuskalar, W.Iceland (300kW) on **189kHz** and Eidar, E.Iceland (100kW) on **207kHz** were both

audible, which rated SINPO 25342 and 12442 respectively. At 2352 on the 14th Simon heard a weak transmission on **279kHz**, which his checks suggest came from Asgabat, Turkmenistan (150kW). At best it rated 14432.

A broadcast on **279kHz** was also heard on the 21st by **David Stevenson** (Swansea) at 0501 - it lasted for about an hour, but reception was extremely poor and no ident could be obtained. A male with a soft voice was heard speaking in an unknown language; also music. This station has been entered in the chart provisionally as Asgabat, Turkmenistan.

Broadcasts in Russian were picked up at night on **279** and **270kHz** by **Jim Edwards** in Wigan. Both transmissions were very weak, consequently he logged them tentatively as Yekaterinburg, Russia on **279**, heard at 0020; also Orenburg, Russia on **270** at 0410. Earlier, he heard Taldom, Russia on 261 at 0015. A number of other stations were mentioned in his interesting report - see chart.

Owing to the absence of Team Talk on **252kHz**, **Eddie McKeown** (Newry, Co.Down) found he could receive Tipaza, Algeria on 262 with a rating of 44344 at 2015; also Burg on **261**, which he noted as 34233 at 2052. On several occasions he tuned to Sasnovy on **279** and enjoyed listening to their long (four minute) National Anthem, which is played before close down.

During a holiday in Austria, **Peter Pollard** (Rugby) searched this band after dark

(1900-2100) with his Sony portable. He stayed in Saalbach, which is in a valley running east-west, closed in at the western end. Reception there was extremely noisy and only four stations were heard - see chart. Surprisingly, BBC R-4 on **198kHz**, which is shared by Drotiwich (500kW), Westerglen (50kW) and Burghhead (50kW), was just audible at strength one!

## Medium Wave Reports

The sky waves from some of the many m.w. stations in the Middle East, N.Africa, Europe and Scandinavia were picked up by the listeners who searched this band after dark and their logs make interesting reading - see chart.

An extensive log was compiled by David Stevenson, but quite a few of the entries proved to be difficult or impossible to identify because the signals were weak - a problem well known to all dedicated DXers! Reference to guide books, such as the *World Radio TV Handbook (WRTH)*, may indicate parallel broadcasts on other frequencies so that cross checks can be made with aid of a second receiver. Details of transmission times and the language(s) involved may also be indicated, all of which can help.

Reception in the m.w. band proved to be much less noisy than l.w. for Peter Pollard in Saalbach and he logged a number of stations after dark - see chart. He searched the band from 1900 until 2100 and was very pleased to hear the BBC World Service via Orfordness on **1296**, which rated SIO 242.

A late night news programme broadcast by the American Forces Network (AFN) via Frankfurt on **873kHz** (150kW) attracted the attention of **Harry Richards**

(Barton-on-Humber) on August 19. It was followed at 0100 by live coverage of a baseball game. The same game was being televised by Channel 5, so Harry switched on his TV. He noticed that the radio commentary was about two seconds behind the action on TV!

The Voice of Russia was heard on **558kHz** with near perfect reception at 0820 by **Sheila Hughes** in Morden. This was followed by R.Canada Int and R.Prague. Apparently the World Radio Network (WRN) had hired air time on R.Spectrum, London. Sheila 'phoned WRN at their SW.London office (0207-896 9000) for more information and was advised that these early morning programmes were temporary - for two weeks. However, there are also broadcasts on Spectrum from 0100 to 0400. Also mentioned was China R.Int (CRI), which may be heard via Spectrum from 2200-2300. The Spectrum transmission carrying CRI was logged by **Fred Wilmshurst** (Northampton) as 44544 and reported by several other listeners.

## Short Wave Reports

During some days in August, the effects of solar flares disturbed the ionosphere and disrupted reception in the higher frequency short wave bands. Although we are now on the downward slope of the present sunspot cycle such events are likely to continue, so some disturbances can be expected in the weeks ahead.

In the **25MHz (11m)** band the daily broadcasts from Radio France International (RFI) to E/C.Africa on **25.820** (Fr, Eng 0830-1300) continued during August, but there were no reports to indicate how well they were received in that area.

Reception of the RFI transmissions in

## Long Wave Chart

kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	H*.*
153	Donebach DLF	Germany	500	A*.B.D.E.*.F*.G*.H*.I*.J*.K
153	Bod	Romania	1200	A*.E*.H*
162	Allouis	France	2000	A*.D.E*.F*.G*.H*.I*.J.K
171	Nador Medi-1	Morocco	2000	A*.B*.E*.I*
171	B'shakovo etc	Russia	1200	B.C.E*.F*.H*.K*
171	Sasnovy	Belarus	1000	I*
177	Orenienburg	Germany	500	A*.B*.C*.D.E*.F*.H*.I.K*
180	Polati	Turkey	1200	A*
183	Saarlouis	Germany	2000	A*.B*.C*.D.E*.F*.H*.I*.J.K
189	Gufuskalar	W.Iceland	150	A*.B*.E*.I*
189	Caltanissetta	Italy	10	A*.H*
198	Droitwich BBC	UK	500	C.E.G*.H.I.K
207	Munich DLF	Germany	500	B*.E*.F*.H*.I*.J.K*
207	Eidar	E.Iceland	100	A*.B*.E*
207	Azilal	Morocco	800	H*.I*
216	Roumoules RMC	S.France	1400	A*.B.D.E*.F*.H*.I*.J.K*
225	Polskie R-1	Poland	?	A*.B*.C.E*.F*.H*.I*.J*.K*
234	Beidweiler	Luxembourg	2000	A*.D.E*.F*.H*.I*.J.K
243	Kalundborg	Denmark	300	A*.B.C*.D.E*.F*.H*.I
252	Tipaza	Algeria	1500	A*.B.C.E*.F*.I*.J*.K*
261	Burg(R.Ropa)	Germany	85	A*.B*.E*.F*.H*.K*
261	Taldom Moscow	Russia	2500	A*.B*
270	Topolna	Czech Rep	1500	A*.B*.E*.F*.G*.H.I.K*
270	Orenburg	Russia	40	A*
279	Ashgebat	Turkmenistan	150	B*.H*
279	Sasnovy	Belarus	500	A*.B.C.E*.F*.H*.I*.K*
279	Yekaterinburg	Siberia	150	A*

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

- Listeners:-  
 (A) Jim Edwards, Wigan  
 (B) Simon Hockenhuil, E.Bristol.  
 (C) Sheila Hughes, Morden.  
 (D) Rhoderick Illman, Oxted.  
 (E) Eddie McKeown, Newry.  
 (F) Fred Pallant, Storrington.  
 (G) Peter Pollard, while in Saalbach, Austria.  
 (H) David Stevenson, Swansea.  
 (I) Ernie Strong, Ramsey, Cambs.  
 (J) Thomas Williams, Truro.  
 (K) Fred Wilmshurst, Northampton.

## Tropical Bands Chart

MHz	Station	Country	UTC	DXer
3.205	R.Ribeirao	Brazil	0110	B
3.215	AWR	Madagascar	0345	B
3.240	TWR Manzini	Swaziland	0415	B
3.255	BBC via Meyerton	S.Africa	2008	B,E,G,J
3.270	Namibian BC,Windhoek	Namibia	2008	B,E,G
3.279	La Voz del Napo	Ecuador	0615	B
3.300	R.Cultural	Guatemala	0405	B
3.315	AIR Bhopal	India	0140	B
3.320	SABC (RSG) Meyerton	S.Africa	0222	B,E
3.365	GBC R-2	Ghana	2006	B,G
3.915	BBC via Kranji	Singapore	2145	B,F,J
3.955	R.Korea via Skelton	England	2100	C,F,H
3.955	R.Taipei via Skelton	England	1855	A,C,H
3.975	R.Budapest	Hungary	0000	C,F,J
3.985	China R.Int via SRI	Switzerland	2320	B
3.985	DW via Julich?	Germany	2133	F,I
4.005	Vatican R.	Italy	2045	F,I,J
4.716	R.Yura, Yura	Bolivia	0005	B
4.750	Xizang BS, Lhasa	China	2145	B
4.755	R.Educ CP Grande	Brazil	0145	B
4.760	AIR Port Blair	India	0135	B
4.760	ELWA Monrovia	Liberia	2140	B
4.765	R.Rural, Santarem	Brazil	2335	B
4.770	FRCN Kaduna	Nigeria	2100	B,G,J
4.775	R.Liberal, Belem	Brazil	0055	B
4.790	AIR Itanagar	India	0010	B
4.790	Azad Kashmir R.	Pakistan	0010	B
4.800	CPBS 2 Beijing	China	2130	B,D,J
4.800	R.Buenas Nuevas	Guatemala	0305	B
4.800	AIR Hyderabad	India	0145	B
4.805	R.Nac.Amazonas	Brazil	2355	B
4.815	R.Difusora, Londrina	Brazil	2345	B
4.815	R.diff TV Burkina	Ouagadougou	1935	G
4.820	R.Botswana, Gaborone	Botswana	2015	B,E
4.820	Xizang, Lhasa	China	2110	B,D,J
4.820	La Voz Evangelica	Honduras	0435	B
4.825	R.Cancao Nova	Brazil	2340	B
4.828	ZBC R-4	Zimbabwe	0435	E
4.830	R.Tachira	Venezuela	0220	B,E
4.832	R.Litoral, La Ceiba	Honduras	0210	B,E
4.835	RTM Bamako	Mali	1956	G,J
4.840	AIR Bombay	India	1645	B,G
4.845	R.Cultura Ondas,Trop	Brazil	0130	B
4.845	ORTM Nouakchott	Mauritania	G201	B,E,G,J
4.850	CNR 1	China	2220	B
4.860	AIR Delhi	India	1645	B,G
4.865	R.Alvorada, Londrina	Brazil	0235	B
4.875	R.Roraima, Boa Vista	Brazil	0305	B
4.880	AIR Lucknow	India	1646	G
4.885	R.Clube do Para	Brazil	0135	B,E
4.890	RFI Paris	via Gabon	0400	E
4.890	R.Port Moresby	Pap.N. Guinea	2120	B

MHz	Station	Country	UTC	DXer
4.895	R.IPB AM C'po Grande	Brazil	0015	B
4.895	AIR Kurseong	India	1647	G
4.905	CPBS 1, Beijing	China	2340	B
4.910	AIR Jaipur	India	0110	B
4.910	R.Zambia, Lusaka	Zambia	0155	E
4.915	R.Anhanguera	Brazil	2305	B
4.915	R.Difusora, Macapa	Brazil	0200	B,E
4.915	GBC-1, Accra	Ghana	2030	B,J
4.920	R.Quito, Quito	Ecuador	0445	B
4.920	AIR Chennai	India	1648	G
4.925	R.S.Miguel,Riberalta	Bolivia	0210	B
4.927	RRI Jambi	Indonesia	2325	B
4.930	AIR Shimla	India	2155	J
4.935	R.Capixaba, Vitoria	Brazil	0015	B
4.940	AIR Guwahati	India	0215	B
4.945	R.Emiss.Rural	Brazil	0125	B
4.950	R.Nacional, Mulvenos	Angola	2315	B
4.950	AIR Srinagar	India	1650	B,G
4.950	VOA via Sao Tome	Sao Tome	2145	J
4.955	R.Cultura, Campos	Brazil	0010	B
4.960	R.Cima	Dominion Rep.	0320	B
4.960	AIR Ranchi	India	0035	B
4.960	VOA via Sao Tome	Sao Tome	0515	B
4.965	Christian Voice	Zambia	2125	B
4.975	R.Uganda, Kampala	Uganda	2016	B,G
4.980	Ecos del Torbes	Venezuela	0310	B
4.985	R.Brazil Central	Brazil	0200	B,E
4.990	Hunan 1, Changsha	China	2230	B
4.995	R.Andina, Huancayo	Peru	0240	B
5.005	R.Nepal, Kathmandu	Nepal	0010	B
5.010	R.Misiones Int.	Honduras	0310	B
5.010	AIR Thiru'puram	India	0130	B
5.025	R.Parakou	Benin	2135	J
5.025	R.Rebelle, Bauta	Cuba	0305	B
5.025	R.Uganda, Kampala	Uganda	1922	B,G
5.030	AWR Latin America	Costa Rica	0300	B,D
5.030	RTM Kuching	Sarawak	2200	J
5.033	R.Bangui	C.Africa	2017	G
5.035	R.Aporecida	Brazil	0030	B
5.040	Jeypre	India	0135	B
5.050	R.Tanzania	Tanzania	2030	B
5.100	R.Liberia, Totota	Liberia	2140	B

- DXers:-  
 (A) Bernard Curtis, Stalbridge.  
 (B) Jim Edwards, Wigan.  
 (C) Stan Evans, Herstmonceux.  
 (D) Bill Griffith, W.London.  
 (E) David Hall, Morpeth.  
 (F) Simon Hockenhuil, E.Bristol.  
 (G) Fred Pallant, Storrington.  
 (H) Clare Pinder, Appleby.  
 (I) Peter Pollard, while in Saalbach, Austria.  
 (J) Vic Prier, Seaton.



(Eng to Eur, M.East, Africa 1600-2300?) 32222 at 2015 in Truro & 44444 at 2215 in Morpeth; R.Canada Int (RCI) via Sackville **17.870** (Eng to Eur 2000-2130) 45444 at 2110 in Northampton; VOA via Greenville **17.895** (Eng to Africa 2000-2200) 45335 at 2115 in Stalbridge; HCJB Quito, Ecuador **17.660** (Eng to Eur 2000-2200 [DX prog 2000 Sat]) 54444 at 2155 in Truro.

Sometimes R.New Zealand's broadcasts to Pacific areas in the **15MHz (19m)** band could be received in the UK. Their 100kW transmission on **15.160** (Eng 1851-2215) was rated 33323 at 1851 in Dudley. R.Australia's broadcasts reached the UK on three frequencies from Shepparton: **15.415** (Eng to E/SE Asia 0600-0900), rated 22222 at 0825 in Seaton; **15.515** (Eng to Pacific, N.America 0200-0700) 44433 at 0655 in Herstmonceux; **15.240** (Eng to Asia 0000-0800 [via Darwin 0800-1200]) 43333 at 0505 in Morpeth.

Also mentioned in the reports were R.Finland via Pori **15.135** (Eng to Eur, Asia, Australia 0630-0700) 55544 at 0640 in Herstmonceux; Voice of Turkey, Ankara **15.350** (Tur to Eur 0700?-1600?), rated 34332 at 0733 in Oxted; Voice of Greece, Athens **15.630** (Gr, Eng to Eur? 0900-1000) 45344 at 0930 in Newry; WEWN Vandiver, USA **15.745** (Eng to Eur, Africa 1000-2100?) 34444 at 1130 in Northampton & 44444 at 1256 in Woodhall Spa; R.Finland via Pori **15.400** (Eng to N.America 1230-1300) 34333 at 1235 in Storrington; WWCR Nashville, USA **15.825** (Eng to N.America, Eur 1000?-2200) 34333 at 1317 in Woodhall Spa; UAE R.Dubai **15.395** (Eng to Eur 1600-1615) 44444 at 1600 in Morden; Voice of Indonesia, Jakarta **15.150** (Sp, Ger to Eur 1700-1900, Eng 2000-2100) 54444 at 1800 in Liverpool & 23222 at 2010 in Truro; Israel R. Jerusalem **15.640** (Eng to Africa? 1900-1930) 44444 at 1900 by **Clare Pinder** in Appleby; VOA via Morocco? **15.410** (Eng to Africa 1800?-?) 55445 at 1910 in Stalbridge; BBC via Ascension Is **15.400** (Eng to Africa 1700?-2300) 34343 at 1951 in Storrington; RCI via Sackville **15.325** (Eng, Fr to Eur, M.East, Africa 2000-2200) 45434 at 2018 in E.Bristol; R.Ext.España via Nobeles, Spain **15.290** (Eng to Eur, Africa 2000-2100) 54444 at 2030 in Austria; R.Kuwait **15.505** (Ar to Eur, N.America 1745-2300) 44434 at 2046 in Ebbw Vale; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 45243 at 2212 in Newry.

Good reception of R.Australia's late night broadcast to SE.Asia in the **13MHz (22m)** band was reported by listeners in the UK. Their transmission from Darwin on **13.620** (Eng 2200-0000) was rated 44444 at 2210 in Morden, 45434 at 2211 in E.Bristol & 44333 at 2216 in Ebbw Vale.

Other occupants of this band include DW via Wertachtal, Germany **13.780** (Ger to Eur 0600-2000?), rated 34433 at 0758 in Oxted; BBC via Rampisham, UK **13.660** (Ar to N.Africa) 55555 at 1230 in Stalbridge; R.Prague, Czech Rep. **13.580** (Eng to Eur, Asia 1300-1329) 55544 at 1310 in Herstmonceux; R.Austria Int via Moosbrunn **13.730** (Eng to Eur, M.East, Africa 1330-1400) 34333 at 1330 in Truro; AIR via Bangalore? **13.710** (Eng to Asia 1330-1500) 23222 at 1342 in Newry; UAER, Dubai **13.675** (Eng to Eur 1600-1640) 43333 at 1615 in Seaton; R.Nederlands via Flevo **13.700** (Eng to Africa 1830-2025) 44334 at 1830 in Dudley; China R.Int via Bamako, Mali **13.685** (Ar to N.Africa 1830-1930) 43333 at 1905 in Liverpool; Swiss R.Int via Sottens **13.645** (It, Ar, Eng, Ger, Fr to M.East, Africa 1830-2130) 44444 at 1930 in Appleby; Voice of Vietnam, Hanoi **13.740** (Fr, Eng to Eur 1900-2100) 45544 at 2030 in Northampton & 34243 at 2037 in Austria; RCI via Sackville? **13.670** (Eng to N/C.America) 33322 at 2211 in Ebbw Vale.

In the **11MHz (25m)** band R.New Zealand's early morning broadcast to

Pacific areas on **11.820** (Eng 0459-0658) reached the UK during favourable conditions. It was rated 33333 at 0500 in Morpeth. Much later, Radio Australia's broadcasts were received in the UK on two frequencies from Shepparton: **11.660** (Eng to Asia 1430-1700), rated 24232 at 1440 in Newry; **11.880** (Eng to Pacific, N.America 1700?-2200?), noted as 34222 at 2153 in E.Bristol.

Many other broadcasters are active in this band during the day. They include HCJB Quito via ? **11.680** (Eng to Eur 0600-0800), rated 55544 at 0600 in Appleby; DW via Wertachtal? **11.795** (Ger to Oceania 0600-1000) 44433 at 0757 in Oxted; World Harvest R. (WHRI) via Maine, USA **11.730** (Eng to Africa) 55445 at 0835 in Stalbridge; Polish R [R.Polonia], Warsaw **11.820** (Eng to Eur 1200-1300) 44444 at 1215 in Morden; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1300-1730) 34333 at 1312 in Woodhall Spa; AWR via Agat, Guam **11.980** (Eng to Far East 1330-1400) 22122 at 1400 in Liverpool; All India R. (AIR) via Bangalore **11.620** (Eng to Africa 1745-1945) 32232 at 1755 in Seaton; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 54533 at 1850 in Herstmonceux; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1900-1930) 43333 at 1915 in Truro; Voice of Mediterranean, Malta via Russia? **12.060** (Eng to Eur, N.Africa 1900-2000) 45444 at 1950 in Northampton; China R.Int via ? **11.790** (Eng to Eur 2000-2200) 54455 at 2131 in Austria; Voz Cristiana, Chile **11.745** (Sp to S.America 2100-1100) 33333 at 2319 in Ebbw Vale.

There is much to interest the listener in the **9MHz (31m)** band throughout the day. During the morning R. New Zealand's 100kW transmission to Pacific areas from Rangitaiki, N.Island on **9.885** (Eng 0659-1105) may be received in the UK. It was rated 25343 at 0855 in Northampton. Later, R.Australia's broadcasts to Asia may reach the UK on two frequencies from Shepparton: **9.475** (Eng 1330-1858), rated 45434 1550 in E.Bristol; **9.500** (Eng 1900-2130) 22222 at 1930 in Truro.

Also mentioned in the reports were WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs), rated 54444 at 0550 in Morpeth & 43333 at 0725 in Oxted; Voice of Turkey **9.460** (Tur to Eur 0730?-2100?) 44333 at 0731 in Oxted; R.Slovakia Int **9.440** (Eng to Australia 0700-0730) 44444 at 0700 in Morden; TWR Monaco **9.870** (Eng to Eur 0700-0900) 55545 at 0750 in Stalbridge; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 43333 at 0940 in Seaton; R.Mediterranean Int, Morocco **9.575** (Ar, Fr to N.Africa, S.Eur 0500-0100) 32222 at 1335 in Liverpool; Voice of Russia **9.480** (Eng [News]) 43444 at 1700 in Appleby; R.Cairo, Egypt **9.990** (Ger to Eur 1900-2000, Eng 2115-2245) 44454 at 1920 in Liverpool & 45544 at 2115 in Newry; Voice of Armenia, Yerevan **9.960** (Eng to Eur 1940-2000) 44444 at 1940 in Newry; TWR via Meyerton, S.Africa **9.510** (Fulani to W.Africa 1830-2045) 33443 at 1948 in Storrington; R.Bulgaria, Sofia **9.400** (Eng to Eur 2100-2200) 55555 at 2100 in Austria;

### Local Radio Chart

kHz	Station	ILR BBC	e.m.r.p (kW)	Listener	kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	A,B*,D*,E,F	1116	R.Guemsey	B	0.50	A,D
603	C.G.Lit'brne	I	0.10	C,E,F	1116	Valley R, Ebbw Vale	I	0.50	A
630	R.Bedfordshire(3CR)	B	0.20	A,B,C,D,E,F	1152	C.G.Amber, Norwich	I	0.83	E
630	R.Cornwall	B	2.00	D	1152	LBC 1152 AM	I	23.50	D,E,F
657	R.Chwyd	B	2.00	D*,E,F	1152	C.I.G., Birmingham	I	3.00	A
657	R.Cornwall	B	0.50	D	1161	R.Bedfordshire(3CR)	B	0.10	E,F
666	C.I.Gold 666, Exeter	I	0.34	A,D,E,F	1170	C.I.G.Amber, Ipswich	I	0.28	E
666	R.York	B	0.80	E	1170	Magic 1170, Stockton	I	0.32	E
729	BBC Essex	B	0.20	E,F	1170	Swansea Snd, Swansea	I	0.58	A,D
738	Hereford/Worcester	B	0.037	A,D*,E,F	1170	1170AM, High Wycombe	I	0.25	F
756	The Magic 756, Powys	I	0.63	A,D,E,F	1251	C.G.Amber, Bury StEd	I	0.76	E
765	BBC Essex	B	0.50	A,E,F	1260	Brunel CG, Bristol	I	1.60	D
774	R.Kent	B	0.70	E,F	1260	SabrasSnd, Leicester	I	0.29	E,F
774	C.I.Gold 774, Glos	I	0.14	A	1278	C.I.Gold 1278 W.York	I	0.43	E
792	C.I.Gold 792, Bedford	I	0.27	B,E,F	1296	Radio XL, Birmingham	I	5.00	D,E,F
801	R.Devon	B	2.00	A,D,E	1305	Premier via ?	I	0.50	E,F
828	C.I.Gold 828, Luton	I	0.20	A,E,F	1305	Touch AM, Newport	I	0.20	D
828	Asian Net Sedgley	B	0.20	A	1323	SomersetSnd, Bristol	B	0.63	D
828	C.I.G. 828 Bourne'm'th	I	0.27	A,B	1332	C.I.Gold 1332, Pt'bo	I	0.60	E,F
837	Asian Net Leicester	B	0.45	A,E,F	1359	Breeze, Chelmsford	I	0.28	E
855	R.Devon	B	1.00	D	1359	C.I.Gold 1359, C'try	I	0.27	F
855	R.Norfolk, Postwick	B	1.50	E	1368	R.Lincolnshire	B	2.00	E,F
855	Sunshine 855, Ludlow	I	0.15	A,D,F	1368	Southern Counties R	B	0.50	D
873	R.Norfolk, W.Lynn	B	0.30	E,F	1413	R.Gloucester via ?	B	?	E,F
936	Brunel CG, W.Wilts	I	0.18	E,F	1413	Fresh AM, Skipton	I	0.10	E
945	C.I.Gold GEM, Derby	I	0.20	E,F	1431	Breeze, Southend	I	0.35	B,E
945	Capital G, Bexhill	I	0.75	D*,E	1431	C.I.Gold, Reading	I	0.14	A,F
954	C.I.Gold 954 via ?	I	?	E	1449	Asian Net Peterbro	B	0.15	E,F
954	C.I.Gold 954, Torquay	I	0.32	D	1458	R.Cumbria	B	0.50	A*
954	C.I.Gold 954, H'ford	I	0.16	A,F	1458	R.Devon	B	2.00	A,D
963	Liberty R, Hackney	I	1.00	E,F	1458	Sunrise, London	I	50.00	E,F
972	Liberty R, Southall	I	1.00	A,E,F	1458	Asian Net Langley	B	5.00	A,E,F
990	R.Devon, E.Devon	B	1.00	A,D	1485	C.I.Gold, Newbury	I	1.00	A,B,E,F
990	Magic AM, Doncaster	I	0.25	E	1485	R.Humberside (Hull)	B	1.00	A*,E
990	C.I.G. Wolverhampton	I	0.09	E,F	1485	Southern Counties R	B	1.00	B
999	C.Gold GEM Nott'ham	I	0.25	F	1503	R.Stoke-on-Trent	B	1.00	A*,E
999	R.Solent	B	1.00	B	1521	C.I.Gold, Reigate	I	0.64	B,E,F
999	Valley R, Aberdare	I	0.300	D	1530	R.Essex, Southend	B	0.15	E
1017	C.I.G.WABC, Sh'shire	I	0.70	A,D,E,F	1530	C.I.Gold, Worcester	I	0.52	A,F
1026	R.Cambridgeshire	B	0.50	E,F	1548	R.Bristol	B	5.00	D
1026	R.Jersey	B	1.00	A	1548	Capital G, London	I	97.50	D*,E
1035	RTL C'try(Ritz)1035	I	1.00	B,D,E,F	1557	C.I.Gold 1557, N.hant	I	0.76	E,F
1035	R.Sheffield	B	1.00	E	1566	CountySnd, Guildford	I	0.50	A*,B,D,E
1116	R.Derby	B	1.20	E,F	1584	London Turkish R	I	0.20	A*,E
					1584	R.Nottingham	B	1.00	E,F
					1602	R.Kent	B	0.25	A

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

- Listeners:-  
 (A) Simon Hockenhill, E.Bristol.  
 (B) Sheila Hughes, Morden.  
 (C) Rhoderick Illman, Oxted.  
 (D) David Stevenson, Swansea.  
 (E) Ernie Strong, Ramsey, Cambs.  
 (F) Fred Wildmshurst, Northampton.

R.Tirana, Albania **9.540** (Eng to Eur 2130-2200) SIO 222 at 2138 by **Francis Hearne** in N.Bristol; China R.Int via Russia? **9.880** (Eng 2200-2300) 53543 at 2215 in Herstmonceux.

Searching the **7MHz (41m)** band during the evening and late at night can be rewarding. When the conditions permit it is possible to hear R.Nederlands via Madagascar **7.120** (Eng to Africa 1730-2025), rated 43423 at 1837 in E.Bristol; China Nat.R, Lingshi, China **7.550** (Chin 2000-2400) 33333 at 2100 in W.London; World Harvest Radio (WHRI) via Maine, USA **7.580** (Eng to N.America) 44444 at 2300 in Morpeth; WBCQ Monticello, USA **7.415** (Eng to N.America 2100-1100) 44444 at 0300 in Morpeth.

During the day there are a number of broadcasts in this band for European listeners. Some originate from R.Japan via Woofferton, UK **7.230** (Eng 0500-0700), rated 44433 at 0620 in Herstmonceux; Family R. (WYFR) via ? **7.355** (Eng 55445 at 0740 in Stalbridge; Sudwestfunk via Rohrdorf **7.265** (Ger 24hrs) 44444 at 0745 in Seaton; Vatican R, Italy **7.250** (Vespers) 33333 at 1508 in Austria; R.Slovakia Int. **7.345** (Eng 1630-1700) 54444 at 1635 in Morden; R.Budapest, Hungary **7.130** (Eng 1900-1930) 55455 at 1900 in Appleby & SIO 333 at 1917 in N.Bristol; R.Thailand, Udon Thani **7.155** (Eng 1900-2000) 33333 at 1932 in Truro; AWR via Slovakia **7.130** (Eng 1930-2000) 43443 at 1936 in Newry; R.Polonia (Polish R), Warsaw **7.165** (Eng 1930-2030) 43334 at 2020 in Stalbridge; RCI via Skelton, UK **7.235** (Eng 2100-2130) 55533 at 2105 in Herstmonceux; AIR via Bangalore **7.410** (Eng, Hind 1745-2230) 55544 at 2132 in Northampton.

Many more broadcasts for listeners in Europe are carried by the **6MHz (49m)** band. Some come from Vatican R, Italy **5.890** (Fr), rated 43444 at 0442 in Austria; R.Japan via Skelton, UK **5.975** (Eng 0500-0600) 44444 at 0500 in Appleby; R.Vlaanderen Int, Belgium via Julich, Germany **5.985** (Eng 0700-0730) 55444 at 0700 in Newry; TWR Monaco via

Germany? **6.045** (Eng 0655-0800) 55545 at 0750 in Stalbridge; R.Nederlands via Julich, Germany **6.045** (Eng 1030-1225) 55555 at 1045 in Herstmonceux; R.Prague, Czech.Rep **5.930** (Eng 1600-1630) 54444 at 1600 in Morden; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 43343 at 1630 in Seaton; R.Slovakia Int. **6.055** (Eng 1830-1900) 45333 at 1832 in E.Bristol; R.Budapest, Hungary **6.025** (Eng 1900-1930) 42432 at 1900 in E.Bristol; RAI Rome **5.970** (Eng 1935-1955) 44444 at 1937 in Newry; R.Sweden **6.065** (Eng 1930-2000) 55555 at 1950 in Northampton; R.Canada Int via Horby, Sweden **5.850** (Eng 2000-2130, Fr 2130-2200) SIO 444 at 2114 in N.Bristol; R.Austria Int, Moosbrunn **5.945** (Eng) SIO 333 at 2132 in N.Bristol; R.Austria Int, Moosbrunn **6.155** (Various) SIO 444 at 2132 in N.Bristol; Deutschland R, Berlin **6.005** (Ger 24hrs) 45444 at 2135 in Seaton; BBC via Rampisham, UK **6.195** (Eng 1700-0000) 54444 at 2145 in Northampton; R.Sweden **6.065** (Eng 2130-2200?) SIO 333 at 2147 in N.Bristol.

Some intended for other areas may also be received here. Among those noted in the reports were the BBC via Antigua, W.Indies **5.975** (Eng to Caribbean, C/S.America 2200-0600?) 34422 at 2335 in E.Bristol; KAIJ Frisco, Texas USA **5.755** (Eng to N.America) 43343 at 0344 in Morpeth; R.Havana, Cuba **6.000** (Eng to N.America 0100-0500) 43333 at 0442 in Morpeth; WEWN Birmingham, USA **5.825** (Eng to N.America 0000?-1300?) 23322 at 0720 in Seaton; WWCR Nashville, USA **5.930** (Eng to N.America 0000?-?) 21221 at 0730 in Seaton.

## MLP32 Log Periodic

★ Freq: 100-1300MHz Tx & Rx  
★ Gain: 11-13dB  
★ Length: 1.40mtr **£99.95**  
★ Conn: N-type

## MLP62 Log Periodic

★ Freq: 50-1300MHz Tx & Rx  
★ Gain: 10-12dB  
★ Length: 3.00mtr **£169.95**  
★ Conn: N-type

*The ultimate receiving antenna - a must for the dedicated listener*

## ROTATOR

Suitable for MLP Log Periodic or any UHF/VHF beams.

**£49.95** + £6.00 P&P

## BRACKETS

6" Stand off .....£6.00  
9" Stand off .....£9.00  
12" T&K (pair) .....£11.95  
18" T&K (pair) .....£17.95  
24" T&K (pair) .....19.95  
36" T&K (pair) .....£29.95

## MD37 SKY WIRE (LONG WIRE BALUN KIT)

25 METRES OF ENAMELLED WIRE INCLUDES 10M PATCH LEAD & INSULATOR For use on with receiver 0-40MHz. All mode no ATU required 2 "S" points greater signal than other baluns. Matches any long wire to 50Ω improved reception.



**£39.95**

## MWA HF Wire Antenna Mk11

Freq 0.05MHz-40MHz Adjustable comes with 25 metres of H/Grade flexweave antenna wire, 10 metres of military spec RG58 coax cable feeder, insulated guy rope, dog bone & choke balun. All Mods No A.T.U. required. Super Duper Short Wave Antenna.

**NEW LOW PRICE £49.95**



## SUPER SCAN STICK

Freq. Range 0-2000MHz Length 1000mm. It will receive all frequencies at all levels unlike a mono band antenna. It has 4 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals. (Ideal for the New Beginner and the Experienced Listener alike).

**£29.95**

## SUPER SCAN STICK II

Freq. Range: 0-2000 MHz. Length 1500mm. This is designed for external use. It will receive all frequencies, at all levels unlike a mono band antenna. It has 8 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals plus there is an extra 3db gain over the standard super scan stick. (For the expert who wants that extra sensitivity).

**£39.95**

## 5' SWAGED POLES

Heavy Duty Ali (1.2mm wall)  
SINGLE 1 1/4" .....£7.00  
SET OF FOUR 1 1/4" .....£24.95  
SINGLE 1 1/2" .....£10.00  
SET OF FOUR 1 1/2" .....£34.95  
SINGLE 2" .....£15.00  
SET OF FOUR 2" .....£49.95



RG58 6mm standard .....£0.35 per mtr  
RG58 6mm mil spec .....£0.60 per mtr  
RF mini 8 7mm mil spec .....£0.85 per mtr

## CONNECTORS

PL259/9 .....£0.75 each  
PL259/6 .....£0.75 each  
PL259/7 for mini 8 .....£1.00 each  
BNC (Screw Type) .....£1.00 each  
BNC (Solder Type) .....£1.00 each  
N TYPE for RG58 .....£2.50 each  
N TYPE for RG213 .....£2.50 each  
SO239 to BNC .....£1.50 each  
PL259 to BNC .....£2.00 each  
N TYPE to SO239 .....£3.00 each

## Hi-Spec coax cable

RG213 9mm mil spec .....£0.85 per mtr  
RH200 9mm mil spec .....£1.10 per mtr (Phone for 100 mtr discount price)

## X1 HF Vertical

★ Freq.: 1.0-50MHz  
★ Type: Loaded  
★ Height: 2.05mtrs  
★ Conn: SO239

**£49.95**

## UK SCANNING DIRECTORY

8th edition

**£19.50**

## Wideband 25-1800MHz SuperGainer Rubber Duck Antennas

MRW-100 40cm long BNC .....£19.95  
MRW-250 14-41cm long telescopic BNC .....£19.95  
MRW-210 37cm long SMA .....£24.95 (ideal for Icom IC-R2)

*Increase the performance of your hand-held, without an external antenna.*

## EXWM-1 Window clip mount

★ BNC socket ★ 2.5mtrs mini coax with BNC plug ★ Black finish Suitable for any BNC hand-held antennas!

**£13.95**

(ADAPTERS FOR OTHER FITTINGS AVAILABLE)

## MRP-2000

(Pre-amplifier) Freq Range 25-2000 Mhz 9-15v input (Battery not included) 14 db Gain. Complete with lead and BNC connectors.

**£49.95**

## WEATHER SATELLITE ANTENNA

### TURNSTILE 137

Freq. 137.5 MHz Length 1000mm

This Antenna is designed for external use to receive weather satellite signals. Complete with mounting hardware.

**£39.95**

### SWP HF30

Freq. Range 0.05-30MHz Length 770mm

Although small, surprisingly sensitive for the H.F. user. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. (Good for the car user who doesn't want an external antenna).

**£39.95**

## SUPER DISCONE

Freq. Range 25-2000MHz Length 1380mm

Internal or External use (A Tri-Plane Antenna). The angle of the ground planes are specially designed to give maximum receiving performance within the discone design. The Super Discone gives up to 3db Gain over a standard conventional discone. Comes complete with mounting hardware and brackets. (Ideal for the Experienced Enthusiast).

**£39.95**

## HF DISCONE

Freq. Range 0.05-2000MHz Length 1840mm

Internal or External use (A Tri-Plane Antenna). Same as the Super Discone but with enhanced HF capabilities, comes complete with mounting hardware and brackets. (Ideal for the Short Wave H.F. Listener).

**£49.95**

## ROYAL DISCONE 2000

(Stainless Steel) Freq. Range Receive 25-2000MHz Transmit 50-52MHz 144-146MHz 430-440MHz 900-986MHz 1240-1325MHz Length 1540mm Connector-N TYPE The Ultimate Discone Design. 4.5DB GAIN OVER STANDARD DISCONE! Highly sensitive, with an amazing range of transmitting frequencies, comes complete with mounting hardware & brackets (The Best There is).

**£49.95**

## G. SCAN II

Freq. Range 25-2000 MHz.Length 620 mm.

Magnetic mount Mobile Scanner Antenna. 2 vertical loaded coils for good sensitivity complete with magnetic mount and 4mts of coax, terminated with BNC plug. (Good for when you are driving about).

**£24.95**

## SWP 2000

FREQ. 25-2000

MHz. Length 515mm. Multiband good sensitivity for its small size. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. (Good for the car user who doesn't want an external antenna).

**£29.95**

**ADD £6 P&P PER ORDER**



MOONRAKER (UK) LTD. UNIT 12, CRANFIELD ROAD UNITS, CRANFIELD ROAD, WOBURN SANDS, BUCKS MK17 8UR. TEL: (01908) 281705. FAX: (01908) 281706

■ Gerry L. Dexter, c/o SWM EDITORIAL OFFICES, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW.

■ E-MAIL: gdexter@pwpublishing.ltd.uk

# Bandscan America

The much-troubled Colombia has seen a new short wave station open on the 49m band. La Voz de tu Conciencia (voice of your conscience) is now active on 6.060, although it is proving to be a difficult catch for most. This religious

broadcaster is owned by the Pan American Mission based in Portland, Oregon, and is located in the small town of Lomalinda, some 240km southeast of Bogotá. Early on they were relaying their medium wave station, which uses the name Radio Alcaravan. So far, most of the North American receptions have been after 0600. Reception reports can be sent to **Apartado Aereo 95300, Bogotá, Colombia.**

Another fairly new South American station is Radio Parinacota in Putre, Chile, operating on 6.010 where Mexico's Radio Mil makes reception in North America extremely difficult. By the way, Radio Mil has installed a new antenna and seeks reports to **Radio Mil Onda Corta, Apartado Postal 21-1000, 04021 Mexico D.F., Mexico.**

Radio Transcontinental/XERTA, which has had a somewhat shaky existence since its inauguration two or three years ago, has changed its broadcast format to all religious programming. It also seems to have finally settled on a frequency, having bounced around the 60m band quite a bit (when it was active, that is). You'll find them now on 4.810.

Florida's Family Radio (WYFR) is a new customer for Merlin Communications and is now being relayed by Abu Dhabi, Woolferton, Ascension and Meyerton. The time exchange between WYFR and Radio Taipei International continues.

The new Paraguay station, Radio America, continues to try to 'jell' and US listeners continue to try to log it. Various tests continue to be run, but unfortunately, so far the power levels being used are extremely low. Frequencies to check are 7.300, 7.737 and 15.185 (all currently running 24 hours-a-day). Eventually the station expects to be using at least a couple of kilowatts. It will be a welcome addition to the sparse ranks of short wave broadcasters in that country.

Honduras may get another short wave station next year. Medium wave religious broadcaster Radio Bethel/HRHZ (on 1.160) plans a five-kilowatt station, which will operate on the 60m band. The station will be at the town of Taujica.

## Station Reactivated

Radio Vila (also using the slogan Radio Cima) has been reactivated in the Dominican Republic and is being heard on its old 4.960 frequency. It signs on at 1000 and is noted as late as 0400.

Also back is the anti-Castro programme produced by the Cuban American National Foundation - La Voz de la Fundacion - and carried over Radio Miami International (WRMI). It airs in Spanish on Mondays, Wednesday and Fridays on 9.955. Remarkably, with Radio Havana noted at less than their usual strength, poor modulation and so on, the Cuban jamming effort appears quite effective.

The frequency 9.955 is made virtually inaudible in the Midwest part of the USA during the evenings. Except for the Radio Marti broadcasts (which are also jammed, though not as effectively) virtually all of the anti-Castro short wave broadcasts are aired over WRMI.

## Joined Forces

Two US religious broadcasters have joined forces as the World Prayer Broadcasting Network, which looks to become a major player in that field. WJIE in Upton,

Kentucky, with its two short wave transmitters, an f.m. outlet in Louisville, KY, and a medium wave station in Indiana, are partnering with High Adventure Ministries' KVOH in California and KHBN-Palau.

Also included in the group will be the Voice of Liberty, a short wave, FM-TV facility to be built in Liberia. Plans are to add another four medium wave stations. High Adventure will also move its offices to Kentucky. WJIE will become the 'Voice of Jerusalem', with live broadcasts from that city.

That new religious broadcaster under construction in the state of

Alaska is running into some flak from locals concerned about the r.f. levels and related health questions. Additionally, there are claims that the station has violated various government regulations regarding 'wetlands' usage. Aurora Communications, which is building the station, says it is 'addressing' the issues. Whatever happens it seems sure that the on-air date for this new one will be delayed.

We don't know if it was inactive for a time or simply not making it, but Radio Miskut in Nicaragua has been observed again on its 5.770 frequency, running to sign off sometime after 0100.

## Reality Status

HCJB's move of its transmitters from the historic Pifo site move has changed from 'what if?' to reality status.

It's going to cost them more than \$4.5 million and require about four years to get the job completed. The new site at Santa Elena, near the coast, will have 11 transmitters and 17 antennas. They hope to have the first broadcasts on the air from Santa Elena by the middle of next year.

United Nations Radio doesn't seem to get much attention in the hobby press so let's give them some. You'll find their broadcasts in French from 1700-1715 on 7.150 (via Meyerton), 17.705 (Skelton) and 21.490 (Meyerton). 1715 to 1720 is just music on 21.490 and 1725-1730 is music on 7.150 (Meyerton). At 1730 to 1745 they're in English on 7.150, 17.570 (Ascension) and 17.710 (Skelton). Then they're off the air until 1830-1845 with Arabic on 15.585 (Rampisham) and 17.565 (Skelton).

Although reception conditions over the past summer were not worthy of any praise, reception from Brazil remained pretty good.



BROADCAST

This VOA QSL pictures the Jefferson Memorial with the cherry blossoms in bloom.



This Icelandic National Broadcasting Service QSL has an aerial view of the capital, Reykjavik.

4.755	Radio Difusora Rural, Campo Grande
4.805	Radio Difusora de Amazonas, Manaus
4.815	Radio Difusora Londrina, Londrina
4.875	Radio Difusora, Roraima
4.885	Radio Clube do Para, Belem
4.895	Radio IPB, Campo Grande
4.915	Radio Anhanguera, Anhanguera
4.985	Radio Brazil, Central Goiania
5.035	Radio Aparecida, Aparecida
5.970	Radio Itatiaia, Belo Horizonte
5.990	Radio Senado, Brasilia
6.010	Radio Inconfidencia, Belo Horizonte
6.020	Radio Gaucha, Porto Alegre
6.040	Radio Clube Paranaense, Curitiba
6.105	Radio Cultura Philadelphia, Foz de Iguacu
6.150	Radio Record, Sao Paulo
6.180	Radio Nacional, Brasilia
9.565	Radio Tupi, Curitiba
9.615	Radio Cultura, Sao Paulo
9.645	Radio Bandeirantes, Sao Paulo
9.665	Radio Marumby, Florianopolis
9.675	Radio Cancao Nova, Paulista
9.685	Radio Gazeta, Sao Paulo
11.725	Radio Novas de Paz, Curitiba
11.780	Radio Nacional, Brasilia
11.805	Radio Globo, Rio de Janeiro
17.815	Radio Cultura, Sao Paulo

The above have been noted over the past month or so. Compared to the rest of Latin America, Brazilian stations are fairly reliable when it comes to QSLing. Well, that covers things for this time. We're back again in three months with another update. Until then, good listening!

# Weather Satellites-

## An Introduction to the 'WXSAT Special'

Here's Lawrence Harris with some good reasons why you should take up weather satellite monitoring.

The challenge that faces me each year as I write the opening words for this 'WXSAT Special' is to come up with a new way of starting! How about 'Monitoring WXSATs is a brilliant hobby', or 'Monitoring WXSATs need not be expensive'? The truth - monitoring WXSATs has been one of my hobbies for a decade and a half, and I believe that you might also find it fascinating if you give me the chance to explain what it is all about - and how you can join in.

### Weather Satellites?

A summary first to put weather satellites (WXSATs) in perspective. If you have a scanner - and these have become cheaper in recent years - using even the simplest of antennas, you can hear a large

number of satellite signals amongst the sounds. A simple 'rubber duck' could bring in more than 20 to 30 satellites, and if you do this in a methodical manner, you should hear several in the 137MHz band that originate from up top. If you have not already done so, check that the frequencies 137.30, 137.50 and 137.62MHz (the main WXSAT v.h.f. frequencies) are included in the programming.

At certain times during the day - and later I explain how to check this out more carefully - you can hear the characteristic 'tick-tick' or 'tick-tock' of a WXSAT. The cycle represents a small part of the WXSAT picture. This repetitive sound lasts half-a-second, so we hear two cycles per second. If you have suitable hardware and software to decode this sound, you find that it represents one or two complete picture lines.

The two sound components become two image components

it transmits just one channel instead of two. By agreement between the two superpowers during the early 1960s, Russian and American WXSAT transmissions are compatible and therefore both types of WXSATs can be decoded using the same equipment.

What you are hearing with the scanner is the passage of satellites in near-polar orbits - we call them the polar orbiting WXSATs - going over your location, see **Table 1**. This distinguishes them from the other type of WXSATs - those in geo-stationary orbit, see **Table 3**. The good news is that the hardware required to receive the basic low resolution images is relatively inexpensive. These passes last for approximately 12

**Table 1 - Polar WXSATs - v.h.f. band frequencies.**

Satellite	MHz
NOAA-12	137.500
NOAA-15	137.500
NOAA-17 t	137.620
METEOR 3-5	137.300

**Table 1 - Supplementary.**

Satellite	MHz
SICH*	137.40
OKEAN*	137.40

(\*oceanographic resources satellites)

**Table 2 - Polar WXSATs - s.h.f. band frequencies.**

Satellite	MHz
NOAA-12	1698.0
NOAA-16 t	1698.0
NOAA-14	1707.0
NOAA-17	1707.0
NOAA-15	1702.5
FengYun-1C	1700.4 CHRPT
FengYun-1D	1700.4 CHRPT

**Table 3 - Geostationary WXSATs.**

Satellite	MHz	Position	Notes
GOES-W	1691.0	135°W	WEFAX
GOES-E	1691.0	75°W	WEFAX
METEOSAT-7	1691.0 & 1694.5	0°W	WEFAX
METEOSAT-5	1691.0	63°E	WEFAX
FENGYUN-2B	1687.5	105°E	(China) - for high-res data, no WEFAX
GMS	1691.0	140°E	WEFAX (Japan/Australia)
INSAT	2599.225	74°E	(India) - not standard

MSG-1 is now in orbit - 28 August 2002 - undergoing commissioning tests.

(after successful signal processing on your computer) - they are two different channels. The Russian WXSAT (the 'tick-tick') is one picture having twice the potential resolution because

minutes, depending on which satellite (and therefore how high above the earth) it is. You are hearing real-time transmissions - and this is what adds to the fascination. The professionals

cannot get the pictures before you do!

Your scanner is unlikely to casually pick up transmissions from the geostationary satellites because these require a suitable higher frequency antenna and pre-amp. This hardware is not too expensive - but please read the whole of this feature before making decisions!

### Satellite Names

America operates the NOAA (National Oceanographic and Atmospheric Administration) satellites in polar orbits and GOES (Geostationary Operational Environmental

Satellites) in geostationary orbit. *GOES-8* and *GOES-10* are positioned over the east and west coasts of America respectively. The Japanese GMS (Geostationary Meteorological Satellite) is located at 140°E longitude.

METEOR (the polar orbiters) and GOMS (Geostationary Operational Meteorological Satellite) are operated by the Commonwealth of Independent States (formerly Russia), though GOMS has failed.

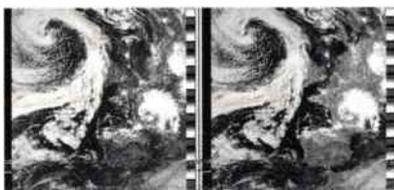
*METEOSAT-5* and *METEOSAT-7* are operated by EUMETSAT (European Organisation for the Exploitation of Meteorological Satellites). *MSG-1* (METEOSAT Second Generation) is EUMETSAT's new digital WXSAT and heralds a new era - see separate article.

The *FENG-YUN* series (translates as 'wind and cloud') are China's geostationary and polar WXSATs. India operates INSAT, a communications satellite carrying an imaging scanner. This cannot be described as a WXSAT, but it does transmit weather images.

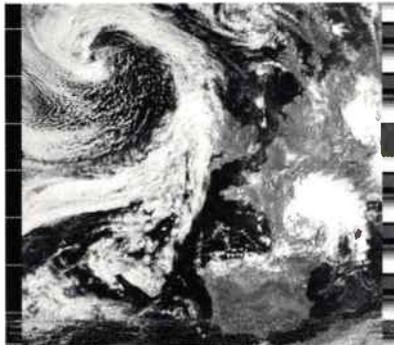
## Orbits & Software

The laws of physics tell us that the further from earth a satellite orbits, the lower its orbital velocity. Satellites in low earth orbits (LEOs) have periods of about 90 minutes; the Moon - at 404,000km - takes 27 days. In between, as pointed out by **Arthur C. Clarke** in his legendary paper on geostationary orbits, at a distance of 35,787km above earth, a satellite orbits once every 23 hours 56 minutes, and therefore remains 'stationary' in the sky, as seen from earth. For maximum coverage on earth, satellites are placed in this orbit above the equator. This orbit has become known as the Clarke belt. There are a number of satellites carrying imaging equipment in the Clarke belt and many of these are WXSATs - see **Table 3**.

To calculate the times when specific polar WXSATs will pass over your location you require software. I have dealt with



**Fig. 1: The 'tick-tock' sound becomes a WXSAT picture - NOAA-171104 5 September.**



**Fig. 2: A closer look at the right-hand channel in Fig. 1.**



**Fig. 3: METEOR 3-5 1249 5 September 2002.**

software in a separate feature in this 'WXSAT Special'.

## Low Resolution (APT & WEFAX) Coding

All WXSATs - polar orbiters and geostationary - provide high resolution images. Some also provide a subset - a.p.t. (automatic picture transmission from polar WXSATs) or WEFAX (from geostationary) - the low resolution equivalents. Low resolution WXSAT image data uses essentially the same method of encoding originally developed in the early 1960s.

A radiometer (a telescope with detectors) scans the earth below. The groups of detectors are separately sensitive to visible light and to specific portions of the infra-red spectrum, and produce output voltages representing the instantaneous brightness of the scene below. This signal amplitude modulates a 2.4kHz sub-carrier. The resulting modulated sub-carrier then frequency modulates the 137MHz band main carrier (137.50MHz in the case of *NOAA-15*), and is transmitted continuously in real-time.

The sub-carrier used by METEOR WXSATs is not a fixed 2.4kHz - it drifts. Unlike any other form of utility modulation, a WXSAT signal requires a minimum of about 30kHz of bandwidth to accommodate the spectrum spread. Add to that about 15kHz of Doppler shift due to the relative movement of the satellite towards and then away from the observer, and we need up to 45 or 50kHz bandwidth capability.

The signal encoding method is therefore unique, and is why purpose designed and built



**Fig. 4: WEFAX METEOSAT-7 C02 format 1300 5 September 2002.**

receivers are essential to reconstruct good quality images from the original data received from the satellite. Although the modulation method is similar, a.p.t. and WEFAX images have different content.

Polar a.p.t. is a stream of data - from acquisition of signal to its loss; the total picture can last from a few minutes on a low elevation pass, to about 18 minutes for a high elevation METEOR pass. WEFAX frames are usually of fixed length - about three minutes and 40 seconds - starting with one synchronising tone and ending with another. These days it is the software that does the work of recognising the tones of a.p.t. and WEFAX.

These low resolution polar WXSAT images, transmitted in the 137MHz v.h.f. band back in the 1960s, have the same format

now in 2002! Equipment built to receive and display these images back in 1963 could probably be used now, but the hardware/ software now available for anyone to buy, is two generations ahead. Not surprisingly, a new all-digital WXSAT *MSG-1* is being commissioned in orbit at this very moment - see the feature on *MSG* - with others planned.

NOAA WXSATs transmit continuous a.p.t. image data in the form of a single line every half-second. This line contains various components: the edge has a short white-line minute marker, preceded and followed by black within the column. This section is followed by the image from the visible-light channel, occupying about half the total line length. The middle of the image line contains a calibration scale for enabling measurements of temperature and channel identification. There is a second minute marker, followed by an infra-red channel, and the final calibration section.

Each half-second line of NOAA data carries a large amount of useful information with the two spectral images.

NOAA orbits are nominally sun-synchronous - that



**Fig. 5: Enhanced h.r.p.t. NOAA-17 1106 5 September 2002**



**Fig. 6: HRPT tracker.**

is - each satellite passes over the same location, at about the same time each day. *NOAA-17* passes south-bound during late morning and north-bound about 12 hours later. *NOAA-16* passes north-bound around 1300 and south-bound about 12 hours later.

*METEOR 3-5*, the current, though old, Russian WXSAT

# HAYDON

## Communications

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE VERIFY BEFORE ORDERING. £&OE.



Mail order: 01708 862524



See over for address

### Q-TEK D.C. 2000 DISCONE

SIMPLY THE BEST

A high performance wideband discone offering superb performance from 0.2-2000MHz. Transmit range: 6m, 2m, 70cm, 32cm & 23cm (power handling 200W). Fitted with low loss 'N' type connector. Supplied with mounting brackets.

OUR PRICE **£54.95** P&P £10.00

Comments from John Griffiths

Putting the DC-2000 up gave me a tremendous boost to all signals with the ancient AR-2000 coming alive! Signals were well received and I found that I wandered out of airband.

NEXT DAY DELIVERY TO MOST AREAS, £10.00.

### ROYAL DISCONE

0.2-2000MHZ



(Stainless steel)  
Frequency range: receives 0.2-2000MHz, transmit 6/2/70/23cm, connector N type. High sensitivity with an amazing range of transmitting frequencies. Comes complete with mounting hardware & brackets.

OUR PRICE **£44.95**  
P&P £10.00

### NEW Q-TEK INTREPID 2000



An amazing vertical (glass fibre) colinear antenna. Quality construction with incredible performance. For the serious scanner enthusiast.  
Freq range: 0.5-2GHz. PL-259 fitting (not supplied). Length 3m. Mast clamps supplied. (Gain up to 9dB is easily obtained). SO-239 fitting. Requires PL-259 plug (not supplied).

ONLY **£89.95** P&P £10.00

### THE VERTICAL CYCLOPSE



This new short wave listeners antenna was initially made specifically for one of our commercial customers but we felt the general public would find it of great interest. At only just over 7 feet high this vertical short wave receiving antenna will give amazing results from 0.2-30MHz and thanks to its commercial construction you simply erect it and away you go. Length 7'6". Fitting PL-259 (not supplied).

**£79.95** P&P £10.00

### DX-10 (R.F. SYSTEMS)



A superb quality active antenna with a very high intercept point ideal for weak signal reception without increases in radiated noise. A truly amazing antenna! Freq: 100kHz-30MHz. Bomb-proof over loading figures, 90cm long, mains PSU + controller supplied (coax optional). Atmospheric-noise compensated sensitivity.

**£169.95** DEL £10.00

### DX-1 PRO (R.F. SYSTEMS)



This is a professional wide band receiving antenna with a very high intercept point that ensures a low noise level allowing even the weakest signals to be heard. Constructed of high-impact plastic and aluminium alloy - the amplifier is protected inside a waterproof stainless steel vessel. The unit is supplied complete with mounting hardware and an indoor controller with PSU (coax not supplied). Freq. 20kHz-54MHz. Gain: +6dB (ref dipole). Intercept points:  $\geq +75dBm$  (2nd ord),  $\geq +50dBm$  (3rd ord). (Static protection included). For the true professional.

**£329.95** DEL £15.00

### AIR-44



(Airband base)  
Prof quality base antenna for AIRBAND. (Civil & military). With SO-239 fitting (1.7m long). Gain 4.5/7dB.

PROFESSIONAL QUALITY **£79.95** P&P £10.00

AIR-44N As above "N-type" fit.....£84.95

AIR-44 As above 1m long. Gain 3.6dB.  
**£49.95** P&P £8.50

### NEW PRODUCT Q-TEK SS-2000



Compact - indoor/outdoor scanning antenna. (50MHz-2.6GHz). Superb glass fibre construction. Ideal in areas affected by "noisy neighbour syndrome". This antenna can be put in the loft or outside on the building. Initial tests show this to far outperform a discone at "VHF". SO-239 socket (PL-259 plug needed) 1.3m long (mast clamps supplied).

50MHz-2.6GHz and under 1.3m long **£49.95** DEL £10.00

### MLBA (R.F. SYSTEMS)



Ready assembled wire antenna offering low noise reception on long, medium, short wave (100kHz-40MHz) adjustable from 6mts to 20mts long. Magnetically coupled transfer system ensures reduced static noise levels and allows unwanted build-up to leak harmlessly to earth without damaging the receiver. (Subject to recvr. being earthed).

**£64.95** POST £5.00  
PL-259 to PL-259 4mtr patch lead.....£8.99

### GLOBAL AT-2000



Deluxe SW ATU  
0-30MHz. SO239 fittings.

ONLY **£89.00**  
P&P £5

(Probably the best ATU around)

PATCH LEADS AVAILABLE IF REQUIRED.

PL-259 to PL-259 patch lead.....£5.99  
BNC to PL-259 patch lead.....£9.99

### Q-TEK SKY-WIRE MkII

Ideal for any receiver. Receives all short wave bands (all mode). No ATU required. Built-in balun, PL-259 connection (0-52MHz).

ONLY **£32.95** P&P £3.00  
8 METRES

SO239 BALUN

### E.M.F. ANTENNA



A low cost, superb passive broadband (500kHz-30MHz) antenna useable down to 150kHz. Ideal for indoor or outdoor use and at only 4mtrs long you most certainly will find the space! Using magnetic transfer technology, interference & noise is minimised. Ready assembled + PL-259/coax.

ONLY **£62.95** P&P £4.00

### WA-50 'AMPLIFIER'

SEND SAE FOR DATA SHEET



Broadband amplifier for short wave, medium & long wave. 50kHz-50MHz. 10dB gain. Superb low noise amplifier. Ideal for short wave improvement. Requires 12V (150mA).

OUR PRICE **£99.95** P&P £7.50

Optional AC adapter.....£16.99

### MLB (R.F. SYSTEMS)

SEND SAE FOR DATA SHEET



The MLB contains a special impedance matching transformer which converts any piece of wire between 6 and 20 metres long into a wide band receiving antenna. 100kHz-40MHz. Low noise - probably the best there is!

**£39.95** POST £3.00

### DPX-30 ANTENNA DUPLEXER/COMBINER

SEND SAE FOR DATA SHEET



Ant A (0-30MHz) } To receiver low  
Ant B (30-2000MHz) } insertion loss

Allows two antennas to be connected to one receiver without interaction. **£54.95**  
P&P £3.50

### QS-300



A fully adjustable desk top stand for use with all hand-helds. Fitted coaxial lead with BNC + SO239 connections.

OUR PRICE **£10.00** P&P £3.00

### SP-3 (PROFESSIONAL)

SEND SAE FOR DATA SHEET



Two way combiner. one antenna feeds two scanners (without mismatch). 10-2500MHz. High isolation (BNC sockets).

Can be used in reverse **£59.95** P&P £3.50

### SP-1 TWO WAY COMBINER (PROFESSIONAL)

SEND SAE FOR DATA SHEET



Very high quality combiner allows two short wave receivers to be connected to one antenna without interaction. 50kHz-30MHz (SO-239 fitting).

Can be used in reverse **£59.95** P&P £3.50



**ENTER THE WORLD OF EXPLORATION  
AND ENJOY A LIFE OF NEW DISCOVERIES**

*...bring your scanning directories to life!*

*With 2 Megabytes of Memory*

**FAIRHAVEN RD500VX+  
RADIO DATABASE**



**The RD500VX+**  
is a new kind of  
wideband receiver with  
sleek, robust styling,  
...only 8 inches wide!



Its massive memory can store information equivalent to several scanning directory books. Any word such as "Fire", "Air", "Voice Of America", or even your local town can be searched for. It can hold 54,682 entries, each with 20 characters of text, mode, and frequency. A 45 key TV style remote is provided for text entry and control, and a PC keyboard can be plugged into the receiver.

...No more thumbing through scanning directories, and no PC needed!

**RD500VX+**  
**SALE PRICE: £699.99**

**OUR IN-HOUSE TESTS SHOWED THIS  
OUTPERFORMED THE COMPETITION - EVEN WHEN  
COMPAIRED TO £1500 RECEIVERS**

subject to availability  
Delivery £10.00

**The RD500VX+** gives wideband coverage with auto memory, skip list, priority channel, pause/hold, AFC, world time clock, and S-meter, and its HF performance is complemented with pass band shift, notch and peak filter, noise blanker, and smooth 5Hz tuning steps.

Modes include USB/LSB, AM, sync AM, stereo CW, NBFM/WBFM and stereo FM, with TV sound and video output as standard.

We include Windows software to make it easy to gather information from document scanners, the Internet and other sources. **The RD500VX+** can be linked to your PC to backup or download information, and a database is loaded into the receiver before shipping.

It also has a built in digital sound recorder and editor so a news flash or rare DX can be recorded. Up to 4 minutes of sound can be permanently stored!

**Specifications:**  
Sensitivity (10dB S/N) HF SSB 0.2uV. IP3 +10dBm.  
VHF/UHF NBFM 0.3uV. Scan speed 50/second.  
Frequency range 0 - 1750MHz  
Collins filters available.

N.B. Picture of radio above is not the latest model.

# HAYDON

## Communications

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE VERIFY BEFORE ORDERING. E&OE.



Mail order: 01708 862524



See over for address

NEXT DAY DELIVERY TO MOST AREAS £10.00

desk receivers

### REALISTIC DX-394



★ Superb performance SW receiver ★ 0.2-30MHz (all mode)  
★ Selectable tuning steps (down to 100Hz)  
★ 240 or 12V ★ Digital S-meter ★ Attenuator ★ Key pad entry ★ 160 memories ★ Noise blander.

OUR PRICE **£149.95** P&P £10

OUR BEST SELLING LOW PRICED RECEIVER  
HD-1010 optional headphones .....£9.99

### 2 YR G'TEE ICOM IC-R75



FREE POWER SUPPLY

The short wave receiver for the true enthusiast.  
● 0.03-60MHz (all mode)  
● Synchronous AM detection  
● PC control capability.

Optional DSP unit £8.00 OUR PRICE **£589.00**

OUR BEST SELLING HF RECEIVER  
SP-21 Extension speaker .....£74.99

### JRC NRD-545 DSP



The ultimate short wave receiver with DSP - for the real perfectionist.

OUR PRICE **£1299.00** Del £10.00

NVA-319 Extension speaker .....£189.00  
CHE-199 VHF/UHF converter.....£269.00

portable receivers

### NEW - EVOKE-1



D.A.B. radio under £100.00!

Using the latest third-generation D.A.B. technology, Evoke-1 delivers outstanding digital sound quality at an affordable price. A stylish, mains powered receiver without the normal hiss, crackle and fade of old AM/FM broadcast. Transform your radio listening.

OUR PRICE **£99.95** P&P £10

### SANGEAN ATS-909



Roberts name at nearly twice the price. Other features include RDS facility, 306 memories and FM stereo through headphones. The ATS-909 represents superb value for money.

OUR PRICE **£139.00** P&P £10

Optional power supply.....£16.95  
HD-1010 mono/stereo headphones.....£9.99

### SONY SW-100E



★ Miniature portable all mode SW receiver ★ Station presets for 50 frequencies ★ Single side band system ★ Synchronous detector ★ Tuning in 100Hz + 1kHz steps ★ Includes compact antenna/stereo earphones/carrying case.

OUR PRICE **£159.95** P&P £10

ACE-30 Power supply unit for above .....£24.95  
AN-100 Active antenna.....£64.95

NOW IN STOCK - ORDER NOW - D.A.B. "digital audio broadcasting" portable receiver for **£99.95**

gizmos

### MAST HEAD PULLEY



A simple to fit but very handy mast pulley with rope guides to avoid tangling. (Fits up to 2" mast).

**£8.95** + P&P £2.50

30m pack nylon rope (4.4mm) .....£10.00  
50m pack of antenna wire .....£12.99

WHY NOT CONNECT A LONG WIRE TO MAKE AN EASY-TO-ERRECT ANTENNA SYSTEM?

### Q-TEK PL-25



0.2-2GHz. An easy to use PL-259 (right angled) telescopic whip. Ideal for all receivers.

OUR PRICE **£19.95**

P&P £2.50



As above with 'rotary hinge' **£29.95**

BNC adaptor .....£3.49  
N-type adaptor.....£3.95

### MICRO MAG ANTENNA MM-1



Micro magnetic base with (19") whip. Rx: 0.5MHz-2GHz. Ideal for all scanners supplied with miniature coax lead & BNC (all fitted).

OUR PRICE **£24.95** P&P £5.00

BNC to PL-259 adaptor .....£3.49  
BNC to N-type adaptor.....£3.95

items of interest

### REGULAR-GAINER RH-770



"BNC" 21cm flexible whip that is ideal as replacement. (Rx: 25MHz-2GHz) (Tx: 2m/70cms).

OUR PRICE **£16.95** P&P £1.50

### SUPER-GAINER RH-9000



"BNC" 40cm flexible whip for the ultimate in gain. (Rx: 25MHz-2GHz) (Tx: 2m/70cms).

OUR PRICE **£21.95** P&P £1.50

### DB-2000



A superb "BNC" black telescopic whip. Ideal for scanners. Folds neatly away. (0.1-2GHz).

OUR PRICE **£14.99** P&P £1.50

### NEW NOISE FILTER!



A superb TDK 'snap fix' ferrite clamp for use in Radio/TV/Mains/PC/Phone etc.

Simply close shut over cables and notice the difference! Will fit cables up to 13mm diameter.

SRP: £24.90/pair  
OUR PRICE: **2 for £10** (p&p £2.50)

### Accessory items

PL-259 - PL-259 (short patch lead).....£5.99  
PL-259-PL-259L (4 mtr patch lead) .....£8.99  
BNC-BNC (short patch lead) .....£6.99  
BNC-BNC "L" (5 mtr patch lead).....£9.99  
50m roll flexweave (heavy duty antenna wire) .....£30.00  
20m roll flexweave (heavy duty antenna wire) .....£15.95  
50m roll PVC coated (stranded wire).....£10.95  
30m roll nylon guy rope (4.4mm) .....£10.00  
Nylon "Dog Bone" insulators .....£1.00  
Roll self-amalgamating tape (25mm x 10m).....£6.50  
Ferrite rings.....£2.00 each  
RG-58 coax "Mil spec" 100m roll .....£35.00  
RG-213 coax "Mil spec" 100m roll.....£70.00

### WATSON HUNTER



Frequency counter covers 10MHz-3GHz. Incl's nicad, charger, antenna.

ONLY **£59.95**

P&P £6.00

Optional case ~~£14.99~~ .....£7.50



### BA-888

ELECTRONIC BAROMETER/CLOCK.

- Temp/weather/forecast/pressure barometric trend
- 24hr bargraph
- 12/24hr clock & alarm
- Humidity ● Table/wall mount

OUR PRICE **£69.95** P&P £4.00

### SECONDHAND LIST

MVT7100 as new .....£169.95  
MVT7300 as new .....£199.95  
MVT9000 MkII as new.....£299.95  
AR8000 boxed as new .....£199.95  
AR8200 MkI vgc .....£249.95  
AR8200 MkII as new.....£329.95  
MVT7000 boxed, etc .....£119.95  
AR8600 as new, boxed.....£499.00  
PRO-2042 (25-1300MHz) .....£199.95  
DX-394 as new .....£119.95  
AR3000A immaculate .....£499.95  
ICR75 as new + DSP.....£549.95  
FRG-100 vgc.....£299.95  
RD-500VX+ as new .....£549.95  
HF-150 as new .....£199.95  
PRO-2036 desk top .....£299.00  
PRO-60 25-1300MHz (no book).....£99.00  
IC-R3 as new - boxed.....£339.95  
UBC780XLT as new - boxed.....£259.95  
E-map kit incl's. CD + mem card.....£199.00  
NRD-535 as new.....£699.99  
ICR70 VGC (private sale).....£299.99

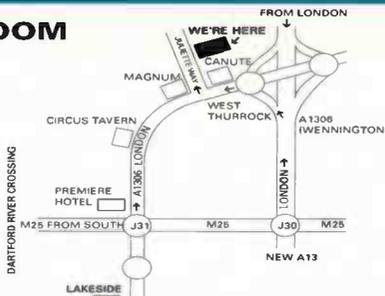
## THURROCK, ESSEX SHOWROOM & MAIL ORDER:

Unit 1, Thurrock Commercial Centre,  
Purfleet Industrial Park, Aveley,  
South Ockendon, Essex RM15 4YA  
TEL: 01708 862524  
FAX: 01708 868441

Open Mon - Fri 8am - 4.30pm.  
Sat 8am - 1.00pm.

E&OE

5 mins from  
Lakeside



## W. MIDLANDS SHOWROOM

Unit 1, Canal View Ind. Est.,

Brettel Lane,

Brierley Hill

W. Mids.

DY5 3LQ

Open Mon-Fri 9.30-5pm.

Sat 9.30-1pm

Tel: 01384 481681

NO MAIL ORDER TO MIDLANDS  
BRANCH



### ALINCO DJ-X3

Micro-handly scanner. 100kHz-1300MHz.  
700 memories/stereo FM (earphones)/  
attenuator/bug detector/audio  
descrambler. AM/FM/WFM/ Selectable  
tuning steps (incl's 8.33kHz).  
OUR PRICE **£115**

Optional battery pack and drop in charger £39.99

Soft case ..... £15.99  
PC interface ..... £39.99



### ALINCO DJ-X10

Full-featured handy. 100kHz-2GHz all  
mode. Includes SSB/CW band scope,  
alphanumeric display plus loads more.  
(Includes battery/drop-in charger).

OUR PRICE **£269.00**

Optional case ..... £15.00  
Optional battery box ..... £14.99  
Cigar lead ..... £19.99  
PC interface ..... £39.99



### ALINCO X-2000

The intelligent scanner! 100kHz-2.15GHz.  
All mode incl's SSB, "Flash Tune" reads  
frequency of nearby signal & tunes  
the handle for you. Incl's battery, charger &  
loads more.

OUR PRICE **£449.95**

Optional case ..... £15.00  
Optional battery box ..... £14.99  
Cigar lead ..... £19.99  
PC interface ..... £39.99



### MVT-7100EU

Wideband hand-held scanner covers  
500kHz-1650MHz. (All mode). Includes  
nicad/car charger/charger/antenna.  
Extremely user-friendly hand-held receiver  
with outstanding performance unmatched  
by its rivals.

OUR PRICE **£199.95**

Soft case for 7100EU/9000 - specify. £19.99  
MVT-9000 MkII ..... Our price £325.00

MVT-7300EU ..... Sale price £219.00



### MVT-9000 MkII

The "flag ship" of hand-holds.  
0.5-2000MHz. AM, FM, WFM, USB, LSB.  
Includes nicads & charger. A superb top  
of the range hand-held with performance  
to match.

0.5-2GHz all mode. SALE PRICE  
Yupiterus best ever  
production model **£325.00**



### AR-8200 SERIES-3

Never before has one hand portable  
offered so much. ★ Covers 100kHz-  
3GHz (all mode) ★ Computer control  
capability ★ 8-33kHz steps for the new  
airband spacing ★ Reaction tune  
capability ★ Includes nicads/charger/  
antenna and car lead.

OUR PRICE **£379.00**

Optional case ..... £19.99  
CC-8200 PC interface ..... £79.99

### Q-TEK APOLLO 2000 MkII



A brilliant new compact indoor antenna  
that covers 0-1650MHz and is just 20"  
tall (collapsed). Supplied with coax and  
BNC plug fitted.  
Ideal for table top mounting or by the  
window.

ONLY **£54.95** P&P £6.00

new to our range

### M-75 SCANNER PRE-AMP



Superb BNC in-line amplifier to boost  
signals! Fits on top of your scanner and  
away you go. (Powered by PP-3 battery -  
not supplied).  
Freq: 24MHz-2.1GHz.  
Gain: -10dB to +20dB.

OUR PRICE **£79.95** P&P £5.00



NEW 8th EDITION

### THE UK SCANNING DIRECTORY

Britain's best selling scanner book now  
larger than ever. Nearly 700 pages packed  
full of frequencies from 25MHz-1.8GHz.

ORDER YOURS TODAY!

PRICE **£19.75** P&P £4.00

### NEW AOR AR8600 MkII



Extremely versatile all  
mode receiver  
(530kHz-2040MHz).  
Optional power  
supply ..... £19.95

AR5000 ..... £1295  
AR5000+3 ..... £1449  
SDU5500 ..... £799  
AR3000A ..... £699

OUR PRICE  
**£649.95**

### YAESU VR-5000



0.1-2.6GHz all mode  
receiver with DSP  
(optional) plus band-  
scope/world clock and  
too much more to print.

OUR PRICE **£575.00** (incl's PSU)  
Optional DSP ..... £79.95

### ICOM IC-8500



Next generation  
wideband receiver.  
0.1-2GHz. (All mode)

2 YR G'EE

OUR PRICE  
**£1149.95**

SP-21 extension speaker ..... £74.99  
Voice synthesiser board ..... £34.95

### BEARCAT UBC-780XLT



New comprehensive  
scanner (25-1300MHz)  
Alpha Tag, PC  
cloning control.  
Smart scanner + trunk  
track facility.

OUR PRICE **£299.99**

Software 780XLT ..... £29.99

### BEARCAT UBC-9000XLT



25-1300MHz wideband  
desktop scanner with  
turbo scan. (Selectable  
AM/FM/WFM).

Selectable tuning steps + alpha-numeric tagging.  
"Our best selling  
desk-top scanner" OUR PRICE **£235.00**

### NEW UBC-278CLT



New base scanner with built-in  
clock radio. 25-956MHz (with  
gaps) 88-108MHz (WFM)  
500kHz-1720kHz (AM).  
Fully programmable. Ideal for  
the bedroom.

OUR PRICE **£139.95** Delivery £10.00

### NEW UBC-280XLT



Sportcat twin turbo. Easy to  
programme - turbo scan handie.  
25-956MHz (with gaps).  
CTCSS/DCS tone facility. Alph  
numeric display. Turbo search -  
300 steps/sec. Incl's  
batts/charger.

A SNIP@ **£159.95**  
Delivery £10.00

### ETREX VISTA



24Mb of memory +  
altimeter & map  
facility.  
SRP £399.00.  
This is the top of the  
range ETREX model  
and comes complete  
with PC cable.

SALE PRICE  
**£299.00**

### ETREX CAMO



This version is the  
same as Etrex Standard  
but includes:-  
● Camouflage  
● Fishing  
● Hunting  
● Calculator.

SRP £170.00.  
SALE PRICE **£119.00**

### STREET PILOT III DELUXE



Now with "voice  
prompts" as well as  
direction indication.  
Incl's: Map CD, 128  
meg cart & data  
card, power lead & mount. The ultimate in  
talking GPS's.

OUR PRICE  
**£1099.00**

hand-held scanners

gadgets

mobile / base scanners

bargains

transmits during the sunlit part of its orbit. Its image content - see **Fig. 3** - is different from the NOAAs. Each line lasts a half-second, as with the NOAA WXSATs, but only one spectral image is present, so METEOR ground resolution is higher. The scanner operates with wavelengths from 0.5 to 0.8 $\mu$ m (microns) - a little different from the channel 2 visible-light band from the NOAA scanner.

The image line starts with a group of black-and-white bars (columns). At one time, these could identify a particular satellite. Image data follows; the penultimate section contains white and black columns that can individually be 'on' or 'off', ending with a grey scale. Careful monitoring of the columns shows them to be a binary representation of the numbers 0 to 63; the current number indicates the opening of the aperture of the image scanner - and this changes as METEOR crosses varying illuminated ground.

This piece of satellite sleuthing was discovered by the Kettering Group, British experts on Russian satellites based in Kettering during earlier decades. The METEORs originally transmitted infra-red images during the night. Such transmissions were received during the early operational phase of these WXSATs, but invariably ended within a few weeks or more - apparently due to instrument failure.

*METEOR 3-5* has an orbital plane that precesses slowly with respect to the sun. It therefore occasionally coincides with the earth's zone of twilight. At such times, although the satellite (and its solar panels) are in continuous illumination, the ground below is in darkness, so transmissions from the spacecraft may be terminated for a period of weeks.

The SICH and OKEAN series are oceanographic resources satellites that, on rare occasions, have transmitted for short spells lasting a few minutes. Although

they transmitted a.p.t. (and have therefore been monitored by many people), image content varied, sometimes including visible-light, radar, or even microwave image sections. *SICH-1*, *OKEAN-4* and *OKEAN-O* are no longer operational, but replacements are planned.

### High Resolution - PDUS & HRPT

Geostationary WXSATs transmit high resolution images, referred to as Primary Data (PD), on 1691.0MHz. The polar orbiters transmit high resolution images on frequencies, see **Table 2**, in the 1700MHz band. Both



**Fig. 7:** Crossed-dipoles (turnstile) for a.p.t. reception.



**Fig. 8:** Quadripolar Helix Antenna for a.p.t. reception.

of these transmission formats require special equipment that is at the top end of the price scales. This is the stuff that professionals use. For your money you get a large, fixed dish, cabling and PDUS receiver and decoder, or you buy a 1m dish and tracking system - see **Fig. 6** - for the polar satellites. The reward is top quality images.

### WEFAX & APT Systems

Although a general purpose scanner fed by a 137MHz antenna will suffice for monitoring polar satellites - it cannot decode the signals to produce pictures without significant modification. If you want to do this properly, you need a purpose-designed system.

Buying a complete 'plug-in-and-go' set-up is the quickest, and you are guaranteed compatibility. Most hobbyists use WEFAX and/or a.p.t. because this is cheaper. For a.p.t. reception, a crossed-dipole, see **Fig. 7**, phased for right-circular polarisation, can be used for the NOAAs. Quadripolar helix antennas, see **Fig. 8**, have gained popularity - I use one myself. The antenna can be mounted on a roof-top after first testing near ground level to ensure that it works properly. Cabling should be low-loss 50 $\Omega$ ; pre-amps are optional - they may amplify unwanted terrestrial signals.

For WEFAX (dual-band) reception, the antenna must be either a 1m dish (fitted with horn or dipole) or a Yagi - the dish probably being the most common. A dish diameter of 1.8m is officially recommended for WEFAX (also known as SDUS - Secondary Data User Station), in order to guarantee uninterrupted reception during test periods.

For most of the time, reception is satisfactory when using smaller dishes, but a high quality pre-amp and short low-loss cable run are essential for WEFAX. An alternative option for a METEOSAT system is the possibility of using a down-converter to move the 1691MHz signal down to 137.50MHz, for feeding into a standard v.h.f. WXSAT receiver. For both WEFAX options, the above hardware should produce a good quality signal in the 137 or 1691.0/1694.5MHz band.

The receiver is defined by your system requirements - a.p.t. only, WEFAX only, or both. One receiver can do both, an economical option with compromises. A good option would be an a.p.t. receiver with a down-converter for WEFAX.

### Decoding The Signal

The use of a computer to decode a.p.t./WEFAX signals from a proper receiver is the normal way to complete your WXSAT station. Both types of receiver (direct 1691MHz or standard

137MHz band) provide an output for subsequent decoding, and PC computers currently permit the largest choice of decoding hardware/software. The system receives the audio signal, software decodes it and displays the resultant image line-by-line, in real-time. Automatic data capture is common.

An alternative, and very popular method of telemetry decoding relies on the availability of a suitable sound chip or card in the computer. The audio signal can be recorded as a 'wav' file and can be decoded either in real-time, or later - see separate article on software. Whatever method is chosen (or experimented upon), the final result depends largely on the quality of the hardware used to obtain the signal.

### Image Flow

A properly set-up ground station can receive several images from each of the operational polar orbiters, every day. Active NOAA WXSATs should be received on all passes above your horizon. They provide side-by-side (visible-light and thermal infra-red) images during daylight, and near-infra-red and infra-red during the night.

METEOR satellites provide a visible-light image that emphasises clouds and snow - optimised for northern Russian latitudes. Except for deserts, land is not well seen. There are various faults in METEOR images: jitter causes ill-defined edges to details within the image, and the aperture sometimes appears to 'stick', causing bands.

Autumn scenes darken as the sun's elevation reduces; land temperature falls, and this is clearly seen on NOAA infra-red images. METEORs switch off earlier because they reach twilight (unlit ground) while still above the horizon; their visible-light pictures become difficult to interpret. The waters of the Gulf of Bothnia freeze and snow coverage on the Swiss Alps increases. From March, an improvement is seen as the sun's elevation increases. The arrival of spring sees melting ice and lighter images. By summer, hot land is clearly seen on all infra-red images.

Every image received from a polar orbiter can be improved by

using basic software image enhancement techniques. The darker areas of images - land in METEOR images, or winter scenes in NOAA images - can be significantly improved.

WEFAX images are transmitted according to a schedule and include sections of the visible hemisphere. The infra-red (D2) and visible-light (C02) formats from *METEOSAT-7* include Britain, and are transmitted every 30 minutes. Animation sequences can be produced. Whole disc images from all sensors are transmitted regularly, as are images originating from *GMS-5*, (Japanese) and *GOES-8* (USA). As a regular supplier of up-to-date images of this hemisphere, it is hard to beat METEOSAT WEFAX.

### System Costs

The cost of a system depends on your choice of hardware. A complete METEOSAT receiving system, excluding computer, has cost around £500 - with variations. Cheaper

combinations such as using a down-converter, lowers this considerably. An 'active feed' allows the use of low cost offset dishes for receiving WEFAX.

Receiving equipment for low resolution transmissions from the polar orbiters can cost up to £500, but discounts may be obtained. These prices are guidelines; special offers and kit options may reduce the cost. Proven systems can be bought in kit form from reputable organisations, such as the Remote Imaging Group. Do be aware that some electronics experience and test equipment is essential for success.

### High Resolution - PDUS & HRPT - Changes

Primary Data is scheduled to end in late 2005, superseded by the new HRIT (High Rate Information Transmission) service from *MSG-1*. I am not aware of definitive costings for the new receiving systems yet. Additionally, like Primary Data, HRIT will be encrypted, and the cost of this may not be

completely defined, though a Key Unit may cost about 400 Euros. Meanwhile, HRPT will continue to be available from NOAA WXSATs, being supplemented in due course by MHRPT - (METOP HRPT) from EUMETSAT's new METOP series. Full information will be published in 'Info In Orbit' as it is released.

### WEFAX - 2005 Marks The End Of The Line

Major changes are underway. *MSG-1* (METEOSAT Second Generation) is now in orbit and will replace *METEOSAT-7* when the new digital system - Low Rate Image Transmission (LRIT) is introduced. The EUMETSAT User Service confirm that the METEOSAT Transitional Programme (the current HRI and WEFAX service) will be continued until the end of 2005. This will allow for a significant amount of overlap with METEOSAT Second Generation (MSG) operations. The latest information will always be

included in my *SWM* column.

### Suppliers

**RIG (Remote Imaging Group)** - An international group of enthusiasts based in Britain. Can supply a number of products with discounts. Membership secretary **John Din, 59 Woodend Road, Coalpit Heath, Bristol, BS36 2LH** or E-mail: [jdin2197@aol.com](mailto:jdin2197@aol.com) **Timestep, PO Box 2001, Dartmouth TQ6 9QN, Tel: (01803) 833366.** Currently the only supplier in Britain offering a large range of hardware for the hobbyist.

I welcome information from any manufacturer of WXSAT equipment who wishes to be listed in future articles.

### So What Next?

Two things. Firstly join RIG. You can then see the latest prices and availability. Secondly, decide whether your interest has been kindled or killed after reading this 'WXSAT Special'. I hope you will come and join us!

# METEOSAT

## Second Generation WXSAT in Orbit

Lawrence takes a brief look at Europe's brand new WXSAT.

**W**eather satellites (WXSATs) must be amongst the last of technology's wonders to be brought into the 21st century. Most television sets sold in the 1960s would simply not work now because the 405-line service of the 1950s and early 1960s was upgraded before the end of that decade to 625-lines. In Britain, colour television transmissions only started shortly before the

moon landings. Although the 625-line service is still available, the trend to digital television is inexorable.

As discussed in the main feature on WXSATs, the METEOSAT series, together with almost every currently operational WXSAT, has stuck to the transmission formats originally agreed between the superpowers back in the early 1960s. This has been excellent for amateur hobbyists because technological progress

elsewhere has increasingly enabled us to 'eavesdrop' on the professional weather forecaster and scientist's field, but it is finally time to be overtaken once more - perhaps for a year or so.

The METEOSAT series of European geostationary WXSATs started operations almost 25 years ago, producing its first image on 9 December 1977 - see **Fig. 1**. The picture was shown on television, and because I was deeply involved in the UK space programme, I

remember seeing it and feeling pleased that METEOSAT was a European success. The series continues to provide us with low cost, low resolution WEFAX, and high resolution Primary Data today, but its end is scheduled for late 2005.

Instead of mourning the passing, let us look at the second generation of hardware systems and anticipate what they should deliver. Essentially, we can expect more and better - but at a cost.

### MSG-1 Payload

*MSG-1* carries more equipment than earlier METEOSATs. The new all-digital WXSAT carries four main payloads: the meteorological package - the radiometer and telescope system SEVIRI (Spinning Enhanced Visible and Infra-red Imager), the climate research package - GERB (geostationary earth radiation budget), the Meteorological Communications Payload (MCP) communication system providing data and control transmission and finally there is a Search and Rescue transponder.

*METEOSAT-7* and its predecessors have delivered a fresh image every 30 minutes. That image has shown details, in Primary Data, to 2.5km resolution in visible-light and 5km in infra-red, in a total of three channels. The new sensing system, SEVIRI, carried by *MSG-1*, is a multi-wavelength camera - and this will produce images of



**METEOSAT-1**

**Fig. 1: M-1 first image 9 December 1977. Copyright EUMETSAT.**

the Earth's surface and cloud cover in 12 different wavelength bands, every 15 minutes. The images will have a higher resolution - the smallest detail at 1km in the visible and 3km in the infrared, at 10 bits per pixel. Note that this 1km resolution is virtually equivalent to current h.r.p.t. - the high resolution images from the much lower polar orbiting WXSATs - but of course this only applies to the satellite's nadir - the Gulf of Guinea in equatorial Africa.

By doubling the rate of image taking to four per hour instead of two, *MSG-1* will provide improved coverage of cloud development, and with greater sensitivity. Three of the 12 imaging channels record visible light reflected from Earth's surface and clouds. Five channels will discriminate clouds, and measure cloud temperature, land and sea surfaces in infrared; the remaining will detect wavelengths emitted by water vapour, carbon dioxide and ozone in the atmosphere. This will be a significant improvement that should lead to

better climate modelling and provide a 3D view of the atmosphere.

## Commissioning

*METEOSAT-7* currently remains operational at 0° longitude. Launch activities, and the period immediately following this (the Early Orbit Phase - LEOP), were performed by the European Space Operations Centre (ESOC), a European Space Agency (ESA) facility in Darmstadt (Germany). This takes one week. Thereafter ESOC will also be responsible for a short period of in-orbit storage (IOS).

EUMETSAT takes over the

initial imaging tests. Non-SEVIRI data should become available to High Rate and Low Rate User Station (HRUS and LRUS) users prior to that time. I hope to publish the first image in my monthly column.

Coordination of image data transmission to HRUS and LRUS users will be via the EUMETSAT User Service. During in-orbit commissioning, the *MSG-1* spacecraft will be located near 10°W. Following the successful completion of in-orbit commissioning, the spacecraft will be re-located to *METEOSAT-7*'s current position at 0° longitude. Parallel operations will start with *MSG-1* at 0°, and *METEOSAT-7* at about 10°W, and are currently planned for autumn 2003.

After more than eight years of operation (late 2005), *METEOSAT-7* will finally be shifted into the 'graveyard' orbit (a belt above the geostationary distance) and then remain there as a non-functional satellite. *MSG*'s operational orbit remains at 0° for its designed lifetime - at least seven years.

## When All Goes Right

A schedule has been published for LRIT - the

size. Accordingly, the Council has published a 'wish' list that prioritises a selection of channels from *MSG* and from *GOES* and comparable WXSATs, but their main aim is to use the available LRIT bandwidth to its maximum capacity. LRIT will also carry several meteorological products in addition to those seen from *METEOSAT-7* - Atmospheric Motion Winds, Global Instability Index, Cloud Mask and Cloud Top Heights.

Other data is still under consideration for inclusion and may be added to the schedule. Only live experience can determine the optimum compression circumstances. In my humble opinion, I would suggest that the potential collection of imagery is likely to make *MSG-1* LRIT an extremely attractive proposition. The opportunity for better quality and more coverage from one WXSAT must surely be appetising?

Sadly, the cost of encryption will be a factor. LRIT is being almost fully encrypted - the exception being the synoptic images. Users will require an LRIT license fee and an *MSG* station key unit - costing about 400 Euros. This may be the 'killer' of the system for hobbyists - only time will tell. I do hope to have the opportunity to test manufacturer's systems on, at least, the unencrypted



**Fig. 2: The *MSG-1* satellite - Structural and Thermal Model (STM) during the integration and transport to the LSS for thermal vacuum testing at ESA/ESTEC. Image copyright ESA.**

satellite from ESOC on September 25th and is responsible for the commissioning thereafter - and its successors *MSG-2* and *MSG-3*. The first activation of the Spinning Enhanced Visible and Infrared Imager (SEVIRI) instrument takes place around the end of October, followed by the initial phase of imaging tests. The first dissemination of SEVIRI (imaging) data to users is planned towards the end of



**Fig. 3: *MSG* artist's view. Copyright ESA.**

low rate information transmission format that will be the most popular because of its relatively simple receiving requirements. However, there are important factors to consider first.

Only with actual data from *MSG* can EUMETSAT really judge the quality of the compressed images and their

images. Watch my monthly 'Info In Orbit' for continuing news!

## The High Rate Information Transmission Service

The entire image data set from *MSG-1*, together with data from foreign satellites and service messages exceeds the



Fig. 4: MSG-1 simulated channel 12 HRV image copyright EUMETSAT.

transmission capacity of the satellite - 1Mb/s - so compromises are inevitable. The only native image to be subjected to potentially lossy compression is the HRV (visible-light) channel, but otherwise channels are transmitted lossless every 15 minutes (twice the rate of the LRIT data).

Note that, unlike Primary Data, no foreign satellite image data will be included. I

personally suspect that this data set will remain the province of the professionals, because although it will offer a marginal increase in resolution and image frequency, it will exclude our favourite pictures! The required dish size may well exclude domestic use.

### If All Goes Wrong?

With such meticulous care and planning going into this essential and prestigious project, I suspect that there is probably little scope for many unforeseen failures. The next two satellites in the series are already under construction and can be launched before the lifetime of the current METEOSAT is reached, so it is anticipated that no interruption to the data flow is likely.

Credits: All the data, information and images, for which I am grateful, were provided by ESA and EUMETSAT. Thanks are also due to Richard Francis for identifying (a few!) errors in my original draft.

Fig. 5: MSG-1 - the launch! Image copyright EUMETSAT.



# Weather Satellite Software Guide

Lawrence takes a trip around David Taylor's website, where he reports on the many programs freely available for the WXSAT enthusiast.

In this edition, I am taking the unusual step of featuring the work of one person - **David Taylor** of Edinburgh. For almost five years, David has been writing and developing sophisticated software for the WXSAT enthusiast, and making this freely available to users, via his web site:  
<http://www.satsignal.net>

In the main feature about WXSATs, I mentioned the need to understand all aspects of monitoring before buying a system. One important part of this process will not cost you any significant expenditure - other than that of Internet access - and this can be free! On David's site, you find access to a variety of programs:

- satellite tracking (*Wxtrack*)
- a superbly designed 3-D representation of earth with selected satellites (*WxtrackGL*)
- conversion of recorded a.p.t. and WEFAX to images (*Satsignal*)
- combining a series of images (*Geosatsignal*)
- convert recorded raw h.r.p.t.

data (from various sources including NOAA's huge archive) into images (*HRPT-reader*)

- and a selection of non-WXSAT software that could be of interest to many people.

This feature deals only with David's WXSAT programs. Please note that a few of the features available on some of David's programs require a low-cost registration to access - the large majority are free to use.

### *Wxtrack*

This, in common with some others in the suite, is not simply one quick download. It requires a number of associated library files, some of which are optional, but all are referred to and linked from the site, so you won't find yourself unable to run the program.

When you have completed the various downloads, there is one more essential file - the latest Kepler elements. For accurate predictions, ensure the elements are within 14 days, and that your system clock is set

# WATERS & STANTON

**NEW**  
**2003 RADIO COMMUNICATIONS GUIDE**  
**£2.95**  
**Carr. £1.25**

**NEAR OFFICE** • 22 MAIN RD, HOCKLEY • ESSEX • SS5 4QS  
**ENQUIRIES: 01702 206835/204965 FAX: 01702 205843**

**MIDLANDS** • NORTH SHOP • BENTLEY BRIDGE • CHESTERFIELD RD  
 • MATLOCK • DERBYSHIRE • DE43 5LE  
**ENQUIRIES: 01629 582380 FAX: 01629 580020**

**SCOTLAND** • BORDERS SHOP • 20 WOODSIDE WAY • GLENROTHES  
 • FIFE KY7 5DF **ENQUIRIES: 01592 756962 FAX: 01592 610451-**  
**CLOSED MONDAYS**

carriage charges: A=£2.75, B=£6, C=£9

**336**  
**PAGES**

**WATSON W-HP200**  
**COMMS HEADPHONES**

**NEW**

**HEAR THE DIFFERENCE!**

- Mono 8 Ohm
- 200 - 10,000Hz
- Tailored for Comms
- Padded ear pieces
- Good sound proofing
- Single cable
- 3.5mm stereo plug
- 1/4" stereo adaptor



**£22.95**  
 Plus £2.75 Carr.

**NEW** NES10-2 DSP SPEAKER

**DSP BUILT IN!**



**£99.95**  
 Plus £6.00 Carr.

- Speaker with built-in DSP noise filters
- Dip switch settings for 8 filter settings
- Plugs directly into 3.5m speaker socket
- Handles up to 5 Watts input
- Max 2.5 Watts output
- Requires 12V at 0.4 Amps max
- Use mobile with cigar adaptor

This is a combined speaker and DSP unit that can be used with any receiver or transceiver. It offers 8 filter settings selected via a dip switch on the back and a top mounted on/off switch to select the DSP in and out of circuit. The unit offers dramatic noise reduction enabling weak signals to be cleaned up by removing most of the noise. DX and weak signals can sound just like locals. It is equally great for mobile use by reducing car noise and making speech clearer.

**KILLS NOISE**  
**ENHANCES SPEECH**  
**MOBILE OR BASE**

**NEW**

**Uniden-Bearcat**  
**UBC-220XLT**



Ideal for general listening, this scanner covers all the major bands from 66MHz - 956MHz AM and FM. 200 memories and a very fast scanning speed make this a very attractive buy. You also get the flexible short antenna, AC charger and batteries. Very popular with Airband listeners.

**£119**  
 Plus £6.00 Carr.

**MVT-3300EU SCANNER**  
**SPECIAL OFFER**



The MVT-3300EU from Yupiteru covers most of the useful bands in the VHF and UHF spectrum. It has 200 memories as standard with a range of band and security channels as well. It has functions normally associated with more expensive sets such as pre-setting the receiving mode and frequency step, Duplex reception with "One Touch" function, Auto-Write and Search-Pass memory functions. There is also a Decipherment function to receive certain scrambled communications.

**£129**  
 Plus £6.00 Carr.

**VR-1200 RECEIVER**  
**NEW MODEL**



- 100kHz - 1300MHz
- AM, FM, WFM
- 12 Channel steps
- 640 Memory Channels
- 64 frequency skip channels
- 21 Smart Search
- 8 Search bands
- 1 Priority channel
- Dual watch
- 8-Character Alpha-tags
- Preprogrammed broadcast frequencies
- VFO search feature • PC programmable with optional ADMS-3 kit.
- Antenna: BNC • Supply 9.0-13.8V DC • 2 x AA cells • Battery voltage: 2.2-3.5V DC (nominal 3V)

**£159**  
 Plus £6.00 Carr.

**YUPITERU MVT-7100EX**  
**100kHz - 1.656GHz**



Probably the best value for money, it has stood the test of time and is very sensitive. Offers

- USB, LSB, CW, AM, FM, WFM,
- 1,000 memories
- 500 Pass channels
- 12 Tuning steps
- Fast scan speed
- Rechargeable batteries, AC charger and telescopic antenna.

**£229**  
 Plus £6.00 Carr.

**UBC-3000XLT**

- 25MHz to 1.3GHz
- 400 Ch/20 Banks
- 10 Priority Channels
- Automatic store
- Twin Turbo Scan & Search
- Scan rate: 100 ch per sec
- Data skip feature
- Selectable Attenuator
- Modes: AM, WFM, NFM
- LCD with back light
- Ext spkr jack 3.5mm
- Ext earphone jack 2.5mm
- Rechargeable battery (5hrs)
- Power requirements 6.5V DC
- Size 68 x 88 x 38mm
- Weight 368g



**£189**  
 Plus £9.00 Carr.

**AOR AR-8600 II**

**NEW**



- AOR's exciting new scanner.
- 530kHz - 2040MHz
  - 1000 Memories
  - 37ch sec scan
  - RS232 PC interface fitted
  - 10.7MHz IF for SDU5500
  - Accepts up to 5 slot-in cards
  - Detachable MW bar aerial
  - FM AM SSB CW
  - 2000 pass frequencies
  - 8.33kHz airband steps

**£649**  
 Plus £9.00 Carr.

**FAIRHAVEN RD500VX RADIO**  
**DATABASE RECEIVER**



The Fairhaven RD500VX is an advanced all mode, all band radio database receiver. It covers from 0 to 1750MHz with all mode capability. As well as the normal USB, LSB, CW, FM and AM modes it also includes synchronous AM, stereo FM, wideband FM, Data, TV sound and video.

**£749**  
 Plus £9.00 Carr.

**YUPITERU MVT-7300**



- NFM, WFM, NAM, WAM, USB, LSB, CW
- 521kHz - 1320MHz
- 1,000 memory channels
- High sensitivity
- Signal strength meter
- High speed scanning & searching
- MONITOR button
- Descrambler function
- Telescopic rod antenna
- Clock timer function
- Variable colour display
- Key illumination
- Clone function
- 8.33kHz airband spacing
- 12V DC/230V AC mains

**£239**  
 Plus £6.00 Carr.

**NOW WITH NICADS & CHARGER**

**BEARCAT UBC - 9000XLT**  
**BASE STATION**



**£249**  
 Plus £9.00 Carr.

The 9000XLT features Twin Turbo scan & search modes with 10 user definable priority channels. User selectable modes covering AM, FM and Wide FM modes. Selectable receiver attenuator, delay, Alpha tagging and data options are available direct from the keyboard. For unattended operation the 9000XLT has an automatic tape recorder ON/OFF and tape output feature!

**AOR-7030 RECEIVER**  
**0kHz - 32MHz**



**£749**  
 Plus £9.00 Carr.

Needing little introduction, this receiver has become a classic of design. Features USB, LSB, CW, AM, FM.

- 100 Memories
- Dual VFOs
- Resolution to 10Hz
- Clock and Timer
- Variable Bandwidth
- Wide Dynamic Range
- Seamless Tuning using Single Loop DDS
- Clear LCD Readout
- Infrared Remote Controller
- AC Power Supply.

**YAESU VR-5000**



**£599**  
 Plus £9.00 Carr.

- Yaesu's exciting new scanner:
- 100kHz - 2599MHz
  - FM AM SSB CW
  - Real-time band scope
  - DSP Noise and notch filters(with optional DSP-1)
  - 2000 Memories
  - Optional digital voice recorder
  - Large digital display
  - Super HF performance
  - Ultra sensitive
  - Fully programmable

**YAESU VR-500**

- This lovely little scanner from Yaesu offers superb performance.
- 100kHz - 1300MHz
  - 1000 Memories
  - 100 Skip channels
  - 10 Search bands
  - 8 Character alphanumeric display
  - Band scope Priority monitoring
  - PC programmable
  - Smart search feature
  - Alpha numeric recall
  - Size 58 x 95 x 24mm



**£199**  
 Plus £6.00 Carr.

AR-7030+ £879 C

World Radio History



## WDP-30 SHORT WAVE DIPOLE

**NEW**

**8.5m long!**



'Coax Feeder Included' **£49.95**  
Plus £6.00 Carr.

- True Dipole Performance
- Receive Only
- 1MHz - 30MHz
- 10m Long approx.
- Low noise design.
- Matching Module
- 50 Ohm Input
- SO-239 socket
- 10m Coax

This new design from Watson gives you dipole performance across the entire short-wave bands. Unlike random wires, it reduces the background noise and pulls in the signals. And its small size means it will fit most garages. Absolutely no adjustment required.

## STREET PILOT III

**NEW FROM GARMIN**  
**IT TALKS TO YOU**

"TURN LEFT IN 2 MILES"



**£945.55**  
Plus £9.00 Carr.

It talks to you and is supplied with street level mapping, 32Mb storage card and card reader for quick PC programming. Examples of voice info are: "turn left 2 miles," "take 2nd left at next roundabout," "house number 17 is on your left," "turn right in 300ft." These are in stock now.

## GARMIN GPS-V DELUXE

**£499.55**  
Plus £6.00 Carr.



The GPS V is one versatile navigator that delivers automatic routing, detailed mapping and WAAS capability - all in a compact handheld GPS. It comes with the MapSource City Select CD, which gives you access to detailed street-level maps with locations of restaurants, hotels and other services. Use the GPS V to look up a location and it will automatically calculate a route and guide you to your destination with turn-by-turn directions and audible beeps that alert you to upcoming turns. All regions unlocked.

## IC-R75 RECEIVER

30kHz - 60MHz



**£599**  
Plus £9.00 Carr.

The IC-R75 has received rave reviews in the Amateur Radio Press. It's a very serious short wave receiver with coverage right up to the exciting 6m Ham Band. Features include USB, LSB, CW, AM, FM • 101 Memories • Super High Dynamic Range • Synchronous AM detection • Twin Pass band Tuning • Digital Signal Processing (with optional UT-106) • Automatic Notch Filter • 101 Alphanumeric Memories • RF Gain/Squelch • Clock • Numeric keypad • Attenuator • 2-level Pre-Amp • Scanning.

## BAR-888U RADIO CONTROLLED WEATHER CENTRE



**£59.95**  
Plus £6.00 Carr.

Desk-top display with radio-locked clock to Rugby atomic standard, inside and outside temperature recorder [with wireless remote sensor], barometer plus 24-hour forecast trend and day/date information. Order: BAR-888U

## GLOBAL AT-2000 ANTENNA TUNER



**£89.95**  
Plus £6.00 Carr.

The classic wire antenna tuner for short wave listening. Covering 1.8 - 30MHz, it includes our exclusive G-switch, which improves front-end selectivity. Just connect a random length of wire and connect a coax cable from ATU back to receiver.

## ICOM IC-R8500 "EDITORS CHOICE"



**£1199**  
Plus £9.00 Carr.

The IC-R8500 has a wide frequency range continuously from 0.1 to 2000MHz. It's ideal for the radio amateur or shortwave listener. The IC-R8500's all mode capability allows reception of a variety of different modes, from the world over: SSB (USB, LSB), CW AM, FM and WFM are included, along with several 'specialty' modes, CW narrow, AM wide, AM narrow and FM narrow are available [Requires optional FL52A].

## ICOM IC-R10E

500kHz - 1300MHz



- USB, LSB, CW, AM, FM, WFM
- 1,000 Memories
- Bandscope • Noise Blanker
- Wide range of tuning steps
- alphanumeric Display
- Real Time Band Scope
- Voice scan feature
- Data output port
- Programmable scanning
- Nicad pack, AC charger and helical antenna.

**£279**  
Plus £6.00 Carr.

## CAPTURE THAT FREQUENCY! Hunts down Frequencies



**£59.95**  
Plus £6.00 Carr.

Supplied with telescopic antenna and AC battery charger: if you are within 200 ft or so of the handheld, you should be able to read off the frequency. Note it down and enter it in your scanner. It's that simple and it's pocket sized.

## SPY CATCHERS

## NEARFIELD MONITORS



Zoom into any FM transmission between 30MHz and 900MHz and monitor the audio. It takes a fraction of a second. The WR-5001 comprises a complete receiver with auto tuning, skip button, squelch adjustment and built-in speaker. The WR-5002 is similar, but adds an auto-hold control and a bargraph signal meter: it also adds a CHV port for reaction tuning loom and AOR receivers fitted with this feature. These monitor receivers are designed for nearfield use and the range is from a few hundred metres to around 1km, depending on frequency and power of the transmitter.

WR-5001 £99.95 WR-5002 £159.95

## OPTOELECTRONICS DS-1000 DIGITAL COUNTER



**£499**  
Plus £6.00 Carr.

- PROMOTION SAVE £100**
- Frequency range 10MHz - 2.6GHz
  - Resolution 100Hz
  - Signal strength -45dBm to -5dBm
  - 1,000 memories 65,000 hits per memory
  - Captures Digital & Analogue signals
  - Minimum 500us RF pulse required
  - Reaction times [requires lead]
  - Display: 2x16 alphanumeric LCD [with backlight]
  - Signal strength displayed in dBm and bargraph
  - Built-in RS-232, direct connection to PC
  - Supply: Battery [5-6 hours], ext. 9V DC, 150mA

## AOR-8200 SERIES 2

500kHz - 2040MHz



This wide range scanner is fitted with a data port for computer control. Features include

- USB, LSB, CW, FM, WFM
- Programmable steps
- 1000 memories in 20 banks
- Alphanumeric display
- Built-in AM antenna
- B.33kHz steps for air band
- Rechargeable ni-cads, AC charger and helical antenna.

**£379**  
Plus £6.00 Carr.

## PCR-1000 10kHz - 1300MHz COMPUTER CONTROLLED RECEIVER



**£329**  
Plus £6.00 Carr.

Connect this up to your PC and enjoy high quality reception with an amazing station data base and memory log. Can be used remotely from PC. Requires PC [not included]

Mode:USB, LSB, CW, AM, FM, WFM.

## ICOM IC-R2

500kHz - 1309MHz



**£139**  
Plus £6.00 Carr.

This palm size handy offers great performance. Offers

- FM, WFM and AM
- Auto squelch
- 400 Memories
- 11 Tuning steps
- CTCSS decode
- Duplex monitoring feature • PC Programmable • Built-in attenuator • Priority watch • Needs 2 x AA cells (extra). Antenna included.

## WATSON WMM-3 MkII



Transmit & Receive: SSTV, PSK32, PACTOR, FAX, CW, RTTY, 1200 Baud Packet [using a variety of programs from CD-ROM]

New layout - for easier hook-up to computer and new modern chip - FX614 replaces old TM3105 New modes - CD with latest programs

**£69.95**  
Plus £6.00 Carr.

## YUPITERU MVT - 9000

-9000EU MK2 100kHz - 1.996GHz

Covering the complete radio spectrum from long wave to UHF, you have a complete station in your pocket. Features include NFM, WFM, NAM, WAM, LSB, USB, CW, • 7 Frequency steps • 1,000 Memories in 20 banks • 500 Pass memories • 10 Priority channels, • Band Scope display • Duplex receive function lets you hear both sides of the conversation • Fast tune function, • Built-in AM antenna • Dual frequency display • Fast keypad entry, • Rechargeable batteries, AC charger and helical antenna.



**£369**  
Plus £9.00 Carr.

## R-861 PORTABLE SW WITH RDS



**£199.95**  
Plus £6.00 Carr.

- 153kHz-29,999MHz, B75 - 108MHz
- AM, SSB (USB/LSB), FM (FM Stereo)
- AM wide/narrow filter • Tone control
- AM RF Gain control • Stereo through earphones
- 307 memories • 261 SW, 18 MW, 18 FM 9 LW plus priority station
- RDS (Radio Data System) Station name, Auto time set • 3 individual alarm timers
- 11V/230V auto-switching AC adaptor

## MFJ-461 MORSE CODE READER



**IT'S BRILLIANT**

**£84.95**  
Plus £9.00 Carr.

The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays CW on the 32 character high contrast LCD. It has automatic speed tracking, a serial port - if you wish to connect to a computer to display the text on a bigger screen. It can also be connected to your receivers audio if required. Truly pocket sized at 57 x 32.5 x 25.5mm and 156g.

## SANYO WS-1000 WORLD SPACE DIGITAL RECEIVER



**£149**  
Plus £6.00 Carr.

Comes complete with detachable mini flip-up dish and with 5m of cable. Receives digital broadcasts from the WorldSpace Satellite. Runs from supplied AC mains adaptor or optional batteries. Audio output via internal mono speaker, external optional stereo headphones or stereo line out via phono connectors as well as a S/PDIF digital audio output. It also has 32 memories complete with remote control and a port for multimedia services. Amazing performance; amazing price.

## HITACHI KH-WS1 WORLD SPACE DIGITAL RECEIVER

This radio has its own mini satellite dish and receives digital WorldSpace broadcast signals via the AfriStar satellite. As well as all the normal VHF FM programmes, you can switch to satellite broadcast signals from CNN, BBC, Bloomberg [multi language], World Radio networks 1 & 2, and lots more. High quality mono via the internal speaker and stereo via the headphone socket. Runs from AC, 4 x D cells (not supplied), or external 6V.



**£149**  
Plus £6.00 Carr.

correctly. You may need to change the filename terminator to \*.tle for the software to acknowledge it. Visit: [http://www.celestrak.com/NO\\_RAD/elements/](http://www.celestrak.com/NO_RAD/elements/)

Download *weather.txt*, rename and place this in the same directory. The program should run when all files are present - so you can then adjust the basic parameters. Use the setup tab first and move (drag)

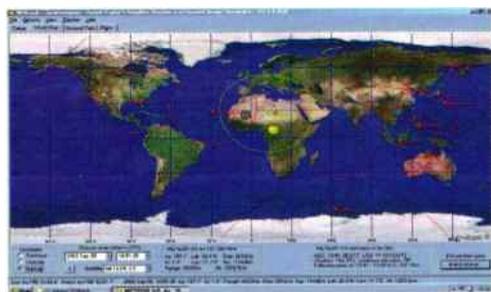


Fig. 1: *Wxtrack* main screen.

your selected satellites from the available window into the active one. Note that there are potentially three banks of satellites for this selection - I use the remaining banks for non-WXSAT groups.

You can change the directories for Kepler data and satellite picture files so that the software knows where to look. The setup tab provides access to the predictions section. On the right section you will find a list of all passes of the selected satellites for the current day. Check the location and set it to your own home town. My town is Southampton, but my computer's system location is set to Casablanca where GMT reigns 365 days per year - so that no summer-time changes affect the predictions!

With satellites chosen, the World Map should display a Mercator projection showing the satellites as moving circles overlaying the map of the world. The latter is available in various forms - detailed on David's site. There is a 91KB 'good quality' world map, and a 135KB 'higher quality' map. The 3MB download is described as 'super quality', and, amongst others, there is the 11MB Etopo 5 database. I am still trying some of these.

The program has many features. You can 'get next pass' to identify the next satellite scheduled to rise above your horizon, and the 'picture from

pass' will produce a simulated picture on the 'ground path' screen that you could expect to receive direct from the satellite. This means that if you actually receive this satellite pass, you can compare theory with practice! David originally wrote the program to allow him to identify the scene below the clouds.

Amongst a large number of other facilities, the display offers a summary of the data for the main satellite, and this can be changed merely by clicking on a satellite. It is essential to set up a satellite tracking program in

showing the orbits of chosen satellites in a 3-D simulated view. As anticipated, the satellites shown are selectable, and you can even add solar and lunar perspectives. Really David, this is all too much for a freebie!

## SatSignal

This program is designed to process the audio files obtained by recording WXSAT signals by software. *SatSignal* does not itself record these files - there are already a number of programs that do this. If a receiver is left to scan the WXSAT band frequencies, it should lock every time a 2.4kHz sub-carrier is detected. The resultant output signal can be fed to a sound card or even the onboard sound processor usually built-in to a computer.

Using a suitable program, after several hours, a set of audio files will have accumulated on the computer and these are ready for *SatSignal* to process. For optimum efficiency, the recording software must recognise the start and end of a signal.

Like *Wxtrack*, *SatSignal* requires a number of additional library files and these are referred to on David's web site. When running, the program analyses the middle part of the file (where interference is likely to be lower) and obtains reference data. From this information, the software identifies the satellite type. After completing the analysis, a memory-only picture is created, followed by considerable

optimisation. The result is rather more than the original data provided - theoretically impossible - but performed anyway by David's clever algorithms.

*SatSignal* is able to process in batch mode, so that the multiple files created by your overnight or overday absence are easily dealt with. The display options are many, yet even the most sophisticated routines seem to require minimal processor power, so the program can run on older machines.

## Geosatsignal

This relatively new program can combine WEFAX segments to produce larger views, and even combine separate images from different WXSATs to produce a 'world view'. Your own WEFAX images can be used, or you can collect some from various web sites. The process uses built-in combinations (joins) and requires little more than ensuring you use the correct name convention for your images. Processing options include the type of stretch required (for example histogram equalise), and even the addition of a sea background. Animation is available, as are some intriguing map projections.

## HRPT Reader

When you buy an h.r.p.t. (high resolution polar images) system, you naturally get software that will process and enhance the data. David's version was written without him actually having such a system - he obtained raw data from various people and sources. The result is an excellent product that I use regularly for browsing and processing (before deleting) my ever increasing archive of raw data. The program will process not only Timestep's raw h.r.p.t. data, but also that from the Satellite Active Archive web site operated by NOAA.

The software makes an effective false colour image using selectable combinations of the various channels. Various enhancements are available 'on the fly' so that the best result can be obtained by inspection. The image can be saved in JPG format with a preferred compression factor. The only caveat to consider is that h.r.p.t. files are large - typically tens of megabytes, and the program is memory intensive: if you have a slow, 32MB RAM computer, forget it! I use 256MB+ RAM and there are but a few seconds' delay loading images.

Finally, as intimated, there is more software on David's site, but this feature merely looks at his WXSAT offerings. I am sure that I speak for everyone who has used one of David Taylor's programs when I say "Thank you David!"

**SWM**

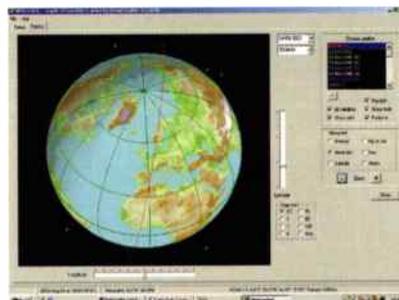


Fig. 2: *WxtrackGL*.

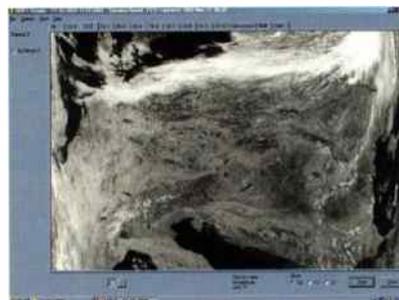


Fig. 3: HRPT reader showing first UK pass of FENGYUN-1D at 0830 on 17 May 2002 received at Southampton.

order to get a full appreciation of the significance of geostationary and polar WXSATs. Many such programs have been written, and we can be impressed by the efforts of all the programmers. David's provides an excellent selection of information and options within the program. There are other features, but let us move on.

## Wxtrack GL

This is a variation on satellite displays: the view seen by an astronaut high above the earth,

**L**ocated on the southern bank of the River Clyde, Dougie's shack has a truly amazing view, both visually and from an r.f. point of view. Not surprisingly Dougie is a keen v.h.f./u.h.f. listener and his radio collection reflects this bias. There is an h.f. presence in Dougie's listening enclave too, as regular attention is paid to RTTY, Navtex and FAX decoding.

Dougie is fortunate to have created a rather opulent monitoring hide-away where I suspect many an hour is passed in total comfort monitoring the airwaves. Hiding away in this comfortable radio paradise is the following radio kit. For v.h.f. and u.h.f. Dougie uses a mixture of Realistic, AOR, Icom and Yupiteru radios, specifically a Realistic PRO-2006 base station, a pair of Realistic PRO-2042s fitted with Opto 535 computer control boards which allows both memory management and computer supervised scanning. AOR's AR2000 and AR8000 and a Yupiteru MVT-7100 make up the hand-held contingent and the versatile Icom PCR1000 computer controlled receiver finishes off the high spectrum capability.

To enable frequency logging with ease, the OptoElectronics Scout is pressed into service. Dougie uses OTTO software to download and manage the frequency data captured with his Scout or the Xplorer test receiver.

I'm told that a highly valued shack accessory is the OptoElectronics Optolinx. This unit has the distinguishing feature of having the unique ability to connect both half and full duplex devices and alternate them under software control.

The h.f. side of things include, the previously mentioned PCR1000 with additional support from the very capable Lowe HF-150 and a Realistic DX-394. Dougie recently had the loan of an Icom R75 as was rather smitten by it - my guess is that'll be the next addition to the already impressive set-up.

Due to location adjacent to the Clyde, as you might expect Dougie indulges in a fair bit of marine monitoring, other interests include membership of the Scottish Scanning Users Group, WXSATs and MilAir.

Thanks for inviting us into your shack Dougie - happy listening.

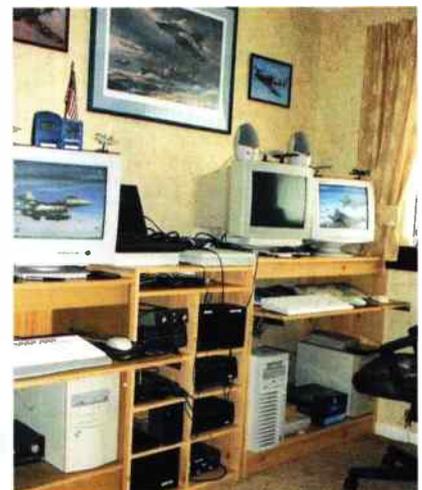


Here are Dougie's two external antennas: a turnstile for satellite work and a Wellbrook ALA1530 active antenna for h.f. There is also a long wire and a host of internal antennas mounted in the loft.



The pictures on the wall belie one of Dougie's interests.

(right): The business side of the shack. The networked PCs helping to look after the radio tower.



(below): Damn fine outlook from the shack window!

# The Other Man's Shack

Back on the road again and this month Kevin heads north of the border to visit the well equipped monitoring post of SWM subscriber Dougie Coull.

More loops from John Wilson. Now it's the turn of AOR's mini LA-350 which can happily be located and rotated in the shack allowing full use of it's nulling capabilities.

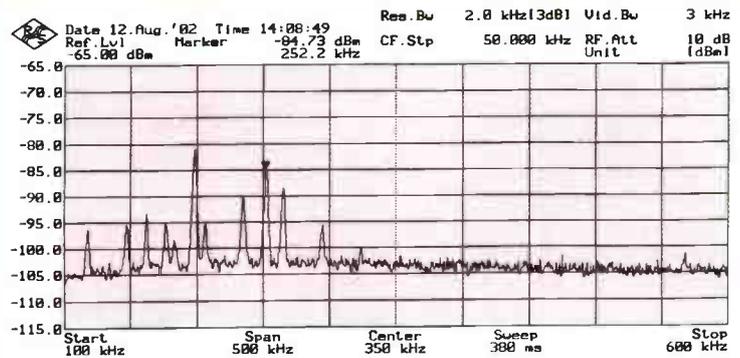


# The AOR LA-350 Loop Antenna

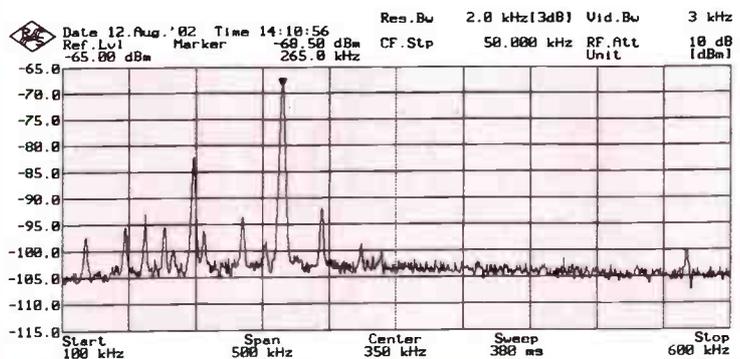
My recent reviews of loop antennas have dealt with ever increasing size. Trust AOR to reverse the process and produce a loop antenna system for those enthusiasts who want the advantages that a loop antenna can bring, but don't have the space for even a one metre loop outside the house. I had seen the advertising for the LA-350 and was delighted when one was submitted to *Short Wave Magazine* for review, since as a confirmed follower of the loop antenna I wanted to discover how this attractive small package performed against other antennas.

The LA-350 consists of a base unit measuring 140 x 80 x 50mm which houses a high performance loop preamplifier and the necessary switching and power regulation, a separate mains power supply giving 12V d.c., and two small loop antennas which plug into the top of the base unit using a

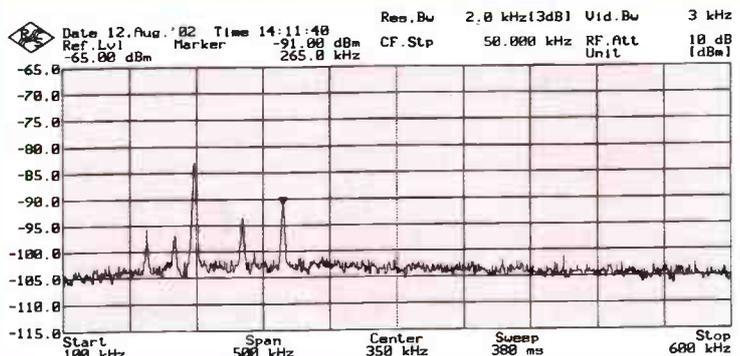
**Fig. 1: Radio Algeria at a level of about -85dBm in the early afternoon.**



**Fig. 2: The tuning control re-peaked to a signal on 265kHz.**



**Fig. 3: The antenna rotated to its null position. The 265kHz signal dropped by no less than 23dB.**



standard 6.3mm jack plug. Using a jack plug is a really neat way to provide an easy way to change the loop elements and at the same time allow the user to rotate the loop to peak and/or null incoming signals. Setting up the unit means connecting the d.c. power to a socket on the rear panel, connecting a BNC coaxial lead (supplied) between the loop output connector and your receiver, plugging in the required loop, and away you go.

## Tuned Loop

The standard kit comes with two loops, one covering 3 to 9MHz and the other 9 to 30MHz. There are two additional elements available covering the lower frequencies 200 to 500kHz and 500kHz to

1.6MHz, a combination which apparently leaves a gap between the high end of the medium wave and the start of the h.f. bands. However, this is not as startling as at first seems, and I will cover the point later. The two h.f. loops are true H-field devices with an outer aluminium tube which is the E-field screen. You all know by now that a proper E-field screen will help the loop's inherent rejection of localised interference sources and this proved to be true in practice, with good rejection of my favourite!! electric fence and my computer noises. The major difference between the AOR loop system and the antennas tested so far is that the AOR loops are tuned, rather than being broad band devices, so in use you have to peak the incoming signals using the

control on the front of each loop base.

The photographs will show you what the set-up looks like, but the most important information is how the LA-350 performed in real life, and as I have said so many times, this is where I stand in for the end user and report back to you on my findings. The rest of this review will consist mainly of spectrum analyser screen prints which I urge you to study carefully, as they tell an interesting story. Loop antenna theory relates signal output to loop area, and since the LA-350 loops are only 300mm in diameter the laws of physics say that the output level from the LA-350 will be lower than for a one or two metre loop with the same number of turns. However, the loop element is followed by a preamplifier

which has the dual functions of matching the low loop impedance to drive a coaxial cable and providing gain at the same time. In the LA-350 leaflet we are told that the amplifier gain is 13.5dB, with a +30dBm third order intercept point. This proves in practice to be quite satisfactory, and like all AOR products, it is clear that the design has been carried out with a great deal of real user experience, judging by the results. I assessed the loop performance by connecting it to an AR7030 receiver and also to my trusty Rohde & Schwarz spectrum analyser. As I have also often said, measurements are all very well, but you need a pair of ears to seek out audible effects which instruments don't necessarily disclose.

## Selectivity

Since the Irish station has been off the air, I started out listening to Radio Algeria on 252kHz, using the 350L ferrite bar antenna. Spectrum plot **Fig. 1** shows Radio Algeria at a level of about -85dBm in the early afternoon. This is an equivalent level to S7 on a traditionally calibrated signal strength meter. The apparent absence of signals above 300kHz is not due to poor loop performance, rather a tribute to the in-built selectivity of the antenna. To illustrate just how selective the antenna is, take a look at **Fig. 2** where I re-peaked the tuning control to a signal on 265kHz. Comparing the two graphs you can see that the 265kHz came up from -90dBm by more than 20dB, whilst the 252kHz signal dropped almost into the noise. Now these signals are only 13kHz apart and that dear friends is selectivity with a capital 'S'. Now some more performance - with the loop still peaked at 265kHz I rotated the antenna to its null position as shown in **Fig. 3**. The 265kHz signal dropped by no less than 23dB, so in real life one could use the directional properties of this loop to really knock out big interfering signals.

To further illustrate the selectivity bestowed by the LA-350 I later generated a local field using a standard single turn calibration loop and plotted the output from the LA-350 with the 350L antenna peaked at 350kHz. The results

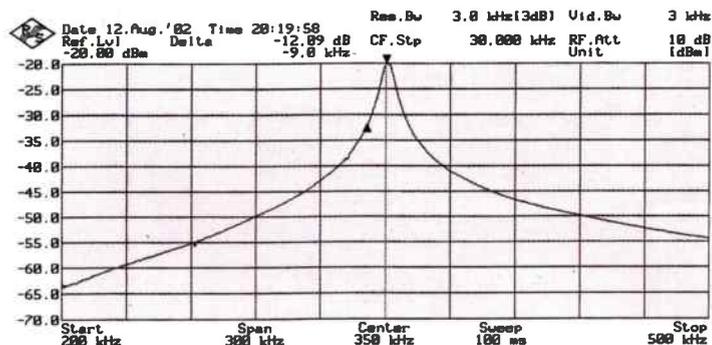


Fig. 4: The output from the LA-350 with the 350L antenna peaked at 350kHz.

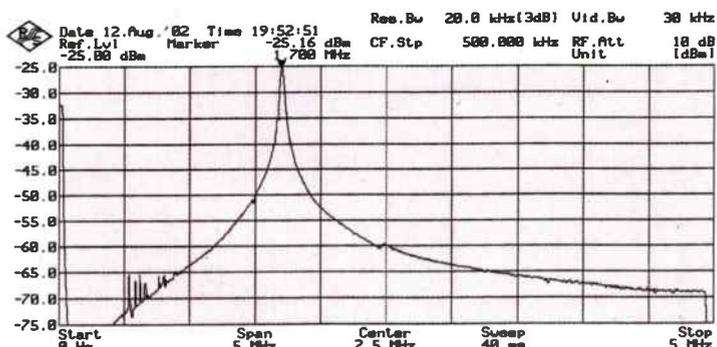


Fig. 5: The response at 1.7MHz using the 350M element.

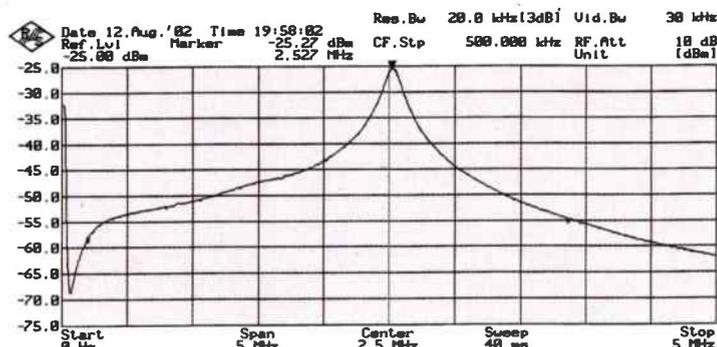


Fig. 6: The response of the 350S at 2.5MHz.

STORE OPEN:  
Monday - Friday  
9:30 - 5:30  
Closed all day  
Saturday



# nevada

our warehouse **CRAMMED**  
with the **LATEST PRODUCTS**

24hr **SHOPPING**  
**NEVADA ONLINE STORE**  
[www.nevada.co.uk](http://www.nevada.co.uk)



Order **ONLINE, PHONE, FAX, POST** -  
or come and see us at our **WAREHOUSE**  
**ORDER HOTLINE**  
**023 9231 3090**

**ROBERTS R861**

- Covers MW/LW/FM/SW
- SSB/CW reception on SW
- 307 presets
- Clock/Alarm facilities

Supplied with: Dual voltage AC supply, sw antenna, earphone, carrying case

**£200 £179** POP £10  
3 CHEQUES OF **£63.00**  
PAY BY CHEQUES/SPREAD

**ROBERTS R9914 DIGITAL WORLD RADIO**

- Covers: MW/LW/SW/FM
- SSB & CW reception
- Ideal for BBC World Service
- Clock/Alarm
- Supplied c/w AC adaptor, earphone, carrying case

**£99.95** POP £10 3 CHEQUES OF **£36.65**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**ROBERTS REVIVAL 250**

- 'Fifties' styled 3 Band portable radio
- LW/MW/FM
- Battery/Mains
- Wooden cabinet
- Selection of colours

**£99.95** POP £10 3 CHEQUES OF **£36.65**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**MAYCOM FR100**

- Freq range: 136, 136-174, 420-470MHz
- Modes AM-FM & WFM
- Power source 3 x 'AA' cells internal 4.5-6V DC external
- Memories 150 ch in 5 banks
- Signal indicator Barograph
- 5' meter 10 segment
- 59w x 103h x 36.5d mm
- 97.5gm excluding batteries
- Supplied c/w SMA antenna belt clip & hand strap.

**£99.95** POP £7.50

**PALSTAR AA30 Combined 3-in-1 unit**

- ACTIVE ANTENNA - SW PRE-AMP
- ACTIVE ANTENNA/TUNER
- Frequency: 300kHz-30MHz
- Variable Gain
- Peak control
- 12V DC or internal 9V battery (not supplied)

**£69.95** POP £10

**ICOM R3**

- 495kHz - 2451MHz
- 450 memories
- FM, AM, WFM, AM-TV, FM-TV
- Supplied c/w telescopic antenna
- belt clip • charger
- LI/ION battery pack

**£449** POP £10  
3 CHEQUES OF **£150.00**  
PAY BY CHEQUES/SPREAD

**ICOM IC-R2**

- 500kHz - 1310MHz
- AM/FM/WFM
- 400 memories plus 25 band edge memories for easy scanning between specified frequency

**£160 £139** POP £10  
3 CHEQUES OF **£49.66**  
PAY BY CHEQUES/SPREAD

**ICOM PCR 1000**

LATEST VERSION with UPGRADED SOFTWARE SUITABLE FOR WINDOWS XP

COMPUTER RADIO SYSTEM

- 100kHz - 1300MHz
- ALL MODE RECEPTION
- Plus Lots More!

**£389** POP £10  
3 CHEQUES OF **£133.00**  
PAY BY CHEQUES/SPREAD

POB OPTION DSP UNIT UT 106 **£82 £2.75** POP

**MAYCOM AR108**

- Airband: 108 - 136.975MHz
- VHF: 136 - 180MHz
- Selective Channel Steps: 5, 10, 12.5, 15, 25, 1MHz
- Modes: AM or FM
- Memories: 99
- Supplied c/w Belt Clip, Carrying Strap

**£69.95** POP £7.50  
Mains Charger **£8.95 £2.75** POP

**AKD TARGET HF3M**

COMMUNICATIONS RECEIVER

Connect this radio to your PC & receive Weatherfax pix with the FREE Disc & PC interface cable supplied

**£149** POP £10  
INC FREE

12V MAINS PSU  
LONG WIRE ANTENNA  
GUIDE TO SW LISTENING  
ORIGINALY **£209.95** POP £10

**AOR AR 5000**

PRICE MATCH

- 10kHz-2.6GHz
- Modes AM, FM, USB, LSB, CW
- 1000 memories
- 45 ch/sec scan
- 20 search banks
- DTMF decoder
- RS232 port
- N type & SD239 sockets
- Audio 1.7W (852)
- 12V DC @ 1A

**£1599** POP £10  
3 CHEQUES OF **£536.33**

**STEEPLETONE MBR747**

Multiband Receiver

Covers LW, MW AND

- Shortwave (2.3 - 22MHz)
- Marine/Airband (108 - 175MHz)
- Battery/Mains

**£79.95** PLUS POP £10

**AR 8200 MKII**

- 530kHz-204MHz
- All Mode including 8.33kHz AM
- 1000 Memories
- We carry full range of accessories!

**£430 £399** POP £10  
3 CHEQUES OF **£136.33**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**FAIRHAVEN RD-500VX**

LATEST MODEL

Latest database (over 20,000 frequencies)

Frequency: 20kHz - 1.7GHz

**£800 £749** POP £10  
3 CHEQUES OF **£253**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**UBC 780XLT** "a 'must have' for the enthusiasts!"

NEW EUROPEAN VERSION

- 500 channels
- 25-1300 MHz (with gaps)
- AM, FM, WFM
- 5/7.5/10/12.5/20/25/50/100Hz
- Trunktracker - includes Motorola/EDACS/LTR VHF/400/500/800/900
- Smartscanner™ interface
- Alpha tagging
- PC + VFO control
- Clone feature
- CTCSS/DCS World Radio History
- Record functions

**£349** POP £10  
3 CHEQUES OF **£119.66**

**YUPITERU MVT 7100**

- 530kHz-1650MHz
- 1000 memories
- AM/FM/WFM/SSB/CW
- C/w NiCads, mains charger, 12VDC cigar lead, belt clip, carry strap

**£240 £229** POP £10  
3 CHEQUES OF **£79.66**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**YUPITERU MVT 3300**

- 66 - 88MHz, 108 - 170MHz, 300 - 470MHz, 806 - 1000MHz
- Modes: AM/NFM
- Memories: 200

**£160 £149** POP £10  
3 CHEQUES OF **£53.00**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**YUPITERU MVT 7300**

- 520kHz - 1.32GHz
- 1000 Memories
- 8.33kHz Airband
- Duplex reception
- Descramble function
- C/w Mains adaptor, NiCads, Belt clip

**£280 £259** POP £10  
3 CHEQUES OF **£89.66**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**YUPITERU MVT9000EU**

- 531kHz - 2039MHz
- 1000 memories
- W-FM, FM, N-AM, AM, LSB, USB, CV

OP90 SOFT CASE **£26.95** POP £2.75  
3 CHEQUES OF **£10.33**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**UBC 280XLT Sportcat**

Twin Turbo Handheld

- Triple conversion RX
- 25-956MHz (with gaps)
- 200 memories
- CTCSS/DCS Tone Search
- CTCSS/DCS receive
- Turbo search/Turbo Scan
- C/w Antenna, Earphone, Belt Clip, Nicad battery, 240V UK Mains adaptor

**£179.95** POP £10  
3 CHEQUES OF **£63.31**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**YAESU FRG-100**

FREE MAINS PSU

This receiver provides solid coverage from 50kHz - 30MHz with all mode reception of AM, SSB and CW.

**£400 £399** POP £10  
3 CHEQUES OF **£136.33**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**ICOM IC-R8500**

PRICE MATCH

IN STOCK!

This receiver is everything we hoped it would be, covering 100kHz - 2GHz and lots of features including computer control.

**£1340 £1299** POP £10  
3 CHEQUES OF **£436.33**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**ICOM IC-R75**

PRICE MATCH

IN STOCK!

- 0.03 - 60MHz
- Twin PBT built-in
- PC control capability
- Synchronous AM detection

**£699** POP £10  
3 CHEQUES OF **£236.33**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**AOR AR-8600**

NEW Mk II Version

ALL MODE WIDEBAND BASE RECEIVER

OPTIONAL PSU AVAILABLE

- Now 100kHz-3GHz
- Increased RX sensitivity
- New Bandpass filter
- 12V DC or optional internal NiCad pack

**£699** POP £10  
3 CHEQUES OF **£236.33**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**BOOKS**

- The UK Scanning Directory ..... £19.75
- Ultimate Scanning Guide ..... £19.99
- Flight Routings 2002 ..... £7.95
- Practical Receivers for Beginners ..... £14.99
- Ferris Confidential Freq Listing 12th Ed ..... £19.99
- Scanners 4 ..... £9.95
- World Airline Fleet & Selcig Directory ..... £16.95
- DXpedition Behind The Scenes ..... £16.95
- HF Antenna Collection ..... £9.99
- Personal Computers in the Ham Shack ..... £12.99
- Passport to World Band Radio 2001 ..... £15.50
- Practical Transmitters for Novices ..... £16.99
- The World Radio TV Handbook - 2000 ..... £19.95

**IN STOCK!**

**HITACHI WS1**

WorldSpace Digital Satellite Radio

- Receive over 40 channels of fade free digital programs direct from satellite - from almost anywhere in the world!
- +FM/MW/SW
- SW1: 2.3-7.3MHz, SW2: 9.5-26.1MHz

**£149** POP £10 3 CHEQUES OF **£53.00**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**WS2000** **NEW!**

**£129.95** POP £10  
3 CHEQUES OF **£46.65**

- 10 presets and last station memory
- Headphone jack/stereo line out connectors
- External jack for multimedia & data service
- Easy-to-aim antenna WorldSpace antenna
- Battery or mains operation-AC/DC adaptor inc

**SANYO WS1000**

WorldSpace Digital Satellite Radio

A stylish satellite radio for home or portable use.

- Stereo headphone socket
- 32 memories
- Mains or battery (Mains adaptor inc)
- Remote control
- Multi-media port

**£149** POP £10 3 CHEQUES OF **£53.00**  
PAY BY CHEQUES/SPREAD INTEREST FREE!

**POWEREX NIMH HIGH POWER RECHARGEABLE BATTERIES**

- 650mAh... AAA cells... (set of 2) ..... £6.95
- 1500mAh... AA cells... (set of 4) ..... £7.95
- 1600mAh... AA cells... (set of 4) ..... £10.35
- 1700mAh... AA cells... (set of 4) ..... £15.95
- 1800mAh... AA cells... (set of 4) ..... £16.95

ADD £2.75 P&P TO ALL ABOVE PRICES

**MH-C777 PLUS Universal Charger & Analyser**

Charge almost any Lithium Ion, NIMH & NiCad battery packs for ham radios, scanners, PMR 446, cellular phones, digital cameras, camcorders. Analyse & condition battery packs

Display digital voltage, NiCad and capacity International 80-240V AC mains adaptor

Charge AA, AAA, C, D battery cells using optional battery

**£79.95** £8.50 P&P

# GRUNDIG Product sheet 2002



## GRUNDIG SATELIT 800

- 100-30,000kHz (0.1-30MHz) for AM Broadcast and Shortwave
- 87-108MHz for FM Broadcast
- 118-137MHz for Aircraft Band
- AM, USB, LSB modes (0.1-30MHz)
- AM mode only for 118-137MHz
- FM mode only for 87-108MHz
- Three built-in bandwidths for SW

### EU VERSION FEATURES

- 240V AC mains adaptor and Deluxe Headphones included
- Full UK warranty
- CE Approved

£599 ~~£549~~ P.P.P. £10 3 CHEQUES OF £186.33  
PAY BY CHEQUES/PAYMENT INTEREST FREE!

## GRUNDIG YB400 HIGH PERFORMANCE PORTABLE SW RADIO

- 144kHz - 30MHz
- SW: 1.711-26.1MHz
- FM Stereo: 87.5-108MHz
- MW/LW
- SSB reception (both USB/LSB)
- 40 station preset
- Fine tuning
- Dual alarm clock
- Narrow/Wide bandwidth
- DX/Local sensitivity
- Auto Search
- Sleep timer
- Snooze timer
- Mains or Battery (with optional mains adaptor)

- Supplied complete with:
- SW Handbook • Carrying case
  - External Wire Antenna • Carry Strap

£99.00 P.P.P. £10 3 CHEQUES OF £36.33  
PAY BY CHEQUES/PAYMENT INTEREST FREE!



## PORSCHE G-2000

- FM Stereo, AM/FM/MW 13 SW bands. 2.3 - 26.1MHz
- 20 station presets
- Clock, alarm, sleep function, world times
- Mains/Battery (optional ac adaptor)
- Supplied c/w leather cover & in-ear stereo headphones

£89.95 P.P.P. £10

NOW with PSK31 INTERFACE

## Noise Killers FROM TIMEWAVE



### ANC-4

Antenna Noise Canceller & Diversity Combiner

- Cancels S-9 line noise
- Cancels strong interfering signals
- Makes two antennas into phased array
- Wipes out noise before it hits your receiver
- Works with any transmitter/receiver + LOTS MORE!

£199.95 P.P.P. £10 3 CHEQUES OF £69.98  
PAY BY CHEQUES/PAYMENT INTEREST FREE!

**TIMEWAVE DSP 599ZX**  
DSP Noise & QRM Filter, RTTY Modem, Radio/Sound Card Interface

£389.95 P.P.P. £10 3 CHEQUES OF £133.31  
PAY BY CHEQUES/PAYMENT INTEREST FREE!



## UBC 278CLT Base Scanner with MW/FM Radio & Alarm Clock



- 25-956 MHz (with gaps)
- VHF Radio: 88-108MHz
- 100 Memories
- 20 Radio Presets
- Full freq LCD readout
- Programmable
- Channel Lockout
- Priority Ch.
- Scan Delay

£159 P.P.P. £10 3 CHEQUES OF £56.33

## UBC 900XLT



- 25-1300 MHz (with gaps)
- 500 memory channels
- Selectable Attenuator, Delay, Mode (AM/WFM/NFM)
- Auto Store/Freq Transfer
- Auto Tape Record
- TURBO SCAN /SEARCH
- VFO Control

£269 P.P.P. £10 3 CHEQUES OF £93.00

## UBC 60XLT-2

- A brand new low cost scanner that covers MARINE, LAND MOBILE & more!
- 66-512 MHz (with gaps)
- 80 memories
- Channel or Freq display
- Priority Channel
- Channel Lockout
- Scan Delay

£79.95

NEW UPGRADED MODEL - now with 80 memories for the SAME PRICE!

## UBC 3000XLT

- 25-550, 760-1300 MHz
- AM/FM/WFM
- 400 memory channels
- TURBO SCAN/SEARCH
- Automatic Freq Storage
- Selectable Attenuator
- Automatic Freq Sorting
- Supplied c/w earphone, case, belt clip, charger, rubber duck antenna

£199.95 P.P.P. £10 3 CHEQUES OF £69.98  
PAY BY CHEQUES/PAYMENT INTEREST FREE!

## UBC 220XLT

- 66 - 956 MHz (with gaps)
- AM/FM
- 200 memories
- TURBO SCAN/SEARCH
- Data Skip facility
- 10 Priority Channels
- Memory Backup
- Supplied c/w earphone, belt clip, charger and rubber duck antenna

£149.95 P.P.P. £10 3 CHEQUES OF £53.31  
PAY BY CHEQUES/PAYMENT INTEREST FREE!

## UBC 120XLT

- 66 - 512 MHz (with gaps)
- AM/FM/WFM
- 100 memory channels
- TURBO SCAN 100 Channel/Second
- TURBO SEARCH
- Data Skip facility
- 10 Priority Channels
- Programmable Search

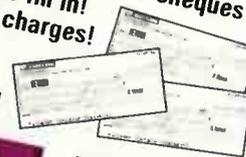
£129.95 P.P.P. £10 3 CHEQUES OF £46.31  
PAY BY CHEQUES/PAYMENT INTEREST FREE!

**COAXIAL CABLE**  
100 metre drums  
RG58 standard £38  
SPECIAL PRICE £25  
RG213 low loss £76  
SPECIAL PRICE £55

To all staff  
Don't forget to tell  
our customers that they can  
pay by 3 post dated cheques with  
GENUINE interest free credit  
with our CHEQUES/PAYMENT  
scheme - MIKE

# Easy to pay & GENUINE INTEREST FREE with CHEQUES/PAYMENT

- Pay by three post dated cheques
- No forms to fill in!
- No hidden charges!
- No hassle!
- No catch!
- No problem!
- Simply divide the price (including carriage) into 3 equal payments.
- Write 3 cheques dated in consecutive months starting with today's date.
- Write your telephone number, cheque card number and expiry date on the back of each cheque.
- Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.



www.nevada.co.uk

# nevada®

Unit 1 • Fitzherbert Spur • Portsmouth • PO6 1TT  
email: info@nevada.co.uk • fax: 023 9231 3091

ALL GOODS SHIPPED FOR 24 HR DELIVERY

P&P: £10 (UK Mainland) unless otherwise stated. £6.00

# SCANMASTER Product sheet 2002

**SCANMASTER LP1300**  
WIDEBAND BEAM ANTENNA  
16 EL LDG PERIODIC DESIGN

- 105-1300MHz
- Gain 11-13dB
- "N" type connector
- 500W

£129.00

## SCANMASTER DESKTOP

A complete desktop antenna covering 25-1300 Mhz, just fitted BNC plug with a magnetic base.

£49.95

**SCANMASTER B128**  
AIRBAND BASE SCANNER

A dedicated CIVIL AIRBAND base antenna designed to give long distance reception on 117-140MHz. Supplied c/w mounting tube & mast clamps.

- "N" Type connector
- length: 1mtr

£39.95

**SCAN AIRMASTER**  
DEDICATED CIVIL & MILITARY AIRBAND ANTENNA

- Covers 117 - 137 Mhz, 224 - 400 Mhz.
- Antenna contains:
- 2 dipoles for Civil Band
- 6 dipoles for Military Airband
- Uses "N" Type connector

£59.95

ORDER HOTLINE 023 9231 3090



nor will you have to persuade your neighbour to 'lend' you his chimney stack to hold up one end of the wire. Having said that, let's just compare the LA-350 with my 15 metre end-fed, balun matched wire and see if there is any difference. I tried out the two standard h.f. loops which come as part of the LA-350 package and looked at signals within the two frequency ranges, then directly compared them with the same signals coming from the 15 metre wire. Spectrum plot **Fig. 8** shows a signal at 6.195MHz from the LA-350, with the carrier in the centre and the sidebands spreading  $\pm 5$ kHz on each side. The same signal from the 15 metre wire can be seen in **Fig. 9** and it is obvious that the level is virtually identical. Using the

higher frequency loop element I tuned to 9.895MHz and **Fig. 10** shows the signal level from the LA-350 with **Fig. 11** showing the same signal from the 15 metre wire. Once again you can see that the levels are identical, so the conclusion is that despite its apparent small size, the LA-350 performs at least as well as a traditional well matched wire antenna, with the all-important advantage of additional selectivity from the loop antenna.

### Pros & Cons

And that's about it, apart from general conclusions and a look at the pros and cons of the LA-350 as an antenna system. In its favour are the small size, the E-field rejection which comes

with a loop, the additional selectivity which a tuned loop provides, the directional properties, and the fact that the entire system is sitting conveniently inside the house and not out at the end of the garden. Against it is the cost, somewhat offset by the performance and quality that you get from AOR, and the fact that if you have a firmware controlled receiver scanning a number of

widely spaced frequencies the antenna can only be peaked on one section of the spectrum. My own view is that the LA-350 is an impressive performer and will prove to be popular with enthusiasts who need a high performance antenna that will sit right on top of the receiver and still be as good or better than a traditional wire antenna strung down the



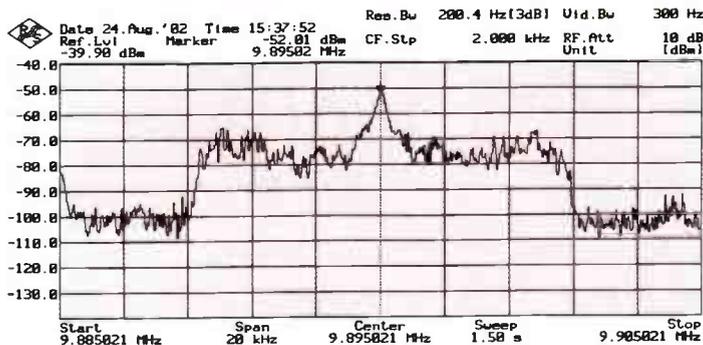
**The 63mm jack socket received the loop of choice. BNC and coaxial power connectors to the rear.**

garden – and of course the LA-350 will reject local noise interference which would drown l.f. signals from the wire antenna.

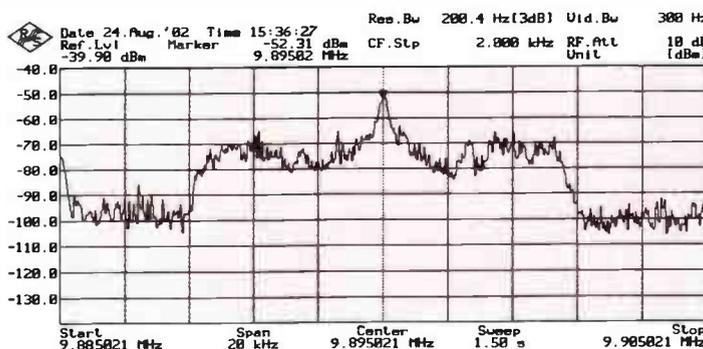
### Receiver Parameters

I have now done some more investigation on this noise rejection issue but will save that for some future article. In the meantime, I have been talking to Colin Horrabin about the current series of articles in *RadCom* which he is co-authoring with two other receiver gurus. One major conclusion that the team came to was the fact that the phase noise performance of an h.f. receiver was probably more important than the third order intermodulation performance, a view which I share as you will know from my review articles on various h.f. receivers. The subject of phase noise from receiver local oscillators and the effects of reciprocal mixing may well be worth re-visiting in the near future – unless of course I am boring you all to death. If that is so, please tell me and I will shut up!!

Happy listening.



**Fig. 10: The 9.895MHz signal level from the LA-350 with the higher frequency loop element.**



**Fig. 11: The same 9.895MHz signal from the 15 metre wire.**

**The two plug-in loops and tuning controls.**



The LA-350 loop antenna is available from:  
**AOR (UK) Ltd.,**  
**4E East Mill,**  
**Bridgefoot,**  
**Belper,**  
**Derbyshire**  
**DE56 2UA.**  
**Tel: (01773)**  
**880788.**  
**Web:**  
**www.aoruk.com**  
 Price for the 3-30MHz unit is **£199 + P&P.**  
 The optional long and medium wave elements are **£49 each.**

# Have a trade in? We pay **TOP MONEY**

From: Tom Higgs G4TUA Sent: 26 June 2002  
To: sales@hamradio.co.uk Subject: Thanks  
Dear ML&S, I never fail to get good service from you! I've bought several things from you over the last year ranging from an FT817 to the just a couple of connectors last week. I just thought I'd let you know how much I appreciate the service I always get - from the friendly and upbeat voice on the phone (always willing to advise) right through to the quick delivery of the goods. Please pass this on to all concerned. Tom Higgs G4TUA

**We have many accessories for the SWL including:**

- Maldol GDH-30 Discone .....£39.95
- Maldol HDX-30 BNC H/held Discone £38.95
- MFJ-461 Pocket Morse Decoder .....£84.95
- Global AT-2000 Antenna Tuner .....£89.95

## NEW! DRESSLER Active Antennas

This outstanding range is ideal for use with all base station receivers, ICR-8500, AR 5000, PCR 1000, NRD 545, FRG 100 & MORE! Beautifully designed and manufactured in Germany

- ARA 100 HDX £349
- ARA 2000 HDX £349
- ARA 60 £189.95
- ARA 2000 £189.95

## Micro PSU

Ideal for scanners and shortwave receivers. This Mini switch mode 2.5 amp PSU will power many scanners and SW receivers. About the size of 20 cigarettes and very light. Ideal for popping in your brief case or suitcase! (State make and model of receiver when ordering) Only £29.95

## NEW Maldol handheld discone

Maldol HDX30 - New discone to clip on top of any bnc scanner Only £39.95

## MYDEL

MiniMag Scanning Antenna available with BNC fitting .....£32.95  
SMA fitting .....£34.95  
Will also work on 2M & 70cms TX (50 W)

Magnetic Long Wire Balun .....£19.95  
Skywire Antenna Kit .....only £39.95

## UK Scanning Directory

In stock at last! The 8th edition of this excellent frequency guide has just arrived **PRICED £19.75** (plus £5.00 P&P - it's **BIGGER** than ever!).

## A Selection of Used Scanners

- AR-8000 used examples .....from £150
- AR-8200 .....from £250
- MVT-900 .....from £199
- MVT7100 .....from £125
- Kenwood R5000
- Deluxe shortwave receiver ..from £450
- Yaesu FRG-100 .....from £300

**Many more used radios available - call for details.**

## FINANCE EXAMPLE

YAESU VR5000	APR.....	19.9%
	PRICE.....	£599.00
	Deposit.....	£00.00
	48 Payments of.....	£17.72
	Total purchase price.	£850.56

Martin Lynch can offer finance terms up to 48 months with no deposit. We welcome your part exchange against any new (or used) product provided it is clean and in good working order, call the Sales Desk today! Usual APR: 19.9%. Payment protection is also available up to 48 months. All units are brand new and boxed and offered with full manufacturers RTB warranty. All prices quoted for cash/ cheque or Switch/ Delta card. No additional charges for credit cards. Martin Lynch is a licensed credit broker. Full written details are available on request. Finance is subject to status. £10 p&p on all major items. E&OE

<h3>MAYCOM FR100</h3>  <p>Pocket scanner with 8,33khz steps for the airband. AM/FM &amp; WFM Basic scanner at a basic price only <b>£99.00.</b></p> <p><b>ML&amp;S £99.95</b></p>	<h3>YAESU VR120D</h3>  <p>Pocket Mini Scanner 500kHz-1300MHz AM/FM and WFM. Ideal <b>Go Anywhere</b> pocket scanner</p> <p>Now with 12V DC!</p> <p><b>ML&amp;S £159.95</b> <b>SPECIAL OFFER</b></p>	<h3>AOR AR8200 MK II</h3>  <p>The best Handheld Scanner available with AM/FM/CW/WFM /USB/LSB. Frequency range: 530kHz-2040MHz PC programmable and controllable (requires PC8200 £85). Complete with high capacity NiCads, Charger, Cigar lighter lead, rubber helical wideband antenna, medium wave plug-in antenna. Add the <b>Super Searcher</b> and <b>RT8200 (£119.99)</b> for reaction tuning to nearby transmitters</p> <p><b>ML&amp;S £439</b> <b>ZERO DEPOSIT!</b> <b>36 * £15.96</b></p>	<h3>YUPITERU MVT-7100</h3>  <p>This scanner is very old in design and lacks a few features but offers good scanning facilities. Covering 100kHz-1300MHz AM/FM/WFM/USB/LSB. Complete with NiCads, Charger, Telescopic Antenna all for <b>£229.00.</b></p> <p><b>ML&amp;S £199.95</b></p>
<h3>KENWOOD THF7E</h3>  <p><b>NEW!</b> The Scanner that transmits! Covering 100kHz - 1300MHz AM/FM/WFM plus SSB (100kHz - 470MHz) with Lithium Ion battery and Charger plus Transmit (6 Watts) on 2 metres and 70cms. An ideal scanner for radio amateurs! All this for only £289.00</p> <p>PC Programmable Requires PG-4P at £31.95 <b>ML&amp;S £289</b> <b>ZERO DEPOSIT!</b> <b>24 * £14.48</b></p>	<h3>YAESU VR500</h3>  <p>100kHz-1300MHz AM/FM/WFM/LSB/USB/CW. This amazing little scanner is an ideal pocket communications receiver with keypad entry!</p> <p>PC Programmable Requires ADMS-3 at £39.95 <b>ML&amp;S £199.95</b></p>	<h3>BEARCAT UBC 780XLT</h3>  <p><b>PC PROGRAMMING SOFTWARE NOW AVAILABLE</b></p> <p>This is our fastest selling scanner for a long time - we just cannot get them in fast enough! Covering 25-510MHz and 800-1300MHz AM/FM - plus it is the only CE approved desktop to offer the Trunk Tracker facility. Complete with DC lead, FREE PSU and Whip Antenna - a steal at only -</p> <p><b>ML&amp;S £329</b> <b>ZERO DEPOSIT!</b> <b>36 * £11.60</b></p>	<h3>YAESU VR-5000</h3>  <p><b>FREE PSU</b></p> <p>This amazing desktop scanner is the only scanner to offer true dual receive. Coverage is from kilohertz to gigahertz offering all modes and has optional DSP for enhanced shortwave reception. Complete with <b>FREE PSU</b> at only <b>£599.99</b> PC Programmable <b>ML&amp;S £599</b> <b>ZERO DEPOSIT!</b> <b>48 * £17.72</b></p>
<h3>MAYCOM AR108</h3>  <p>This little airband scanner sells itself with coverage of the civil airband</p> <p><b>ML&amp;S £69.95</b></p>	<h3>ICOM ICR2E</h3>  <p>This little handy scanner is very simple to operate and is very popular among our commercial customers</p> <p>PC Programmable Requires PC-R2 at £39.95 <b>ML&amp;S £159</b></p>	<h3>ICOM ICR8500</h3>  <p><b>FREE PSU!</b></p> <p>Icom's Flagship Communications receiver covering 100kHz-2000MHz AM/FM/WFM/SSB &amp; CW. SW performance is as good as many short wave only receivers but the VHF/UHF performance is where this radio comes into its own. Complete with <b>Free PSU</b> and <b>Control Software</b> (Not suitable for XP or Macs)</p> <p>PC Controllable <b>ML&amp;S £1349</b> <b>ZERO DEPOSIT!</b> <b>48 * £39.91</b></p>	<h3>ICOM R-75</h3>  <p><b>Icom's Latest Shortwave Receiver</b></p> <p>With all mode coverage from 30Hz to 60MHz Options available are: • Voice synthesiser • UT106 DSP Module.</p> <p><b>ML&amp;S £599</b> <b>ZERO DEPOSIT!</b> <b>36 * £22.26</b></p>
<h3>GARMIN E MAP</h3>  <p>Handheld version of the Street Pilot and comes with Data Lead, 16Mb Ram Card and UK Metro Guide on CD Rom</p> <p><b>NEW GPS V Deluxe NOW IN STOCK!</b></p> <p>GPS V Deluxe has announced a hand held GPS looking similar to the established GPS3 range again with built in route calculator and 24Mb of RAM. Price expected to be about <b>£500</b></p> <p><b>ML&amp;S £329</b> <b>ZERO DEPOSIT!</b> <b>24 * £14.48</b></p>	<h3>GARMIN STREET PILOT 3 DELUXE</h3>  <p>The first portable GPS to talk directions to you. This unit looks similar to the Colour Street Pilot but has the inbuilt ability to calculate your route for you. It will then speak directions to you in a clear female voice. The <b>Street Pilot 3 Deluxe</b> uses a faster processor than previous versions and is much faster at relocating. Supplied with all you need to mount the unit in the car, plus 128Mb memory module, plus European City Street Map CD ROM with keys &amp; you get a <b>FREE USB Memory Programmer</b></p> <p><b>ML&amp;S £1150</b></p>	<h3>GRUNDIG SATELLIT 800 Millennium</h3>  <p>Covers Shortwave, Airband and FM Broadcast An ideal shortwave broadcast radio - suitable both the experienced or novice listener.</p> <p><b>ML&amp;S £549</b> <b>ZERO DEPOSIT!</b> <b>24 * £27.52</b></p>	<h3>MIRACLE WHIP</h3>  <p><b>AVAILABLE NOW!</b></p> <p>This <b>Amazing Antenna</b> at only 55 inches long is an ideal companion for any receiver covering 600kHz - 460MHz</p> <p><b>ML&amp;S £129.99</b></p>

# ML&S

**martin lynch & sons**  
Suppliers of Communications Equipment

this month's  
**star sellers**

**ICOM IC-R9000L**



We are able to offer the last few of these excellent radios at **£6995** On this product only **£995.00** deposit and 60 payments of **£134**

Coverage: 0.1-1999.8Mhz with all modes. Featuring a spectrum scope, 1000 memory channels and many advanced scanning facilities.

**ML&S £6,995.00**  
**£995.00 DEPOSIT!**  
**60 \* £134.00**

**ICOM IC-R10**



Covering 100kHz to 1300MHz with AM/FM/WFM and SSB. Complete with Nicads, Charger and rubber helical wide band antenna all for only **£319.99** Add the **Super Searcher (£99.95)** and **RT-R10 (£109.99)** for reaction tuning to nearby transmitters

**PC Programmable**  
**Requires PC-R10 at £39.95**  
**ML&S £319.99**  
**ZERO DEPOSIT!**  
**24 \* £16.04**

**ICOM IC-R3E**



The Scanner with TV built-in that picks up a bit more than Coronation Street! Complete with Lithium Ion battery and charger, all ready to go! Only **£449**

**PC Programmable**  
**Requires PC-R3 at £39.95**  
**ML&S £449**  
**ZERO DEPOSIT!**  
**36 \* £15.96**

**AOR 8600 Mk II**



**new Mk II version!**

With many of the features of the AR8200 Mk2 this is an exceptional desktop communications receiver. Only **£699.00** with **FREE PSU**

**PC Programmable**  
**ML&S £699**  
**ZERO DEPOSIT!**  
**48 \* £20.68**

**AOR 5000**



**FREE PSU!**

This is the finest communications receiver AOR have produced and has all the features needed for Commercial users and Scanning enthusiasts. There is also The plus version with extra enhancements. Offering good short wave reception as well as excellent VHF/UHF performance. With **FREE PSU**

**PC Controllable**  
**ML&S £1599**  
**ZERO DEPOSIT!**  
**48 \* £47.31**

**SDU 5500**



**FREE PSU!**

See what is happening on the air with this add on spectrum scope. Not only will it work with the **AR5000** and **AOR3000a** - it will also work with **Icom ICR8500, ICR9000, ICR7100** and **TS-870** (A good alternative to the **SM-230**)

**PC Controllable**  
**ML&S £899**  
**ZERO DEPOSIT!**  
**48 \* £26.60**

**AOR 8600 MK II**



**ML&S £699**  
**ZERO DEPOSIT!**  
**36 \* £20.68**

**ICOM ICR8500**



**ML&S £1349**  
**ZERO DEPOSIT!**  
**48 \* £39.91**

**ICOM PCR 1000**



This black box gives all mode receive 100kHz to 1300MHz via your PC. Supplied with software for Windows 3.1/95 and 98. Featuring DTMF decoder, CTCSS decoder, Spectrum scope and much more. We can supply you with alternative demo software that will work with XP (Registration is under **£30.00**). Complete with Whip antenna, PSU, UT-106 DSP module and software.

**PC Controllable**  
**ML&S £385**  
**ZERO DEPOSIT!**  
**24 \* £19.30**

**YAESU FRG-100**



**FREE PSU!**

This is still one of our best selling Short wave receivers with **FREE PSU** at only **£499.00**

Options include  
AM filter, CWV filter, FM unit and Keypad  
- call for a price on all four.

**PC Controllable**  
**(Requires FIF232C at £79.95)**  
**ML&S £429**  
**ZERO DEPOSIT!**  
**36 \* £15.60**

**AOR AR-7030**



**FREE PSU!**

This strange looking radio has stunning audio and a very lively receiver. It is one of the best broadcast band receivers available and an ideal radio for Broadcast DX chasers but is equally at home on SSB and CWV. Even old Lynchy uses one of these! The Plus version is an enhanced version of 7030.

**ML&S £799**  
**ZERO DEPOSIT!**  
**36 \* £29.05**

**GRUNDIG**  
**YACHT BOY 400**



This popular portable shortwave Receiver is back in stock at only **£119.95**

**ML&S £119.95**

**AOR 3000A**



**LAST FEW!**

All mode, all band desktop receiver

**PC Programmable**  
**ML&S £799**  
**ZERO DEPOSIT!**  
**48 \* £23.64**

**KENWOOD**  
**TS-570 DGERX**



**FREE PSU!**

Our best selling HF Transceiver modified for Receive only makes this an excellent DSP Receiver

**PC Programmable**  
**ML&S £949**  
**ZERO DEPOSIT!**  
**48 \* £28.08**

**SAVE £££s!**



Check out our **NEW SHOPPING BASKET** on our website: **www.hamradio.co.uk**

**CALL US 6 DAYS A WEEK**  
**MON-SAT 9.30-5.30**

**0208 566 1120**

128, 140-142 Northfield Avenue  
Ealing • London W13 9SB  
email: sales@hamradio.co.uk  
fax: 0208 566 1207

## Kevin Nice takes us for a whistle-stop tour of Roberts Radio's 70 year history.

It was seventy years ago this month, that Harry Roberts founded the Roberts Radio Company as a partnership with Leslie Bidmead. The pair were to quickly establish an outstanding reputation for their high quality portable wireless sets.

Never subject to cash injection, Roberts Radio has enjoyed a steady and organic growth throughout its history.

Today, Roberts portables are available in high on two thousand stores.

### The Beginning

May 20th 1910, Mile End Road, London saw the birth of Harry Roberts. At the age of fourteen Harry went to work for the Rees Mace Manufacturing Company on Cannon Street, one of the many supplying the buoyant market for wireless sets generated since the commencement of broadcasting in November 1922. In the spring of 1925 Harry moved to his second employer, Cahill &

Company Ltd. of Newham Street W1. Here his work included adjustment and repair of sets. Cahill went into liquidation just over two and a half years later and Harry's next post was that of demonstrating sets for Richard R. Bennet, who had been Cahill's Service Manager.

As time progressed, Harry became dissatisfied by the arrangement and was introduced to Leslie Bidmead by Major Barnett (Bidmead's Landlord). Initially the two worked on a commission basis for Major Barnett, but 1932 saw that change. The pair adopted the business philosophy, make a top-quality product and sell it to top quality customers. Barely in his twenties but full of confidence, Harry took a sample radio to Harrods and talked his way into seeing the buyer - he left with an



**Never one to favour conventional advertising, Harry Roberts took the news worthy approach. Here the mink-coated RTI and solid gold cased R200 which sold for 2000 guineas in 1961. The gold alone would cost £26,000 today.**

order for half a dozen sets. The beginning of a most fruitful association. Orders from other leading departments stores followed and Roberts Radio was on its way.

### The War Years

Business boomed up to the outbreak of war. Harry Roberts was 29 at the time and was soon required to register to military service. He requested some time to close down his factory only to be told "we don't closed down radio factories". December 1940 saw notification that Harrods had sold a model M4D to Her Majesty The Queen for her own personal use.

It later transpired that this was the second Roberts model she had purchased, the first being acquired in 1939 for Princess Elizabeth. During the war years Roberts was used to produce radar electronic assemblies for the Ministry of Aircraft Production.

### Brand Leader

The company returned to civilian production in 1946, consolidating the pre-eminence in its field that had been established before the war. With the introduction of the 'Junior' model the company



### The King turns on the wireless.

had a quality portable that was realistic to actually carry around. This activity was encouraged by the sets



**The R66, launched in 1956. A set who's styling wouldn't look out of place in stores today.**

to produce the first British radio to use an integrated circuit. The result was the RIC1, which featured the TAD100 i.c. The venture proved to be a success due to performance and pricing. A total of 77,967 sets were produced. Sadly, this was the last venture Harry was to enjoy. He died on 14 June 1969.

### Forward With Vision

Richard Roberts succeeded his father as Chairman and MD. He drove the company forward and broadened the range of products. He realised that although the mass market for the recently launched colour television service was being met, the upper end of the market wasn't being provided for. Richard launched Roberts Video Ltd. in May 1975 to service this market using Philips G8 and G9 chassis as a basis. The early 1990s saw the recognition that the market for the traditional Roberts product, although strong was not huge. This resulted in lower priced radios manufactured in the Far East to be introduced. Included in this range was the world band receivers - well known to

# By Royal Appointment.



BY APPOINTMENT TO  
HER MAJESTY THE QUEEN  
SUPPLIERS & MANUFACTURERS  
OF RADIO AND TELEVISION  
ROBERTS RADIO LIMITED



BY APPOINTMENT  
TO HER MAJESTY THE QUEEN  
THE QUEEN MOTHER  
RADIO MANUFACTURERS  
ROBERTS RADIO LIMITED



BY APPOINTMENT  
TO HER MAJESTY THE PRINCE OF WALES  
MANUFACTURERS & SUPPLIERS OF  
RADIO RECEIVERS  
ROBERTS RADIO LIMITED

### Roberts Radio's Molesey Avenue factory of 1962.



being sold with a waterproof carry bag. Soon the Junior became noticed amongst the hand luggage of affluent travellers.

### Transistors

The 1950s saw a huge advance in portable radios due to both the introduction of transistor with their modest power requirements and also the use of ferrite rod antennas. These factors allowed the reduction in bulk without compromise of performance.

### British First

It was 1967 that saw a collaboration between Roberts Radio and Mullard



### The R861 world band radio

readers of SWM.

Today this move has proved to be highly successful with Roberts Radio having a very significant share of this market. The company is still heavily involved in innovation, currently they are involved in DAB collaborations with the BBC after producing the world's first DAB portable. Happy Birthday Roberts Radio!

■ PETER BOND, c/o EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: skyhigh@pwwpublishing.ltd.uk

# Sky High

## 9-11

As I write this, it is the day after the first anniversary of the events of September 11th and I am pleased to say that it has passed without incident. I know of at least two people who elected to fly on this day on the basis that the increased security would make it the safest time to travel. I am not sure if that would have been my way of looking at it?

A year on and much of the industry is still in varying states of turmoil and hundreds, possibly thousands, of aircraft are in storage. Large companies such as US Airways have filed for Chapter 11 protection, but it is not all bad news, it is good to see that the so-called budget airlines are reporting increased profits.

## LJAO

Having made various comments in recent months regarding the move of the London Military LJAO element to Swanwick and the subsequent call sign change to Swanwick Mil. I have just noticed that I also missed a more obvious change to the LJAO frequency titles. In recent documents it seems that the use of sector titles for the various LJAO areas such as Clacton and Seaford/Hurn has been dropped.

The frequencies are now listed under more generalised areas as follows: Northwest 127.45/254.275, Central 275.35, Southeast 233.8/299.8/251.225/291.075. The frequency 254.275 which is the London Mil Initial Contact frequency north of the Lichfield Corridor now appears to be operated under the control of Swanwick Mil. (Sorry to partially repeat information from previous months).

## tk8500

I am grateful to one of our US readers, **Tom L.** from Arizona who notes my various comments regarding the Icom IC-R8500 receiver in the past. He asks if I am aware of a piece of radio control software which is available for this and other radios, that is available to download from the Internet. The answer was no, I was not aware of this program and so I ventured off to [www.parnass.org](http://www.parnass.org) to have a look at the software.

Written by Robert Parnass, who has had a distinguished research and development career spanning over 25 years, *tk8500* is open source software designed to control and program the Icom IC-R8500 and other receivers. Open source means that you can download the source code and for those of you who have programming skills, you can alter the software to suit your own requirements.

*tk8500* is written in the Tcl/Tk scripting language which enables it to run on a

variety of operating systems, including *Linux* and *Microsoft Windows*. *tk8500* is distributed free of charge, but it is neither shareware nor in the public domain, *tk8500* is a copyrighted work.

If you are a *Windows* user, the free *Tcl/Tk* interpreter must be loaded onto your system before you can run the *tk8500* program, it can be downloaded from Bob's site. Comprehensive instructions for downloading and installing the *tk8500* program are also available. As long as you follow the instructions and make sure you download into the correct folders, installation is quite straightforward. So with the software installed, a serial lead in place and COM 1: selected, (you can use any COM Port), I fired up the software.

*tk8500* starts with three windows, Main Controls, Secondary Controls and Adjustments, by using the 'View' Menu, the way in which you present these windows can be changed to suit your personal set-up, including docking the Adjustments window onto the Main Controls. I am not going to go into extensive detail, but most of the R8500's various controls are available from within these three windows. The layout is straightforward and easy to use. Another nice feature is that four of the six items listed on the menu bar can be 'torn off' to form a new window.

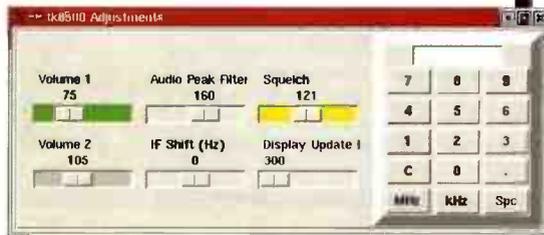
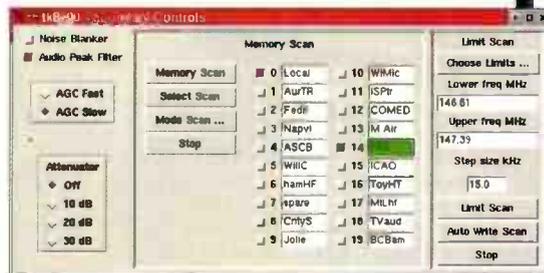
Anyone who has read my past comments on the IC-R8500 will know that although it is a great radio and has many features, I was always a bit disappointed that the scanning facilities were not more comprehensive, in particular the ability to link scanning banks together. So the first thing that immediately struck me with the *tk8500* was the 20 little boxes in the middle of the Secondary Controls window - all of which could be selected.

To me it was like finding the pot of gold at the end of the rainbow, it allows you to scan any permutation of the memory banks, whether it was one, three, seven or all twenty. To my mind the *tk8500* would be worth having for just this one feature. The flexibility it gives to airband scanning is quite dramatic when you can add a bank of AWACS or Air to Air frequencies into the current scan with just a couple of clicks on the mouse.

You can upload and download memory data from the radio, this data is stored as a .csv file (comma-separated variables) format, so users can create or edit them using spreadsheet, *Excel* or text editor programs. There is no facility to edit these data files within the *tk8500* software. You must adhere to the correct



No photograph this month, but some screen shots from the *tk8500* software.



comma delimited format, otherwise data will not be sent to the radio. The correct format is clearly illustrated on the website. I downloaded my 900 plus memories edited some of them and reloaded them into my IC-R8500 without problem.

One important thing to note is that whatever your Bank/Memory configuration is, (especially if you have altered the bank sizes using cut and paste), you must upload the same configuration back into the radio. You can edit data or fill in empty memories, but the number of memories in each bank **must** stay the same.

I suggest that you download two complete memory files, call one the masterfile.csv and hide it away as a backup, name the second one Mem-1.csv, (or whatever), and work on this file. If it all goes horribly wrong you still have the master file to return your R8500 to its original memory configuration.

*tk8500* also gives you the facility to log your current scanning activity, this is once again stored as a .csv file. The file stores all the information you need to see which frequencies have been active in your absence, including date, time and signal strength. The spreadsheet format is as follows, the last two columns being signal strength and the name you allocated to a memory channel on the IC-R8500.

13/09/02	09:38:40	378.675	AM	0.7	NEAT
13/09/02	09:51:15	279.25	AM	3.83	OTA F
13/09/02	09:53:52	284.975	AM	2.97	NEAT

## Sky High

Another feature that this software offers is that you can designate a secondary volume setting to be used when receiving specific frequencies, (no sound card is required). The louder audio can alert you to signals on important frequencies whilst scanning. This higher volume is determined by the presence or absence of the keyword 'vol2' in the 9th field of the line for that memory channel in the .csv file. Up to now I have not tried this feature.

The only drawback I found is that the Scan Delay does not work very well. When using the IC-R8500 with the Scan delay off the radio will start scanning again three seconds after the signal disappears. When using the software the scan often re-starts immediately. This is a known problem that Bob is aware of, but as yet he has not found a solution.

Finally, remember that this is a programme that is still under beta testing and is therefore still under development. No warrantee of any form is offered, but for something that is free, you wouldn't expect that. As I write this, I have only been using it for six days, but as yet I have not encountered any bugs.

Bob Parnass asks users to report any problems and I am sure he would welcome any suggestions that could improve this already excellent programme. The program is currently

also available for the following radios: Icom IC-R75, Yaesu VR-120, Standard VR-150, Yaesu VR-500 and the JRC NRD-545, at present there are no plans to add to this list.

OK, I realise that you do have to own one of the radios listed to utilise this programme, but to my mind this is the best download I have ever made from the Internet, and it's free! Well done Bob - an excellent piece of radio control software.

### SSR Codes

My thanks go to **Mike K** who sends me the following SSR Squawk code changes, shown below, that he has

DELETE:	6201-6210	SHANNON EASTBOUND LANDING UK
	6211-6247	UK TO SCANDINAVIA AND RUSSIA
	6330-6337	HAWARDEN
	7350-7373	MANCHESTER APPROACH, RAF BENSON
INSERT:	6201-6227	SHANNON EASTBOUND LANDING UK
	6230-6247	UK TO SCANDINAVIA AND RUSSIA
	6301-6307	UK DOMESTIC
	6330-6336	HAWARDEN
	6337	HAWARDEN
	7350-7373	MANCHESTER APPROACH
	7350	RAF BENSON
	7351-7373	RAF BENSON

found in a UK NOTAM. It's always handy to know these as a change of squawk code is a good guideline to which ATC unit a specific aircraft is to be transferred shortly.

### 8.33 Spacing

Lastly this month, some news of 8.33kHz spacing. By the time that you read this, the implementation of 8.33kHz spacing in the UK will be about a week away on the 31st October. A NOTAM is due to be issued on the 3rd October detailing the introduction.

# Practical Wireless

THE UK'S BEST AND ONLY INDEPENDENT AMATEUR RADIO MAGAZINE

Next Month in *Practical Wireless*, the magazine that brings you Amateur Radio & So Much More ....

## REVIEWED

\* Track those Beacons! **Rob Mannion G3XFD** puts the MFJ-890 h.f. Beacon Monitor to the test.

## IN THE SPOTLIGHT

\* Did your club enter the *PW* Club Spotlight Competition? We reveal the winners this month!

## PROJECT

\* **Phil Cadman G4JCP** shows you how to build a battery valve power supply unit.

## FEATURE

\* The *PW* team, with the help of readers provide some helpful hints and tips on Silent Key Sales



Plus all your regular favourites including:

● *Amateur Radio Waves* ● *Bargain Basement* ● *Club News* ● *Keylines* ● *News* ● *Radio Scene* ● *Valve & Vintage*

and much, much more!

\* contents subject to change

CAN YOU AFFORD TO MISS IT? DECEMBER ISSUE ON SALE 14 NOVEMBER...PLACE YOUR ORDER TODAY!

■ DAVE ROBERTS c/o SWM EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: scanning@pwpublishing.ltd.uk

# Scanning Scene

**D**oes your wife, girlfriend, boyfriend, partner or mum complain about the amount of space that your monitoring post occupies in the happy family home? One chap seems to have the answer.

In 1985 a Radio Surveillance and Countermeasures system was ordered by a South African country. The whole kit and caboodle amounted to four Pinzgauer six wheel drive military vehicles. The trucks were sent to Racal in Bracknell, Berkshire, in 1986 to be fitted out with equipment. Three were equipped as electronic surveillance vehicles and fitted with what amounts to a complete spectrum monitoring outfit.

The Racal receivers in those Pinzgauers are able to receive any mode, in much of the radio spectrum. The fourth truck was specified as a high power jamming unit. During the time that Racal were

working on the motors, international sanctions were applied to the client country. Racal put them into storage and scratched their heads for the next fourteen years when they were knocked out to a vehicle dealer in 2000.

The current owner of this unit acquired it in July 2001 with only delivery mileage on the odometer. The truck is still running in! Apart from being fully specified to deal with the African climate, including air conditioning and special air filtering to keep sand out of the engine and cab, the vehicle was (and is) still chock full of the Racal radio equipment.

The idea of the system was to deploy the three vehicles in different locations around the country. They would then triangulate the position of the offending transmissions and the jamming vehicle would come into play. Presumably so would some air assets as well.

The equipment fitted appears to include a brace of Racal RA1794

receivers that receive any mode between 2 and 512MHz and possibly a Racal RA1796 as well. The 1796 deals with frequencies up to 1GHz.

Special computer control equipment is hooked up and this gear also plots the target signal's direction. The truck is complete with generators and a 6m pneumatic mast mounted at the rear. Other Racal equipment allows the vehicle to maintain communications in the field.

Vehicles of this type occasionally find themselves up for sale although most are not offered with radio equipment fitted. Currently Pinzgauers are available in Britain from a company in Whitby and there are a number of Land Rover 101s fitted with radio bodies, on sale elsewhere.

## Mobile Monitoring

If you feel that domestic pressures are driving you to invest in 'out of the home' mobile monitoring, the first place to start looking would be any military vehicle rallies that you can locate. There are usually a number of radio trucks for sale at the bigger events. This advice could save your relationship...there is no need to thank me.

**RA1794 radios fitted in the operating area.**



Conflict in the Middle East seems to be a never ending story. The 30MHz band seems to be quite a favourite for players in that area. Listeners in Europe have been hearing f.m. transmissions that have been tentatively identified as Israeli military transmissions on 30.350, 30.800, 32.300, 32.3500, 32.400, 33.500 and 34.050MHz. These communications are mostly in Hebrew (Israel's official language since 1948), but some English words will be used and I believe that some contacts have been entirely in English.

On the other side of the divide, 30.450 and 30.680 are thought to be in use by some Iraqi military units, again the signals are f.m., but with coded signals. If another major conflict breaks out in this region, there is no doubt that low band v.h.f. signals between 30 and 50MHz will be used by a large number of the opposing forces. Listeners that monitor this area of the spectrum will be able to overhear a fair bit of traffic should conditions allow.

**Steyr-Puch Pinzgauer 6 x 6. Showing d.f. antenna.**



**You can see the fuel cap in this Pinzgauer view. "Fill her up please" "That'll be a hundred and fifty two pounds forty four pence, sir".**

# Scanning Scene



The control equipment.

## Old Frequencies

Several folks have mentioned to me that they have been hearing data transmissions on the old Customs and Excise frequencies in the 440MHz band. I've also been told that some of the antennas on C & E premises have not been changed. This in itself doesn't mean much. Next time you wander in, out or by your local police station look at the roof. If the nick is more than a few years old you may see masses of old antennas that have not been removed.

I recently noticed some old low-band hardware on the roof of a police station in Southern England. It must have been there since the mid eighties. Having said that, I think that there may be a delay in the Customs APC025 rollout and it is conceivable that they are using the new equipment on old frequencies for the time being.

## AOR Decoder

Following on from this it seems that AOR (Authority On Radio) may pip Uniden to the post with an APC025 decoder. It seems as though the very clever people there have put together an add on radio adapter for use with the AR5000 or AR5000+3 receivers.

Called the ARD5000, it plugs into the AR5000 and will decode unencrypted APC025 signals. To quote the AOR release, "The software can be easily changed or upgraded using an optional plug-in memory card. This will allow the user to monitor other new analog

and digital modes". At the moment there is no mention of how much this equipment will cost the punter. Will it trunk track MPT1327 signals?

At the moment, if you want to monitor MPT1327 trunked systems the preferred option seems to be *FTrunk*. *FTrunk* (and the more expensive *PTrunk* - for engineers) decodes MPT1327 and 1343 systems. The whole kit amounts to some windows software and a decoder box plus cables and a power supply.

First tune the scanner to a control channel. The PC will display the channel to which you should tune a

second scanner. Also data messages are displayed on the v.d.u. If you possess a scanner that has RS-232 interface such as the AOR AR3000, AR3000A, AR5000, AR8200 or AR8600 or an Icom PCR100, PCR1000, R10, R7000 or R7100, R8500 or R9000, an Optocom, Uniden BC780XLT or WinRadio, these radios can be reaction tuned by the software and will automatically recover the audio of any selected Prefix Group or individual ID.

If one of the above scanners is in use and your computer has a soundcard, then the recovered audio can be recorded on the hard drive as a .wav file. There are many control options with this software and some very serious listeners are utilising it. You'll need to have a PC running *Windows 95, 98, ME, 2000 or XP* and have a Com Port available. You'll also need \$400 Australian Dollars available as well, (plus, of course, our usual pernicious tax). Yes



Radio Bodied Land Rover 101.



Land Rover 101, rear view showing military issue beer cooling box.

Victoria, Australia is where the package is marketed, by a company called Talkback Systems Australia.

Now I don't do the lottery. My lack of luck in matters gambling is the stuff of legend in pubs everywhere from England, west to Alaska. Therefore I don't even buy a lottery ticket. If I did and had that big win...

## Sexy Little Number

Rohde and Schwarz have just brought out the sexiest little number since Madonna. It's a hand-held spectrum analyser covering from

100kHz to 3GHz. To be sold as the R&S FSH3 it can, when equipped with a v.s.w.r. bridge, be used for scalar network analysis or for distance to fault measurement on cables. It has an external power sensor that enables it to carry out high precision r.f. power measurement up to 8GHz.

R&S don't seem to have the exact price listed anywhere, but they say that it costs 'under 7000 euros'. Now that's around £4500 (UK customers add VAT, etc.) All of the above and it looks really neat as well, with a colour l.c.d. screen. The advertising blurb says that using it soon becomes second nature - for more info. see 'Communique' - Ed.

Fellers I believe you!! But I only get a fiver a week pocket money and I have a serious Fanta Lemonade habit. **SWM**



You can even hide the 'Mobile Monitoring Post' in the garden.

■ MIKE RICHARDS G4WNC, 49 CLOUGHS ROAD, RINGWOOD, HANTS BH24 1UU

■ E-MAIL: decode@pwpublishing.ltd.uk ■ Web: <http://www.mikespage.btinternet.co.uk>

# Decode

First of all an apology regarding my E-mail and web site. Many of you will have noticed that not only did my web site disappear during August, but all E-mails to me were also bouncing back to the sender. The reason for this was BTOpenworld's decision to suspend my account because of lack of use! I still haven't had a satisfactory explanation for this, but everything should be working by the time you read this. The only point I'm not too sure on is the web address, if there's a change, I'll let you all know in the next column.

Well, the 'Decode Special' seems to have gone down very well and, despite the E-mail problems, I've had lots of enquiries from new 'Decode' listeners. So in this column I'm going to tackle some of the questions along with a new and particularly friendly propagation program.

## SYNOPSIS

Lots of people asking about SYNOPSIS weather data that's the 5-digit RTTY number groups sent by stations like Hamburg Meteo. In its raw form, the data is singularly uninteresting and is little more than a set of numbers. However, each of these number messages contains detailed weather reports from ground, sea or airborne observation stations. The data is really easy to receive and the most commonly monitored station in the UK is Hamburg Meteo. on 7.646MHz. This station is a reliably strong signal and transmits data 24 hours a day.

If you take a careful look at the number groups transmitted by these stations, you will soon realise that the messages follow a standard format. The first point to note is that messages always start with the sequence ZCZC and end with NNNN. These codes are universally used to signal the start and end of a wide range of other RTTY messages as well as.

If you're a real glutton for punishment you could always try your hand at manually decoding the number groups. If you want to try this, you will need a suitable reference text that contains all the look-up codes you need for a manual analysis. Both the *Klingenfuss Radio Data Codes Manual* and *Ferrell's CFL 13th Edition* cover this subject, but there is also lots of info available on the Internet - just search for SYNOPSIS Codes and you should get plenty of useful hits.

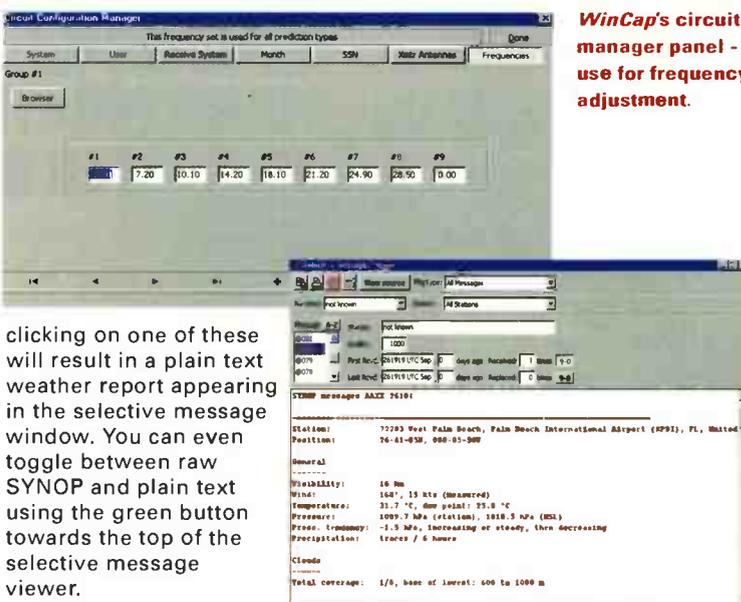
If you don't want to expose yourself to the labour of manual decoding, the next best route is to download the latest version of *JVComm32* from [www.pervisell.com](http://www.pervisell.com) I've covered this program on a number of occasions and it featured as the core software in my recent QuickStart series.

One of the real jewels in this program is the inclusion of a neat SYNOPSIS decoding module. This takes all the hard work out of the decoding process and presents the listener with a plain text decoded version of the message. To try this, just download and install the latest version of *JVComm32* - select RTTY as the receive mode and tune to 7.646MHz and make sure you're seeing the five digit number groups.

Next you need to look out for AAXX or BBXX

near the start of the message, this indicates that the station is sending Ground or Sea reports respectively. With all this complete, you just have to select the Selective Message Viewer. You will find this just under where it says RTTY in the mode box. You will probably need to leave it running for a while until the software has detected a few complete messages.

If all is well, you should see a selection of message numbers listed in the message box and



WinCap's circuit manager panel - use for frequency adjustment.

clicking on one of these will result in a plain text weather report appearing in the selective message window. You can even toggle between raw SYNOPSIS and plain text towards the top of the selective message viewer.

If you want to take the decoding a step further, it is possible to plot the station reports on a map and even produce your own real time weather maps. To do this you need more software and the package to go for is the excellent *Digital Atmosphere* from WeatherGraphics. This is a really comprehensive weather program that will really blow your socks off!

What's more, the demo version is fully functional for 30 days so you can give it a good test before you buy. To get a copy of the (10MB) installation file you need to visit [www.weathergraphics.com](http://www.weathergraphics.com) and go to the Download section. I'll save a fuller description of this program for another day, but it's a great way to bring your weather data to life.

JVComm's excellent SYNOPSIS decoder in action.

## Propagation

Anyone who's spent any time dealing with the h.f. bands will tell you that you really have to have some idea about the effects of propagation conditions to stand a chance of receiving the more interesting and distant stations. There's a host of variables at work making the whole subject an ideal candidate for some computer processing.

Not surprisingly, there are many propagation programs around, but the more accurate packages tend to assume fairly extensive knowledge on the part of the user. This is not really what we're looking for, so I was really pleased to come across

# RadioSport NEWS

## A New "Picketts Lock"

### London Show finds new home

With the closure of Lee Valley Leisure Centre, the traditional home of the **London Communication & Computer Show**, the organisers were presented with the challenge of finding a new venue that would suit all parties. After a long and exhaustive search, they came across a place which not only met all the criteria but is conveniently located off junction 25 of the M25, the motorway junction that many visitors to London Shows have been using for years.

Their efforts have already been rewarded, with exhibitor bookings practically filling the venue several months before the event.

#### THE NEW VENUE

Wodson Park is a leisure centre that is similar in many ways to 'Picketts Lock', except that it is located a few miles outside the M25. Getting there is every bit as easy, indeed the journey time from the M25 is practically the same as it is to Picketts Lock. Talk-in stations will be operational on 2m & 70cm, and when you arrive you will find plenty of free parking. Full travel details can be seen on [www.radiosport.co.uk](http://www.radiosport.co.uk)

Wodson Park is quite new, so it has all the facilities you would expect - brightly-lit halls, a good sized catering outlet, two bars, a passenger lift and facilities for the disabled.

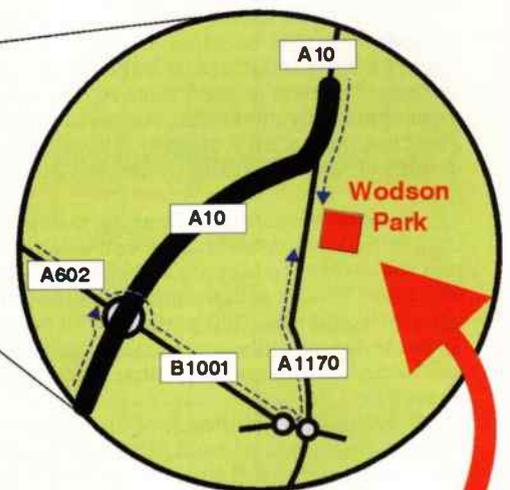
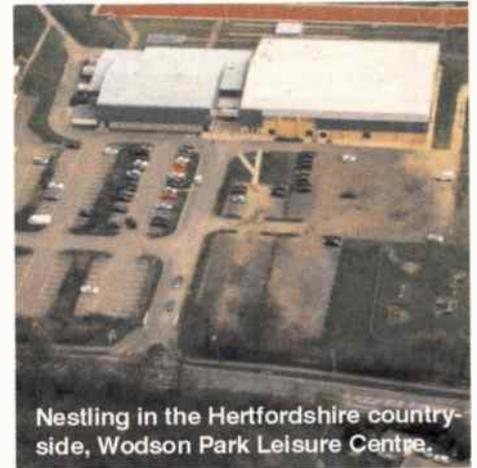
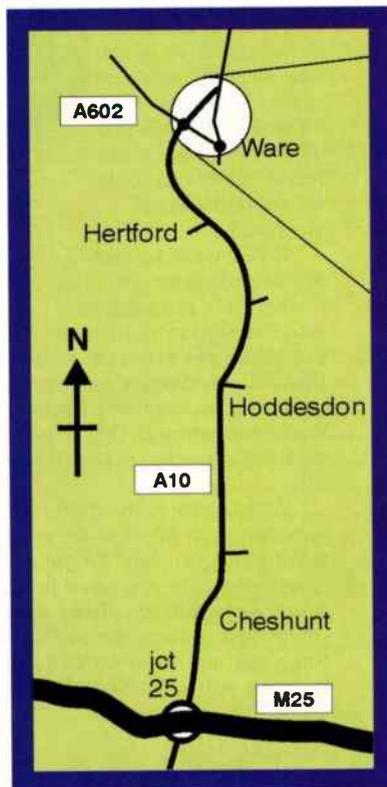
#### REASONS TO GO

Apart from meeting friends new and old, there will be major retailers,

## London COMMUNICATION & COMPUTER SHOW

**Saturday 23 November & Sunday 24 November**

(Opens 10.00am each day)



**Wodson Park  
Wadesmill Road  
Ware, Herts SG12 0UQ**

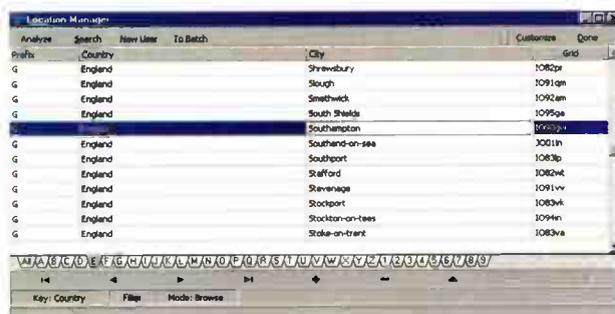
computer systems, software and upgrades, on-demand Morse Tests and Assessments, and Special Interest Groups. Southgate ARC's Bring & Buy completes the list.

All-in-all it should be well worth visiting.



One of Wodson Park's halls.

# Decode (continued)

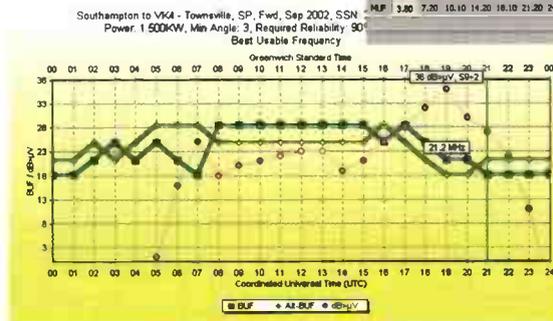


**WinCap Location Manager - use to find target cities or enter new locations.**

**WinCap Wizard** from Kangaroo Tabor Software in the US. This is an adaptation of the VOCAP prediction engine that's been designed for amateur use. Although the initial front-end is a bit daunting, you can still get some really useful results quite quickly. The download site for the program is:

<http://www.taborsoft.com/wwizard3/>

Once you've downloaded and installed the program, you need to run it and set-up your basic station data so that all the predictions are based around your home location. To do this, select the Circuits button on the main menu, then choose User. You will be presented with a box showing town, country and lat/lon - this needs to be updated to show your home location.



**Example prediction chart for Southampton to Australia.**

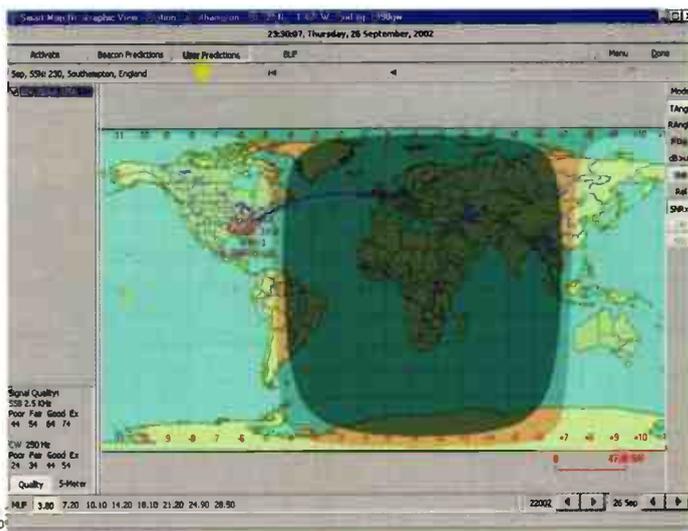
The easiest way to do this is to click the Locations button and search through the list to find the nearest city to your location. Its not important for this to be really close, anywhere within 80-160km will do. If you really want to be accurate, you can enter your home address details manually. Whilst in this menu, you have the option to alter the prediction frequencies. This is not really important at this stage because the amateur bands listed provide a good distribution of frequencies.

With this basic data complete, you're now

ready to start making a few predictions. To take a look at a specific location and find the best frequency to use at various times of day you should choose Analyse then Point-to-Point. If all is well, you will be presented with the Location Manager screen and you can use this to search-out the city and country you want.

Once you've found the desired location, highlight it and choose analyse on the Location Manager menu bar. The program will then work out the best usable frequency for contact between the chosen site and your home location. Another useful

plot is to check the likely signal strength of the link by hitting the dBµV button - this will show the expected 'S' meter readings and signal strength. I've shown an example of a plot I did



**Sample world propagation map from WinCap.**

for Southampton to Townsville Australia. This clearly shows the best usable frequencies and signal strengths - you can see that the best time and frequency is 1900 using 21.2MHz.

Once you've familiarised yourself with the interface and learnt how to do basic predictions, you can move on to the next level of customisation. If you want to use the program to help you find the best time and frequency for a specific station, you can enter the details into the Station Manager. Its really easy, you just open the Location Manager, press the + sign and enter the details you want.

You can also customise the frequencies used for the predictions by opening the Circuit configuration manager - you can set up to nine different frequencies what should be more than enough. Whilst *WinCap* has smoothed sunspot numbers built-in you can add the correct number for the day by visiting:

<http://www.sunspotcycle.com/>

# Propagation Forecasts

## How to use the Propagation Charts

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

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

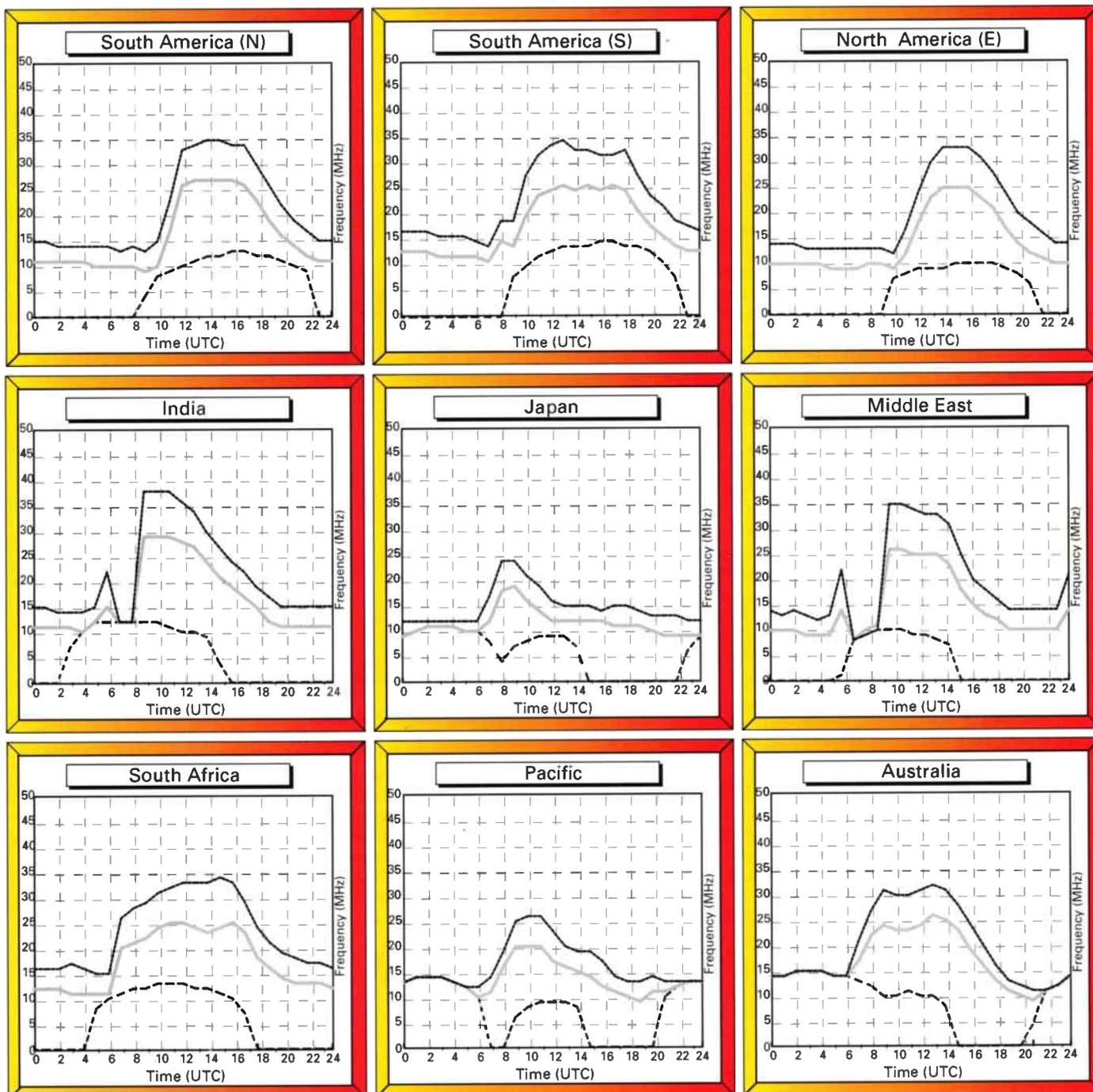
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

probability of success for the path and time.

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

Good luck and happy listening.

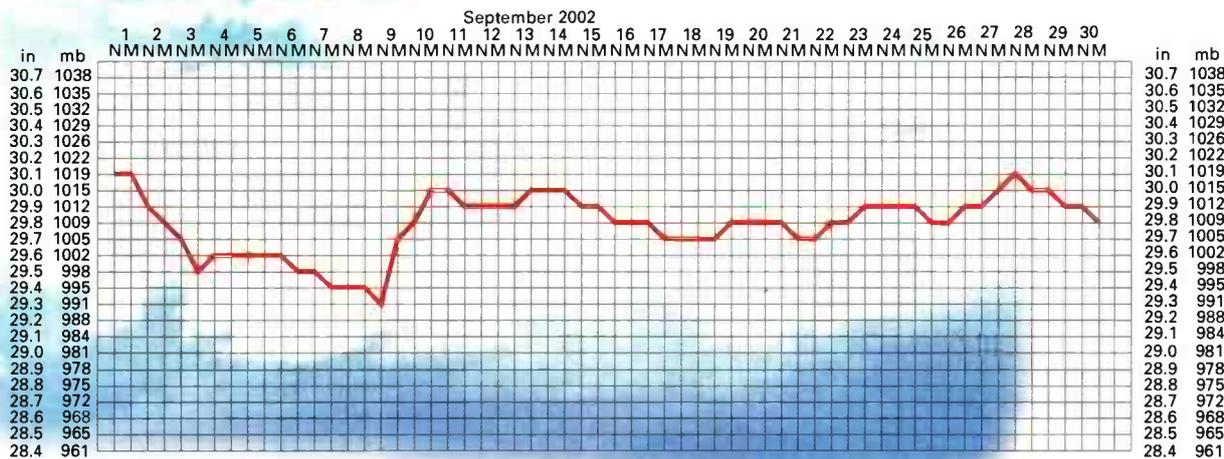
November 2002  
Circuits to London



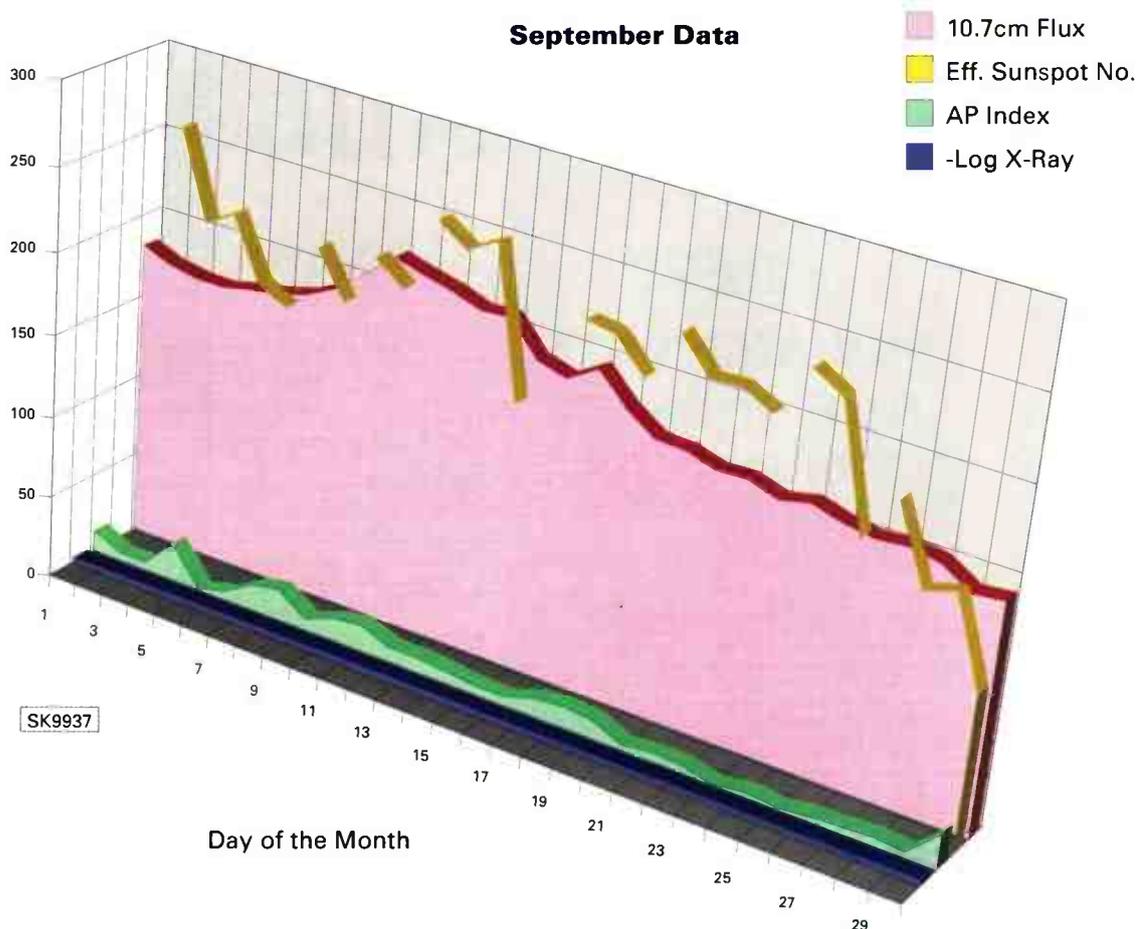
SK9936

# Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, September 2002.



September Data



## guide to the chart

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

The K and AP indices are measures of geomagnetic activity.

The K index ranges from zero (very quiet) to nine (severely disturbed).

K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions.

The AP index ranges from 0 to 400. An AP of 30 is the threshold for geomagnetic storm conditions.



# SRP TRADING



1175 Bristol Road South, Northfield, Birmingham B31 2SL  
★ ★ TRADE AND EXPORT ENQUIRIES WELCOME ★ ★

## COMMTEL 225 BASE SCANNER



500 CHANNEL PROGRAMMABLE SCANNER

Range: 25-1300MHz.

'NO GAPS'.

Modes: AM, FM, WFM

~~£289.95~~

**£249.95**

+ £5.00 P&P

★ FREE ★  
discone  
worth  
£49.95  
with every  
order



## TRIDENT TRX-200

Spectacular new scanner Very high spec

### Specifications

100kHz-2149MHz  
WFM/NFM/AM/SSB/CW  
8.33kHz steps for airband



- Auto/maual step selection
- Step size from 50Hz-500kHz
- 1000 memory channels
- 10 search banks
- Priority channel
- Band scope
- 30 channels per second search speed
- Signal strength
- Computer interface/controllable

Complete with-

- Mains charger/adaptor
- Re-chargable batteries
- Cigar lighter adaptor
- Hand strap

**£249.95** + P&P



**MVT-7100**

£219.95



**UNIDEN  
3000**

£179.95



**MVT-9000**

£369.00

**LIMITED  
OFFER  
FREE!**

**PRE-AMP WITH  
ANY OF THESE  
SIX RADIOS**



Normally  
worth  
£39.95

**MVT-3300**

£149.00



**AR 8200  
MkII**

£379.00



**MVT-7300**

£229.95



Opening times: ● Mon-Thurs 9.30am-5.15pm ● Fri 9.00am-3pm ● Sat 10.00am-2.00pm

**Tel: 0121-475 9898, 0121-475 6969**

**FAX: 0121 475-3355**

E-mail: [srp.trading@virgin.com](mailto:srp.trading@virgin.com)  
Web: [www.srp trading.com](http://www.srp trading.com)

# Amateur Bands

## Five Meg Experiment

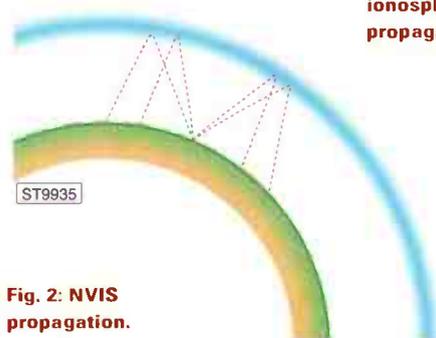
Since 1st August some UK amateurs have been able to obtain a *Notice of Variation* to their licences which allows them to operate on five specific frequencies around 5MHz. The purpose of allowing amateurs to use these frequencies is for propagation experiments, specifically regarding Near Vertical Incident Skywave or NVIS for short. The frequencies assigned are **5.260, 5.280, 5.290, 5.400 and 5.405MHz.**

## Near Vertical Incidence Skywave

Very impressive. But for what purpose? It's best described as the reverse of long distance working. With long distance or DX working the idea is to try and send the radio signal out at as few degrees as possible above the horizontal. The plan being that the signal will travel as far as possible before hitting the ionosphere and bouncing back to earth an equally long distance further from the transmitting station.

The result of most of the signal going to the nether reaches of the globe is that not much of it reaches local stations. What is hoped to achieve using NVIS propagation is not to get the signal a long way around the globe, but for it to reach those local stations. This is achieved by designing the antenna system so that most of the signal will be sent out more or less straight up. The signal then bounces off of the ionosphere as usual, but because of the steep angle that it went up, it returns to earth very much closer the antenna.

Rather like a firework rocket sent up almost vertically and so landing very close to its launch site. A typically NVIS antenna is simply a horizontal dipole put up only a few metres



**Fig. 2: NVIS propagation.**

would provide complete coverage over the area local to the transmitter, when local means anything within hundreds, or more kilometres.

There is some purpose to this experiment. The frequencies are allocated to the military who would like to know a bit more about using NVIS propagation. Using NVIS is a useful way to get good radio coverage of an area where no communications infrastructure exists, such as those parts of the world where widespread aid operations are likely to be conducted.

There's quite a few UK amateurs using 5MHz,

although all of the activity that I've heard has been around 5.4035 on upper side band and from all over the country.

## How's My Signal?

You'll notice something a bit different about 5MHz contacts from those on other amateur bands. Unlike other amateur contacts, the signal reports are given using the SINPO system more commonly used to give reports of broadcast station reception, rather than the usual RST system.

Under the SINPO reporting system there are five criteria regarding the received signal to report, with each criterion having five levels. The components of the SINPO report are:-

Signal Strength	Max '5'	Min '1'
Interference	None '5'	Lots '1'
Noise	None '5'	Lots '1'
Propagation disturbance	None '5'	Lots '1'
Overall Quality	Good '5'	Bad '1'

A perfect report under the SINPO system would be 55555.

## 5MHz Equipment

A small hurdle for the NOV holders to overcome in order to operate on 5MHz is to find suitable transmitting equipment. This may seem strange when most modern amateur transceivers can very easily be modified to transmit on frequencies other than the usual amateur bands.

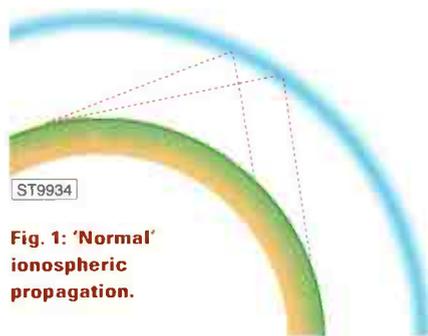
However, it seems possible that taking into use a CE marked transceiver that has been modified to general coverage transmit may contravene the 1992 Electromagnetic Compatibility Regulations. If so, then the only amateur radio gear that can be used on 5MHz is either stuff that isn't available commercially, or commercial gear manufactured before the regulations came into force. If you want to check, visit <http://www.hms.gov.uk> for the full regulations.

## DXpeditions

Seven German amateurs will operate as 3XY7C from Guinea for a fortnight from 30th October. As well as voice, they plan to use c.w., RTTY, PSK31 and possibly SSTV, and all bands from 50MHz to Top Band.

Two Brits, three Germans and an American will be using KH8 calls from Tutuila and Ofu islands, American Samoa, in the southern Pacific between the 29th October and 8th November. They will be giving special attention to 1.8MHz and openings to Europe.

Over the last ten days of October the Mongolian Radio Sport Federation's DXpedition to Khentii province will use the call JU840C. The special event station is being held at the birthplace of Gengis Khan, founder of the Mongolian empire, to celebrate his 840th anniversary.



**Fig. 1: 'Normal' ionospheric propagation.**

above ground. Ideally NVIS, combined with the inevitable little bit of ground wave,

# askDirect

VISIT OUR WEB SITE: [www.askdirect.co.uk](http://www.askdirect.co.uk)  
 EMAIL US YOUR ORDERS: [sales@askdirect.co.uk](mailto:sales@askdirect.co.uk)  
 MAIL ORDER FREEPHONE: **020 73232747**

THE NEW ASK FLAGSHIP STORE IS NOW OPEN COME SEE US AT:  
 248 TOTTENHAM COURT ROAD, LONDON W1T 7QZ  
 KAMLA: 251 TOTTENHAM COURT RD, LONDON W1T 7RB  
 McDONALD: 70 OXFORD STREET, LONDON W1D 1BP  
 HARP: 237 TOTTENHAM COURT RD, LONDON W1T 7QW

**SIMPLY THE  
 BEST PRICES!**

## SONY

- ICF-SW07 Inc dual voltage mains adapter and ANLP1 active loop antenna.....£229
- ICF-SW07 Inc ANLP1 loop antenna .....£210
- ICFSW100E with wire antenna, earphones and carrying case.....£159
- ICF-SW1000T.....£330
- ICF-SW7600GR Dig WB receiver.....£124
- ICF-SW77.....£300
- ICF-SW35 Dig WB receiver.....£69
- ICF-SW12 11 band analogue receiver....£59
- ICF-SW11 12 band analogue receiver...£39
- ICF-CD2000S World Travel Clock.....£139
- AN-71 Wire antenna.....£7
- AN-100A Active antenna for ICF-SW100 and 7600G.....£49
- AN-1 Outdoor active antenna.....£59
- AN-LP1 Active loop antenna.....£59

## HITACHI

- WORLDSPACE KHWS1.....£140

## SANYO

- WORLDSPACE WS1000B.....£140

## GRUNDIG

- SATELLITE 800EU.....£540

## ROBERTS

- R862 12 band analogue receiver.....£25
- R871 15 band analogue receiver.....£35
- R9921 MB Dig WB Radio with RDS.....£60
- R881 Multiband digital world band radio ...£70
- R9914 MB Dig WB Rad with SSB.....£85
- R876 Multiband digital world band radio ...£115
- R861 MB Dig WB radio with RDS.....£170
- RC828 MB Dig WB radio with cassette & time-recording.....£170

## LICENCE FREE TRANSCEIVERS

- MOTOROLA XTN446 Rch.....£170
- MOTOROLA T6222.....£65
- ALINCO DJ-446 Rechargeable.....£140
- KENWOOD TK3101.....£189
- ENTELEUROWAVE PMR446.....£55
- MULTICOM JUNIOR For 2.....£110
- PANASONIC KXTR320 .....£110



**SONY £210**



**AOR £370**



**AOR £1340**



**AOR £670**



**HITACHI  
 KHWS1  
 £140**

## GARMIN

- ETREX.....£135
- ETREX VENTURE.....£165
- ETREX LEGEND.....£225
- ETREX SUMMIT.....£200
- ETREX VISTA.....£320
- GPS II +.....£200
- GPS III +.....£330
- GPS V.....£430
- GPS 12.....£140
- GPS 12XL.....£200
- GPS 76 Marine.....£190
- GPS MAP76 Marine with MAP.....£310
- STREET PILOT COLOUR III.....£770

## YUPITERU

- MVT-9000 MKII ALL MODE.....£360
- MVT-7300 EX ALL MODE.....£250
- MVT-7100 EU ALL MODE.....£195
- MVT-3300 EU.....£135

## YAESU

- VR-120 100KHz-1300MHz.....£160
- VR-500 100KHz-1300MHz with AM FM WFM LSB USB.....£209
- VR-5000 100KHz-2599MHz.....£630
- FT817 Inc PSU & Rechargeable battery £670
- FT847.....£1200

## AOR

- AR5000.....£1340
- AR5000 + 3.....£1500
- AR7030.....£670
- AR7030 PLUS.....£800
- AR8200 SERIES 2.....£370
- AR8600 MKII.....£600
- SDU5500 Inc PSU.....£799

## ICOM

- IC-R2 500KHz-1300MHz, AM, FM, WFM, PC.....£135
- IC-R10 100KHz-1300MHz, AM, FM, WFM, PC.....£300
- IC-PCR100 100MHz-1300MHz, AM, FM, WFM, PC.....£185
- IC-PCR1000 100MHz-1300MHz, All mode PC Rec.....£325
- IC-75 30KHz-60MHz, AMS, AM, FM, USB, LSB, RTTY, CW.....£645
- ICR-3 Full UK tv coverage, 500KHz-2450MHz.....£CALL

## BEARCAT

- UBC9000XLT Base receiver.....£250
- UBC220XLT Hand held receiver.....£120
- UBC780XLT With Trunking.....£325

**ONLINE ORDERS  
 OVER £100 RECEIVE FREE OF  
 CHARGE DELIVERY TO A UK  
 MAINLAND ADDRESS.**

ALL PRICES INCLUDE VAT AT 17.5%. PRICES ARE SUBJECT TO AVAILABILITY AND CHANGE WITHOUT PRIOR NOTICE. ALL PRODUCTS CARRY 12 MONTHS MANUFACTURERS WARRANTY. DELIVERY CHARGES APPLY ON TELEPHONE MAIL ORDER. WE ARE OPEN MONDAY TO SATURDAY 9.00AM TO 6.00PM. E&OE.

■ ROGER BUNNEY, 35 GRAYLING MEAD, FISHLAKE, ROMSEY, HANTS SO51 7RU

# Satellite TV News

The intense public interest both in the UK and Europe - particularly France - produced a flurry of SNG trucks in and around Soham the following day uplinking over both *Intelsat 801* and *Eutelsat 2F3*. Though the content of the reports carried was predictable, the SISLink 19 truck 'UKI-189' downlinking at 11.649GHz-H (SR5632 + FEC3/4) was positioned elsewhere - at a police road block using a 'cherry picker' and a long range camera lens to view distant 'scenes of crime' technicians at the bodies' location.

Central Europe has suffered during August with heavy rainfall and the resultant flooding that devastated parts of Germany, Austria, the Czech Republic and then into Hungary, both the Elbe and Danube have experienced record highs and much of the city of Prague was totally saturated in water and mud. SNG coverage of the flooding was intense and **Edmund Spicer** (Littlehampton) monitored numerous RTL news feeds over the 11.520-11.560GHz-V spectrum running their usual SR6666+3/4 parameters on the 8°W *Telecom* bird.

'BBC UKI-613-P1 Magdeburg' over on *2F3*, 21.5°E were pro-active with news reports - 12.539GHz-H (5632+3/4) - though interestingly when the Iraqi dissidents took over the Iraqi Embassy in Berlin on August 24th UKI-613 also popped up again - this must be a permanently Germany based BBC unit. **Roy Carman** (Dorking) noted *Eurobird* 28.5°E with an SNG truck identifying - 'Aut-6-Speedy TV' @ 12.648GHz-V (SR6111+3/4) with a 'multi-user feed' during the German flood period. This involved the SNG camera and mic., but a series of flood updates were filed over the satellite link by reporters, each sliding onto the single mic. his own network or station logo sleeve - at this time the Elbe as 8.5m above normal! 'RTL OFF ROAD D220' motored - or swam - into Prague and showed scenes of flooded palaces and historic buildings, the downlink via *Eutelsat W2*, 16°E 12.517GHz-H, 56532+3/4.

Sports and the football season is again active, the low-end of *Intelsat 801* vertical has local matches usually for Sky Sports. German motor rallying was featured August 25 with their 'ADAC' rally through the backwood villages of the Dorfs - interesting to note that uplinking was over the UK truck 'ntl.UKI 457 2' running 12.580GHz-H (5632+3/4) over *Atlantic Bird 2/Telecom 2D* @ 5°W.

The very active *NSS-K Atlantic* - 21.5°W - was replaced by the new bird on the block by *NSS-7* on August 21st. *NSS-7* is an upmarket satellite carrying both C- and Ku-band. Unfortunately, the transfer of the *NSS-K* clientele to *NSS-7* was far from seamless. Around this period the *Globecast* 11.590GHz-V bouquet disappeared, as did the familiar Reuters 11.462GHz-V carrier, instead a quick scan of the spectrum showed a few new customers operating on other frequencies, but horizontal.

A couple of days later, news filtered in that hence forth the European spot ex *NSS-7* would be horizontal, further South into Africa and vertical would be used and South Africa would be vertical. At the time of writing, a few of the regulars have established themselves, check for Reuters WNS 11.609GHz-H SR4000 + 3/4; Brightstar London/APTN New York 11.684/11.677GHz-H 5632+3/4; Reuters Washington 11.571GHz-H 5632+3/4 - an unusual 'BT-15' appeared early during the transfer at 11.610GHz-H SR 2666+3/4.

*Globecast* sometimes appears, though tending to lease now at random and have to be searched out, no longer their convenient 11.590GHz-V bouquet with the PGA Golf, Indy 500, etc. They've been sighted at 12.683GHz-H 6116+3/4 on the 29th for example with PGA golf sponsored by 'Air Canada'. An unusual small bouquet has been carried over *NSS-7* and at the time of writing they've moved for the third time to 11.858GHz-H SR6515+3/4. At this spot will be found

RTS-1 - 'Radiodiffusion Television Senegalaise' from Dakar - with good technical quality programming in company with RTNC - 'Radio-Television Nationale Congolaise' from Kinshasa.

The service ident appears as 'Nations 1' RTNC and 'Nations 2' RTS. The PIDS aired APID 256; VPID 256; PCRPID 8190.

A 'phone call from Edmund evening of August 27th gave the alert for *Atlantic Bird 1* launch (Ariane flight 155) ex Kourou, French Guinea, which was carried live over *Hot Bird*, 12.673GHz-V SR27500+3/4 within the Telespazio bouquet, unfortunately a problem postponed the launch until the following night which successfully put the bird into flight. Jordan TV is also found in this package.

I have received two queries this past month asking 'where is NASA TV?'. NASA-TV usually appears **only** when there is a mission to the *International Space Station* and/or a shuttle launch to same.

An observation that in recent months there is a decided increase in satellite news feeds opting into the MPEG-4:2:2 mode rather than the norm of MPEG-2. MPEG-4:2:2 is a 'professional' standard and as such receivers are not commonly available, other than at lottery level, typically well over £2000 UK. One sat-zapping colleague has adapted his computer to display 4:2:2 pictures successfully at nominal cost.

As I type these words, September 10th news reports are now filtering out of New York, marking one year after the fateful September 11, 2001. On 11.684GHz-H (5632+3/4) for example is carrying 'APTN New York Path 1' with a series of reports - in several languages.

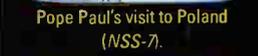
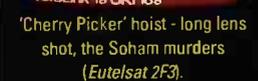
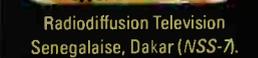
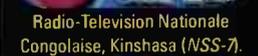
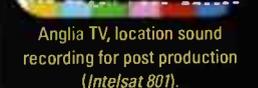
In my satellite column in the December 2001 issue of *What Satellite TV* I wrote that the 4th aircraft (Sept 11th, United Airlines flight 93) that was heading towards Washington in which the passengers and crew reportedly fought with the terrorists before the 'plane crashed may have another scenario. During the actual September 11th attacks, I received an E-mail telling that USAF jets had been scrambled to shoot down the fourth aircraft, this was backed up a couple of days later from another source that had monitored transmissions relating to the shooting down.

A report published in the USA, recently reprinted in *The Independent* and *Daily Mail* - August 16th 2002 - now suggests that Flight 93 was shot down by an F-16 - under orders...the mystery remains unless the authorities speak - and they won't!

I've received an interesting letter from **Alan Richards**, Ilkeston, who bought an old SIS 1.5m dish 'hanging' on the back of an ex-bookies, now an Indian restaurant. He modified the previously fixed mount dish and now using boot laces and a bungee can move the dish across the satellite arc! Alan receives excellent pictures from 48°E across to (enviously) 58°W - the latter including Cuban TV programming and BT feeds in Ku-band.

*Europe\*Star-1* @ 45°E was very active during the recent World Summit on poverty with *Globecast* a main runner for news feeds backhauling into Europe - September 1st and 'Globecast LF 7-Path 1' was feeding reports into BBC London - 11.504GHz-V (6116+3/4) - and evenings into the BBC-2 *Newsnight* programme. *Globecast* were also seen with African continent feeds on 11.657; 11.663 and 11.666GHz with an unusual SR4425 + FEC 5/6.

The EBU also had a three channel package feed ex Johannesburg feeds carried over *Eutelsat W1*, 10°E running 11.461GHz-V with unusual parameters SR 13333+FEC 7/8. The value of an auto search digital receiver can be seen with the almost impossible task of decoding digital parameters with such wide ranging possibilities! Next month the annual 'Satellite TV Special' where hopefully operating techniques can be discussed informally.



airband  
basics

backchat

on the  
road

satellite  
monitoring

amateur  
airwaves

software  
spot

world of  
cb

scanners

In Next Month's

# radio ACTIVE

- **FREE! RAE Home Study Course Part 2**
- **Military Matters**
- **Review - Cobra microTALK MT500-2**
- **All in a Life's Work - Tales from G3LL's test bench**



All the usual features packed with information for the radio enthusiast...

**RADIO ACTIVE NOVEMBER ISSUE ON SALE 18 OCTOBER**

Radio Active is published on the third Friday of each month - available from all good newsagents or direct by calling (01202) 659930, priced at only £2.50

## DEALERS PANELS

Dorset

### THE SHORTWAVE SHOP

Radio Communications Centre

Amateur/C.B./Shortwave  
Scanners/Marine/Airband  
Full range of used equipment

[www.shortwave.co.uk](http://www.shortwave.co.uk)

18 Fairmile Road, Christchurch,  
Dorset BH23 2LJ

Tel/Fax: 01202 490099

Devon

### GAREX ELECTRONICS

Established 1963

VHF/UHF specialists

Aerials, preamps, filters, connectors, PMR  
equipment and spares.

Main agents for REVCO premium quality  
mobile aerials.

[www.garex.co.uk](http://www.garex.co.uk)

PO Box 52, Exeter EX4 5FD

Mobile 07714 198 374

Kent

### R. G. ELECTRONICS

#### SCANNERS

Walkie Talkies, CB Radio  
Satellite Radio, GPS,  
Metal Detectors.

ICOM & NEVADA DEALER.  
RADIO SHACK STOCKISTS

[www.rgelectronics.co.uk](http://www.rgelectronics.co.uk)

66 Oxford St., Whitstable, Kent CT5 1DG

01227 262319



Scotland

Everything you need for C.B.,  
Scanners & Amateur Radio. . .

### JAYCEE ELECTRONICS LTD

20 Woodside Way  
Glenrothes, Fife KY7 5DF  
Tel: 01592 756962

Tues-Fri 9am-5pm • Sat 9am-4pm  
Closed Sunday & Monday

Somerset and South West

### QSL COMMUNICATIONS

- For all amateur radio and listener needs.
- New and secondhand equipment.
- Part exchange welcome.

Unit 6, Worle Industrial Centre, Coker Road,  
Worle, Weston-Super-Mare BS22 6BX

Tel/Fax: (01934) 512757

West Sussex

### Cooke International

[www.cooke-int.com](http://www.cooke-int.com)

Electronic Test &  
Measuring Equipment

Tel: (+44) 0 1243 55 55 90

Operating & Service Manuals.

■ KEITH HAMER & GARRY SMITH, 17 COLLINGHAM GARDENS, DERBY DE22 4FS

■ E-MAIL: dxtv@pwpublishing.ltd.uk ■ WEB: www.test-cards.fsnet.co.uk

# DX Television

The August Sporadic-E activity was more productive than of late. It started off well with further evidence of exotic transatlantic reception, albeit at scanner level. Also, signals from various E2 outlets in the Middle East were evident on several occasions.

## Reception Reports

On August 1st, at around 2000, USA/Canadian TV vision signals were detected again on Channels A2 with two carriers present, and on A4 with three carriers audible. A 6m transatlantic path was established at the time.

The opening on the 4th commenced with NRK-1 Norway occupying Channels E2, E3 and E4 displaying programme schedules with a characteristic white disc in the lower left of the screen. This is actually a digital clock. Towards 1700, Belarus R1, RTL KLUB R2, MTV-1 R1 and STV-1 (Slovakia) R2 made an appearance with impressive signal strengths.

**Stephen Michie** (Bristol) submitted an excellent log for the 5th, commencing with RUV Iceland E4 with trivia text pages at 0918. Sweden, Norway and Finland were present throughout the morning with reception from central Europe by early afternoon, later extending through the Balkans. Albania (TVSH) on Channel C appeared twice - first at 1422 then again at 1905. Albania was also received by **Peter Barber** (Coventry).

**John Lees** (Cheltenham) comments that the 5th was the 'best day this year - just like old times' with a strong sustained Sporadic-E opening between 1000 and 1800. Starting with Norway on E2, E3 and E4, reception later included Spain E2 and E4 in addition to Portugal E3. All stations supported perfect pictures in colour with sound at times. Syria E2 was identified with Arabic subtitles at around 1745.

By mid-afternoon on the 8th, at least two pictures with Arabic script were battling on E2. One station, possibly IRIB-1 (Iran), seemed to include a logo in the top-left. Stephen Michie noticed a Polish serial at 1650 on R2, originally transmitted by Telewizja Polska, but being broadcast via Lithuanian TV. Last June, **Tom Crane** (Hawkehill) heard what sounded like Polish TV sound on R1. Maybe other countries are offering Polish programmes.

Iran E2 was also around on the 10th during the evening according to **Tim Bucknall** (Congleton).

Veteran DXer **Ian Beckett** (Buckingham) reports strong Spanish signals on E2, E3 and E4 on the 11th with reception lasting well into the evening. On the 13th RTBF-1 (Belgium) from the Liège outlet appeared on E3, presumably by tropospheric enhancement as it is too close for Sporadic-E reception.

On the 20th **Paul Farley** (Newhaven) identified signals from the Middle East on E2 consisting of a studio discussion with Arabic text along the bottom at 0911. The offset (48.239602MHz) indicates it was Iran, but the logo in the top-left looked different, resembling two half spheres on top of each other to form a circle with a gap across the middle with writing in the gap. There may have been another small white logo in the lower right.

On the 24th at 0755, Iran appeared again on E2 with views of Mecca, later fighting with a Syrian soap opera on E2. Amazingly, a path to Iceland (RUV E4) was established at the time with scrolling pictures and non-stop adverts for

laptop computers.

Peter Barber (Coventry) saw the Estonian PM5544 test card on R2 at 1032 on the 28th. Over on E3, Danish schedules followed by their new analogue clock were present from the Fyn transmitter. Good Italian signals were present on the 30th from 0745 with a telesales channel (just below E2) and RAI UNO on A and B. Spain E3 and Portugal E3 were also evident towards mid-morning.

**Philip Smith** reads the column every month and finds it very informative (thanks Philip!). Towards the end of the month, strong Italian RAI UNO signals have been identified. Philip wonders if F2 propagation can be received on a simple set-up. It is possible, as the signals can be as strong as Sporadic-E. By the time this column is in print, we should know whether F2 has returned for another spectacular session!

## FM Reports

The f.m. band became choc-a-bloc at times, notably on August 5th, 11th and 14th, writes **Simon Hockenull** (Bristol). By mid-morning on the 11th the band was well populated with Spanish signals with signal strengths approaching S4. Services identified using RDS include CAD-CIEN on 89.70MHz with pop music, RNE CLAS on 88.60 with classical music, RNE-3 on 103.35, CAD ENA on 97.90, SER on 104.30 and ON DACERO on 95.0MHz.

The 2m band at 144MHz became active for a while too. An early evening opening on the 14th produced Czech stations on 89.70 (CR1), 88.80 (CR USTI) and 104.4MHz (CR CB).

## Weaker Signals

**Roger Bunney** (Romsey) recently commented about the relative weakness of many of the old-favourite transmitters. For example, three decades ago TVE Spain would blast anything else off the screen. To a lesser degree, Italian signals on Channel A would roar in - any private station would be considerably weaker, perhaps just detectable.

These days RAI UNO signals seem much weaker and often appear at similar levels to the private stations. One theory is that e.r.p. levels have reduced on many of the ageing Band I transmitters and this has been more noticeable within recent years. However, the RTL KLUB outlet at Pecs in Hungary seems to regularly provide high signal levels - possibly this transmitter is operating at its full 50kW e.r.p. specification.

## Keep On Writing!

Please send your DXTV, slow-scan TV and f.m. reception reports, news, off-screen photographs and information to arrive by the first of the month to:- **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS**. We can also use off-air pictures stored as JPG files on PC disks and good-quality video recordings. Our DXTV and Archive TV website can be found at: [www.test-cards.fsnet.co.uk](http://www.test-cards.fsnet.co.uk)



Fig. 1: New Danish second-network test card based on the PM5534 design.

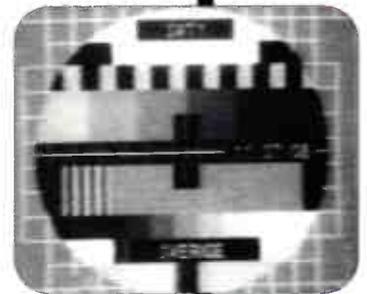


Fig. 2: Swedish PM5534 received by Stephen Michie on E3 via Sporadic-E.



Fig. 3: Accidental showing of the Colour-Bar test signal via BBC-2. Does anyone know what the inscription means?



Fig. 4: Another example of the current BBC-1 Identification Symbols. This meaningless and baffling Ident is called 'Haka'.

■ LAWRENCE HARRIS, 55 RICHVILLE ROAD, SHIRLEY, SOUTHAMPTON SO16 4GH

■ E-MAIL: info.orbit@pwpublishing.ltd.uk ■ WEB SITE: http://www.itchycoo-park.freeserve.co.uk

# Info in Orbit

Some of the weather satellite (WXSAT) pictures sent by readers are quite remarkable, reflecting various news events such as the European floods and widespread fires in Russia. High above us, *MSG-1*, the new all-digital European WXSAT, continues the in-orbit checkout, while down here we wonder about the economics of setting up an LRIT system - or at least I am wondering! Then there is the newly-launched Indian *METSAT*.

## Current WXSATs

Many WXSAT monitors spent early September anticipating the second channel on *NOAA-17* to be switched from channel 1 (one of two visible-light channels) to infra-red - expecting this to happen before 9 September, the official 'operational' date. It did not happen. Then, to my surprise, the second channel was switched - to 3A!

Wayne

**Winston** (the NOAA contact on the mailing lists) explained: "NOAA has started doing some a.p.t. channel switching with 2 and 3A (near visible) during the day, and the more standard 3B (IR) and 4 at night. This is temporary. The date for *NOAA-17* being declared operational has been set back at least until around 23 September. Nevertheless, we are processing the AVHRR data to level 1B already, which is why it is showing up in the SAA. We expect to change the a.p.t. switching configuration on 24 September to a more normal 2, 4 day, 3B, 4 night".

For those who are new to this intriguing hobby, *NOAA-17* was launched on 24 June into polar orbit, and followed normal operational procedures by commencing a.p.t. (low resolution transmissions) that included two visible channels - 1 and 2. Activation of the infra-red sensors has to be delayed for a couple of weeks to allow system stabilisation (specifically outgassing).

Unusually, and for reasons not yet obvious, the inclusion of an infra-red channel within the a.p.t. transmission was delayed as described above, resulting in the daytime inclusion of channel 3A instead of infra-red. High resolution transmissions continued as normal - with five channels of data.

## Indian METSAT Launched

The World Meteorological Organisation publishes tables of expected launches and an entry for *METSAT* indicated a launch in '2002'. In its seventh flight, conducted on 12 September from Satish Dhawan Space Centre, SHAR, Sriharikota, the Indian

Space Research Organisation's Polar Satellite Launch Vehicle successfully launched India's first exclusively meteorological satellite, *METSAT*, into a Geo-synchronous Transfer Orbit (GTO).

Until now, India's meteorological services have been combined with telecommunication and television services in the *INSAT* system. *METSAT* is a precursor to the future *INSAT* system that will have separate satellites for meteorology, telecommunication and broadcasting services.

*METSAT* carries a Very High Resolution Radiometer (VHRR) capable of imaging the Earth in the visible, thermal infrared and water vapour bands. *METSAT* will relay data sent by platforms to the Meteorological Data Utilisation Centre at New Delhi. Such platforms have been installed all over the country.

*METSAT* was developed by ISRO Satellite Centre, Bangalore. The Meteorological payloads were developed by Space Applications Centre, Ahmedabad. The Master Control Facility at Hassan is responsible for all post launch operations on the satellite.

## MSG-1 - Update

Europe's new all-digital, geostationary WXSAT *MSG-1* (METEOSAT Second Generation) continues through in-orbit checks. Launch was televised and broadcast on the Internet. Thirty-three minutes into the flight, live telemetry was received via the ESOC (European Space Operations Centre) ground system, confirming that *MSG* was functioning normally.

As a test activity, telemetry was also acquired independently via the EUMETSAT Primary Ground Station (PGS) at Usingen at 0608 on 29 August. As a further test, the Central Facility of the *MSG* Control Room at EUMETSAT was connected to the PGS and the first *MSG-1* telemetry was acquired by wholly EUMETSAT devices at 0703.

In addition at 1205 on 29 August, the Backup and Ranging Ground Station (BRGS) at Maspalomas acquired satellite telemetry from the *MSG-1* satellite, and continued to track it until 1304, at which point the satellite moved out of the field of view of the antenna. If commissioning goes according to plan, then full *MSG* routine operations are expected to commence in the third quarter of 2003.

## Latest Idea On MSG-1 Data For Amateurs

The possibility of another satellite carrying unencrypted, very easy to decode, *MSG-1* data has been mentioned to me by **Dave Cawley** of Timestep. I will publish any further news in this column!

## WXSAT Software - An Update

The 'WXSAT Special' includes a short feature on David Taylor's WXSAT software suite, and I had been wondering about writing an article mentioning other software writers when I received a perfectly timed

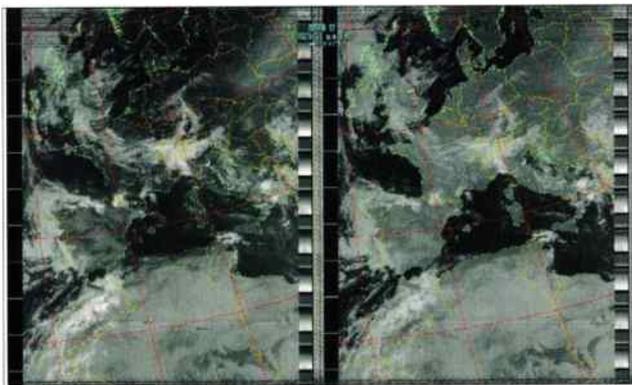


Fig 1: *NOAA-17* a.p.t. 3 September 1010 from Jean-Louis Querton using *wxtoimg*.



Fig 2: Launch of *MSG-1*. Copyright 2002 ESA - CNES - Ariespace/Photo Service Optiqua CSG.



Fig 3: River Vistula from *NOAA-15* on 11 August from Robert Moore.

All times quoted in *SWM* are UTC unless stated.

contribution from **Jean-Louis Querton**. Jean-Louis lives in Calpe, between Valencia and Alicante in Spain, and wrote an enthusiastic note about the a.p.t. decoding software *wxtoimg*, developed by Abstract Technologies, New Zealand Ltd., see <http://www.weather.net.nz/wxtoimg/>

He commented "The software records the signal from the receiver (or scanner) and when reception is over, it starts decoding. The actual 2.3.5 beta version is really fantastic and presents a lot of features: Map Overlay: it can display land, lakes, rivers, country borders, ground station and cities, even on LEO satellites, thanks to the ability to decode the data channels in the a.p.t. bit stream to orientate the map with the picture received; Autodetect Pass: this gives the correct scanning North to South, or vice versa, based on the Kepler elements; Update Kepler Elements Automatically From The Web: Autodetect a.p.t. from NOAA, METEOR, SICH, OKEAN or WEFAX from METEOSAT or GOES.

A wide range of picture enhancements are available. Recording options give you the choice to start recording on WEFAX start/stop signal, or on the presence of the 2400Hz carrier, or when the sound level rises a certain amount, or when selected active a.p.t. satellites are overhead".

Jean-Louis described his station. He has a Nueva Electronica LX 1375 - Ricevitore Meteo/Polari receiver (which I presume is an Italian dual-satellite model), and feeds this from a home-made QFH antenna, with 12mm copper pipes, following instructions from Paul Hayes.

Jean-Louis has also done some tests on the software, as I did after it was released. Firstly, using an old Pentium I 133MHz running under *Windows 98* with 32MB RAM, he found that it was 'too slow'; using an Acer laptop with a Celeron 650MHz processor running under *Windows 98* with 320MB RAM produced 'very good results'. **Figure 1** was supplied by Jean-Louis.

**Professor Robert Moore** retired

last year from his position at the

Department of Sociology, Social Policy and Social Work Studies of John Moores University in Liverpool. He E-mailed: "I thought you might like to see this stunning image of the River Vistula which I picked up from the NOAA-15 pass at 0732 on 11 August. The river is illuminated by sun-glint for 350km, but is visible for a further 150km to near Lublin. You can also see the Hel peninsula around the Gulf of Gdansk. Warsaw is just south the confluence of the Vistula and the Bug, the latter is clearly visible to the right of centre".

Robert has a Timestep HRPT system which he operates from his house in North Wales. His main interest is the weather and also he operates a small weather station. A Lowe HF-150 receiver and *M-Scan Meteofax* software gives him a continuous supply of North Atlantic weather charts.

Although Robert's location is high up, he comments that he has virtually no southern horizon - it varies from 20° to nearly 30° depending on the height of the trees on the hill that slopes above him to the south. With a clear northern horizon, however, he has received good pictures of far north latitudes, but nothing south of Majorca. Although Robert supplied a colour image, I could not convert it properly for publication without reducing the original format to black and white.

**Ferdinand Valk** receives h.r.p.t. data using a 850mm dish and his system is controlled by a dedicated computer. The raw h.r.p.t. file is processed



Fig 4: Composite NOAA image of 8 September from Ferdinand Valk.



Fig 5: Infra-red image received in Southampton from NOAA-15 1845 on 2 September showing trails.

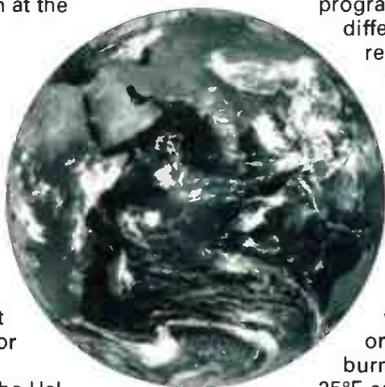


Fig. 6: Here is the first image of the launch of India's METSAT, courtesy of ISRO.

by **David Taylor's** software. Ferdinand writes:

"Using *GroundMap*, another of David Taylor's programs, I have remapped several passes of different satellites to a common projection. The resulting image files are then brought into

*Photoshop 7* for further processing. Basically, all images have been merged into a single one and selective enhancements have been applied to bring out the details I was after in the first place. Both merging and enhancement techniques I have developed myself".

The result is shown in **Fig. 4**, a composite image from NOAA-12, NOAA-15, NOAA-16 and NOAA-17 passes. The objective was to show the large extent of the smoke originating from the moor fields that are burning East of Moscow. The image is centred on 25°E and 45°N, with enhancement applied to bring out the finer and more transparent smoke as well.

## Frequencies

### a.p.t.

NOAA-12 and NOAA-15 transmit a.p.t. on 137.50MHz.

(during overlap periods, NOAA-12 (the secondary WXSAT) a.p.t. may be switched off).

NOAA-17 transmits a.p.t. on 137.62MHz.

METEOR 3-5 usually transmits on 137.30MHz when in sunlight.

METEOR 2-21 may transmit on 137.40MHz when METEOR 3-5 is switched off.

### h.r.p.t.

NOAA-12 and NOAA-16 transmit h.r.p.t. on 1698.0MHz.

NOAA-14 transmits on 1707MHz.

NOAA-15 transmits on 1702.5MHz.

NOAA-17 transmits on 1707MHz.

FENGYUN-1C and FENGYUN-1D transmit on 1700.4MHz.

### WEFAX:

METEOSAT-7 (geostationary) transmits WEFAX on 1691 and 1694.5MHz and Primary Data on 1691.0MHz.

# Timestep



PROsat for Windows is used by most leading weather satellite enthusiasts. They have grown up using Timestep products and now rely on the superior image quality and ease of use provided by PROsat for Windows. Features such as real time reception, auto-scheduling, temperature readout, totally automatic reception of all NOAA's and Soviet satellites and automatic animation have made PROsat the preferred package. For weather satellite systems contact :

**Timestep PO Box 2001 Dartmouth TQ6 9QN England**  
**Tel: 01803 833366 Fax: 01803 839498**  
**www.time-step.com email information@time-step.com**



## NEW 24 PAGE CATALOGUE!

April 2002

**High Quality Accessories For:**

- **SCANNING Rx** (Airband etc)
- **AMATEUR RADIO**
- **SHORTWAVE LISTENERS**
- **PMR, etc**

**Plus**

- **SURPLUS STOCK**
- **COMPONENTS**
- **SOLDERING IRONS** (Weller & Metcal)



**FREE!**

Contact SSE as below for your **FREE** copy!

- NEW SSE product - UNIQUE** adjustable passive audio filter for noise reduction - NFM, SSB, AM, CW
- Improve intelligibility with less fatigue
  - Connects between spk-socket and ex spk and phones
  - Low internal attenuation. Special power inductors allow up to 5W of audio power
  - Fully isolated 2 pole by-pass switch
  - Choice of filter combinations
  - Limited period offer includes **loudspeaker!**

**PRICE: £23.00**

**Jim AAF-2002**

**NEW!**



Payment by **POSTAL ORDER** or **CHEQUE** Standard postage is **(PLUS) £2.00** per order within the UK.

For **FREE** information contact:

Solid State Electronics (UK) SWM, 6 The Orchard, Bassett Green Village, Southampton SO16 3NA

Tel: 023 8076 9598 - Fax: 023 8076 8315

Email: [solidstate@ssejim.co.uk](mailto:solidstate@ssejim.co.uk) - Visit our web site: [www.ssejim.co.uk](http://www.ssejim.co.uk)

The **Jim** logo is a registered trade mark of Solid State Electronics (UK)

**ONLY THE BEST FROM**

**R RadioShack®**  
 You've got questions. We've got answers.®



**GRUNDIG SATELLIT 800**

**£539.99**

Plus P & P.<sup>†</sup>  
 #200232

- AM/FM/Shortwave/VHF Aircraft band from 118-136 MHz.
- Dual-conversion super heterodyne circuitry.
- PPL synthesized tuner • SSB. • 70 user memory presets.
- Synchronous detection to improve purity of SW/AM reception.

**YACHT BOY 400PE**

- AM/FM/SW reception. **£99.99**
- SSB.
- Direct digital keypad tuning.
- 40 user-set station memories.
- LCD shows time/timer modes/ Dual alarm modes/Sleep timer.



#200234

**Huge Range of RadioShack Products now Available in the U.K.**

For the address of you nearest RadioShack stockist or order direct

**CALL : 01543 468855**

or e-mail: [radioshack@rs-rusk.com](mailto:radioshack@rs-rusk.com)

P & P.<sup>†</sup> if applicable £5.00 per package **Retailer Enquiries Welcome**  
 RuSk Limited is the Licenced U.K. Distributor for RadioShack Corporation



**RIG**  
 Remote Imaging Group™

*Do you know that there are weather satellites passing overhead right now?*

*With fairly simple equipment YOU could be receiving their weather pictures at home!*

The Remote Imaging Group is an international group of over 2000 enthusiasts who are interested in receiving weather satellite transmissions from all over the world. We publish a 100 page quarterly journal that contains articles and information related to the reception of weather satellite meteorological transmissions. The journal includes regular articles on meteorology, and understanding weather satellite images, it also contains reviews and constructional articles as well as lots of images, some in colour! RIG maintains a large shareware and image library for members' use and provides comprehensive helplines for those that need it. RIG also endeavours to provide all the equipment required to receive weather satellite images directly, and also carries adverts from manufacturers that give generous discounts **ONLY** to RIG members! In short the benefits of membership are too good to miss so why not join our 2000 plus international membership **NOW?**

Membership rates are for a **FULL** year's journals (x4):-  
 £12 (UK) £15 (EU outside UK) £18 (Outside EU).

For more information visit our internet website at:-

<http://www.rig.org.uk>

For a free information pack send a large SAE to:-

**RIG - S6F, 34 Ellerton Road, Surbiton Surrey KT6 7TX, England**

■ GRAHAM TANNER, 64 ATTLEE ROAD, HAYES, MIDDLESEX UB4 9JE

■ E-MAIL: [ssb.utilis@pwwpublishing.ltd.uk](mailto:ssb.utilis@pwwpublishing.ltd.uk)

# SSB Utilities

I am still receiving letters and E-mails with advice about antennas in answer to Mr Baker's enquiry a few months back. This month I have a letter from **Ian McDowell** in Cambridgeshire who sent a letter containing a recording of some amateur stations which he heard using an antenna of his own design, and attached to the letter was a small sample of the wire used.

Ian McDowell's antenna is a loop with a slight difference - it is around the inside of a bedroom window. Ian says that he has tried all sorts of kinds of antennas over the past few years, much to the amusement of his family and neighbours. He has tried 'inverted Ls', 'inverted Vs', end-fed and outdoor loops, but he insists that he has had superb results with his simple loop wound around a window near his operating position.

Ian's letter included a diagram of the antenna which simply shows a window approximately 1200 by 900mm, and the wire is lightly taped to the surrounding brickwork inside the window recess. A length of 50Ω coaxial cable feeds the signal directly to his receiver - a Lowe SRX-30. One end of the loop wire is simply attached to the coaxial cable 'inner' and the other end of the loop is attached to the braid 'outer' - what could be simpler?

From the small sample of antenna wire enclosed by Ian, I can report that the wire used is plastic coated multi stranded cable, and Ian even says that in a previous life his antenna was a clothes-line! If you wish to make something similar yourself, you do not need to use such thick wire, as thin wire will give almost identical results and will be easier to handle. Personally, I would add an a.t.u. between the receiver and the antenna so as to provide a better impedance match between the antenna and receiver.

One aspect of Ian's antenna needs to be mentioned - the antenna will be directional, as are all loop antennas. It will receive signals strongly from two directions, and will have strong 'nulls' in two other directions. If you can imagine that this loop antenna was installed in a window facing due north, then it would receive signals very well from due north and south, but signals from due east and west would be attenuated or reduced.

The antenna is in a fixed position and cannot be rotated, so once it is fixed in place, you will be restricted to good signals from some directions and poorer (or none at all) from other directions. This kind of antenna does fulfil many of the usual requirements for a cheap portable antenna - it is cheap (simple thin wire will be more than adequate), simple to install (maybe 10 to 20 minutes maximum), portable (can be installed and removed easily and quickly), and as Ian's comments have indicated, it does work quite well on some frequencies.

## New Frequencies

The following may interest those who like to monitor the North Pacific (NP) and North Atlantic track 'D' (NAT-D) aeronautical network frequencies. According to the September issue of *Monitoring Times* (Hugh Stegman's 'Utility World' column) a new h.f. voice transmitter in Barrow, Alaska, was due to come on line in June. This is well above the Arctic Circle and is remotely controlled by ARINC's facility near San Francisco.

According to the article, ARINC and airlines wanted better h.f. voice coverage than they were getting, even though HF DL already works well in the region. No frequencies are mentioned in the article. However, a

logical assumption would be that this transmitter will show up on the NP frequencies identifying as 'San Francisco'. It is said to be 'high powered' with an operational range of 3000nm.

However, I have done some research and found a listing of the h.f. frequencies monitored by 'Barrow' - they have the following available 3.013, 6.640, 11.342, 13.348, 17.925 and 21.964MHz. These are all well-known ARINC h.f. frequencies covering various areas of the northern Pacific airspace. Personally, I have not heard anything yet, and I would be interested to hear from anyone who has heard 'Barrow' on these frequencies.

On this side of the world, and much closer to home, the Royal Navy has been changing some of its frequencies. The Royal Navy has two major air stations in the south-west of England - Culdrose in Cornwall, on the Lizard peninsula, and Yeovilton in Somerset. At Culdrose there are a large number of Sea King helicopters, twin turbo-prop Jetstream aircraft, and some on the new Merlin helicopters. 'Culdrose Ops' has been using **5.696MHz** for many years, but the NOTAM indicates that they have changed to **6.748MHz** from 9th September onwards.

For many years the callsigns on 'Culdrose Ops' have been quite easy to decode - the flights either used standard 'Navy' callsigns or a single letter prefix indicating the type of aircraft or helicopter calling - 'J' prefix was a Jetstream and 'K' was a Sea King. RNAS Yeovilton also houses Sea King helicopters, and also the VTOL Sea Harrier and Lynx helicopter. For the past few years they have been using **8.977MHz** since the closure of the air station at Portland in Dorset, however they have now changed to **6.736MHz** (primary) and **5.420MHz** (secondary).

I have only ever heard Sea Kings and Lynx' working 'Yeovilton Ops', and the callsigns tend to be either a tactical tri-graph callsign, a standard 'Navy' number callsign or a 'Navy' two-letter callsign. Although I have heard these callsigns many times, I have never understood which helicopter is using which callsign; does anyone know how to interpret these Navy callsigns, and how can you tell which callsign belongs to which helicopter?

The NOTAM which mentions these frequency changes seems to indicate that they will only be effective from 9th September until 23rd September, but it also mentions that the changes will be incorporated into future publications, which tends to support the idea that these changes will be more permanent. As I write these words, we are in the middle of the above test period, and I cannot tell whether the test will continue. Only patient monitoring will provide the answer.

## Web Watch

Monitoring Times -  
<http://www.monitoringtimes.com/>

ARINC news release about Barrow -  
<http://www.arinc.com/news/2002/08-12-02.html>



■ JERRY GLENWRIGHT, 56 DENBIGH ROAD, NORWICH NR2 3HH  
 ■ E-MAIL: shackware@pwpublishing.ltd.uk

# ShackWare

Personal  
communication  
you should have.



Hello and welcome once again to 'ShackWare'. This time, a look back (and forward) at two stalwarts of computing and radio, prompted by a letter from correspondent **Matt Chadwick** of Kilsyth, Glasgow. Matt writes: "As you often mention boot sale finds in your 'ShackWare' article, I thought I'd write and tell you about mine which I found while looking for CB items at a table sale at a local school. I'd just spotted a nice little antenna matcher device in a box beneath the table at one stall when I also saw a weird black computer under a pile of dusty cables in the same box. It turned out to be a ZX81 and I bought it for £3.50 together with a 9V power pack - the antenna matcher the lady threw in for free, she said it was her husband's stuff and as he'd gone off for a cup of tea, she just wanted to get rid of it! Since then, I've had the machine working with an old portable black and white TV (it wouldn't work with the Panasonic wide-screen in the living room). Can you tell me a bit more about the ZX81? I wasn't really interested in computers when the ZX81 was popular, but now I've warmed to the machine and I'm keen to learn a bit more".

What an invitation! Now you've gone and done it, Matt...

## Power Without The Price

The ZX81 wasn't the first of Sinclair's computers for the masses - that particular accolade goes to the ZX80 - but it was certainly the most successful of the two and paved the way for all home computers that came after it in the UK. Indeed it's fair to say that many computer and electronics professionals of today got their start on a ZX81 before progressing to university DEC 10s, PDP11s, VAXs and the like.

Always the butt of jokes (is it any wonder? Sinclair advertised it - quite seriously - as being capable of running a nuclear power station!) the ZX81 was, in fact, a sophisticated machine which took the basic design of the ZX80 and improved it beyond all measure. Under the lid, the 16 integrated circuits of the ZX80 were reduced to just four: a Zilog Z80 central processor, a ULA - a kind of custom-built IC designed to do many of the tasks of those 16 ICs in the ZX80 - a minor logic support chip and 1K RAM. Simple, elegant, and perfectly suited to its purpose.

The outer skin was the now famous and familiar sleek black case with red ZX81 lettering. The keyboard was a 'touch sensitive' affair (actually a membrane that energised the simple circuit beneath) which was in fact about as sensitive as a set of dentures! However, the ZX81's remarkable keyword entry system (you pressed a key and the context-sensitive BASIC interpreter flashed up the right word) reduced typing to a minimum. That black case looked fantastic in advertisements for the machine and wooed many a novice to the high street computer stores - Dixons, Laskys and the like. Face to face however, it looked little bigger than a calculator and rather less interesting because there was no built-in display.

At the outset, the ZX81 was available in kit form or as a complete machine - the kit was the cheapest option. Many hobbyists built them and many more bought them. In the States, the machine was known as the Timex TX1000 where it fared rather less well. Who would want this peculiarly British confection with its massive 1K RAM or wobbly 16K add-on RAM pack? One wrong jiggle and all your hard-graft programming was gone. US competitors such as the Apple II, Atari 800, and even the earliest incarnations of IBM's PC proved far more popular among dollar-rich Americans.

One interesting fact is that at the beginning of 1983, high street newsagent and book seller WHSmith was growing wise to the potential for a home computer boom and decided to stock the computer and offer it using in-store custom display units which provided the opportunity to try before you buy. The ZX81, they reasoned, was the most affordable and (believe it or not) the most high-profile computer and therefore likely to generate big sales.

Well, they certainly guessed right as far as a home computer boom was concerned. That kicked off about the middle of 1983 and, apart from the odd moment, hasn't really stopped since. What they got wrong was the ZX81. By 1983, serious contenders for the crown were taking away sales from the humble Sinclair, including Sinclair's own ZX Spectrum, a Z80-based, upgraded computer featuring a 'real' keyboard (well, little rubber buttons anyway), colour graphics and sound. Available in 48K and 16K guises, the latter was priced at £99 - an entry point that effectively wiped out sales of ZX81s. It wasn't long before WH Smith moved away from sales of computers, concentrating instead on software.

From the very beginning, the ZX81 attracted the more serious user (though that's not to say game-play wasn't big too - *3D Monster Maze* is still one of the foremost examples of expert programming for any machine) and many third-party expansion boards were made available, commercially and via user groups. RS-232, A-D converters, programmable I/O lines and circuits for sampling, sound, high-res graphics, add-on RAM and more were all available to the home constructor. Of course, RS-232 meant access to RTTY, Morse and other simple data modes via a terminal unit and software available on EPROM.

Today, the good old ZX81 is thin on the ground. It was the world's first disposable computer and disposed of it was - countless thousands must be sitting in land-fill sites even as I write this. At boot sales they're few and far between (though there are still a few older patrons who have emptied their attics and have no idea of the worth of what they're selling). And look out for a ZX80 (white case, blue keyboard, fake heat vents in a bulge at the rear), which are bringing big money on Ebay - prices well above a hundred pounds are not unknown!

If you find a ZX81, or decide to rummage at the back of the cupboard under the stairs and relive those first heady days of the early '80s computer boom, be sure to point your browser at [edge.edger.net/~krebaker/zx81.html](http://edge.edger.net/~krebaker/zx81.html) and [www.honneamise.u-net.com/zx81/](http://www.honneamise.u-net.com/zx81/). Almost every bit of software ever written for the Sinclair machine is available for free download and there are countless sites devoted to keeping the ZX81 alive and in good health (albeit with tongues firmly planted in cheeks).

The ZX81 is British through and through. It is quirky and slightly ridiculous but it got the job done. My first computer was a ZX81. Forty two quid from Dixons on Oxford Street. I loved it and I still do.

## People's Computer, People's Radio

That mention of CB got me thinking too, Matt. About this time two years ago, I first discovered the relatively new PMR446 'people's radio' band. Eight channels of u.h.f. frequencies with CTCSS tones to give the illusion (it works well) of many more channels. I bought a pair of cheap handsets and gave the new band a go - well, when you write for the world's best-loved radio mag, you've got to explore every new avenue (that's the excuse I gave to Angela!). It's fair to say that I raved about the new medium. Excellent reception up to a couple of kilometres (with many DX enthusiasts achieving far greater distances), easy to use, no licence and, best of all, no foul-mouthed kids...

It was that last sentiment, in conjunction with (I now realise) disparaging remarks about some users of CB that got one or two correspondents hot under the collar. No need now to repeat what I said but something along the lines outlined above. I was ticked off good and proper.

All of which was rather a shame because I adore CB. Today there are relaxed rules over antennas, truly excellent, beautifully-engineered transceivers (the Cobra CB built entirely into a handset the size of a mic?), CEPT and the 1981-approved band (together giving 80 true channels) and all the people who used to ruin what was otherwise an excellent band are now on mobile 'phones.

Recently I've been tuning up and down the 40 UK channels in Norwich and by gum, the people here know how best to get the most from CB. Sensible, interesting, amusing, informative breakers who care about the band and other users, are always to be heard chatting, and while I listen rather than broadcast (because I am a listener first and foremost) I've been sorely tempted to join in I can tell you!

Anyone without an amateur licence who has a niggling little yen to get on the air, should give CB a whirl. A second-hand set-up will cost you well under £50. My set, a mobile Pama GX-25, cost £11 at a boot sale and came complete with an extension speaker and a power mic.

Under-21s don't need a licence and nor do pensioners. The rest of us must pay a reasonable £15 a year, though there's some debate over whether even that should go in order that the band can attract more users.

And PMR446? Still going strong, still largely free of those who would spoil it for others and now with some truly amazing hand-held transceivers. The Alan 441 for example. Around £70 for a pair of radios no bigger than the palm of your hand, and with a range of several kilometres on three AAA cells - fantastic. For more details, check out [www.thunderpole.co.uk](http://www.thunderpole.co.uk) Until next time, good listening (you might just hear me!).

**DEDICATED TO THE SCANNING  
AND SHORTWAVE ENTHUSIAST.  
WE'RE MORE THAN JUST SOFTWARE!**

**NOW  
SUPPORTS  
UBC780**

**SCANCAT® GOLD for Windows**

*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 (NRD). Plus, PRO-2005/6/35/42 (with OS456/535), Lowe HF-150 and Watkins-Johnson.

**Announcing Scancat-Gold for Windows Ver. 8.25**

**We've added a lot of new features to our latest Scancat.  
AND . . . We have made it EASIER than EVER! Scancat-Gold  
for Windows - New features for VER. 8.25.**

**NOW  
SUPPORTS  
UBC780, BC99,  
BC745, Pro2052**

Completely redesigned Graphical Interface

- Two Scanning modules - A simple basic module for beginners

**Plus**

- An advanced scanning system for the "experts"
- New "Folder Tabbed" GUI puts everything at your fingertips

- Faster scanning speeds
- Extensive on screen help
- Completely revised printed manual - over 160 pages
- EXPANDED trunking support for BC780, BC995 and Pro2052
- Supports all radios in ONE program - share files with all radios
- Monitor and log all Talk Group activity - export to other files
- Completely revised trunking database management with expanded capabilities. Make programming your radio a breeze!
- Expanded import from databases such as EXCEL
- NO ONE supports your "Trunk Tracker" with more features

**Scancat-Gold for Windows-SE - Improved features for Ver. 8.25**

All the features of our "Standard Scancat" plus these additional functions:

- Long term logging of frequencies to your hard drive
- Record audio to hard drive using your computer's soundcard
- NEW - Records audio when "Trunktracking" or conventional scanning
- Improved spectrum analysis with several great graphical analysis screens

**Limited offer**  
Grove Hot HF 1000 frequencies FREE with software

Scancat-Gold for Windows .....\$99.95 USD  
Scancat-Gold for Windows - SE .....\$159.95 USD  
SHIPPING \$10.00

**NOW- ORDER ON-LINE FROM OUR WEBSITE**

**WEBSITE** [www.scancat.com](http://www.scancat.com) **E-mail:** [info@scancat.com](mailto:info@scancat.com)  
**TAKE A LOOK NOW FOR FREE DOWNLOADABLE FREQUENCIES & DEMOS**

**COMPUTER AIDED TECHNOLOGIES**

P.O. Box 18285 Shreveport, LA 71138  
Phone: (318) 687-444 FAX: (318) 686-0449

Info/Tech Support: (318) 687-2555 (9 a.m. - 1 p.m. Central M-F)

Order direct or contact your favorite dealer



**PHOTAVIA PRESS**

**AIRWAVES 2002**

**PUBLISHED  
APRIL 2002**

**THE 9th EDITION OF THE UK'S MOST COMPREHENSIVE  
HF / VHF / UHF CIVIL & MILITARY AVIATION FREQUENCY DIRECTORY  
A5 / WIRE SPIRAL BOUND - FULLY UPDATED FOR 2002**

TOWER - APPROACH - RADAR - GROUND - AIR TO AIR - RANGES - ATIS  
GCI - SQUADRON OPS - AIR REFUELLING - VOLMET - AIRLINE OPS - AWACS  
AIR DEFENCE RADAR (UK & EUROPE) - AEROBATIC TEAMS - SEARCH & RESCUE  
UK / EUROPEAN CIVIL & MILITARY AREA RADAR - MILITARY AIRFIELD STUDS  
4 LETTER AIRFIELD CODES - RUNWAYS - SSR CODES - UK BASED MILITARY UNITS  
**MAPS OF - UK TRANSMITTER SITES AND FREQUENCIES - MILITARY TACAN ROUTES  
LOW ALTITUDE, AWACS & AIR REFUELLING AREAS - UK RADAR SECTORS / FREQS  
UK PRIMARY AIRWAYS AND REPORTING POINTS - UK SUPERSONIC ROUTES  
UK OCEANIC ROUTES & FREQUENCIES - MAJOR WORLD AIR ROUTE HF AREAS**

**MILITARY AND CIVIL HF DIRECTORY - (INCLUDES MANY DISCRETE FREQUENCIES AND  
CHANNEL DESIGNATORS) - RAF/ROYAL NAVY - WORLD-WIDE / NATO MILITARY AIR-ARMS  
US MILITARY GLOBAL HF NET - MYSTIC STAR - US NAVY - US COAST GUARD - VOLMET  
HURRICANE HUNTERS - SEARCH & RESCUE - SPACE SHUTTLE - MAJOR WORLD  
AIR ROUTES - AIRLINE OPERATIONS - LONG DISTANCE OPERATIONS CONTROL (LDOC) - DOMESTIC HF**

**UK PRICE £9.95 INCLUDING FREE POSTAGE & PACKING**

**PUBLISHED  
MARCH 2002**

**CALLSIGN 2002**

**THE 8th EDITION OF OUR CIVIL AND MILITARY AVIATION  
CALLSIGN DIRECTORY - FULLY UPDATED - OVER 2700 CHANGES  
A5 / WIRE SPIRAL BOUND - OVER 6500 AVIATION CALLSIGNS**

**MILITARY DIRECTORY - CALLSIGNS ARE LISTED ALPHABETICALLY AND  
ALSO BY AIRARM / SQUADRON - INFORMATION INCLUDES : CALLSIGN  
AIRCRAFT TYPE - CODE - UNIT/SQUADRON - HOME BASE - REMARKS  
CIVIL DIRECTORY - CIVIL CALLSIGNS FROM OVER 180 COUNTRIES ARE  
LISTED ALPHABETICALLY AND ALSO BY THREE LETTER AIR TRAFFIC PREFIX  
INFORMATION INCLUDES: CALLSIGN - THREE LETTER ATC PREFIX  
AIRLINE OR OPERATOR - COUNTRY OF ORIGIN - REGISTRATION PREFIX**

**UK PRICE £9 95 INCLUDING FREE POSTAGE & PACKING**

(SORRY - NO CREDIT CARDS) CHEQUES/POSTAL ORDERS/STERLING IMO'S/PAYABLE TO:

**PHOTAVIA PRESS (DEPT SW) - SUNRISE BREAK  
CHISLON FARM - SOUTHDOWN HILL - BRIXHAM  
DEVON - TQ5 0AE - UK Tel: 01803 855599**

**VISIT OUR WEB SITE AT: [www.photav.demon.co.uk](http://www.photav.demon.co.uk)**

# NORTH ATLANTIC ROUTE CHART

**A must for anyone who monitors trans-atlantic  
flights - shows trans-atlantic way points and zones,  
(chart measures 740 x 520mm).  
Follow the progress of flights you hear.**

**Published by the US Federal Aviation Administration.**

**Yours for just £9.00 (inc. P&P).**

**ORDER NOW BY CALLING  
(01202) 659930**

**Do you  
monitor  
trans-atlantic  
flights?**

# SWM UK Radio Club Listing

If you want to meet others with a radio passion, then use this guide.....

## NORTH WEST

### CHESHIRE

**CHESTER & DRS, G3GIZ.** Meets at the Burley Hall, Waverton, Chester. Details from Bob Campbell G4CMI. Tel: (01244) 378699.

**HALTON RADIO CLUB, MOBKZ.** Meets at the Play Centre, Norton Hill, Windmill Hill, Runcorn. Details from Alan Parker 2E1DSF. Tel: (01928) 790228.

**MACCLESFIELD WIRELESS SOCIETY, G4MMS.** Meets at the Pack Horse Bowling Club, Abbey Road, Macclesfield. Details from Mrs Hazel Parrott.

**MID CHESHIRE ARS, G3ZTT.** Meets at the Cotebrook Village Hall, Cotebrook Nr Tapscott, Cheshire. Details from Niall Reilly G0VOK.

**NORTH CHESHIRE RC, G0BAA.** Meets at the Morley Green Club, Moberley Road, Winslow, Cheshire. Details from Jill Gourley G0OZJ. Tel: 0161-485 5036.

**RADIO OFFICERS ARS, MORCA.** Details from Mr J. Bell G0GMM.

**UKFM GROUP WESTERN, G83MP.** Meets at the Morley Green Club, Moberley Road, Winslow, Cheshire. Details from Gordon Adams G3LEQ. Tel: (01565) 652652, FAX: (01565) 634560.

**WARRINGTON & DARS, G0WRS.** Meets at the Grappenhall Community Centre, Bellhouse Lane, Grappenhall, Warrington, Cheshire. Details from John Riley G0RPG. Tel: (01925) 762722.

**WIDNES & RUNCORN ARC, G0FWR.** Meets at the Scout Hut, Castle Road, Halton Castle, Runcorn, Cheshire. Details from Martin Tust G4LUJ. Tel: (01928) 714843.

### CUMBRIA

**CARLISLE & DARS, G4ARS.** Meets at the Morton Community Centre, Wigton Road, Carlisle. Details from Mr J.A. Ennis G3NWA. Tel: (01228) 27463.

**EDEN VALLEY RS, G0ANT.** Meets at the BBC Club, Penrith. Details from John Roze G0VMP. Tel: (01931) 716421.

**FURNESS ARS, G4ARF.** Meets at the Farmers Arms Hotel, Newton-in-Furness. Details from Mr K. Moore M1BWA. Tel: (01229) 465691.

**WHITEHAVEN ARC, M0BEE.** Details from Mr N. Williams M0CRM.

### GREATER MANCHESTER

**BURY RS, G3BRS.** Meets at the Mosses Centre, Cecil Street, Bury, Lancs BL9 0SB. Details from Steve Gilbert G3OAG. Tel: 0161-881 1850.

**DOUGLAS VALLEY ARS, G3BPX.** Meets at the Wigan Sea Cadet HQ, Training Ship Sceptre, Brookhouse Terrace, off Warrington Lane, Wigan. Details from Mr D. Sage G4WVG. Tel: (01942) 211397.

**ECCLES & DARS, G3GXJ.** Meets at the Eccles Liberal Club, Wellington Road, Eccles, Manchester. Details from Chris Hamson G8KRG. Tel: 0161-773 7899.

**MANCHESTER & DARS, G5MS.** Meets at the Simpson Memorial Community Hall, Moston Lane, Moston, Manchester. Details from Mr T. Lever, Snr.

**OLDHAM ARC, G4ORC, G1ORC.** Meets at the Royston Air Training Corps, Park Lane, Royston, Oldham. Details from Michael Crossley M1LVL. Tel: (01768) 367454.

**OLDER HILLS ARS, G0UQA.** Meets at the Oulder Community School, Hudsons Walk, Oulder Hill, Rochdale. Details from Carolyn Hope G7WFF. Tel: (01706) 522687.

**ROCHDALE & DARS (RADARS), G0ROC.** Meets at the Bamfield & Fieldhouse, Cricket Club, Bamfield Village. Details from John Cannell G7QAL. Tel: (01706) 376204.

**SOUTH MANCHESTER RAD & COMP CL, G3FVA.** Meets at the Sale Cricket Club, Dave Road, Sale, Cheshire. Details from Chris Ward G4HON. Tel: 0161-483 5174.

**STOCKPORT RS, G6UQ, G8SRN.** Meets at the T.S. Hawkins, Stockport Sea Cadets HQ, Pearmill Ind. Est., Stockport Road, West Howe, Lower Bredbury, Stockport. Details from David Simcock M1ANT. Tel: 0161-456 7832.

**TRAFFORD ARC, G0TRC, G1TRC.** Meets at the Watch House, Cruising Club, Canal Bank, Stretford, Manchester M32 8WE. Details from Roger May G4YLQ. Tel: (01457) 8666575.

**TRAFFORD RADIO GROUP G0TRG.** Meets at 17th Stretford Scouts HQ, Barton Road, Stretford, Manchester. Details from Jon Mossman G7JKK. Tel: 0161-865 5609.

**WEST MANCHESTER RC, G4MWC.** Meets at the Astley & Tydesley Miners Welfare Club, Meantly Road, Astley, Tydesley, Manchester. Details from Jeffrey Moran M0BGU. Tel: (01204) 497694.

**WIGAN & DARC, G0HRW.** Details from Mr D.H. Barkley G0DPI. Tel: (01942) 237162.

### ISLE OF MAN

**ISLE OF MAN ARS, G03PLH.** Meets in the Sea Cadets Hall, Tromode Road, Tromode, Douglas. Details from

Dave Walton M0BXX. Tel: (01624) 816308.

### LANCASHIRE

**BURNLEY & DARS, RS87674.** Meets at Barden High School, Barden Lane, Burnley, Lancashire. Details from Bill Sorvener G0BQC.

**CENTRAL LANCS ARC, G0FDX.** Meets at the Priory Club, Broadfield Drive, Leyland, Lancs. Details from Steve Shearn M1ACJ.

**DARWEN ARC, G4JS.** Meets at the Danwen Catholic Club, Wellington Fold, Darwen, Lancashire. Details from Len Jackson G0NPJ.

**FISTS CW CLUB, G0IPX.** Details from Mr E. Longden G3ZQS. Tel: (01254) 703948.

**FYLDE ARS, RS53939.** Meets at the Comed Aviation Club Room, Blackpool Airport, Blackpool. Details from Mike Erber G7HUJ.

**MORECAMBE BAY ARS, G4YBS.** Meets at the Trimpell Sports & Social Club, Outmoss Lane, Morecambe, Lancs. Details from Brian Watson G0RFDH. Tel: (01524) 424522.

**PRESTON ARS, G3KUE.** Meets at the Lonsdale Club, Fulwood Hall Lane, Fulwood, Preston. Details from Mark Procter G1PIE.

**ROLLS-ROYCE ARC, G3RR.** Meets at the Club Room, Rolls-Royce Sports Ground, Barnoldswick. Details from Mr J.A. York G3KYJ.

**ROSSENDALE ARS, G1JRS.** Meets at the Old Fire Station, Burnley Road, Rawtenstall, Rossendale, Lancs B84 8EW. Details from Ken Slaughter. Tel: (01706) 830306.

**THORNTON CLEVELYS ARS, G4ATH.** Meets at the Frank Townsend Centre, Beach Road, Thornton Clewleys, Lancs. Details from Mr J.E. Duddington G4BHF. Tel: (01253) 853554.

### MERSEYSIDE

**LIVERPOOL & DARS, G3AHD.** Meets at the Churchil Conservative Club, Church Road, Wavertree, Liverpool L15. Details from David G. Parr G8DEY.

**SOUTH WIRRAL CONTEST GROUP, G3CSA.** Details from Mr T.B. Saggerson G4WSE. Tel: 0151-339 0842.

**SOUTHPORT & DARC, G2QA.** Meets at St. Marks Church Hall, Scarsbrick, Lancs. Details from Don Atkins M1BLU.

**WIRRAL & DARC, G4MGR.** Meets at the Irby Cricket Club, Mill Hill Road, Wirral. Details from Brian Black.

**WIRRAL ARS, G3NWR, MX1CAR.** Meets at the Club Room, Ivy Farm, Arrow Park Road, Wirral L49 5LW. Details from Alan Upton G3UZZ. Tel: 0151-677 3266.

### NORTH EAST

#### CLEVELAND

**EAST CLEVELAND ARC, G4CRD.** Meets at the Committee Room Of The New, New Marske Institute Club, Gurney Street, Cleveland TS11 8EG. Details from Malcolm Brass G4YMB. Tel: (01287) 638119.

**STOCKTON & DARS, G4XXG.** Meets at the Billingham Community Centre, Billingham, Cleveland. Details from David J. London G0VGB. Tel: (01642) 896395.

#### CO DURHAM

**BISHOP AUCKLAND RC, G4TTF.** Meets at the Stanley Village Hall, Rear High Road, Stanley, Crook, Co. Durham. Details from Mark Hill G0GGF. Tel: (01388) 745353.

**DARLINGTON & DARS, G4ZVH.** Meets at the Hulworth Community Centre, Hurworth, Darlington, Co. Durham. Details from Mike Wood G8MTV. Tel: (01325) 721545.

**DERWENTSIDA ARC, G4PFF.** Meets at the Steel Club, 36 Medomsley Road, Consett, Co. Durham. Details from Mr G. Derby G7GUJ. Tel: 0191-370 2032.

**GREAT LUMLEY AR & ES, G4EUZ.** Meets at the Community Centre, Great Lumley, Chester-le-Street, Co. Durham. Details from Mr J.J. Barclay M0BPM. Tel: 0191-388 8113.

**PETERLEE RADIO CLUB, G0KVV.** Details from Andrew Pennell G0NSK.

### HUMBERSIDE

**EAST YORKSHIRE ARS, G0EQR.** Meets at the Northern Foods Sports & Social Club, Millhouse Woods Lane, Cottingham, E. Yorks. Details from David Taylor G4EBT. Tel: (01482) 876702.

**GOOLE R & ES, G0OLE.** Meets at the West Park Pavilion, Goole, South Humberside.

**GRIMSBY ARS, G3CNX.** Meets at Cromwell Social Club, Cromwell Road, Grimsby, South Humberside. Details from Mr G.J. Smith G4EBK. Tel: (01472) 887720.

**HORNSEA ARS, G4EKT.** Meets at The Mill, Alwick Road, Hornsea, North Humberside. Details from Jeff Southwell G4IGY. Tel: (01964) 533331.

**HULL & DARS, G3AMM.** Meets at the SWL Centre, Club Room, Gothland Close, Walton Street, Hull. Details from Mr R. Hutton.

**RAYWELL PARK SCOUTS ARS, G4CMT.** Details from Mr A.D. Russell M0AXU.

**SCUNTHORPE STEEL ARC, G4FUH.** Details from Alistair Butler M1ECF.

### NORTH YORKSHIRE

#### DARLEY ARC, G0FOS.

**HAMBLETON ARS, G0JQA.** Meets at the Mercia Centre, Northallerton, N. Yorks. Details from Ian Brickwood G0JQA. Tel: (01609) 775988.

**QUEEN MARY ARC, G6OM.** Meets at Blazefield, Pateley Bridge, Harrogate, North Yorks HG3 5DR. Details from Frank Hams G4IEY. Tel: (01242) 236715.

**RIPON & DARS, G4SJM.** Meets at the Bunker, rear of Ripon Town Hall, North Yorkshire. Details from Nigel Drumm M1BDZ. Tel: (01423) 884733.

**ROYAL SIGNALS SCARBOROUGH ARC, G0RCS.** Details from Mr A.W.W. Timme G3CWW. Tel: (01484) 842330.

**SCARBOROUGH ARS, G4BP.** Meets at the Scarborough Cricket Club, Pavilion, North Marine Road, Scarborough, North Yorks YO12 2TJ. Details from Mr D.P. Tipper G3JBR. Tel: (01723) 377296.

**SCARBOROUGH SE GRP G0XOO.** Details from Roy Clayton G4SSH. Tel: (01723) 862924.

**THE VINTAGE & MILITARY ARS, RS183536.** Details from H.A. Aspinall.

**YORK ARS, G3HWW.** Meets at the Guppy's Enterprise Club, 17 Nunnerly Lane, York. Details from Keith Cass G3WVO. Tel: (01904) 422084.

**YORK RADIO CLUB (AMATEUR) G4YRC.** Meets at the Bishopthorpe Social Club, Bishopthorpe Main Street, York. Details from Gareth Foster G1DRG. Tel: (01904) 421392.

### NORTHUMBERLAND

**NORTHUMBRIA ARC, G4AAV.** Meets at the Old Telephone Exchange, Cresswell Road, Ellington, Morpeth, Northumberland. Details from Mr D. Stansfield G0EYV. Tel: (01670) 513026.

### SOUTH YORKSHIRE

**FINNINGLEY ARS, G7HAH.** Details from John Fennell G4HOY. Tel: (01427) 872522.

**MALBY & DARS, G4SKM.** Meets at the Centenary Hall, Clifford Road, Hellaby, Rotherham. Details from Keith Johnson G1PQM. Tel: (01709) 798098.

**MEXBOROUGH & DARS, G4BTS.** Meets at the Harrop Hall, Mexborough, South Yorks. Details from Mr R.T. Sheppard G0VSK. Tel: (01709) 586329.

**SHEFFIELD ARC, G0INF.** NPAE/RAE tuition provided. Meets at the Sheffield University Staff Club, 197 Brook Hill, Sheffield. Details from Mrs Irene Glossop G0SFF.

### TYNE & WEAR

**HOUGHTON-LE-SPRING ARC, G3NMD.** Meets at the Durnine Royal British Legion, Durnine, Farnhouses, Tyne & Wear DH4 6LJ. Details from Foster Aungles G0ABF. Tel: 0191-584 4673.

**SOUTH TYNESIDE ARS, G0WKKQ.** Meets at the Boldon Scout Hut, Grey Horse Car Park, Front Street, Boldon. Details from William Wilson M0BWM. Tel: 0191-421 9921.

**TYNEMOUTH ARC G0NWM.** Meets at the Linskill Centre, Linskill Terrace, North Shields, Tyne & Wear. Details from Mr G.N. Thompson G0SBN.

**TYNESIDE ARS, G3ZQM.** Meets at the St Teresa's Club, 200B Heaton Road, Newcastle-upon-Tyne NE6 5HP. Details from Mr J. Pickersgill G0DZG. Tel: 0191-265 1718.

### WEST YORKSHIRE

**DENBY DALE & DARS, G4CDD, G8KMK.** Meets at the Pe Hall, Denby Dale, West Yorkshire. Details from Mr J.P. Morley G4FSQ.

**HALIFAX & DARS, G2UG.** Details from Mr S.P. Ortmayer G4RAW. Tel: (01422) 203062.

**KEIGHLEY ARS, G0KRS.** Meets at the Cnocket Club, Ingrow, Keighley, West Yorkshire. Details from Mr I. Townsend M1BGY. Tel: (01274) 723951.

**LEEDS & DARS, G4ALD.** Meets at The Radio Shack, Yambury (Horsforth), RUFC Grounds, Brownberrie Lane, Horsforth, Leeds LS18 5HB. Details from Mr E. Howden G0IBU.

**NORTH WAKEFIELD RC, G4NOK.** Meets at the East Ardsley Cricket Club, Nr Wakefield. Details from Mrs Olga Parker 2E1ASV. Tel: 0113-253 9087.

**OTLEY ARS, G3XNO.** Meets at The RAOB Club, Westgate, Otley, West Yorkshire. Details from Jack Worsnop G0SNV. Tel: (01274) 636197.

**PONTERFAC & DARC, G3FYQ.** Meets at the Carleton Community Centre, Pontefract, West Yorkshire. Details from Colin Wilkinson G0NQE. Tel: (01977) 677006.

**SPEN VALLEY ARS, G3SVC.** Meets at the Old Bank WMC, Mirfield, West Yorkshire. Details from Mr J.R. Wide G0FOL. Tel: (01274) 875038.

**WAKEFIELD & DARS, G3WRS.** Meets at the Ossett Community Centre, Prospect Road, Ossett, W. Yorks. Details from Ian Roberts. Tel: (01924) 216502.

**WAKEFIELD RPTR GR G0KMR.** Details from Mr Mike Charlton G6OXZ.

**WHITE ROSE ARS, G3XPE.** Meets at the Moortown RUFC, Moss Valley, Kings Lane, Leeds LS17 7NT. Details from Mr M. Wilson G7SDW. Tel: 0113-273 6039.

### MIDLANDS

#### BEDFORDSHIRE

**DUNSTABLE DOWNS RC, G4DDC.** Meets at the Shevva Club, 77 High Street South, Dunstable, Beds LU6 3SF. Details from Phil Seaford G8KTW. Tel: (01525) 384419.

**SHEFFORD & DARS, G3FJE.** Meets at the Church Hall, Amphil, Shefford, Beds. Details from John West. Tel: (01462) 812739.

**ST SWITHUN'S ARC, M0AJV.** Meets at St Swithun's Church, Rectory Rooms, Sandy, Beds. Details from Kelyn Darton G0WOD. Tel: (01767) 683179.

#### CAMBRIDGESHIRE

**CAMBRIDGE & DARC, G2XV.** Meets at the Colridge Community College, Radegeund Road, Cambridge. Details from Ron Huntsman G3KBR. Tel: (01223) 501172.

**DUXFORD ARS, G82MM.** Meets at Building 177, Imperial War Museum, Duxford Airfield, Cambs. Details from Mrs B.L. Pope. Tel: (01279) 656149.

**GTR PETERBOROUGH ARC, G4EHM.** Meets at the 6th Form Building, Stanground College, Farset Road,

Fletton, Peterborough. Details from Alan D. Ralph G8XLH.

**HUNTINGDONSHIRE ARS, G0HSR.** Meets at the Medway Centre, Medway Road, Huntingdon. Details from David Leech G7DIU. Tel: (01480) 431333.

**MARCH & DRAS, G3PMH.** Meets at the British Legion Club, Rookwood Road, March, Cambs PE15 8DP. Details from Mr J. Braithwaite G3PWK. Tel: (01353) 698885.

**PETERBOROUGH R & ES, G3DQW.** Details from Mr V. Edwards G8NGZ.

**WISBECH AR & ELEC. CLUB, M5ARC, G8NED.** Details from Alan Bridgeland.

### DERBYSHIRE

**BOLSOVER ARS, G4RSB.** Meets at the Blue Bell, High Street, Bolsover, Derbys. Details from Colin Morris G0RXT. Tel: (01246) 822856.

**BUXTON RA, G4SPA.** Meets at the Leewood Hotel, Buxton. Details from Derek Carson G4IHQ. Tel: (01298) 25506.

**DERBY & DARS, G2DJ.** Meets at 119 Green Lane, Derby. Details from Martin Shardlow G3SZJ. Tel: (01332) 556875.

**EREWASH VALLEY ARG, G0PCX.** Meets at The Sitwell Arms Public House (between Horsley Woodhouse and Woodside). Details from Peter Russell M0AQI.

**MOUNT ST MARY'S ARC, G4MSM.** Meets at the College, Spinikill, Sheffield. Details from Rev. P. McArdle G0DAG. Tel: (01246) 812230.

**NOTTS & DERBY BORDER ARC, G4NID.** Meets at Marplot United Reform Church, Chapel Street, Marplot, Ilkeston. Details from Graham Bromley G4UTN. Tel: (01773) 834308.

**NUNSFELD HOUSE ARC, G3EED.** Meets at the Nunfeld House, Boutton Lane, Avaston, Derby. Details from William F. Smith G7PJJ.

**STH DERBYS & ASHBY W ARG, G0SRC.** Meets at the Moira Replan Centre, 17 Ashby Road, Moira, Swadincote, Derbyshire DE12 6DJ. Details from Mrs B. Waley. Tel: (01283) 760822.

**STH NORMANTON, ALFRETON & DARC, G0CPO.** Meets at the New St Community Centre, New Street, South Normanton, Derbyshire. Details from Peter Gething M0LQU. Tel: 0115-955 5766.

### GLOUCESTERSHIRE

**CHELTENHAM AR ASSN, G5BK.** Meets at the Prestbury Library, Prestbury, Cheltenham. Details from Ivan Wilson G4BOW. Tel: (01452) 731956.

**CHELTENHAM CLUSTER SUPP GP, G87DXC.** Details from Mr A.M. Davies G0HDB. Tel: (01684) 72178.

**GLOUCESTER AR & ES, G4CHM.** Meets at the Churchdown School, Churchdown. Details from Mr A.J. Martin. Tel: (01452) 618930.

**SMITHS INDUSTRIES RS, G4MEN.** Meets at the Sports & Social Club, Evesham Road, Bishops Cleeve, Cheltenham GL52 4SF. Details from A.J. Hooper G3JMF.

**STROUD RS, G4SRS.** Meets at the Minchampton Youth Centre, nr Stroud. Details from Mr S.G. Spencer G3ILD. White Noise Listening G0WNL. Details from Adrian Deane G7MCG.

**HERSFORD & WORCESTER BROMSGROVE & DARC, G3VGG.** Meets at the Avoncroft Arts Centre, Bromsgrove, Worcs. Details from Mr J.F. Burford G4OAZ.

**BROMSGROVE ARS, G4TUI.** Meets at the Liky End WMC, Bromsgrove, Worcs. Details from Barry Taylor G0TPG. Tel: (01527) 542266.

**DROITWICH ARC, G4PVO.** Meets in the Community Hall, Droitwich Spa, Worcs. Details from Hector Wragg M1BLV. Tel: (01905) 794399.

**HEREFORD ARS, G3YDD.** Meets at the Civil Defence HQ, Magistrates Court, Gaoil Street, Hereford. Details from Tim Bridgland-Taylor G0JWJ. Tel: (01432) 279435.

**KIDDERMINSTER & DARS, G0KRC.** Meets at the Sutton Arms, Sutton Park Road, Kidderminster, Worcs. Details from Mr A.W. Saunders G00ZB. Tel: (01299) 400172.

**MALVERN HILLS ARC, G4MHC.** Meets at the Red Lion Inn, St Anne's Road, Malvern, Worcs. Details from Dave Hobro G4IDF. Tel: (01905) 351568.

**REDDITCH RC, G4ACZ.** Meets at the WRFVS Centre, Ludlow Road, Redditch, Worcs. Details from Mr R.J. Mutton G3EVT. Tel: (01789) 762041.

**VALE OF EVESHAM RAC, G0ERA.** Meets at the BBC Club, High Street, Evesham, Worcs. Details from Mr A.C. Lindsay G4NRD. Tel: (01386) 41508.

**NATIONAL SPACE CENTRE ARS, M1NSC.** Details from Mr J. Heath G7HHA.

**TAMWORTH ARS, G8TRS.** Details from Mr A.I. Dyson G0HUW. Tel: (01827) 830437.

**WELLAND VALLEY ARS, G4WVR.** Meets at the Village Hall, The Green, Great Bowden, Leics. Details from The Secretary.

## LINCOLNSHIRE

**FIVE BELLS GROUP, G4SM.** Details from Mr B.K. Tatnell G4ODA.

**GRANTHAM RC, G0GRC.** Meets at the Kontakt Social Club, Barrowby Road, Grantham, Lincs. Details from Mrs Paul Rose G4STO. Tel: (01427) 788356.

**LINCOLN SHORT WAVE CLUB, G5FZ.** Meets At The Railway Club, Triton Road, Lincoln. Details from Mrs Pam Rose G4STO. Tel: (01427) 788356.

**RAF CONINGSBY ARC, G31QS.** Meets at Essex Block, RAF Coningsby. Details from Peter Hanson G0NYY.

**RAF WADDINGTON ARC, G0RAF.** Meets at Pwysie Inn, Fosbeak, Saxby Road, Lincoln. Details from Robert Pickles G3VCA. Tel: (01522) 528708.

**SPALDING & DARS, G4DSP.** Meets at The Old Fire Station, Spalding, Lincs. Details from Raymond Pearson G8ELV. Tel: (01775) 711953. Web: www.sciars.org.uk

**SPILSBY ARS, RS91468.** Details from Clive Ironmonger G6HYF. Tel: (01790) 752712.

## NORTHANTS

**KETTERING & DARS, G5KN.** Meets at The Liacs Public House, 39 Church Street, Isham, Kettering, Northants NN14 1JD. Details from Fay Barwell G6AKS. Tel: (01536) 390954.

**MID NORTHANTS AR EXP, G0ING.** Details from Lionel Parker G5LP.

**NORTHAMPTON RC, G3GWB.** Meets at the British Timken, Social & Athletic Club, Cotswood Avenue, Duston, Northampton. Details from Norman Miller G0GBZ. Tel: (01327) 349188.

**NORTHAMPTON SCOUT ARG, G6NDS.** Meets at Overstone Scout Activity Centre, Northampton. Details from Ian Rivett G6WPU.

**PARALLEL LINES CG, G4UP.** Details from Mr P.S. Lidsay G4CLA.

## NOTTINGHAMSHIRE

**ARC OF NOTTINGHAM, G3ERN.** Meets at the Haywood Road Community Association, Haywood Road, Mapperley Road, Nottingham NG3 6AD. Details from Ron Hague G4XOU. Tel: 0115-919 9177.

**DUKERS ARS, G4XTL.** Meets at Ambleside Community Centre, Ambleside, West Olterton, Notts. Details from Colin Foster G7DEX.

**HUCKNALL ROLLS ROYCE ARC, G5RR.** Meets at the Hucknall Rolls Royce Sports & Social Club, Watnall Road, Hucknall, Nottingham. Details from Mr P Hart G4JSM.

**MANFIELD ARS, G3GQC.** Meets at the Debdale Park Sports & Recreation Club, Debdale Lane, Mansfield Woodhouse, Notts. Details from David Peat G0RDP. Tel: (01623) 631931.

**NORTH NOTTS DATA GROUP, G0WIN.** Details from Tony Jenkins G8TBF.

**SIEMENS ARC, G5ZK, G81GQ.** Meets at the GPT Sports Ground, Beeston, Nottinghamshire. Details from Chris Archer G4VFK. Tel: 0115-943 3387.

**SOUTH NOTTS ARC, G0DAU.** Meets at the Fairham Community College, Farnborough Road, Clifton, Nottingham NG11 9AE. Details from Gary Bishop G0WUG. Tel: (01509) 672846.

**WORKSOP ARS, G3RCW.** Meets at the Club House, 59-61 West Street, Worksop, Nottingham S80 1JP. Details from Tony Calvert G4GBS. Tel: (01302) 743130.

## SHROPSHIRE

**OSWESTRY & DARC, G4TTO, G1ORA.** Meets at the Sweeney Hall Hotel, Oswestry. Details from Ant Astley G1W0AJA. Tel: (01691) 860545.

**SALOP ARS, G3SRT, M1AXW.** Meets at the Telepost Club, Railway Lane, Abbey Forge, Shrewsbury. Details from John Burnford G0G1N.

**TELFORD & DARS, G3ZME.** Meets at the Dawley Bank Community Centre, Dawley, Telford, Shropshire. Details from Mr M. Vincent G3UKV. Tel: (01952) 255416.

## STAFFORDSHIRE

**BURTON ON TRENT & DARS, G3NFC.** Meets at the Stapehill Institute, Main Street, Stapehill, Burton-on-Trent, Staffs. Details from Mr M.W. Cotton G4HBY.

**CANNOCK CHASE ARS, G8SW.** Meets at the Four Crosses Inn, Walling Street, Hatherton, Cannock. Details from Arnold Matthews G3FZW. Tel: (01543) 262495.

**CHAD RC, G4CAR.** Meets at the Swinfen Officer's Club, Swinfen, Lichfield, Staffs. Details from Bernard Jayne G8BFL. Tel: (01543) 268569.

**LICHFIELD ARS, G3WMS.** Meets at the Queens Head, Sandford Street, Lichfield. Details from Roger Smethers G3NLY. Tel: (01543) 672762.

**MORLANDS & DARS, G4NHT, G1MAD.** Meets at the Crea Works, Blythe Bridge, Stoke-on-Trent, Staffs ST11 9JL. Details from Mr B.J. Butcher G4HKG. Tel: (01782) 395793.

**NEWCASTLE-U-LYME SCOUT AR COM GR, G7UQG**

**NORTH STAFFS ARS, G4BEM.** Meets at the Blacklake Lodge, Hilderstone Road, Meir Heath, Stoke-on-Trent ST3 7NS. Details from Mervyn Bennett G4HUQ. Tel: (01782) 394887.

**STOKE-ON-TRENT ARS, G3GBU.** Meets at the '45' Club, 92 Lancaster Road, Newcastle-under-Lyme, Staffs. Details from Albert Allen G4DHO. Tel: (01782) 638801.

**SUTTON COLDFIELD RS, G3RSC.** Meets at the Rugby Club, Walmley Road, Sutton Coldfield, West Midlands. Details from Paul G. Turner G7MWD. Tel: 0121-350 4263.

## WARWICKSHIRE

**AVON VALLEY ARA, M0RAD.** Details from Mr Peter Bradham G0WUJ. Tel: (01905) 724531.

**MID WARWICKSHIRE ARS, G3UDN.** Meets at the St. John Ambulance HQ, 61 Enscote Road, Warwick. Details from Bernard Pittaway. Tel: (01926) 420913.

**RUGBY ATS, G4APD.** Details from Tony Humphries G0OLS. Tel: (01455) 552693.

**STRATFORD-UPON-AVON & DRS, G0SOA.** Meets at the Home Guard Club, Tiddingham, Stratford-upon-Avon, Warwicks. Details from Ron Horsley G0MRH. Tel: (07970) 148204.

## WEST MOLANDS

**ALDRIDGE & BARR BEACON ARC, G0NEQ.** Meets at the Aldridge Central Hall Community Centre, Middlemore Lane, Aldridge WS9 8AN. Details from Mr C.J. Baker G0NOL. Tel: (01922) 636162.

**COVENTRY ARS, G2ASF.** Meets at the Binley Church Hall, Binlikow Road, Coventry. Details from John Beech G85EQ. Tel: (01203) 673999.

**DUDDLEY ARC, G4DAR.** Meets at the Community Centre, Sedgley, Central Library, St James Road, Dudley. Details from Tony Lucas G4LVA. Tel: (01384) 277925.

**HILLCREST ARS, G0SPM.** Meets at The College, Simms Lane, Netherton, Dudley, West Midlands. Details from Mrs Megan Fleetwood G0TMF. Tel: (01384) 294804.

**KYNOCH R & TVS, G3HPP.** Meets at the Club Workshop, IMI Ltd., Sportsfield, Perry Bar, Birmingham. Details from Mr G. Nicholls. Tel: (01922) 635376.

**MIDLAND ARS, G3MAR.** Meets at Unit 22, 60 Regent Place, Hockley, Birmingham (jewelry quarter). Details from John A. Crane G0LAI. Tel: 0121-628 7632.

**SANDWELL AMATEUR RADIO CLUB, G0CWC.** Meets at Sandwell ARC, Broadway, Oldbury, Walsley, West Midlands B68 9DF. Details from Stuart Collins M0BTO. Tel: 0121-561 4663.

**SIERRA HOTEL ARC, G0OBS.** Details from Warwick M. Hall G4WVH.

**SOLI-HULL ARS, G3GEL.** Meets at The Shirley Centre, 274 Stratford Road, Shirley, Solihull, West Midlands. Details from Paul Gaskin G8AYV. Tel: 0121-783 2996.

**SOUTH BIRMINGHAM RS, G3OHM.** Meets at Hampstead House, Fairfax Road, West Heath, Birmingham. Details from The SBRS Secretary.

**STOURBRIDGE & DRS, G8OI, G6SRs.** Meets at the Old Swinford Hospital/School, Stourbridge, West Midlands. Details from Tom Edwards.

**WEST BROMWICH CENTRAL RC, G4WBC.** Meets at the Sandwell Public House, High Street, West Bromwich, West Midlands. Details from Ian Leitch G0PNI. Tel: 0121-561 2884.

**WEST MIDLANDS POLICE ARC, G0COP, G1WMP.** Details from Steven Jones G6LRL.

**WILLENHALL & DARS, G4ETW.** Meets at The Liberal Club, Villiers Street, Willenhall, West Midlands. Details from Dave Bradbury. Tel: (01902) 411252.

**WOLVERHAMPTON ARS, G5TA.** Meets at the Electricity Board Sports Club, St. Marks Road, Chapel Ash, Wolverhampton. Details from Mrs J. Smith. Tel: (01902) 751936.

**WRODSLEY RC, G4WRA.** Meets at the Brick Maker's Arms, Mount Pleasant, Brierley Hill, West Midlands. Details from Andy Evans G1PKZ.

## LONDON & CENTRAL

### BERKSHIRE

**ARBORFIELD ARC, G31HH.** Details from Mrs E.W. Harding 2E1AUQ.

**BRACKNELL AEC, G4BRA.** Meets at the Coopers Hill Community Centre, Bagshot Road, Bracknell, Berks. Details from John Ellerton G3N3N.

**BURNHAM BEECHES RC, G3WVR.** Meets at the Farnham Common Village Hall, Victoria Road, Farnham Common, Bucks. Details from Mrs Eileen Chislett G6ELL. Tel: (01628) 625720.

**MAIDENHEAD & DARC, G3WVX.** Meets at the Red Cross Hall, The Crescent, Maidenhead, Berkshire. Details from Neil Savin G0SVN. Tel: (01628) 626210.

**NEWBURY & DARS, G5XV.** Meets at the Royal British Legion, Pelican Lane, Newbury. Details from Mark Slade M0CUK. Tel: (01488) 638985.

**READING ARC, G3ULI.** Meets at the Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. Details from Marnoch Standen G0JMS. Tel: 0118-972 3504.

## BUCKINGHAMSHIRE

**AYLESBURY VALE RS, G4VRS.** Meets at the Harwick Village Hall, Aylesbury, Bucks. Details from Mr L.I. Cropley G0DFC.

**CHESHAM & DARS, G3MDG, G1MDG.** Meets at the White Hill Centre, Chesham, Bucks. Details from Mr T.J. Thirwell G0VFW. Tel: (01442) 832189.

**CHILDREN ARC, G3CAR.** Details from Roy Page G4YAN. Tel: (01494) 534216.

**MILTON KEYNES ARS, G3HIU.** Meets at Room 202, Faulkner House, Bletchley Park Museum, Wilton Avenue, Bletchley, Milton Keynes. Details from Matt Preston. Tel: (01908) 379739.

**MILTON KEYNES SCOUT ARS, G0SKM.** Meets at The Quaries, M.K. Scout Campsite, Cosgrove. Details from Mr P.A. Orchard G0RYZ. Tel: (01908) 648186.

## GREATER LONDON

**ADDSCOMBE ARC, G4ALE.** Meets at the Lion Inn, Pawns Road, Croydon. Details from Mr Q.G. Collier G3WRV. Tel: 0208-653 6948.

**BARKING R & ES, G3KBF.** Meets at the Parkside Community Centre. Details from Bill Chever G0IQK. Tel: (01708) 474443.

**BROMLEY & DARS, RS89030.** Meets at the Victory Social Club, Kechill Gardens, Hayes, Bromley. Details from Alan G. Messenger G0TLK.

**CLIFTON ARS, G3GHN.** Meets at the Kidbrooke House, Community Centre, 90 Mycenae Road, London SE3 7SE. Details from Mr J. Veaney G7BKH.

**CRYSTAL PALACE & DRC, G3VCR.** Meets at the All Saints Church, Parish Rooms, Beulah Hill, London. Details from Bob Burns G30OU. Tel: (01737) 552170.

**DARENTH VALLEY RADIO, G0KDV.** Meets at the Crookenhill Village Hall, Swanley, Kent. Details from Mr K.W. Halls G8VJG. Tel: (01322) 663022.

**ECHFORD ARS, G3UES.** Meets at The Community Centre, St. Martin's Court, Kingston Crescent, Ashford, Middlesex. Details from Robin Hewes G3TRD. Tel: (01784) 456513.

**EDGWARE & DRS, G3ASR.** Meets at the Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware, Middlesex. Details from Stephen Slater G0PQB. Tel: 0208-953 2164.

**HAVERING & DARS, G4HRC.** Meets at the Fairtytes Arts Centre, 51 Billet Lane, Hornchurch, Essex.

**RS OF HARRROW, G3EFX.** Meets at the Harrow Arts Centre, Uxbridge Road, Hatch End, Middlesex. Details from Mr C. Fnel G4AUF. Tel: (01895) 621310.

**SILVERTHORPE RC, G3SRA, G2HR, G8CSA.** Meets at the Chingford Adult Education and Community Centre, Friday Hill House, Simons Lane, Chingford, London E4 6JH. Details from Dave Christy G0KHC. Tel: 0208-504 2831.

**SOUTH LONDON COLLEGE ARS, G3HFY.** Meets at the Lambeth College, Norwood Centre, Knights Hill, West Norwood, London. Details from Mr M. Knott G0WCR.

**SOUTHGATE RC, G3SPG.** Meets at the Winchmore Hill Cricket Club, First Lane, London N21 3ER. Details from Mr D.F. Berry G4DFB.

**ST DUNSTONS COLLEGE ARS, G4SDC.** Details from Sam Kennard G40HX. Tel: 0181-690 1274.

**SURREY RADIO CONTACT CLUB, G3SRC.** Meets at The S.I. Terra Nova, 34 The Walkdens, Croydon, Surrey. Details from Maurice Fagg G4DDY. Tel: 0208-669 1480.

**WEST LONDON ARS, RS95599.** Details from Robin Clay G0VJI.

**WHITTON ARC, G0WIN.** Meets at the Whitton Community Centre, Percy Road, Whitton. Details from Ian Clabon G0PFN. Tel: 0208-894 9131.

## HERTFORDSHIRE

**BISHOPS STORTFORD ARS, G5ZG.** Meets at the Royal British Legion Club, Windmill, Bishop's Stortford, Herts. Details from Tony Judge G0PQF. Tel: (01279) 506933.

**DACORUM ARTS, G7RH, G0WH.** Meets at the Guide Meeting Rooms (next to the Royal British Legion), Queensway, Hemel Hempstead. Details from Ian Hamilton G0TDC. Tel: (01442) 211925.

**HODDESDON RADIO CLUB, G0TSN.** Meets at the Rye Park Conservative Club, Rye Road, Hoddesdon, Herts. Details from Don Platt G3JNJ. Tel: 0208-292 3678.

**MIMRAM CONTEST GP, M0ABC.** Details from Alan Holdsworth G800. Tel: (01707) 392950.

**RADIO SCOUTING TEAM, G82RST.** Meets at Tolmers Scout Camp, Tolmers Road, Cuffley, Herts EN6 4JS. Details from Mill Livens G2CKB. Tel: (01992) 558493.

**STEVENAGE & DARS, G3SAD.** Meets at the Stevenage Day Centre, Chells Way, Stevenage, Herts SG2 0LJ. Details from Peter Bell 2E1CRK. Tel: (01462) 674505.

**VERULAM ARC, G3VER, G8VER.** Meets at the RAF Association HQ, New Kent Road, St Albans, Herts. Details from Walter Crane G3PMF. Tel: (01923) 262180.

**WELWYN & HATFIELD ARC, G3WGC.** Meets at the Royal Naval Association, Black Fan Road, Welwyn Garden City, Herts. Details from Dean Jackson G7PKF. Tel: (07973) 560649.

## SURREY

**BENTLEY ARC, G0VZS.** Details from Derek Gilbert G0NFA.

**CATERHAM RG, G0SCR.** Details from Mr RN. Lewis G4APL.

**COULSDON AMATEUR TRANS. SOC., G4UPR.** Meets at St Swithuns Church Hall, Grovelands Road, Purley, Surrey. Details from Andy Briers G0KZT. Tel: (01737) 552139.

**DORKING & DRS, G3CZU, G7DOR.** Details from John Greenwell G3AEZ. Tel: (01306) 631236.

**FARNBOROUGH & DRS, G4FRS.** Meets at The Community Centre, Meadon Avenue, Farnborough, Hants. Details from Mr M. Harsey G8ATK. Tel: (01252) 715765.

**GUILDFORD & DRS, G6GS.** Meets at the Guildford Model Engineers HQ, Stoke Park, Guildford, Surrey. Details from Stella Whitcomb G0SWE.

**KINGSTON & DARS, G3KIN.** Details from Mrs Mary Ashdown G0BQV.

**REGATE ATS, G5UK, G7RAT.** Details from Mr A.C. Embling G1LNT. Tel: (01883) 344723.

**SUTTON & CHEAM RS, G2WR, G7SAC.** Meets at the Sutton United Football Club, Borough Sports Ground, Gander Green Lane, Sutton, Surrey. Details from John Puttock G0BWW. Tel: 0208-644 9945.

**THAMES VALLEY ARTS, G3TVS.** Meets at the Thames Ditton Library, Watts Road, Giggs Hill, Thames Ditton, Surrey. Details from Cor. J. Pegler G3ENI. Tel: (01483) 284279.

**WIMBLEDON & DARS, G3WMM.** Meets at St. Andrews Church Hall, Herbert Road, Wimbledon, London. Details from Mr Reg Blackwell M1EEK. Tel: 0208-696 9857.

## SOUTH & SOUTH EAST

### EAST SUSSEX

**BRIGHTON & DRS, G4GOR.** Meets at the Roast Beef Bar, Brighton Racecourse, Elm Grove, Brighton. Details from Mr P.J. Fellington.

**CROWBOROUGH DARS, G0CWR.** Meets at the Plough & Horses, Walsley Road, Jarvis Brook. Details from Mrs M. Clark. Tel: (01892) 663666.

**EAST SUSSEX AMATEUR TV GROUP, RS178475** was G83VX. Details from Keith Ellis G8HGM. TEL: (01323) 720220.

**SOUTHDOWN ARS, G3WQK.** Details from Jim Harris G4DRV. Tel: (01323) 728479.

**THE QFZ ARG OF SUSSEX, G83VX.** Meets at the Coach Station, Warring Road, Eastbourne. Details from Stuart Constable M0CHW. Tel: (01435) 863020.

## HAMPSHIRE

**ANDOVER RAC, G0ARC.** Meets at the Village Hall, Wildern, Andover, Hants. Details from Mr R.S. Coleman G0WYD.

**BASINGSTOKE ARC, G3TCR, G8UYN.** Meets at the GEMS Social Club, Uster Road, Basingstoke, Hants. Details from Bob Brown M0CJJ.

**FAREHAM & DARC, G0VCE.** Meets at the Portchester Community Centre, Westlands Grove, Portchester, Hants. Details from Andrew Sinclair G0AMS. Tel: (01329) 235397.

**HIGHFIELD PARK RC, G4WMD.** Meets at Highfield Park RC, National Air Traffic Service, Highfield Park, Heckfield, Hants RG27 0LD. Tel: (01734) 225019.

**HORNDEN & DARS, G4FBS.** Meets at Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. Details from Stuart Swain G0FYX. Tel: (01705) 472846.

**ITCHEN VALLEY ARC, G0VNR.** Meets at the Scout Hut, Brickfield Lane, Chandlers Ford, Eastleigh, Hants. Details from Sheila Williams G0VNI. Tel: (01703) 813827.

**SONY BROADCAST ARC, G4SZC.** Accredited C&G RAE centre. Meets at Sony Sports & Social Club, Priestley Road, Basingstoke. Details from Stephen Harding G4JGS. Tel: (01256) 55011.

**SOUTH HAMPSHIRE INT. TELE SOC., G3DIT.** Meets at G3JZV's QTH. Space is limited. Details from Rev. T.R. Mortimer G3JZV. Tel: 02392 649254.

**SUBMARINE ARC, G3E2U.** Meets at HMS Collingwood, Newgate Lane, Fareham, Hants PO14 1AS. Details from Mr W.S. Blyn G0PPH. Tel: (01329) 232386.

**THREE COUNTRIES ARC, G4WVR.** Meets at the Bramshot Parish Inst. & Club, Headley Road, Liphook, Hants. Details from Damian Kamm G7RFV. Tel: (01428) 724456.

**WATERSIDE ARS, G4UYN.** Meets at the Applemore Scout HQ, Applemore, Hythe, Southampton. Details from Tony Horton G0LJG. Tel: (01703) 841794.

## ISLE OF WIGHT

**BRICKFIELDS ARS, G0BAR.** Meets at Brickfields Horse Country Centre, Newnham Road, Birnstead, Isle of Wight. Details from Mr P. Bebody.

**ISLE OF WIGHT RS, G3SKV.** Meets at The Old Cafe, Whiteciff Bay, Holiday Park, Bembridge. Details from Alan Reeves G4ZQF. Tel: (01983) 294309.

## OXFORDSHIRE

**BANBURY ARS, G0BRA.** Meets at St. John's Church Social Club, South Bar, Banbury, Oxon. Details from Mr R.S. Marsden G1VSY. Tel/FAX: (01295) 253509.

**HARWELL ARS, G3PRA.** Meets at the Social Club, Harwell Laboratory, Didcot, Oxon. Tel: (01235) 223250.

**OXFORD & DARS, G5LGO.** Meets at the Grove House Club, George Street, Summertown, Oxford. Details from Mr D. Walker G3BL5. Tel: (01865) 24

# RADIO

42 Brook Lane, Great Wyrley, Walsall, West Midlands WS6 6BQ

Phone: 01922 414796 Fax: 01922 417829

E-mail: sales@radioworld.co.uk Web: www.radioworld.co.uk

**AOR**



AR5000

**Model Description £ RRP inc VAT**

**AR5000** High performance full featured wide band all mode base receiver 10kHz - 2600 Mhz. IF selection as standard 220kHz, 110kHz, 30kHz, 15kHz, 6kHz, 3kHz (500Hz optional). Supplied with mains power supply. **£1295.00**

**AR5000+3** High performance base receiver with three enhanced options factory fitted: noise blanker, synchronous AM, automatic frequency control. **£1449.00**



AR3000A

**AR3000A** Unique all mode extremely wide band base-mobile receiver 100kHz - 2036mhz with no gaps. RS232 port fitted. **£699.00**

**AR3000A + (plus)** Customised AR3000A with switchable narrow SM & SAT filters, Tape relay, SDU ready and discriminator output. **£799.00**

**AR8200 Series 2** New advanced wide band all mode hand-held receiver with enhanced microprocessor facilities, slot card options available, multi-function display. **£395.00**

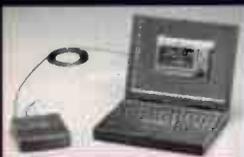
**ICOM**



PCR1000

**AR8000** The New Concept. Wide band all mode hand-held receiver with many microprocessor facilities, dot matrix display and computer compatibility. **£296.00**

**ICOM R2** 0.1300mhz Handie. Fits in the palm of your hand. AM/FM, FM Narrow - 450 memory channels **£139.00**



PCR100

**IC R8500** 100kHz - 2GHz Continuous. All mode no gaps. 1000 Memories. 4IF band widths Excellent all round for the professional listener **£1440.00**

**IC-R75E** 0-60MHz. High Stability receiver circuit 100 DB Dynamic range. Twin bandpass Tuning. Optional digital processor. Best selling receiver **£629.00**

**IC-PCR1000 & PCR 100** ICOM PCR1000 - 0-1300mhz. All modes. Computer driven. On screen programming. Band scope. Instant band scope access via mouse. List of features, call for brochure. **PCR 1000 £299.00, PCR 100 £199.00 (SAME SPEC WITHOUT SSB)**

## GARMIN GPSIII



Moving map features basemap, built-in European, African and Middle East to 20mi; includes

lakes, rivers, cities, railways, coastlines, motorways and roads. Uploadable CD ROM, detailed map data available from MapSource CDs.

RWP **£325.00**

## GARMIN STREET PILOT



Built-in international map contains motorways, major roads, lakes, rivers,

streams, airports, cities, towns, coastlines, motorway exits plus waypoints.

STREET PILOT COLOUR

RWP **£545.00**

STREET PILOT

RWP **£410.00**

## GARMIN GPS12



The Garmin GPS12 series products are as rugged as GPS gets. Military-tough construction and waterproof cases make these units ideal companions for any outdoor adventure. All feature a 12 channel receiver that locks onto stellites fast and stays locked on, even under extreme conditions. These units may be tough on the outside, but their operations are easy and logical.

RWP **£129.00**

**FINANCE NOW AVAILABLE. PHONE DAVE FOR DETAILS!**



# WORLD

ESOE

## YUPITERU

### YUPITERU MVT 2000 III

Yupiteru flag hip model, with a range exceeding 2000mhz, a real time bandscope.



- 531 kHz - 2039 Mhz
- 1000 memory channels
- All modes: W-FM, FM, N-AM, AM, LSB, USB, CW
- Multiple scanning steps 50Hz - 125kHz
- Alpha numeric display
- Band scope with marker function for direct access to displayed frequencies
- Duplex receive capability - hear split frequency signals easily with VFOs
- 20 search bands
- Fast tune facility gives 10 times function for quick tuning
- Built-in ferrite rod antenna for AM broadcast reception
- OP90 Soft Case

**£329.00**

### ALINCO DR-2800T TRANSCIVER



Freq 25 - 1300MHz  
500 Channels  
Modes AM, FM, WFM Trunktracker  
Alpha Tagging  
With UK mains adapter, Telescopic aerial.

**£Phone for best UK price**

### ALINCO DR-2800T



Desktop scanner with TURBO SCAN  
Freq 25 - 1300MHz  
AM,FM,WFM

**£249.00**

### YUPITERU MVT 2300HD

An exciting new handheld packed with features - but at a price you can afford! The receiver has "breathtaking performance" ensuring this set is destined to be a number one seller



- FREQUENCY  
66 - 88MHz  
108 - 170MHz  
300 - 470MHz  
806 - 1000MHz
- MODES: AM/NFM
- STEPS: 5, 6.25, 10, 12.5, 25kHz
- MEMORIES: 200
- BAND MEMORIES: 10 (user re-programmable)
- PRIORITY CHANNELS: 10
- SCAN/SEARCH SPEED: 30 per sec
- POWER: Requires 4 x AA batteries
- SUPPLIED WITH: Antenna, Earpiece, Carrying Strap and built-in Desk Stand

**£159.95**

### YUPITERU MVT 2100 HD

Probably the most popular high end scanner. It's easy to use and can receive just about anything going!

- 530kHz - 1650mhz
- AM/FM/WFM/SSB/CW
- 1000 Memories
- C/W N/Cads & charger
- OP51 Soft Case £17.95 + £2 p&p



**£199.00**

## ROBERTS

### ROBERTS R-809

Multi-band digital PLL preset stereo world radio.

- High specification, easy to use
- 54 preset stations
- 5 tuning methods
- LCD display for all important functions
- Dual time display
- Standby function
- Clock/alarm
- Snooze function
- Adjustable 59 minute sleep timer
- Power supply battery (6V power)
- FM stereo on external socket
- 3.5mm stereo headphone socket
- AM wide-narrow filter
- MW switched tuning steps

**£79.99**



### AOR AR8600



All mode, wideband desktop scanner  
530KHz - 2040MHz. Additional slot cards  
PC Control. 1000 memories

**£Phone for best UK price**

## ICOM

### ICOM IC-83

- PACKED FULL OF FEATURES
- Excellent for surveillance

### ICOM IC-83

- -0-30MHz
- HF receiver
- Airband
- VHF
- Large easy to use base/portable
- Suitable for all ages

**£549.00**



## USED EQUIPMENT

MAKE	MODEL	PRICE
AEA	PIC 88 TNC	£80.00
ALINCO	AD1-446 70cm MOBILE 35w	£189.00
ALINCO	DJ-G1 HANDY 2M WIDE RECEIVER	£129.00
ALINCO	DJ-05EY 270W WIDE BAND TRANSCIVER	£200.00
ALINCO	DR-590 DUAL BAND MOBILE TRANSCIVER	£175.00
ALINCO	DR-605 DUAL BAND MOBILE TRANSCIVER	£230.00
ALINCO	DX-70T 100W MOBILE / HF TRANSCIVER	£399.00
ALINCO	DX-70TH TRANSCIVER	£475.00
ALPHA	87A FULLY AUTOMATIC AMP	£3,350.00
AMERSTON	DSK-5 25w DSK SWITCH	£199.00
AOR	AR-2002 BASE SCANNER	£199.00
AOR	AR-3000A RECEIVER	£495.00
AOR	AR-5000 RECEIVER	£1,199.00
AOR	AR-7030 REMOTE CONTROL RECEIVER	£595.00
AOR	AR-8000 HANDY RECEIVER	£199.00
AOR	AR-8200 MK1 HANDY RECEIVER	£260.00
DAIWA	PS-120MK11 10amp PSU	£50.00
DAIWA	PS-30AM11 20amp POWER SUPPLY	£85.00
DATONG	FL2 FILTER	£60.00
DIAMOND	GSSV-3000 PSU	£100.00
DIAWA	CNW-518 2KW CROSS METER ATU	£199.00
DIAWA	ROTATOR MR-750U HEAVY DUTY	£250.00
DRAKE	DRAKE 2700 ATU 2.5KW (MINT CONDITION)	£295.00
DRAKE	DRAKE L7 LINEAR AMP (MINT CONDITION)	£399.00
DRAKE	R-8 RECEIVER (MINT)	£550.00
HESTERITE	3M EXPLORER 2m AMPLIFIER	£399.00
ICOM	IC-207 DUAL BAND MOBILE	£210.00
ICOM	IC-229H 2M MOBILE	£120.00
ICOM	IC-251E AC 2M Multi-mode	£325.00
ICOM	IC-275H 2M 100W BASE TRANSCIVER	£550.00
ICOM	IC-3J UHF MINI HANDY	£89.00
ICOM	IC-475E AC 25W MULTIMODE 70CM BASE	£525.00
ICOM	IC-706MK1 TRANSCIVER	£499.00
ICOM	IC-706MK11 DSP TRANSCIVER	£599.00
ICOM	IC-706MK11G (AS NEW)	£799.00
ICOM	IC-725 HF MOBILE 100w	£400.00
ICOM	IC-726 HF MOBILE 100w	£425.00
ICOM	IC-729 TRANSCIVER HF 50MHz	£425.00
ICOM	IC-735 HF 100W	£450.00
ICOM	IC-746 HF/502M 100w	£999.00
ICOM	IC-756 HF/6M BASE TRANSCIVER	£1,050.00
ICOM	IC-1W31E DUAL BAND HANDY	£175.00
ICOM	PCR-1000 PC RECEIVER SSB/FM/AM	£200.00
ICOM	PS-15 POWER SUPPLY	£100.00
ICOM	PS-55 PSU 20 amp	£120.00
ICOM	PS-85 POWER SUPPLY	£175.00
ICOM	R10 HANDY SCANNER	£199.00
ICOM	R2 HANDY RECEIVER	£110.00
ICOM	R-7000 25-2000MHz ALL MODE RECEIVER	£575.00
ICOM	R-72 RECEIVER AC	£450.00
ICOM	R-72 RECEIVER DC	£400.00
ICOM	R-75 RECEIVER	£450.00
ICOM	SP-21 EXTENTION SPEAKER FOR IC-706 etc	£45.00
ICOM	TRE HANDY 2700m	£195.00
ICOM	W-21E DUAL BAND HANDY	£199.00
JRC	JR-535 RECEIVER	£675.00
JRC	JR-945 DSP RECEIVER	£999.00
KANTRONICS	KAM PLUS TNC	£220.00
KENWOOD	AT-200 ATU	£125.00
KENWOOD	AT-230 ATU	£140.00
KENWOOD	AT-300 ATU	£225.00
KENWOOD	BC-15 RAPID CHARGER	£40.00
KENWOOD	DFC-230 FREQUENCY CONTROLLER	£99.00
KENWOOD	PS-50 PSU	£130.00
KENWOOD	PS-52 HEAVY DUTY POWER SUPPLY	£175.00
KENWOOD	R-5000 RECEIVER Inc Converter	£595.00
KENWOOD	SP-950 SPEAKER	£90.00
KENWOOD	TH-22E HANDY 2M	£99.00
KENWOOD	TH-46 UHF HANDY	£100.00
KENWOOD	TL-922 LAST SERIAL No. (MINT)	£999.00
KENWOOD	TM-455E 70CM MOBILE MULTI MODE TRANS	£495.00
KENWOOD	TM-751E 2M 25W MULTI MODE	£325.00
KENWOOD	TM-77E DUAL BAND TRANSCIVER	£250.00
KENWOOD	TR-651E 70cm Multi-Mode	£325.00
KENWOOD	TS-1405 HF 100W BASE/MOBILE	£399.00
KENWOOD	TS-680 HF 6M BASE/MOBILE	£395.00
KENWOOD	TS-690 SAT TRANSCIVER HF/6M	£695.00
KENWOOD	TS-811E 70cm MULTI MODE TRANS	£400.00
KENWOOD	TS-850 SAT 100w HF BASE TRANS	£390.00
KENWOOD	TS-870 DSP HF/BASE TRANSCIVER	£999.00
KENWOOD	TS-940SAT HF BUILT IN ATU BASE	£750.00
KENWOOD	TS-950 SD DIGITAL 150W TRANSCIVER	£1,250.00
KENWOOD	TS-950S HF 150W BASE BUILT IN ATU	£999.00
KENWOOD	TS-950SDX HF 150w TRANS (FLAGSHIP)	£1,799.00
KENWOOD	VFO-180 VFO	£80.00
LINEAR AMP	EXPLORER AMP	£399.00
LOWE	HF-225 RECEIVER	£225.00
MAYCOM	AR-108 AIRBAND HANDY	£50.00
MFJ	1278 TNC incl SSTV	£225.00
MFJ	MFJ-255B ANTENNA ANALYZER	£175.00
MFJ	MFJ-784B DSP FILTER	£150.00
MFJ	MFJ-962 1.5KW ATU	£175.00
MFJ	MFJ-969 ATU 3KW INPUT	£220.00
M MODES	Microwave mod's 144/100 100w 2m	£120.00
MIRAGE	D3010 430-450MHz AMPLIFIER 100W	£200.00
NAG	144XL 2M BASE AMPLIFIER 400W	£325.00
PACCOM	320 TNC	£99.00
PACCOM	TINY 11 PACKET TNC	£99.00
PAKRATT	PK-232 MODEM	£140.00
REALISTIC	PRO-2005 25-1300MHz BASE SCANNER	£110.00
REALISTIC	PRO-2026 SCANNER	£99.00
S.E.M	TRANSMATCH	£90.00
SDNY	CRF-121 World band radio built-in printer MINT	£999.00
TARGET	9-30MHz HF RECEIVER	£100.00

major plastic!!

There is NO CHARGE for using credit cards



Mare. Details from Stephen Cole G3YOL. Tel: (01934) 843144.

## CORNWALL & SCILLY IS

**CORNISH RAC, G4CRC.** Meets at the Perran-ar-Worhul Village Hall, Perranwell, Nr Truro, Cornwall. Details from Mrs Cheryl Hammert 2E1ADQ. Tel: (01726) 882758.

**NEWQUAY & DARS, G4ADV.** Meets at the Treviglas School, Newquay. Details from Mrs Maggie Reed G0KEM. Tel: (01726) 882752.

**POLDHU ARC, G2BGM.** Meets at the Club House, Poldhu Cove, Mullion, Cornwall TR12 7JB. Details from Mrs Carolyn Rule MOADA. Tel: (01326) 240144.

**SALTASH & DARC, G4GKQ, G8SAL.** Meets at the Toc H Hall, Warraton Road, Saltash, Cornwall. Details from Brian Giles. Tel: (01752) 844321.

**ST AUSTELL ARC, G0ECC.** Meets at Poltair School. Details from Reg Pears G4TRV. Tel: (01726) 72951.

## DEVON

**APPLEDORE & DARC, G2FKD.** Meets at the Appledore Football Club. Details from Mr B. Jewell M08BR.

**AXE VALE ARC, G8CA, G7AXE.** Meets at the George Hotel, Axminster, Devon. Details from Pat Cross G0GHH. Tel: (01297) 33756.

**DARTMOOR RADIO CLUB, G1RCD, G0DRC.** Meets at the Yelverton War Memorial Village Hall, Meavy Lane, Yelverton, Devon. Details from Ron Middleton G7LLG. Tel: (01822) 852586.

**EXETER ARS, G4ARE.** Meets at the Moose Centre, Spinning Path Lane, Blacktoy Club, Exeter. Details from Ray Donno G3YBK.

**EXMOUTH ARC, G0XRC.** Meets at The Scout Hut, Marpool Hill, Exmouth.

**NORMAN LOCKYER OBSERVATORY ARG, G0AQC.** Meets at the Norman Lockyer Observatory, Salcombe Hill, Sidmouth. Details from Ron Hanson G0MOC. Tel: (01395) 515349.

**NTE (PAIGNTON) ARS, G0OSH.** Meets at Paignton Community College, Upper School, Waterleat Road, Paignton. Details from Rod Maude G0SVM. Tel: (01803) 521066.

**SOUTH DEVON ARC, G4SSD.** Meets at the Hillhead, Kingswear, Devon. Details from John May G0CDB. Tel: (01803) 522995.

**TORBAY ARS, G3HJA.** Meets at the Highweek Family & Social Club, Highweek, Newton Abbot, Devon. Details from John Olway G3RMA. Tel: (01803) 556425.

**UNIVERSITY OF PLYMOUTH ARS, G0UQP.** Details from Alan Santillo G0XAW.

## DORSET

**BLACKMORE VALE ARS, G4RBV.** Meets at Shaftesbury Club for Young People, Coppice Street, Shaftesbury, Dorset SP7 8PF. Details from Mr A. Marriott G0GFL. Tel: (01258) 860741.

**BOURNEMOUTH RS, G2BRS.** Meets at the Kinson Community Centre, Kinson, Bournemouth, Dorset. Details from Len Rayner M0AXI. Tel: (01202) 895134.

**CHRISTCHURCH ARS, G0MUD.** Meets at the Siemens Pressy Sports & Social Club, Grange Road, Somerford, Christchurch, Dorset. Details from Mr K.P. Harris G7WSN. Tel: (01202) 484892.

**FLIGHT REFUELLING ARS, G4RRF.** Meets at the Flight Refuelling Social Club, Merley, Wimborne, Dorset. Details from Martin Axon 2E1DFZ. Tel: (01202) 693334.

**POOLE RS, G4PFS.** Meets at the Bournemouth & Poole FC, Constitution Hill Site, Poole, Dorset. Details from Phil Mayer G0K4L. Tel: (01202) 700903.

**PORTLAND ARC, G0VOP/G7VQP.** Meets at Clifton Hotel, Grove Road, Portland. Details from Kerry Morris G1WIK. Tel: (01305) 788591.

**SOUTH DORSET RS, G3SDS.** Meets at the Church Hall, Chickwell, Weymouth, Dorset. Details from John Rose M0BQQ. Tel: (01305) 832057.

**WESSEX AMATEUR WIRELESS CLUB, G1WAW.** Details from Ken Powell G1NCG. Tel: (01202) 549376.

## JERSEY

**JERSEY ARS, G13DVC.** Meets at the German Signal Station, Rue Baal, La Moye, St Brelade. Details from Mrs Anne Mourant M0BJU. Tel: (01534) 734948.

## SOMERSET

**PRESTON COMMUNITY SCHOOL ARC, G0PCS.** Details from Craig Douglas G0HDI. Tel: (01935) 71131.

**TAUNTON & DARS, G3KXV.** Meets at The Memorial Hall, Trull, Taunton. Details from David Roseward M0CIE.

**WEST SOMERSET ARC, G00WK.** Meets at the West Somerset Community College, Minehead, Somerset. Details from Alan Elliott G7RSU. Tel: (01643) 707207.

**WINCANTON ARC, G0MRA.** Meets at King Arthur's Community School, West Hill, Wincanton. Details from Mr G.A. Fingerhut G0ENW. Tel: (01963) 370506.

**YEOVIL & DARC, G3CMH, G8YEO.** Meets at the British Red Cross HQ, 72 Grove Avenue, Yeovil, Somerset. Details from George Davis G3ICQ. Tel: (01935) 425669.

## ESSEX

**BRAINTREE AR & CCC, G4JG.** Meets at the Baintree Hockey Club, Church Street, Bocking, Baintree. Details from Keith Farthing 2E0ARS. Tel: (01376) 347736.

**CHELMSFORD ARS, G0MWT.** Meets at the Marconi Social Club, Beehive Lane, Chelmsford, Essex. Details from John Bowen G8DET. Tel: (01245) 226591.

**CLACTON RADIO CLUB, G3CRC.** Details from Mr D. Fitzpatrick M0CHL.

**COLCHESTER ARS, G3VCO.** Meets at the Colchester Institute, Sheepen Road, Colchester. Details from Frank R. Howe G3FU. Tel: (01206) 851189.

**DENIE HUNDRED ARS, G0UTT, G7SDH.** Meets at the Henry Samuel Hall, Maryland, Essex. Details from Mrs Christine Wade. Tel: (01621) 772986.

**HARLOW & DARS, G6UT.** Meets at the Mark Hall Barn, First Avenue, Harlow, Essex. Details from Len Brackstone G7UFF. Tel: (01279) 832700. FAX: (01279) 864973.

**HARWICH ARIG, G0GRH.** Meets at the Park Pavilion, Barrack Lane, Harwich. Details from Eugene Kraft G4FTF.

**LOUGHTON & EPPING FOREST ARS, G4ONP.** Details from Marc Litchman G0TCC. Tel: 0208-502 1645/(07803) 023501.

**SOUTH ESSEX ARS, G4RSE.** Meets at the Paddock, Long Road, Carvey Island, Essex. Details from Mrs Betty Maynard G6LUO. Tel: (01268) 695474.

**SOUTHEND & DRC, G5QK.** Meets at the Alexandra Yacht Club, Cliffdown Parade, Southend-on-Sea, Essex. Details from Alan Radley G0TMM. Tel: (01268) 741229.

**STANFORD-LE-HOPE & DARC, G4SLH.** Meets at the St Joseph Parish Rooms, Scratton Road, Stanford-le-Hope, Essex. Details from Ken Thompson G4PDB. Tel: (01375) 671238.

**VANGE ARS, G3YOV.** Meets at the Barnstable Community Centre, Basildon, Essex. Details from Mrs D. Thompson. Tel: (01268) 552606.

## KENT

**BREDHURST RX & TX SOC., G0BRC.** Meets at Rock Avenue Working Mens Club, Rock Avenue, Gillingham, Kent. Details from Mr T.M. Wheeler G7MIM.

**CRAY VALLEY RS, G3RCV, G1RCV.** Meets at the Progress Hall, Admiral Seymour Road, Eltham, London SE9. Details from Richard Perynza G8PDB. Tel: (01689) 602948.

**DOVER RADIO CLUB, G3YMD.** Meets at the Dover Grammar School for Boys, Astor Avenue, Dover. Details from Brian Hancock G4NPM. Tel: (01304) 821007.

**EAST KENT RADIO SOCIETY, G0EYR.** Meets at St. Bartholomew's Church Hall, Heme Bay, Details from Paul Nicholson G3VJF. Tel: (01227) 743070, FAX: (01227) 742288.

**HASTINGS ELEC. & RC, G6HH, G1H1H, G6LL.** Meets at West Hill Community Centre, Croft Road, Hastings, East Sussex. Details from Mr J. Boothroyd G0MTJ. Tel: (01233) 732656.

**HILDERSTONE ARS, G0HRS.** Meets at Hilderstone A.E.C., Broadstairs, Kent. Details from Mr G. Shaw M0AQ4.

**HOME COUNTIES ATV GRP, G6HCT.** Meets at the Binfield Club, Binfield (near M4/J10). Details from Mr A. Brooker G4WZG.

**MAIDSTONE YMCA ARS, G3TRF.** Meets at YMCA Sports Centre, Melrose Close, Maidstone, Kent. Details from Colin Wilson G0VAR. Tel: (01622) 736636.

**MEDWAY ARTS, G5MW, G8MWA.** Meets at Tunbury Hall, Catkin Close, Tunbury Avenue, Walderslade, Chatham. Details from Mr J. Hale G3FTH.

**NORTH KENT RS, G4COW.** Meets at The Pop-in-Parlour, Graham Road, Bexleyheath, Kent. Details from Mr A.V. Fribbens G8MLQ. Tel: (01474) 365694.

**SWALE ARX, G4SRC, G6SPC.** Meets at the Ivy Leaf Club, Dover Street, Sittingbourne, Kent. Details from Gordon Powell M0AKA. Tel: (01795) 665559.

**THE MORSE CLUB, G4XOX.** Details from Mr K. Churchill M1CZA. Tel: 0208-301 5067.

**WEST KENT ARS, G3WKS.** Meets at The St. Marks School Hall, Tunbridge Wells, Kent. Details from Malcolm Sheppard G4FWG. Tel: (01892) 652272.

## NORFOLK

**ANGLIA TELEVISION ARS, G0TAV.** Meets at Anglia TV, Norwich NR1 3JG. Details from Jim Bacon G3YLA. Tel: (01603) 615151.

**GREAT YARMOUTH RS, G3YRC.** Meets at the Bradwell Community Centre, Bradwell, Great Yarmouth, Norfolk. Details from Mr A.D. Bedford G3NHU.

**GRESHAM'S SCHOOL ARC, G3PXD.** Details from Rev. R.N. Myerscough G3PXD.

**KINGS LYNN ARC, G3XYZ.** Details from Derek Franklin G0MQL.

**NORFOLK ARS, G4ARN.** Meets at Norwich Aviation Centre, Norwich Airport. Details from John Wadman G0VZD. Tel: (01953) 604769.

**NORTH NORFOLK ARG, G82MC.** Details from Keith J. Martin G0GFO. Tel: (01263) 588506.

## SUFFOLK

**BURY ST EDMUNDS ARS, G2TO.** Meets at the Culford School, Cufford, Bury St Edmunds, Suffolk. Details from George Woods G3LPT.

**FELIXSTOWE & DARS, G4ZFR.** Meets at the Orwell Park School, Nacton, Near Ipswich. Details from Paul Whitting G4YQC. Tel: (01473) 642695.

**FRAMLINGHAM COLLEGE ARC, M0C8B.** Tel: (01728) 727232.

**IPSWICH RADIO CLUB, G4IRC.** Meets at the Golden Hind, Nacton Road (3rd Wednesdays at The Hollies, Bucklesham Straight Road), Ipswich. Details from Keith Gaunt G7CY. Tel: (01394) 420226.

**LEISTON ARC, G0TUJ.** Meets at Leiston Town Athletic Assn., Victory Road, Leiston, Suffolk. Details from Sam Lydiate G4IFD. Tel: (01728) 832999.

**LOWESTOFT DRS, G3JRM.** Meets at The George Barrow Hotel, Outon Road, Lowestoft. Details from Phil Holden G0JSG. Tel: (01502) 585448.

**MARTLESHAM RS, G4MRS.** Meets at the BT Laboratories, Martlesham Heath, Ipswich, Suffolk. Details from Darren Hatcher. Tel: (01473) 644475.

**SUDBURY & DRA, G0SMI, G7SRA.** Meets at the Old School, Wells Hall Road, Great Cornard, Sudbury, Suffolk. Details from Bryan Penton G1TWW.

**SUFFOLK DATA GROUP G8TMM.** Details from Peter Pryke G8HUE. Tel: (01473) 631313.

## NORTH WALES

### CLWYD

**CONWAY VALLEY ARC, G6TMM.** Meets at the Studio, Penhos Road, Colwyn Bay, Clwyd. Details from Mr R.W. Evans G6PMC. Tel: (01745) 855068.

**HALYUN & DARS, G6SHRG.** Details from Mr D. Austin G6WJHG.

**NORTH WALES RS, G6WNR.** Meets at the Old YMCA, Queen's Drive, Colwyn Bay, Clwyd. Details from Ted

Shipton G6WDSJ. Tel: (01745) 336939.

**WREXHAM ARS, G6W4WM.** Meets at the Community Centre, Maeswynn Road, Wrexham. Details from Mr P. Moran G6W0WR.

## GWYNEDD

**MERION ARS, G6W4LZP.** Meets at the Royal Ship Hotel, Dolgellau, Gwynedd. Details from Gervase Chavasse G6W4URJ. Tel: (01341) 421028.

**PORTRHADDOG & DARS, G6W0M.** Meets at The Yacht Club, The Harbour, Porthmadog, Gwynedd. Details from Mr G. Cadwaladr M6W1DFN.

**THE DRAGON ARC, G6WATTA.** Meets at the Ebenezer Church Hall, Lon Foel Graig, Llanfairpwll, Isle of Anglesey. Details from Stewart Rolfe G6W0TF. Tel: (01248) 362229.

## POWYS

**POWYS ARC, G6W4HVN.** Meets at the ATC HQ, Park Lane, Newtown, Powys. Details from Mrs Jean Brown ZW1CEZ. Tel: (01686) 640814.

## SOUTH WALES

### DYFOD

**ABERPORTH YMCA, G6W4SIV.** Meets at the Hut B17, The Airfield, Aberporth. Details from Mr G. Carruther G6W4HJG. Tel: (01239) B11205.

**ABERSYSTWYTH & DARS, G6W0ARA.** Meets at the Scout Hut, Plassgwyn Avenue, Abersystwyth. Details from John Woodward G6WIDK. Tel: (01970) 890657.

**CARMARTHEN ARS, G6W4YCT.** Meets at The Aelwyd Care Home, Carmarthenshire County Council, Tregynwr Road, Llangunifon, Carmarthen SA31 3BS. Details from Mr W.D. Hughes G6W4ZLX. Tel: (01267) 231359.

**CLEDDAU ARS, G6W0SIV.** Details from Trevor Perry G6W4XKQ. Tel: (01646) 600725.

**LLANELLI ARS, G6W0EZO.** Meets in the Furnace Community Hall, Furnace Square, Llanelli. Details from Roy Jones G6W0JZK. Tel: (01554) 820207.

**PEMBROKESHORE RS, G6W0EJE.** Meets at Furzy Park Community Centre, Furzy Park, Haverfordwest, Pembrokeshire. Details from Ian M. Jones M6W0CAB. Tel: (01437) 763028.

## GWENT

**ABERGAVENNY RS, G6W4QFL.** Meets at the Hill Residential College, Pen-y-Pond, Abergavenny, Gwent. Details from Glyn Hughes G6W0DQY. Tel: (01633) 483186.

**BLACKWOOD & DARS, G6W6W.** Meets at the Oakdale Comprehensive School, Oakdale, Blackwood, Gwent. Details from John Evans G6W8TI. Tel: (01495) 225178.

**EBBW VALE COLLEGE RS, G6W0IM.** Meets at the Gwent Tertiary College, Ebbw Vale Campus, College Road, Ebbw Vale, Gwent. Details from Mr T. Hayden G6W0HCN. Tel: (01495) 305192.

**NEWPORT ARS, G6W4EZW.** Meets at the Bryniglas Community Centre, Bryniglas Road, Newport, Gwent. Details from Paul Nicholas.

**PONTYPOOL ARS, G6W3RNN.** Meets at the Settlement, Rockhill Road, Pontypool, Gwent. Details from Graham Smith G6W0OLZ.

## MID-GLAMORGAN

**BRIDGEND & DARC, G6W4LNP.** Meets at the Club Brynmynny, Brynmynny, Bridgend. Details from Alun Hulmes. Tel: (01656) 721574.

**HOOVER (MERTHYR) ARC, G6W3RDB.** Meets at the Hoover Sports Pavilion, Hoover Ltd., Pentrebach, Merthyr Tydfil, Mid Glamorgan. Details Robert Cummings G6W0RVG.

**MID GLAMORGAN ARG, M6W0CNA.** Meets at Aberkenfig Sports & Social Club. Details from Mervyn Carey G6W4VSE. Tel: (01656) 734668.

## SOUTH GLAMORGAN

**BARRY ARS, G6W3VNL.** Meets at Sully Sports & Leisure Club, South Road, Sully, S. Glamorgan. Details from Richard Mortimore G6W4BVJ. Tel: (01446) 738756.

**HIGHFIELDS ARC, G6W4LFO.** Meets at the Highfields Physically Handicapped Centre, Allensbank Road, Cardiff. Tel: (01222) 561542.

## WEST GLAMORGAN

**PORT TALBOT (BS PLC) ARS, G6W3EOR.** Meets at the British Steel PLC Sports & Social Club, Margam, Port Talbot, West Glamorgan. Details from Mr J. Chinnock M6W0AGE.

**SWANSEA ARS, G6W40CC.** Meets at the Applied Sciences Building, Swansea University. Details from David Williams G6W4BNU. Tel: (01792) 519046.

## SCOTLAND WEST & WESTERN ISLES

**CENTRAL REGION**

**FALKIRK & DARS, G6W0FRC.** Details from Scott Waterall G6W0KBU.

**STIRLING & DARS, G6W0NKK.** Meets at Banderath Industrial Estate, Throsk, Nr Stirling. Details from John Shery G6W0AZC. Tel: (01324) 824709.

## DUMFRIES & GALLOWAY

**WIGTOWNSHIRE ARC, G6M4RV.** Meets at the Aird Unit, Stranraer Academy, Stranraer, (entrance from Cairnpoll Road). Details from Neil Macdonald G6M4LQS.

## STRATHLYDE

**AYR ARC, G6M0MYE.** Meets at the Cridal Leisure Centre, Ayr. Details from Peter Sturgeon M6M0BQP.

**CENTRAL SCOTLAND FM GROUP RS38728.** Details from Thomas Stalker G6M7TZO. Tel: (01698) B16793.

**DALRY ARC, M6M0ARG.** Meets at The Turf, In Dalry Court, Hill Street, Dalry. Details from Alex McKean M6M0ABM. Tel: (01294) 823295.

**DUNOON & DARS, G6M0CDD.** Meets at the Edward Street Community Centre, Edward Street, Dunoon. Details from A.B. Horton G6M0BUL. Tel: (01369) 840217.

**HELENSBURGH ARC, G6M4HEL.** Details from G. Capstick G6M7QAF. Tel: (01603) 675922.

**INVERCULDE ARC, G6M0GNK.** Meets at the Cardwell Bar, Cardwell Road, Gourcock, Strathclyde. Details from

Andrew Givens G6M3YOR. Tel: (01475) 638226.

**KILMARNOCK & LOUDOUN ARC, G6M0ADX.** Meets at the Hurrford Community Centre, Cessnock Road, Hurrford. Details from Steve Campbell G6M4OSS. Tel: (01560) 483800.

## LARGS & DARS, G6M0VIG.

**LORN ARS, G6M0LRA.** Details from T. Olsen G6M0EQW. Tel: (01866) 2580.

**MID LANARK ARS, G6M3P0K.** Meets at the Newarthill Community Ed. Cent., High Street, Newarthill, Motherwell, Lanarkshire ML1 5GU. Details from John Neary G6M0XFK. Tel: (01698) 822860.

**MILTON OF CAMPSIE ARS, G6M0MOC.** Meets at the Red Cross Hall, Kirkintilloch. Details from John MacKenzie G6M0HJU. Tel: (01360) 312954.

**PAISLEY ARC, G6M0PYM.** Meets at the Paisley YMCA Hall, 5 New Street, Paisley PA1 1JU. Details from John Quigley G6M0TQA. Tel: 0141-889 6860.

**SCOTTISH DIGITAL COMMS. GRP, G6M7YSR.** Details from Stuart Clark G6M1VBE. Tel: (01698) 884803.

**WEST OF SCOTLAND ARS, G6S4AGG.** Meets at the Multi Cultural Centre, 21 Rose Street, Glasgow. Details from Hon. Sec.

## SCOTLAND EAST & HIGHLANDS BORDERS

**BORDERS ARS, G6M0BRS.** Meets at the St. John Ambulance Hall, Benwick-upon-Tweed. Details from A.M. McCreadie G6M0BPY. Tel: (018907) 50492.

**GALASHIELS & DARS, G6M4YEO.** Meets at the Focus Centre, Galashiels. Details from Jim Keddie G6M7LUU.

**KELSO ARS, G6M4KHS.** Meets at the Abbey Row Community Centre, Kelso. Details from Margaret Chalmers G6M0ALX. Tel: (01573) 226372.

## FFE

**GLENROTHES & DARC, G6M4GRC.** Meets at the Football Pavilion, Station Road, Thornton, Fife. Details from Alexander Adam G6M0FVD. Tel: (01592) 874374.

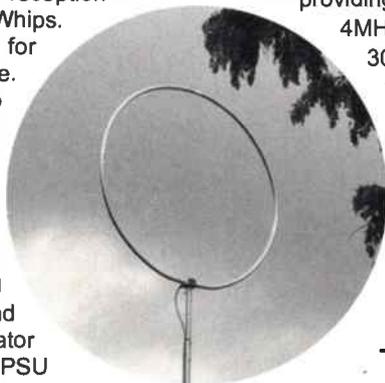
## GRAMPIAN

**ABERDEEN ARS,**

# WELLBROOK COMMUNICATIONS

## ALA 1530 LOOP ANTENNA EXTENDED LF RANGE DOWN TO 50kHz

The ALA1530 loop sets new standards for the listener. For the first time it is possible to reject locally radiated and mains borne noise and still provide improved reception compared to larger antennas and Active Whips. 1m dia. Aluminium loop is designed for outdoors, away from the local noise zone. The loop is broadband from 50kHz to 30MHz with useable performance to over 100MHz and matches directly to the receiver. Thus the loop is easy to use, as no tuning is required. With 30dB nulls to reduce interference, LW, MW and SW reception is outstanding. Professional performance is assured for high signal environments with high IP2 +70dBm and IP3 +40dBm. Supplied complete with Rotator Mounting Bracket, Antenna Interface and PSU £119.95 + £10.00 P&P Add 25.00 overseas



**ALA 330 HF Active Loop 3MHz to 30MHz**  
£119.95 + £10.00 P&P Add £25.00 Overseas

**LFL1010 VLF Active Loop 10kHz to 10MHz**  
£160.00 + £10.00 P&P Add £25.00 Overseas

Wellbrook Antennas are also used for Professional Broadcast, Navigation Beacon, Radio Monitoring, etc

**Wellbrook House, Brookside Road, Bransgore, Hants BH23 8NA. Tel: 01425 674174**

Also from *THE SHORTWAVE SHOP* 01202 490099 E-mail: sales@wellbrook.uk.com Visit our web site: www.wellbrook.uk.com

## NEW K9AY DIRECTIONAL LOOP

New K9AY directional loop antenna. This revolutionary antenna has an electronically steerable cardioid pattern providing up to 30dB Front to Back ratio from 50kHz to 4MHz. With high omni-directional sensitivity up to 30MHz. It comes with Antenna Control Unit and a two loop Head unit. The antenna is easy to use and can discriminate co-channel interference.

**K9AY LW/MW Dx Loop**  
£289.00 + £10.00 P&P Add £15.00 Overseas

See John Wilson's review ; Oct 2002 *SWM*

**This is what the experts say.**

**John Wilson; Nov 2000 *SWM*:**

Given the choice between an active whip and an active loop, I would take the loop every time. It is infinitely better than the whip in terms of E-field noise rejection, performs every bit as well if not better than the classic end fed wire, has very useful nulls for rejecting unwanted signals.

## www.Aerial-Techniques.com

### MANHATTAN 15"/38CM L.C.D. MULTI-STANDARD PAL/SECAM COLOUR T.V.

- 240v AC/12v DC operational
- Automatic tuning
- International teletext
- 2 x 1.5w nicam digital speakers
- Scart connection
- PC compatible
- Remote control
- Silver cabinet
- Wall mountable
- Slim and lightweight



**£699.00**

● The ideal size for travelling  
● Reception covers: PAL system I (for UK); PAL systems B/G (for Europe); PAL system D (for China); SECAM L (for France); SECAM D/K (for Eastern Europe); and SECAM B/G.

Also available in 20" screen.

### THOMSON 14"/36cm MULTI-STANDARD COLOUR T.V. WITH INTERGRATED V.C.R.

- Covers VHF/UHF/PAL/SECAM  
For use in the UK, France and Europe
- Two integrated tuners
  - International teletext
  - Built-in TV guide
  - Video Plus
  - NTSC play back
  - On-screen menu
  - Silver cabinet
  - Infra-red remote control



**ONLY £399.00** inc VAT

including a FREE inverter enabling you to run it off 12V DC.

Overnight delivery for all items by insured courier £12.00

### NEW GRUNDIG GDS-3000

Digital satellite receiver  
Complete digital satellite system available for **only £399.00**

#### This includes:

- 60cm mesh dish kit
- Plus all connection cables & plugs.
- Free viewing card, accessing: BBC1, BBC2, ITV1, Channels 4 & 5, all the BBC radio stations. Plus many other channels.

#### Additional extras available

- New collapsible tripod - £49.95
  - Satellite signal finder - £29.95
  - Folding 64cm dish (including digital LNB) - £79.95
  - Folding 88cm dish (including digital LNB) - £89.95
- All inc VAT

#### MULTI-STANDARD SPECIALISTS

FULLY COMPREHENSIVE 35 PAGE CATALOGUE AVAILABLE BY RETURN OF POST FOR £1.50

59 Watcombe Road, Southbourne, Bournemouth, Dorset BH16 3LX  
Tel: 01202-423555 Fax: 01202-425055  
E-mail: atech@dircon.co.uk Est. 1979 Callers by appointment please

## WIRELESS AND ELECTRONIC SURPLUS

A DIGITAL HAND-HELD LCR METER Measuring inductance, capacitance and resistance. 3.5 digit, 1999 count, i.c.d. display, inductance range 2Mh to 20H, capacitance range 2000pF to 200µF, resistance range 2000Ω to 20MΩ. Brand new and boxed with test alligator clip leads and user manual. \$44.00 + \$4.00 P&P.

VALVE BASES Octal B7G B9A. All 5 for \$2.50.

HIGH VOLTAGE CAPACITORS 0.1 1000V wkg mixed dielectric axial. .05 600V wkg axial. 0.68 800V wkg myler dipped axial. Any 5 for \$3.00. 1.250 wkg axial type. 10 for \$2.00.

HIGH VOLTAGE ELECTROLYTICS 10µF 400V wkg axial. 22µF 250V wkg axial. 47µF 385V wkg radial. 68µF 450V wkg radial. All 5 for \$2.50.

WAVE CHANGE SWITCHES 2 pole 4-way. Single pole 3-way. Single pole 6-way. All \$1.00 each.

VINTAGE CARBON ONE WATT RESISTORS Useful values. Pack of 50 \$3.00.

VINTAGE CARBON 1/2 WATT RESISTORS Pack of 30 \$2.00.

1/4 WATT METAL/CARBON FILM RESISTORS 250 for \$1.00.

TOGGLE SWITCH Arrow, 3 amp, 250V AC DPDT. 2 for \$2.50.

SILVER MICA CAPACITORS 350V wkg, 220pF, 300pF, 560pF, 680pF, 820pF. 10 for \$1.00.

TUBE CERAMICS 350V wkg, 220pF, 330pF, 470pF, 1000pF, .002µfd. 15 for \$1.00.

EX-REUTERS DIGITAL SATELLIT SET TOP RECEIVERS Suitable if authorised for weather maps and low res pictures. Otherwise sold for experimental purposes 950-14600 mc/s. Needs dish and LNB. With manual. Used but in good condition. \$29.50 carriage \$10.00.

#### BOOKS AND MANUALS

R1155 RECEIVER DATA 47 pages \$12.50 including P&P

MULLARD VALVE DATA AND EQUIVALENTS HANDBOOK Over 300 pages of valve data, base connections, characteristics and operating conditions for Mullard valves and their equivalent makes. Facsimile reprint. \$16.50 + \$3.50 P&P

EDDYSTONE COMMUNICATIONS RECEIVER DATA 1950-1970 A facsimile reprint of the circuit diagrams, general description and some service notes. 50 pages. \$11.50.

JANES MILITARY COMMUNICATION 12th EDITION 1991-1992 Over 800 pages. contains much recently released military wireless equipment. \$25.00 P&P \$8.50.

A.T. SALLIS 'GOVERNMENT SURPLUS RADIO SALES CATALOGUE' 1959 An excellent catalogue containing 200 photos and details of Government surplus, wireless items including components, receivers, equipment and accessories. 92 pages. Facsimile copy. \$9.50 including P&P.

T1154 SERIES TRANSMITTER MANUAL 54 pages. \$14.75 including P&P

WIRELESS SET (CANADIAN) No19 Mk3 TECHNICAL MANUAL 62 pages. \$13.50 including P&P.

P&P £2.00 UNDER £12.00. OVER FREE UNLESS OTHERWISE STATED

#### Interested in vintage or military radio?

Why not subscribe to *The Vintage Wireless Trader*. Published approx every four months. Contains 100s of out of print old and collectable wireless books, magazines, ephemera, vintage communication and domestic receivers, government surplus military equipment, valves and components, etc. all affordable prices as well as subscribers wants and sales. Send £6.00 for the next four issues.

### (Dept SW) CHEVET BOOK SUPPLIES

157 Dickson Road, BLACKPOOL FY1 2EU  
Tel: (01253) 751858. Fax: (01253) 302979.

E-mail: chevett@globalnet.co.uk TELEPHONE ORDERS ACCEPTED.

Callers welcome Tuesday, Thursday, Friday and Saturday 10am - 6pm

# SWM

# bookstore

The quickest and most comprehensive radio book service in the UK

The books listed have been selected as being of special interest to our readers. They are supplied direct to your door. Many titles are overseas in origin.

	pages	price	code		pages	price	code
<b>LISTENING</b>				<b>AIRBAND</b>			
AIRWAVES 2002	144	£9.95	AIR22	ANTENNA FILE (RSGB)	285	£18.99	ANTFIL
AIRBAND RADIO GUIDE (abc)				ANTENNA TOOLKIT (inc. CD-ROM) Joseph J. Carr	214	£25.00	ANTOOL
5th Edition	112	£8.99	ABRG5	ARRL ANTENNA BOOK 19th Edition	732	£24.00	RRAB19
AIRBAND RADIO HANDBOOK (Haynes)	190	£12.99	ABRHB	BACKYARD ANTENNAS Peter Dodd G3LDO	200	£18.99	BYANTS
AIR TRAFFIC CONTROL (abc) 8th Edition	112	£8.99	ATC8	BEAM ANTENNA HANDBOOK			
CALLSIGN 2002	144	£9.95	CAL22	W.I. Orr W6SAI & S.D. Cowan W2LX	268	£8.95	BMANHB
CIVIL AIRCRAFT MARKINGS (abc)	384	£7.99	CIVAIR	BUILDING & USING BALUNS Jerry Sevick	125	£18.95	BUBALS
FLIGHT ROUTINGS 2002 Williams	160	£7.95	FR22	EXPERIMENTAL ANTENNA TOPICS H.C. Wright	70	£3.50	BP278
MILITARY AIRCRAFT MARKINGS 2002 (abc)	224	£7.99	MILAIR	HF ANTENNA COLLECTION (RSGB)			
NORTH ATLANTIC ROUTE CHART	740 x 520mm	£9.00	NAROUT	Edited by Erwin David G4LQI	233	£9.99	HFANTC
WORLD AIRLINE FLEET & SELCAL DIRECTORY + UPDATE	300	£16.00	WAFSEL	HF ANTENNAS FOR ALL LOCATIONS (RSGB)			
MILITARY AIR SCAN 2002	348	£15.99	MILSCN	Les Moxon G6XN	322	£7.99	HFAFAL
<b>FREQUENCY GUIDES</b>				INTRODUCTION TO RADIO WAVE PROPAGATION J.G. Lee	116	£3.95	BP293
FERRELL'S CONFIDENTIAL FREQUENCY LIST 12th Edition	514	£19.99	FERR12	MORE OUT OF THIN AIR (PWP)	112	£6.95	MOOTA
GLOBAL BROADCAST GUIDE (July 2002 Issue)	32	£2.75	GBGJU2	PHYSICAL DESIGN OF YAGI ANTENNAS (Hardback)			
GUIDE TO UTILITY RADIO STATIONS 2002 20th Edition.				D.B. Leeson W6QHS	200	£15.50	PDYAGI
Joerg Klingenfuss	580	£23.00	KFUTIL	RADIO AMATEUR ANTENNA HANDBOOK			
PASSPORT TO WORLD BAND RADIO 2003	592	£15.50	PASS23	W.I. Orr W6SAI & S.D. Cowan W2LX	188	£8.95	RANTHB
PROMA SCANNING SCENE CD	-	£4.75	PROMCD	RECEIVING ANTENNA HANDBOOK Joe Carr	189	£17.50	RXANHB
RADIO LISTENERS GUIDE 2002	128	£5.25	RLG22	VERTICAL ANTENNAS W.I. Orr W6SAI & S.D. Cowan W2LX	192	£8.95	VERANT
SHORTWAVE FREQUENCY GUIDE 2002 - 6th Edition.				VHF UHF ANTENNAS I.D. Poole	128	£13.99	VUANTS
Joerg Klingenfuss	564	£20.00	KFSWFG	<b>BEGINNERS/NOVICE/RAE</b>			
SUPER FREQUENCY LIST (2002) on CD-ROM.				AMATEUR RADIO EXPLAINED. Ian Poole	150	£9.90	AREXPL
Joerg Klingenfuss		£14.00	KFSWCD	AN INTRODUCTION TO AMATEUR RADIO Ian Poole G3YWX	150	£4.99	BP257
UK SCANNING DIRECTORY 8th Edition	700	£19.75	UK8TH	AN RAE STUDENTS NOTEBOOK Bob Griffiths G7NHB	76	£6.95	RAESNB
WORLD RADIO TV HANDBOOK 2002	680	£19.95	WRTH22	FOUNDATION LICENCE NOW! (RSGB)		£3.95	FLNOW
<b>SCANNING &amp; SHORT WAVE</b>				HF AMATEUR RADIO. Ian Poole	120	£13.99	HFAR
BUYING A USED SHORT WAVE RECEIVER -				RADIO AMATEURS EXAMINATION/END OF COURSE			
New 4th Edition F. Osterman	78	£5.95	BUSWRX	TEST PAPERS Ray Petri G0OAT	104	£13.95	RAECTP
RECEIVING (VALUE) STATION LOGBOOK (RSGB)	80	£4.95	RXLOG	RAE MANUAL (RSGB) 16th Edition	127	£15.00	RAEMAN
SCANNERS 4 SCANNING INTO THE FUTURE Bill Robertson	245	£9.95	SCAN4	RAE REVISION NOTES (RSGB)	92	£5.00	RAERVN
SHORT WAVE COMMUNICATIONS Peter Rouse GUIDKD	187	£4.50	SWCOM	SECRET OF LEARNING MORSE CODE Mark Francis	84	£6.95	SOLMC
SHORTWAVE RECEIVERS PAST & PRESENT 3rd Edition	450	£25.95	SWRXPP	THE NOVICE LICENCE STUDENT'S NOTEBOOK			
THE SUPERHET RADIO HANDBOOK I.D. Poole	104	£4.95	BP370	John Case GW4HWR	124	£6.00	NOVSTU
<b>WEATHER</b>				THE NOVICE RADIO AMATEURS EXAMINATION HANDBOOK Ian Poole G3YWX	150	£4.95	BP375
FAX & RTTY WEATHER REPORTS Philip Mitchell	88	£11.50	FXTWR	THE RADIO AMATEURS' QUESTION & ANSWER REFERENCE MANUAL. 5th Edition Ray Petri G0OAT	208	£13.95	RAQARM
WEATHER SATELLITE HANDBOOK 5th Edition.				TRAINING FOR THE NOVICE LICENCE A MANUAL FOR THE INSTRUCTOR (RSGB) John Case GW4HWR	101	£6.75	TNOVIM
Dr Ralph E. Taggart WB8DQT	192	£15.50	WSATHB	<b>CALL DIRECTORIES</b>			
WEATHER REPORTS FROM RADIO SOURCES.				PW UK/EIRE CALLSIGN CD		£4.75	PWCALL
3rd Edition. Philip Mitchell	32	£7.50	WRFRSO	RSGB YEARBOOK. 2002 Edition	462	£15.99	RSYB22
<b>AMATEUR RADIO</b>				<b>DESIGN &amp; CONSTRUCTION</b>			
<b>AMATEUR TELEVISION</b>				COIL DESIGN & CONSTRUCTION MANUAL B.B Babani	106	£3.95	BP160
AN INTRODUCTION TO AMATEUR TELEVISION.				LF EXPERIMENTERS HANDBOOK	112	£18.99	LFEXHB
Mike Wooding G6IQM & Trevor Brown G8CJS	156	£5.00	INTATV	PRACTICAL RECEIVERS FOR BEGINNERS (RSGB)			
THE AMATEUR TV COMPENDIUM. Mike Wooding G6IQM	104	£3.50	ATVCOM	John Case GW4HWR	165	£14.99	PRRXFB
<b>ANTENNAS/TRANSMISSION LINES/PROPAGATION</b>				PRACTICAL TRANSMITTERS FOR NOVICES			
25 SIMPLE AMATEUR BAND AERIALS E.M. Noll	63	£1.95	BP125	John Case GW4HWR	126	£12.50	PTXNOV
25 SIMPLE INDOOR AND WINDOW AERIALS E.M. Noll	50	£1.75	BP136	PROJECTS FOR RADIO AMATEURS & SWL. R.A. Penfold	92	£3.95	BP304
25 SIMPLE TROPICAL AND MW BAND AERIALS E.M. Noll	54	£1.75	BP145	RADIO & ELECTRONICS COOKBOOK (RSGB)	319	£16.99	RECOOK
				RADIO RECEIVER PROJECTS YOU CAN BUILD	312	£20.95	RRPYCB
				Les Hayward W7ZOI & Doug DeMaw W1FB	256	£11.50	SSDRA
				TECHNICAL COMPENDIUM (RSGB)	288	£17.99	RSTECO
				TECHNICAL TOPICS SCRAPBOOK (RSGB). 1995-99			
				Pat Hawker	310	£14.99	TT9599

	pages	price	code
THE ART OF SOLDERING R. Brewster.....	84	£3.99	BP324
UNDERSTANDING BASIC ELECTRONICS (ARRL).....	314	£15.50	UNDBEL

### SHACK ESSENTIALS

AMATEUR RADIO MOBILE HB (RSGB).....	114	£14.99	MOBHB
AMATEUR RADIO OPERATING MANUAL (RSGB).....	257	£24.99	AROPM
ARRL OPERATING MANUAL 7th Edition.....	420	£18.50	RROPM
ARRL HANDBOOK 2002 79th Edition.....	1216	£28.00	RRHB22
AMATEUR RADIO (VALUE) LOGBOOK (RSGB).....	80	£4.95	TXLOG
AMATEUR RADIO WORLD ATLAS (A4 size).....	20	£8.00	ARWAT
GREAT CIRCLE MAP.....	400 x 400mm	£1.50	GCMAP
IOTA DIRECTORY 11th Edition (RSGB).....	128	£9.95	IOTA11
RADIO AMATEURS MAP OF THE WORLD 2002 (Traxel).....	980 x 680mm	£7.00	RAMAPW
RADIO COMMUNICATIONS HANDBOOK 7th Edition. Dick Biddulph/Chris Lorek.....	580	£29.99	RCOMHB
RSGB PREFIX GUIDE.....	34	£6.95	PFXGDE

### MICROWAVES

AN INTRODUCTION TO MICROWAVES F.A. Wilson.....	134	£3.95	BP312
MICROWAVE HANDBOOK - COMPONENTS & OPERATING VOL 1 (RSGB).....	110	£12.00	MWHBV1
MICROWAVE HANDBOOK - CONSTRUCTION & TESTING VOL 2 (RSGB).....	120	£18.99	MWHBV2
MICROWAVE HANDBOOK - BANDS & EQUIPMENT VOL 3 (RSGB).....	140	£18.99	MWHBV3

### QRP

LOW POWER SCRAPBOOK (RSGB).....	320	£12.99	LPSCRA
QRP POWER (ARRL).....	188	£11.50	QRPPWR
INTRODUCING QRP Dick Pascoe G0BPS.....	48	£4.95	INTQRP

### VHF & HIGHER

ALL ABOUT VHF AMATEUR RADIO W. I. Orr W6SAI.....	163	£8.95	AAVHF
GUIDE TO VHF/UHF AMATEUR RADIO Ian Poole G3YWX.....	180	£8.99	GTVUHF
VHF/UHF handbook (RSGB) Dick Biddulph G8PDS.....	180	£22.00	VUHFHB
NOS INTRO: TCP/IP OVER PACKET RADIO Ian Wade G3NRW.....	356	£11.50	NOSINT

### VINTAGE & WIRELESS

#### CRYSTAL SETS

THE XTAL SET SOCIETY NEWSLETTER Volume 1 & 2 Combined. Phil Anderson W0XI.....	96	£14.00	XTNL12
THE CRYSTAL SET HANDBOOK & VOL. 3 XTAL SET SOCIETY NEWSLETTER. Phil Anderson W0XI.....	134	£8.00	XTNL3
THE XTAL SET SOCIETY NEWSLETTER Volume 4. Phil Anderson W0XI.....	88	£7.00	XTNL4
CRYSTAL RECEIVING SETS & HOW TO MAKE THEM.....	124	£7.95	XTHTM
CRYSTAL SETS. The Xtal Set Society Newsletter, Volume 5. Phil Anderson W0XI.....	88	£7.00	XTNL5
CRYSTAL SET BUILDING & MORE.....	168	£10.50	XTNL67
CRYSTAL SET PROJECTS.....	160	£10.00	XTPROJ

**Now Available**

**2003 Passport To World Band Radio**

**Buy Yours Now!**



	pages	price	code
CRYSTAL RADIO HISTORY, FUNDAMENTALS AND DESIGN P.A. Kinzie.....	122	£8.00	XTHIST
CRYSTAL SET LOOPERS, A3 TUBER & MORE Volume 8 Xtal Set Society Newsletter.....	128	£10.50	XTLOOP

### HISTORICAL

100 RADIO HOOK UPS 2nd Edition (reprinted).....	48	£3.35	100RHU
1934 OFFICIAL SHORT WAVE RADIO MANUAL Edited by Hugo Gernsback.....	260	£11.85	1934SW
COMMUNICATIONS RECEIVERS - THE VACUUM TUBE ERA R.S. Moore.....	141	£17.95	COMRXV
MARCONI'S ATLANTIC LEAP (H/B).....	96	£6.99	MALEAP
POP WENT THE PIRATES Keith Skues.....	568	£14.99	POPPIR
SAGA OF MARCONI OSRAM VALVE (Paperback) B Vyse.....	346	£25.00	SMOV
SEEING BY WIRELESS - THE STORY OF BAIRD TELEVISION Ray Herbert.....	27	£3.70	SBYWIR
THOSE GREAT OLD HANDBOOK RECEIVERS (1929 & 1934).....	94	£6.95	TGOHRX

### VALVES

HENLEYS 222 RADIO CIRCUIT DIAGRAMS (1924).....	271	£9.95	222RAD
HOW TO BUILD THE TWINPLEX REGENERATIVE RECEIVER Lindsay.....	63	£6.75	HTBTRR
HOW TO BUILD YOUR FIRST VACUUM TUBE REGENERATIVE RECEIVER T.J. Lindsay.....	127	£8.25	HTBFVA
HOW TO BUILD YOUR RADIO RECEIVER (A4) (Popular Radio Handbook No. 1).....	100	£6.70	HTBYRR
HOW TO MAKE A NEUTRODYNE RECEIVER Webb.....	63	£5.95	HTMNRX
SECRETS OF HOMEBUILT REGENERATIVE RECEIVERS (Rockey).....	127	£8.75	SHBRRX

### ELECTRONICS

BASIC RADIO PRINCIPLES & TECHNOLOGY Ian Poole G3YWX.....	262	£15.99	BRPRIN
ELECTRONIC PROJECT BUILDING FOR BEGINNERS R. Penfold. (BP392).....	110	£4.95	BP392
GETTING THE MOST FROM YOUR MULTIMETER.....	102	£3.99	BP239
SCROGGIES - FOUNDATIONS OF WIRELESS & ELECTRONICS 11th Edition.....	292	£20.99	SCROGY
TEST EQUIPMENT FOR THE RADIO AMATEUR Clive Smith G4FZH.....	170	£12.99	TESTEQ

## Telephone

**(01202) 659930**

E-MAIL: [bookstore@pwpublishing.ltd.uk](mailto:bookstore@pwpublishing.ltd.uk)

FAX: (01202) 659950

OR USE THE ORDER FORM ON PAGE 70



Please note: Cash not accepted with mail orders. Please allow up to 28 days for delivery although the usual wait is about 4 days.

# WINRADIO®

## Innovative Hardware



Portable external receivers



Card-based receivers



Antenna distribution units



Multichannel systems



Wideband antennas



Directional antennas



Sonobuoy Receiving Systems



Direction Finding Systems

## Advanced Software



## The future of radio.

For further product information and to download free software, visit our website: [www.winradio.com](http://www.winradio.com)

**Falcon Equipment and Systems**  
 Importers and System Integrators  
 PH: +44 (0) 1684 295807  
 EM: [winradio@sda-falcon.co.uk](mailto:winradio@sda-falcon.co.uk)  
 Web: [www.sda-falcon.co.uk](http://www.sda-falcon.co.uk)

# ACARS Log Analyser

What type of aircraft is that? Who owns it? What route is it flying? Discover all this and more with ACARS Log Analyser. Filter and manipulate your ACARS logs the way YOU want to. Supports all major decoders via log importing and DDE Linking for real-time data input.

Only £30.00 – order online or by phone.

DEMO CAN BE DOWNLOADED FROM OUR WEB SITE OR CONTACT US FOR A FREE DEMO CD.

<http://www.acarsonline.co.uk> - the #1 ACARS portal on the web

Tel: 01207 549293

E-mail: [sales@aveyationsoftware.co.uk](mailto:sales@aveyationsoftware.co.uk)

## DEMODULATORS AND PC PROGRAMMES

All Demods have 25 way female BNC type ORIGINAL RECEIVE ONLY £16.99  
 RECEIVE ONLY with SoundCard Cable (saves cable swapping) £19.99  
 POCSAG RECEIVE version (as Rx only with variable hysteresis) £19.99  
 POCSAG RECEIVE with SoundCard Cable (saves cable swapping) £22.99  
 Original TRANSMIT version (Pocsag Rx + Fax/SSTV/HamComm Tx) £24.99  
 JVComm/PSK31 Tx (Pocsag Rx + Fax/SSTV/HamComm/JVComm/PSK31 Tx) £29.99  
 Adaptors 25m/9f £3.00 25m/9f Cable (ATX/Laptop) £6.00 25m/25m £3.00 9m/9m £3.00  
 4-way 'D' switch Boxes 25 way £17.50 9 way £16.00 Stereo 3.5mm x 2.5m lead £3.50  
 CD JVFax7 + Log Analyser + PD2.05 + Wgraph + RadioRaft V3.21 + Pktnor12  
 JVComm32 V1.00a & V1.22 + SkySweeper V2.9 + Freqs + Aircraft info etc. £6.99  
 For CWType & CWGet NEW Morse Interface (25-pin Male) £18.99

## JVComm32 V1.22 for Fax & SSTV + RTTY Navtex Synop

See Mike Richards Decode Column for reviews SkySweeper V2.9 £59.99  
 Log Analyser V1.7.1 £30.00 SkySpy V2.50 £24.99 RadioRaft V3.21 £24.99  
 JVComm32 V1.00a & V1.22 £49.99 Pocsag (PD2.05) £19.99  
 All prices UK/Eire inc VAT + P&P. Phone for FREE INFO PACK.  
 All products (except software) carry a full money back guarantee.  
 Minimum Credit Card order £15.00. Outside British Isles add £3.00.

Pervisell Ltd, 8 Temple End, High Wycombe Bucks HP13 5DR

Tel: (01494) 443033 Fax: (01494) 448236

[www.pervisell.com](http://www.pervisell.com) e-mail: [ham@pervisell.com](mailto:ham@pervisell.com)



The **SHORTWAVE** Shop  
 18 FAIRMILE ROAD, CHRISTCHURCH, DORSET BH23 2LJ  
 Phone/Fax 01202 490099 SHORTWAVE HOTLINE: 07000 CQDXCQ (273927)

## THE COMMUNICATION SPECIALISTS

Receivers - Scanners - Transceivers

Call & discuss which part of the radio spectrum you wish to operate and we will advise you on the most cost effective way achieving it.

- Full range of new & secondhand equipment available.
- We stock all leading brands:-  
 Airband Amateur CB, Marine Shortwave  
 Licence-Free Family Radio
- Business and security radios



## WorldSpace

digital satellite radios and antennas now in stock.



SHORT WAVE ADVICE LINE  
 01202 490099

**ALINCO, AOR, AKD,  
 BEARCAT, COMTEL,  
 GARMIN, GRE, ICOM,  
 KENWOOD,  
 JRC, LOWE,  
 MAXON,  
 MFJ,  
 MOTOROLA,  
 OPTO,  
 WELLBROOK,  
 YUPITERU,  
 YAESU**



Call for latest second-hand list or visit our website <http://www.shortwave.co.uk>

4 MILES FROM BOURNEMOUTH INTERNATIONAL AIRPORT ON B3073  
 300 YARDS FROM CHRISTCHURCH RAILWAY STATION. FORECOURT PARKING FOR DISABLED



## SUBSCRIPTION RATES

### SHORT WAVE MAGAZINE - 6 MONTHS

£19.00 (UK)

### SHORT WAVE MAGAZINE - 1 YEAR

£36.00 (UK)  £43.00 (Europe)

£48.00 (Rest of World Airsaver)  £54.00 (Rest of World Airmail)

### SPECIAL JOINT SUBSCRIPTION WITH PRACTICAL WIRELESS (1 YEAR)

£60.00 (UK)  £73.00 (Europe Airmail)

£81.00 (Rest of World Airsaver)

£93.00 (Rest of World Airmail)

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

### MONITORING TIMES - 1 Year (12 issues)

£38 (UK)  £43 (Europe Airmail)

£49 (Rest of World Airmail)

### BACK ISSUES

Please send me .....SWM Back issue/s (state month and year)

@ £3.25 each (overseas add P&P, see below) .....£

### BINDERS

Please send me .....SWM Binders at £6.50 .....£

Postal charges: £1.50 for one, £2.75 for two or more (overseas surface)

FREE P&P if you order two or more (UK only) .....£

Please send me the following books

.....£

.....£

.....£

.....£

### Postal charges.

**UK:** £1.50 for one item,

£2.75 for two or more items. ....£

**Overseas:** £2.75 for one item, £4.25 for two items,

then add an additional 75p per item. ....£

**GRAND TOTAL** .....£

# Order Form

FOR ALL MAIL ORDER PURCHASES IN *SHORT WAVE MAGAZINE*

You can now order on-line.

See [www.pwpublishing.ltd.uk/books/](http://www.pwpublishing.ltd.uk/books/)  
for more information

Back issues at £3.25 inc. P&P.  
Phone, FAX or E mail for availability

**TELEPHONE ORDERS TAKEN ON (01202) 659930**  
between the hours of 9.00am - 5.00pm. Outside these hours  
your order will be recorded on an answerphone

**FAX ORDERS TAKEN ON (01202) 659950**

Or please fill in the details ticking the relevant boxes, a photocopy will be  
acceptable to save you cutting your treasured copy!

To: PW Publishing Ltd., Arrowsmith Court, Station  
Approach, Broadstone, Dorset BH18 8PW.

### PAYMENT DETAILS

Name .....

Address .....

Postcode .....

Telephone No. ....

I enclose my Cheque/Postal Order\* for £ .....

made payable to PW Publishing Ltd. (\*Delete as necessary)

or please debit my Access/Visa/Amex card No.

--	--	--	--	--	--	--	--	--	--

   Expiry Date.....

or please debit my Switch card No.

--	--	--	--	--	--	--	--	--	--

 Switch Start Date .....Switch Issue Number (if on card) .....

Switch Expiry Date..... Signature .....

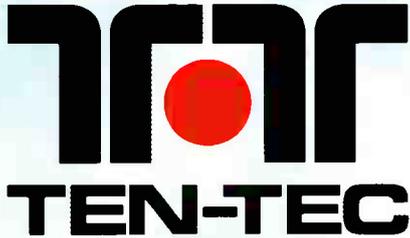
Orders are normally despatched by return of post but please allow 28 days for delivery. Prices correct at time of going to press. **Please note:** all payments must be made in Sterling. Cash not accepted.

## Index to advertisers

Aerial Techniques .....	65	Nevada.....	2, 3, 32, 33	Roberts Radio.....	72
AOR.....	10	Pervissell Ltd.....	68	Solid State Electronics .....	56
ASK Electronics.....	50	Photavia Press.....	59	SRP Trading.....	48
Aveyation.....	69	<i>Practical Wireless</i> .....	40	Ten-Tec.....	71
Chevet Book Supplies .....	65	<i>Radio Active</i> .....	52	The Shortwave Shop.....	68
Computer Aided Technology .....	59	Radio Shack.....	56	Timestep Weather Systems .....	56
Haydon Communications ...	18, 19, 20, 21	Radiosport .....	44	Waters & Stanton.....	26, 27
Martin Lynch & Sons .....	36, 37	Radioworld .....	62, 63	Wellbrook Communications .....	65
Moonraker .....	14	Remote Imaging Group.....	56	Winradio .....	68

**PUBLISHED** on the fourth Thursday of each month by PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Printed in England by Warners Midlands PLC, Lincolnshire. Distributed by Seymour, 86 Newman Street, London W1P 3LD. Tel: 0171-396 8000, Fax: 0171-396 8002, Web: <http://www.seymour.co.uk>. Sole Agents for Australia and New Zealand - Gordon and Gotch (Asia) Ltd.; South Africa - Central News Agency Ltd. Subscriptions INLAND £36, EUROPE £43, REST OF WORLD (Airsaver) £48, REST OF WORLD (Airmail) £54 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.

...America's Best!



# DSP SHORT WAVE RECEIVERS

High performance, versions for PC control, hobbyist and commercial use, all feature DSP technology - also kits from £20 upward and support for current and older equipment



## PRICE TRANSPARENCY

What does Ten-Tec **DIRECT** and price transparency mean ?? Simply your knowledge that you are getting excellent products backed by first class service at the **lowest prices**... no need to hassle over direct imports or concerns of dealing with distant companies. **Buy DIRECT** from the UK today, no worries. UK specification CE approved with 12 month warranty supported in the UK. Remember, Ten-Tec is available direct only, **Ten-Tec products held in UK stock for immediate despatch**. Prices quoted in GBP £ Sterling including VAT. \* Next working day carriage to a UK mainland address £10 extra. *UK sales & support office operated by AOR UK LTD. E&OE.*



### SERIOUS 'DSP' HF PERFORMANCE FROM A SIMPLE LOOKING BOX

**RX-320:** PC 'black box' dedicated short wave receiver. Don't be deceived by the small size of the cabinet or low price, the RX-320 performance is much closer to that of the RX-350 desktop short wave receiver than any low cost rival, it features 34 DSP bandwidths. Take a look what the technical review said about this surprising package.

*John Wilson, SWM April 2002*

...**Third order intercept** point measured at a nominal 14MHz with +15dBm with a 50kHz signal spacing as used by TenTec themselves (handbook specification +10dBm). **Dynamic range was 98dB** against the specification of 90dB, so all better than manufacturer's figures. The RX-320 has a wide band front-end, so I expected the second order intercept point to be quite modest, but it measured at +53dBm with a dynamic range of 92dB... it is remarkably good when compared with any receiver in the middle-price class, and considerably better than the Lowe HF150 which also had a wide-band front end... In conclusion, the TenTec RX-320 is an **amazingly satisfying receiver to use**, and despite its simple appearance when you look inside, it really does perform and has perhaps come the closest yet to marrying the power of a PC with a high performance short wave receiver. The tuning action is smooth, the **a.g.c. system works properly**, the **d.s.p. is excellent**...

**A serious HF performer, RX-320 £249 inc VAT, UK carriage £10 extra\***

**RX-340:** The Ten-Tec RX-340 is a multi-mode, general coverage synthesized receiver utilizing extensive Digital Signal Processing. DSP brings the performance and repeatability of expensive military grade communications receivers into the price range of top end commercial receivers for short wave listeners.  
**£3,799 inc VAT\***



### TABLE-TOP 'DSP' SHORT WAVE RECEIVER, BUILT-IN A.C. POWER SUPPLY

**RX-350:** The Ten-Tec RX-350 is a full featured, mid-price range HF DSP receiver, on-screen band activity display adds a new dimension to locating transmissions and tuning the receiver, 34 DSP bandwidths provided, noise reduction etc.

*John Wilson, SWM September 2002*

... The main **display unit on the RX-350 is very impressive** because it is so easy to read and yet contains full information on what the receiver is doing. The **frequency readout is huge**, and can be read at extreme distances... Memory storage is substantial with eight banks of 128 channels being provided... I checked out the effect of the **noise reduction** facility and noted that in a.m. I obtained a 10dB increase in signal to noise ratio at low input levels, whilst in s.s.b. the improvement was between 5 and 6dB. To have this kind of enhancement available at the touch of a button is a great help when digging out weak signals, and it worked equally well on all types of signal from c.w. to s.s.b. to a.m... One other feature which impressed me was the **automatic notch filter**... I liked the fact that it is a real receiver with a recognisable front panel and a knob for every function...

**RX-350 £1099 inc VAT, UK carriage £10 extra\***

- **302R** optional remote keypad **£129 inc VAT**
- **307B** optional external speaker **£89 inc VAT**  
(carr extra on the above options if ordered separately)

#### TenTec Kits

TenTec produce a wide range of kits with prices from less than £20 through to short wave receivers and transceivers. A list is available from the TenTec web site, or request the kit catalogue. Popular items are available from stock, for special orders please allow 28 days for delivery. *Full instructions supplied with each kit, support is via e-mail from the factory in the USA only.*



**TEN-TEC DIRECT** Tel: **01773 880788** Fax: 01773 880780  
4E East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA England  
tentec@aoruk.com www.aoruk.com/tentec

**TEN-TEC USA, 1185 Dolly Parton Parkway, Sevierville, TN 37862, USA**

**SPECIAL RELATIONSHIP**



# ROBERTS

*Sound for Generations*



## The New R9914 from Roberts

PLL digital world band radio – ideal for **BBC** WORLD SERVICE

- LW/MW/FM/SW wavebands
- 45 station presets
- SSB for reception of single sideband and CW transmissions
- Direct keypad tuning
- Rotary tuning
- Station tuning in 1kHz steps
- Dual conversion for improved SW image rejection
- Digital clock
- Alarm/time functions
- Key lock
- FM stereo via earphones
- Soft carry pouch
- Complete with AC adaptor



BY APPOINTMENT TO  
HER MAJESTY THE QUEEN  
SUPPLIERS & MANUFACTURERS  
OF RADIO AND TELEVISION  
ROBERTS RADIO LIMITED



BY APPOINTMENT  
H.M. QUEEN ELIZABETH  
THE QUEEN MOTHER  
RADIO MANUFACTURERS  
ROBERTS RADIO LIMITED



BY APPOINTMENT  
H.R.H. THE PRINCE OF WALES  
MANUFACTURERS & SUPPLIERS OF  
RADIO RECEIVERS  
ROBERTS RADIO LIMITED

ROBERTS RADIO LIMITED

PO Box 130, Mexborough, South Yorkshire S64 8YT

Tel: +44 (0) 1709 571722 Fax: +44 (0) 1709 571255 Website: [www.robertsradio.co.uk](http://www.robertsradio.co.uk)