

# short wave magazine

## BRITAIN'S BEST RADIO MAGAZINE



Exclusive UK Review

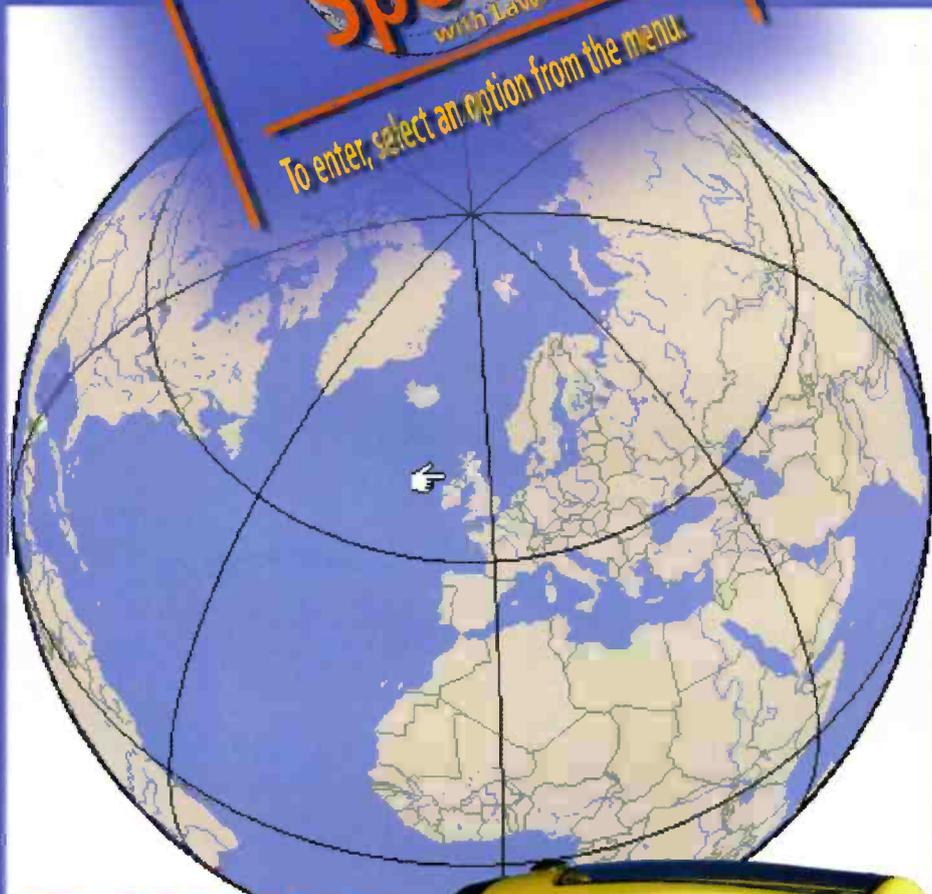
# AOR's AR8600

## JW GETS WRAPPED UP WITH WHIPS & LOOPS

Welcome to the  
**Info in Orbit**  
Special

with Lawrence Harris

To enter, select an option from the menu.



### RECHARGEABLE TORCH/RADIO OFFER



Max  
£40,000  
Min -100,000

Ref: 10 689



Zoom Factor: [input]

Zoom In

Zoom Out



Global

Full Range

Range Search

N Max: 0.000

W Max: 0.000

S Max: 0.000

E Max: 0.000



Political Boundaries  Rivers

Digital Elevation Map (DEM)

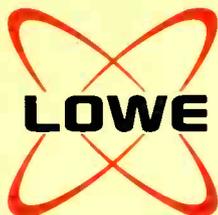
Grid Format: AUTO

November 2000 £2.99



1 1 >

9 770037 426067



# LOWE ELECTRONICS LTD

Check out [www.lowe.co.uk](http://www.lowe.co.uk)  
for the best secure on line shopping

## JRC NRD545



A superlative short-wave receiver, designed to fulfil the needs of professional monitoring stations, the NRD545 is equally at home with the serious hobby listener.

The DSP implementation starts at IF frequencies so don't confuse this with lesser DSP receivers that simply process the recovered audio. You can therefore control the IF bandwidth from 10kHz down to just 40Hz allowing total control for AM, SSB, CW or data signals, really helping to reduce interference. Heterodynes and noise can also be removed and the notch filter will automatically track changes in the frequency of the interfering tone. As you would expect from a top-flight receiver, computer control is fully integrated and there are 1000 memory channels, with memory and programmable scan features.

**SPECIAL OFFER**  
Genuine UK Stock.  
Full Manufacturers Warranty.

Ordering Information  
Product Code: NRD545

**Low Price £1195**

Carriage: £10.00 by Courier

## NRD345



The NRD345 continues to be a popular option for listeners with a keen eye (and ear!) for quality. Easy to use and with great specification, the NRD345 is a great choice if you have a limited budget but want the best. Terms available.

- Frequency range 100kHz to 30MHz
- Dynamic range 100dB, 500kHz bandwidth
- Image rejection 70dB
- RS232 interface
- Modes AM, CW, SSB, Synchronous AM
- Noise blanker
- Clock & timer functions

**Low Price £399**

Carriage: £10.00 by Courier

Ordering Information  
Product Code: NRD345

## GPS3PLUS

New from Garmin, the GPS3Plus. This is Garmin's first GPS designed for vehicle mounting. The new improved basemaps contain much more detail than before and just wait till you see what you can do with Germin's MapSource CD-ROM maps! From these you can upload map sections into your GPS3P for even more detail and routeplanning. This will revolutionise your travel!



Ordering Information  
Product Code: GPS3P

**Low Price £349.00**

Carriage: £10.00 by Courier



## MVT7100

**In our view...simply the best!**

This is the scanner of choice for many of our serious users. If a radio is transmitting and you are close enough you will hear it on the MVT7100. Superb for monitoring military and civil airband channels - also allows you to listen to ground crews and base security. Its shortwave coverage with SSB offers opportunities for monitoring Shanwick and the trans-Atlantic routes!

- LSB/USB/AM/WBFM/NBFM Reception
- 1000 memory channels
- High sensitivity
- Signal Strength Meter
- Illuminated keypad
- High speed search & scan functions
- User friendly
- Battery save function
- Priority function
- Individual power/volume and functions
- Tuning dial
- Channel pass function on memory

Ordering Information  
Product Code: MVT7100

**Low Price £229.00**

Carriage: £10.00 by Courier

## IC-R2

Our lowest priced full coverage scanner also happens to be our smallest! The frequency coverage is from 0.495MHz to 1309.995MHz with NO GAPS making it ideal for monitoring military airband channels.



Ordering Information  
Product Code: IC-R2E

**Low Price £149.00**

Carriage: £10.00 by Courier

**Low Electronics Ltd**  
Chesterfield Road  
Matlock  
Derbyshire  
DE4 5LE

**Tel: (01629) 580800**  
**Fax: (01629) 580020**  
E-mail: [info@lowe.co.uk](mailto:info@lowe.co.uk)  
[www.lowe.co.uk](http://www.lowe.co.uk)

Send us four first-class stamps for our latest full colour catalogue, full of receivers, antennas, books, accessories, nightvision and GPS receivers and more!



# High - the new Alinco DJ-X2

MICRO SIZED SCANNER



## ALINCO DJ-X10E

Wideband 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
- Channel Scope Peak Search
- 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
- User Friendly features
  - Help messages - Personalised Channel names - Memory cloning - Auto memory write scan - Beginner/Expert Mode - Memory Tune Mode

### DJ-X10E includes FREE



- MAINS DROP IN CHARGER For easy and convenient use
- NICAD BATTERY PACK 4.8V DC 700mAH NiCad battery
- BELT CLIP
- CARRYING STRAP
- FLEXIBLE LOW PROFILE ANTENNA



- Large Clear Illuminated Display
- Timer Functions with auto on/off facility
- Battery Save Facility
- Squelch Control
- Stylish cabinet with large speaker
- A super sensitive receiver
- Dual VFOs
- Facilities for cloning another set
- Built-in 24 hour clock
- Display - Contrast - Control
- Low battery alarm
- Switchable Attenuator
- Selectable control Beep tone
- Keypad lock control

**SPECIFICATIONS**

|                 |  |
|-----------------|--|
| Frequency.....  | 100kHz - 2000MHz                             |
| Memories.....   | 1200   |
| Scan Speed..... | 25 ch/sec                                    |
| Scan Steps..... | Selectable (50Hz - 500kHz) in 20 fixed steps |
| Receiver.....   | Triple Superheterodyne                       |
| Dimensions..... | 57(H) x 150(W) x 25.5(D)                     |
| Weight.....     | 320g (with EBP-37N Battery pack)             |

**£295**  
£8 p&p

**OPTIONAL EXTRAS**

|              |                         |        |
|--------------|-------------------------|--------|
| EBP-33N..... | Small size 650mAH NiCad | £39.95 |
| EBP-34N..... | Long life 1200mAH NiCad | £49.95 |
| ESC-29.....  | Standard Soft Case      | £14.95 |
| EBC-6.....   | Mobile Mounting Bracket | £12.95 |
| EME-6.....   | Earphone                | £10.95 |

**We are one of Europe's largest Scanner Specialists**

UK Distributors for Alinco & Yupiteru products

• Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • Hants • PO6 1TT



**DEALERS!**  
for further details contact our TRADE DEPARTMENT  
**Phone:**  
Intl: +44 (0)23 9231 3095  
**Fax:**  
Intl: +44 (0)23 9231 3091

# contents

## features

### BROADCAST

- 8 Bandscan America
- 9 LM&S

Vol. 58 Issue 11 November 2000  
 ISSN 0037-4261  
 ON SALE OCTOBER 26  
 Next issue on sale November 23



- 26 **WEATHER SATELLITE INTRODUCTION**  
It's that time again, when Lawrence Harris gets to write about one of his favourite topics - weather satellites.
- 26 **WEATHER SATELLITE TRANSMISSIONS**  
With the emphasis on introducing beginners to the subject, among the questions Lawrence looks at are: what satellites are available and where are they, what types of pictures are transmitted and what hardware is needed to produce these pictures.
- 46 **INFO IN ORBIT - THE COLUMN**
- 52 **WXSAT WWW**  
The Internet is one of the best sources of information on most subjects, available at low cost to many people. All you require is a suitable computer, modem, software and a telephone line. Lawrence Harris' own introduction to the Internet was in the years before the name was coined.
- 53 **THE ULTIMATE ARCHIVE - NOAA WXSAT RAW DATA FOR DIY PROCESSING**  
Lawrence looks at the alternative to live WXSAT monitoring.

### SWM Author Info

To provide you with a ready reference here are the contact details of all our regular authors.

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

**Amateur Bands**  
 Paul Essery GW3KFE, PO Box 4, Newtown, Powys SY16 1ZZ.

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

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

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

**Bandscan Europe**  
 Peter Shore, c/o SWM Editorial Offices. E-mail: peter.shore@pwpublishing.ltd.uk

**Decode**  
 Mike Richards G4WNC, PO Box 1863, Ringwood, Hampshire BH24 3XD. E-mail: decode@pwpublishing.ltd.uk

**DXTV**  
 Keith Harner and Garry Smith, 17 Collingham Gardens, Derby DE2 4FS

**Info In Orbit**  
 Lawrence Harris, 5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB. E-mail: info.orbit@pwpublishing.ltd.uk

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

**MilAir**  
 Peter Bond, c/o SWM Editorial Offices. E-mail: milair@pwpublishing.ltd.uk

**Off The Record**  
 Andy Cadier, 28 Romney Avenue, Folkstone, Kent CT20 3QJ. E-mail: off.the.record@pwpublishing.ltd.uk

**Propagation**  
 Jacques d'Avignon VE3VIA. E-mail: jacques@pwpublishing.ltd.uk

**Satellite TV News**  
 Roger Bunney, 35 Grayling Mead, Fishlake, Romsey, Hampshire SO51 7RU.

**Scanning**  
 Dave Roberts, c/o SWM Editorial Offices.

E-mail: scanning@pwpublishing.ltd.uk

**ShackWare**  
 Jerry Glenwright, 16 Copeman Street, Norwich, Norfolk NR2 1HH. E-mail: shackware@pwpublishing.ltd.uk

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

**World Wide Radio Guide**  
 Paul Beam, c/o SWM Editorial Offices. E-mail: wwrg@pwpublishing.ltd.uk



### 13 REVIEW - AOR AR8600 TRANSPORTABLE WIDE-BAND RECEIVER

Faris Raouf, recovering from his recent move to wild and wet North Wales, gets his hands on the very latest from AOR.

### 17 WHIPS & LOOPS & A BIT OF FEEDBACK

JW compares an active loop antenna costing around about £100 to multi-thousand pound alternatives from Rohde & Schwarz. See which one you'd choose.



Don't be left in the dark, check out page 42 for our special offer - it's not just a torch!

## COMING NEXT MONTH IN SWM DECEMBER

- 👉 FREE Nevada Catalogue
- 👉 Satellite TV Special
- 👉 Simple & Cheap Scanner Antenna
- 👉 Iridium Satellites & Flares
- 👉 SWM Index 2000
- 👉 JW on the Racal RA17
- 👉 Win a WorldSpace Radio

\*contents subject to change



**EDITOR:**  
Kevin Nice, G7TZC, BRS95787

**NEWS AND PRODUCTION EDITOR:**  
Zoe Shortland

**ART DIRECTOR:**  
Steve Hunt

**ART EDITOR:**  
John Kitching

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

If you wish to send E-mail to anyone at SWM then our Internet domain name is:  
**pwpublishing.ltd.uk**  
Simply add the name of the person you wish to contact.  
For example:  
**kevin.nice@pwpublishing.ltd.uk**

**BOOKS, BACK ISSUES & SUBSCRIPTIONS (ALL ORDERS)**  
(01202) 659930  
(Out-of-hours service by answering machine)

**ADVERTISEMENT DEPARTMENT**  
(Broadstone)  
**ADVERTISING SALES:**  
Chris Steadman MBIM

**ADVERTISEMENT TYPESETTING & PRODUCTION:**  
Peter Eldrett  
Telephone: (01202) 659920  
Facsimile: (01202) 659950

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

## regular columns



58

60

|                         |    |
|-------------------------|----|
| Airband .....           | 64 |
| Amateur Bands .....     | 56 |
| Bandscan America .....  | 8  |
| Book Listing .....      | 40 |
| Book Profiles .....     | 37 |
| Communiqué .....        | 6  |
| Decode .....            | 71 |
| DXTV .....              | 65 |
| Editorial .....         | 4  |
| Info In Orbit .....     | 46 |
| LM&S .....              | 9  |
| MilAir .....            | 58 |
| Order Form .....        | 76 |
| Propagation Extra ..... | 69 |

|                            |    |
|----------------------------|----|
| Propagation Forecast ..... | 68 |
| QSL .....                  | 5  |
| Rallies .....              | 7  |
| Satellite TV News .....    | 60 |
| Scanning .....             | 70 |
| ShackWare .....            | 57 |
| Special Offer .....        | 42 |
| SSB Utilities .....        | 59 |
| Subscription Offer .....   | 42 |
| Trading Post .....         | 75 |
| What's In PW .....         | 25 |



37

The quickest & most comprehensive radio-related book service in the UK!

© PW PUBLISHING LTD. 2000

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 £33 (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 60007-5837.

**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 £33 per annum to UK addresses, £40 in Europe and £44 (Airsaver), £50 (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 £55 (UK) £68 (Europe) and £74 (rest of world), £85 (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 £2.99 each and photocopies are £2.99 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.

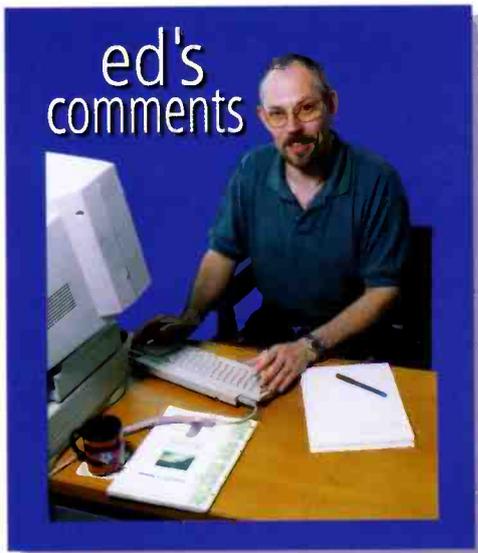
A complete review listing for *SWM/PW* is also available from the Editorial Offices for £1 inc P&P.

### Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: **PW Publishing Ltd., FREEPOST, 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.



**A**s I write this month's Ed's Comments, I'm suffering from a distinct lack of sleep due to the past weekend's

flurry of activities as a marshal/spectator on the Welsh Hill Rally, based at Buihth Wells, Powys. I enjoyed immensely the rain, mud and off-roading. The three day event was a perfect example of how radio is used to achieve smooth efficient and safe running of such an event.

Anyone with a radio capable of receiving 86.4375MHz could have monitored the activities in the forests and military roads of the area. I'd be interested to hear from any readers who caught any of the action between 6 and 8 October.

## WorldSpace Competition

Due to the very high level of interest generated by our WorldSpace radio feature in the October issue of *SWM*, Simply Radios, the UK stockists of WorldSpace receivers - see page 6 - have offered four portable satellite radios for *SWM* readers to win in our competition that will feature in next month's issue - make sure you get the chance to enter by reserving your copy now.

## Satisfied Customer

If you have a problem getting hold of out-of-date material, don't forget that a letter to our QSL page could be the way to find what you're looking for. Our most recent success is John M1CW0 who found the DOS based software for a second-hand ERA Reader decoder. Glad we could help John.

## No Batteries Required

Further to Joe Pritchard's article on a 'Kitchen Cupboard Crystal Set' in the October 2000 issue of

*SWM*, I had an E-mail from Dr. Philip C. Miller Tate of Kingston University who had the following to say, "...there are a group of people, mainly, but not exclusively, based in the USA but linked by the Internet (myself included) who are keen on pursuing the design and construction of crystal set receivers that are capable of high performance and DX reception. They have organised two annual crystal set DX contests so far, with a good response and astonishing results. Mike Tuggle, the current champion, lives in Hawaii and logged 98 stations during the last contest, mostly 4000km away on the West Coast of the USA. I personally logged over 30 stations, including Norway, Spain, Rome and Hungary with what I now recognise to be a wholly inferior design of set, coming last in the contest, but being awarded the title of 'European Grand Champion' - yes, you guessed it, I was the only contestant this side of the Atlantic! It's all good fun.

On the serious side, the enthusiasts have been building crystal sets with outstanding performance, designing the highest Q tuned circuits (500+, Litz wire and self-supporting coils), finding the best detector diodes (including research work on galena), identifying the best headphone types, and modelling circuits with SPICE in order to improve impedance matching for minimum losses. Most of their results have been publicly disseminated through the 'Yahoo' discussion group at <http://clubs.yahoo.com/clubs/thecrystalsetradioclub> and, to a lesser

extent, through the 'Crystal Set Society' discussion group which is open to all-comers.

The main point of this letter is to bring the activities of the enthusiasts to your attention, and to enquire as to whether you would be interested in an article describing the main principles of modern DX crystal set design? I'm not talking about kid's sets or vintage renovation here; this, I

promise you, is ground-breaking and thought-provoking stuff. Please have a trawl through some of the material at the above site (not all of it is cutting edge, there's a lot of chat) and see what you think". Well it could be interesting couldn't it. If you have an opinion either way please drop me a line, paper or electronic. Please include the subject 'Crystal Set'.

## Reader RX Survey

Rex Gilroy from St. Albans says "I hope I am not too late with details of my gear for your survey". Well Rex, due to the belated and now large response from all of your letters and E-mails, I've decided to hang on until next month to include the results of the survey. Unless the post bags keep rolling in that is.

## Free Next Month

Before I sign off, I must tell you about the bonus with next month's *SWM* - a free Nevada Communications catalogue. Don't miss it.



**Dear Sir**

Yesterday, a very sad thing happened to me. "What was that?!", I hear everybody clamouring to find out, (not!). Well, I'll tell you. I had to spend some **money**.

"So what!" you are all asking. We enthusiasts in the scanning, utilities, s.w.l. and other versions of our radio-related hobby all have to spend money in the pursuit of our pastime, sometimes vast amounts of it.

Briefly, my complaint is this. Back in October 1991, I bought a Fairmate HP-2000 wide-band scanning receiver from G4TJB of Weston-Super-Mare for the then princely sum of £259 including VAT. This radio came complete with four Nickel-cadmium batteries and would you believe it, they have only lasted nine, yes that's right, nine years, before I actually had to go out and buy some new ones, because they were only lasting three hours before needing a recharge.

All I can say is, I'm glad my R-5000, Bearcat 9000 and PCR1000 are all mains operated, for I don't think I could stand this constant expense. (What a lot of 1000s there are about, I never noticed that before). Seriously though, this must be pretty good for this type of power source, the NiCads being Sanyo Cadnica N-600AA 1.2V 600mAh and not a trace of leakage or blemish anywhere.

Surely, this must be a record for this type of component! Unless of course, as Esther says, 'you know different!'

**Kelvin Wheeler**  
**Torfaen**

**Dear Sir**

It has been almost 20 years since I purchased a radio from South Midlands Ltd. It was one of those radios which was modified to operate in the amateur bands - a CBM272. Upon receiving the radio, we put in a tone burst for a 10m repeater on Mount Constitution on Orcas Island, Washington. I used the radio for a few years and then put it on the shelf

I have used the radio from time to time. However, I brought it out to use it and found that the tone burst doesn't work. The wire that goes to the mic. has fallen off the mic. connection. Would it be possible to obtain a schematic of this radio or assistance as to where to attach the wire which goes to the mic.? Over the years I have

lost the manual which had the modified frequencies chart. I am also getting old and forgetful at 59 years.

Thank you for your help.

**Ryan LePage KD7RO**  
**Medford Oregon**

*Can anyone help Ryan? Please write c/o SWM Editorial Offices, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW - Ed.*

**Dear Sir**

With reference to the letter from Lionel P. Clyne, Kent, *SWM* October 2000, on checking 6.175MHz I found the station to be Radio Japan in Japanese to Europe 1700 to 1900UTC from there UK relay with IDs every hour on the hour. This station also has the same transmission to the Middle East from their Sri Lanka relay on 11.880MHz. The other frequency to Europe according to the web site at - <http://www.nhk.or.jp/rjnet/> - is 15.115MHz - 1700 to 1800UTC.

**Richard J.C. Reynolds**  
**Surrey**

**Dear Sir**

I've just received the October issue of *SWM*, and seen the letter from Lionel P. Clyne regarding the mystery transmission on 6.175MHz. It seems much more likely that what he's hearing is NHK. relayed from the Merlin site at Skelton, using a 250kW TX and a bearing of 140°. The programme would be in Japanese, and is on from 1700 to 1900UTC. The only puzzle is why he's only started hearing it in the last two weeks - it's been there since at least the end of March!

**Richard Davis**  
**Schedule Manager**  
**Merlin Communications International Limited**  
**London**

**Dear Sir**

I have stumbled back into listening - as a child we always had an old radio set, with short wave, in the bedroom. I've also done it humbly by waiting for every Tandy sale (alas no more around here now they've been taken over). So my main receiver is a Realistic DX-394 usually used when

insomnia means I get up at 0500 and work. It is connected via a Howes CTU9 (the first thing I've built in many a year) to two dipoles in the loft of indeterminate length, made from 10mm earth wire, one facing NW and the other SE.

I also have a Realistic PRO-2045 scanner, mainly tuned to nearby Cambridge airport and Lakenheath control but I do get more adventurous at times. This is connected to a Tandy Discone (with one of the lower rods missing - it's a long way up the ladder and I wobble more at my age! which it shares with my ordinary Pioneer stereo (that'll upset the purists!)).

With regard to *SWM* creating a need for me, it is exemplified by my Icom IC-R2. Now, don't get me wrong, this is an amazing piece of equipment even if I do have to consult the handbook every time I use it and it eats batteries.

However, its only use in anger was whilst waiting at Luton airport for my wife who had been delayed nine hours by EasyJet losing a bit off their plane. I tuned into the tower and could then check properly when it landed which did not correspond with the displays and announcements.

Again the purists will cringe when I say I use it for Radio 4 sometimes, and when working on the PC in the early morning, using a *DOS* program which prevents me from using the TV card, to listen to BBC 1 *Breakfast News* - who needs to watch it. I have downloaded *Hamcomm* and have a Pervisell comparator interface, but I have yet to decode anything in Morse except 'E'.

I'll also come clean. I do have a hand-held CB (Realistic again) because I thought I'd like to transmit legally without needing Morse. Except for being able to point out to truckers that they have almost killed me, it gets little use as the people I hear with CBs are not the type of people I want to communicate with - my knowledge of Soaps, football and 'page 3' of the *Sun* being minimal - what a snob.

**John Loader**  
**Fordham, Ely**

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

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

You can also submit your letters by E-mail to: [qsl@pwpublishing.ltd.uk](mailto:qsl@pwpublishing.ltd.uk)

**Dear Sir**

Boat anchors, bl\*\*dy boat anchors mate, four pages of dribbling nostalgia, three and a half wasted pages. Please let us have no more of this, or, at least very small doses. I refer to John Wilson's article on the RCA AR88 in the July 2000 issue of this publication.

Any human endeavour must attract young enthusiasts to its ranks or perish. Perhaps you've forgotten that most teenage tyros have a low tolerance level for nostalgia expressed by those over nineteen.

For heaven's sake, the AR88 is **sixty years old**, yes that's the early half of the last century, such articles as this would have them reaching for the latest computer magazine. I'm also sixty years old and if I didn't have a standing order for *SWM* with newsagent, I'd have put it back on the shelf myself.

As most receivers these days are of the 'black box' variety, could we please have more practical articles on simple ancillary equipment designed to support their performance such as aerials,

tuners, preselectors power supplies and the like.

**M.R. McLellan**  
**NSW Australia**

*I understand your point of view, particularly related to the encouragement of 'new blood' into the hobby and more importantly from my perspective to the magazine. However, I disagree that the visitation to the AR88 by John is not relevant to today's listening community, be they young or old. The point is, that this fine example of a radio still holds its own amongst the shiny full featured receivers of*

*today. In many cases it is not only a better performer but is much more*

*pleasant to drive. I suspect that you read the July feature, no further that the title and missed the point and the findings contained within the body of the text. Whilst we strive to attract a wide audience to *SWM*, I can categorically say that the genre of article about which you complain is here to stay. Your point about ancillaries and accessories is noted - thanks. - Ed.*

**TOP QSL**

# Communiqué

## WorldSpace At Reading

A group of broadcast band DXers, with support from three main UK DX clubs, have been meeting at Reading for about 25 years now, with an average attendance of between 15 and 20. **Bob Stewart DSO**, Senior Vice President of WorldSpace Europe and Middle East, will be the guest speaker at the next meeting of the **Reading International Radio Group**. Bob will be speaking and giving a visual presentation about the concept and development of WorldSpace as well as showing the portable receivers now available to receive the broadcasts.



The meeting, open to anyone interested, will be on **Saturday November 4th** from **1430-1630** in the **Abbey Room, Reading Central Library, Kings Road**. For further information contact **Mike Barraclough** on **(01462) 643899**, E-mail: **mikewb@dircon.co.uk**

## SWM Causes Prices To Tumble!

Last month we featured an article by Hugh Cocks on WorldSpace Radio. Since then we have had an E-mail from Nick Jones, Sales Manager of **Simply Radios** who informs us that they have stocked the Hitachi and Sanyo models for over three months. The Hitachi model, says Nick, is available to order on-line at **www.simplyradios.com** and both are available to order by 'phone on **0208-668 0908**. The Hitachi KH-WS1 was priced at £239.99 and the Sanyo DSB-WS1000 used to be priced at £279.99 - prices include P&P to all UK mainland addresses.

During the gestation of this issue, the impact of our WorldSpace feature in October SWM has had obvious repercussions. We were informed a short while after the above information was passed to the SWM Newsdesk that the price of both Hitachi and Sanyo WorldSpace receivers has been **slashed to £99.99 inc. free delivery**.



## Final Bristol Rally

Due to falling trader support and diminishing attendances, the Bristol Rally, which was held back on the 3rd September 2000, was the last. The Rally had been held on the first Sunday in September for the past 15 years, but recently it has needed the support of computer traders to maintain its viability.

Closure of a number of radio traders plus others who have moved away from Amateur Radio equipment has made it impossible to continue as a credible radio rally. The **South Bristol Amateur Radio Club** would like to thank all their regular traders and visitors for their loyal support over the years, and their efforts will now be focused on helping the RSGB (Bristol) Group at the Longleat Rally.

## Credit Cards Accepted

### QuartSLab Marketing Ltd.

who up till now have only accepted payments by cheque and postal orders from non-account customers, are pleased to announce that due to frequent requests, especially from overseas customers to pay by credit card, this facility is now available.

QuartSLab Marketing Ltd. can be reached at **PO Box 19, Erith, Kent DA8 1LH, Tel: (01322) 330830, FAX: (01322) 334904** or E-mail: **sales@quartslab.demon.co.uk**



## GlobeCast Chosen

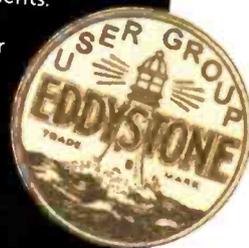
**World Radio Network (WRN)** has chosen **GlobeCast**, the broadcast services unit of France Telecom, to provide satellite

transmission services for its unique new digital radio multiplex on the *Eutelsat Hot Bird 5* satellite, which will offer broadcasters a potential audience

## Eddystone Thrives

The **Eddystone User Group** has now passed its tenth anniversary and continues to thrive. Membership is over 300 and growing! Benefits of being a member include a bi-monthly newsletter of hints, tips, features and technical advice and membership adverts, together with access to a large collection of Eddystone documents. New members will receive the most recent (or next published) newsletter and a renewal notice a year later.

The Eddystone User Group is a non-profit making society of Collectors and Users of these superb radios, which had been made in England since 1923. If you would like to find out more, contact **Graeme Wormald G3GGL, 15 Sabrina Drive, Bewdley, Worcestershire DY12 2RJ**.



of 75 million homes across Europe, North Africa and the Middle East.

This new DVB channel, branded dRadio, will eventually carry up to 40 national and international radio stations broadcasting a wide range of news, current affairs, magazine, commercial, classical and specialist music programming in digital quality, unencrypted audio, all easily accessible to listeners via satellite dish and digital receiver. The launch of dRadio, less than five years before the analogue switch-off, due in 2005, is set to shake up the European broadcasting scene with its promise of a low-cost digital satellite channel on *Hotbird 5*.

WRN will use dRadio as the main distribution platform for all its European networks, including WRN1 Europe, EuroMax Deutsch, EuroMix Multi-lingual and the EuroMax Francais network. A number of major international and European national broadcasts have already expressed a strong interest in dRadio.

Sarah Williams, Chief Executive of GlobeCast Northern Europe of GlobeCast said, "Digital radio distribution offers new and exciting business models for audio broadcasters. We are pleased to be chosen by WRN as their satellite provider and look forward to playing a part in bringing an expanded portfolio of audio entertainment to consumers throughout Europe, North Africa and the middle East".

# WRN



## Catalogue On Web

**AOR (UK) Ltd.** have recently informed us that they have now uploaded a new General Catalogue onto the AOR (UK) web site. The Catalogue is presented as a 12 page Acrobat PDF format file and "covers all

## Mini VCOs

**BFI OPTILAS** has recently announced a new range of surface mount Voltage Controlled Oscillators (v.c.o.s) manufactured by MaCom, an AMP company. Designed for use in wireless base station applications, the MLO family of electrically shielded oscillators are miniature devices that offer high linear tuning and low phase noise that is stable across the frequency band. The v.c.o.s are 100% tried and tested using automated computer-controlled test stations. Industry-standard surface mount packaging simplifies circuit design across radio boards.

All devices within this family are fundamental single-ended oscillators aimed at the market for cellular, portable communication systems and WLL infrastructure. Used in low noise PLL synthesisers in base stations and repeaters, the v.c.o. is designed for use in cost sensitive, wireless and telemetry applications. The devices have been optimised, by careful selection of the

bipolar transistor and varactor diode, for low phase noise and high linearity tuning characteristics.

The low phase noise meets the requirements of digital systems for low adjacent channel interference and BER enabling higher capacity networks. Standard +5V operation interfaces directly with the output for standard +5V p.l.l. circuits and with standard +5V power supplies, saving on component count and cost.

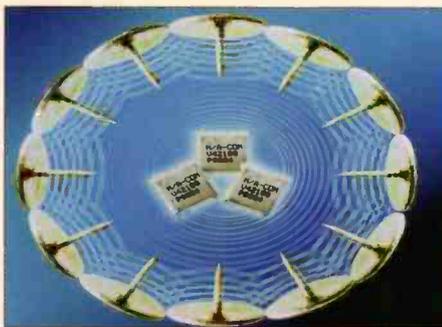
M/A-COMs VCOs are Electrically Shielded to reduce the effect of stray r.f.i. on board while offering High Linearity Tuning which enables low tuning/modulation sensitivity for f.m. and p.m. systems. These miniature devices offer a designer increased packaging density, while the 0.5in LSM1 footprint is

**BFI OPTILAS offers electrically shielded miniature VCOs.**

common to all designs and meets with the accepted industry standard.

Devices are designed to operate over the temperature range of -20°C to +70°C after exposure to the shock, vibration, thermal shock and moisture conditions typically encountered in base station and subscriber terminal environments.

Any enquiries should be addressed to: **BFI OPTILAS Literature Centre, 8 The Oaks Business Village, Revenge Road, Lordswood, Chatham, Kent ME5 8LF.**



major items in fair detail". The file size is around 1.3Mb with picture quality reduced to keep transfer times to a minimum - all text is perfectly

legible! The PDF catalogue can be downloaded from <http://www.aoruk.com/pdf/aor-cat.pdf>

## New Starter Kit

Embedded applications based on the PCI bus are expected to expand significantly. In order to support the development of embedded systems and applications during the hardware and software design phase, **EPSON** provide starter kits for its System Level Products.

The latest addition to this family of extremely successful complete hardware development kits is the Cardsystem-PCI. It follows the same philosophy as starter kits for the Card-PC, but is based around the newly introduced product Card-PCI/GX.

The new Cardsystem-PCI cuts your design time by providing a ready-to-run system consisting of a motherboard, a Card-PCI/GX with 32MB at 200MHz using the Geode GXLV processor from

National Semiconductor, a Compact Flash Card with Windows CE demo image plus runtime licence, software, documentation and cables. Using this new kit cuts the design time dramatically.

The Cardsystem-PCI is a single board computer based on the EPSON Card-PCI/GX. The main board makes a broad range of interfaces available to the user. After unwrapping and connecting the power supply, the system is ready to run. For initial testing and exploring the system a 16MB Compact Flash card including a demo image of Windows CE is included.

The hardware development kit is a useful tool

for hardware integration and the test and development of the application software. In order to support the hardware integration, EPSON provides software tools for the adaptation of the EPSON modified Award BIOS.

Find out more, including news of a software development kit for Windows CE from EPSON themselves - E-mail: [info@epson-electronics.de](mailto:info@epson-electronics.de)

## Club Corner

The **Wakefield & District Radio Society** meet on Tuesdays at 2000 at the Ossett Community Centre, Prospect Road, Ossett, W. Yorkshire. Further details about the society's activities can be obtained from **John G7JTH** on (01924) 251822 or visit their web site at <http://www.sandalmagna.demon.co.uk/wdrs>

Members of the **Bangor & District Amateur Radio Society** meet on the 1st Wednesday of every month in the Clandeboye Lodge Hotel, Bangor, at 2000. Wednesday 1st November 2000 is their Annual Surplus Sale. This excellent event is always a popular way to make some space in your shack! Visitors and new members are (as always) most welcome. More information from **Mike G14XF** on 0284-277 2383 or visit the club's web site at <http://welcome.to/bdars>

Meetings take place at the Lovedean Village Hall, 160 Lovedean Lane, Lovedean, Hants, for the **Horndean & District Amateur Radio Club**, starting at 1930. Visitors are always most welcome. More details from **Stuart Swain G0FYX**, Club Secretary, on 0239-247 2846 or E-mail Stuart at: [g0fyx@msn.com](mailto:g0fyx@msn.com)

The **Weston-Super-Mare Radio Society** meet at the Woodspring, High Street, Worle, normally on the 1st and 3rd Monday of each month. Visitors and prospective members with an interest in amateur radio are always welcome. Further information about club activities from **Graham Pinder G8WAR** on (01934) 415700.

# rallies

## Attention Please!

**Would you like to have your Rally publicised? If so, all you have to do is put together as much information as possible about the Rally, i.e. date, location, times, who to contact, etc. and send it to the Editorial Offices.**

**October 29:** The Galashiels & District Amateur Radio Society are holding their Annual Radio & Computer Rally at The Volunteer Hall, St. Johns Street, Galashiels, Scottish Borders, from 1100-1600. There will be traders, Bring & Buy and refreshments, etc. More details from **Jim GM7LUN** on (01896) 850245 or E-mail: [jimk@gm7lun.freeserve.co.uk](mailto:jimk@gm7lun.freeserve.co.uk)

**November 4/5:** The 14th 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 and under 14s free when accompanied by an adult. There will be a club room and an extensive Bring & Buy. **M. Mee GW7NFY** on (01745) 591704 (combined telephone and FAX number).

**November 12:** The Tenth Great Northern Hamfest takes place at the Metrodome Leisure Complex, Queens Road, Barnsley, South Yorkshire. Doors open at 1000. For further information please contact the Hamfest Manager, **Ernie Bailey G4LUE**, 8 Hild Ave, Cudworth, Barnsley, Yorkshire S72 8RN or telephone on (01226) 716339 or (07787) 546515 (mobile).

**November 25:** The Rochdale & District Amateur Radio Society are holding their traditional radio rally at St. Vincent de Paul Catholic Church Hall, Caldershaw Road, off the A680 Edenfield Road, approx two miles west of Rochdale. Follow the orange arrows from M62 J20. Doors open 1030 (1015 for disabled visitors). Entrance fee is just £1 and there will be refreshments/rest area. **John G7OAI**, evenings, on (01706) 376204.

**November 25/26:** The London Amateur Radio & Computer Show is to be held at the Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London N9. There will be trade stands, talk-in on 2m and 70cm, Bring & Buy, special interest groups, free parking, disabled facilities, camp site, family attractions, licensed bar, catering and Morse tests. Doors open on Saturday at 1015 till 1700 and on the Sunday from 1000 till 1600. Further information on (01923) 893929.

**November 26:** The Bishop Auckland Radio Amateurs Club (BARAC) Rally will take place at Spenny Moor Leisure Centre. This venue is ideally suited for both trader and disabled visitors as it boasts good parking and access to large ground floor hall. There will be the usual radio, computer, electronics and Bring & Buy stalls, as well as catering and bar facilities. Morse tests are available on demand. There will be lots to do for all the family within the Leisure Centre for members of the family not interested in radio. Doors open 1100 (1030 for disabled visitors). Admission is £1, under 14s free of charge. Talk-in on S22. **Mark G0GFG** on (01388) 745353 or **G7OCK** on (01388) 762678.

Send your news to Zoë Shortland at the Editorial Offices

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

■ **E-MAIL: gdexter@pwpublishing.ltd.uk**

# Bandscan America

These days, DXers around the world are eagerly hunting signals in areas not normally used by international short wave broadcasters. Several US navy communications stations have begun carrying programming from the US Armed Forces Network (AFN). These services, formerly carried by satellite, are intended for naval personnel stationed on ships and bases around the world.

As most everyone surely knows, two such stations - in Puerto Rico and near Key West, Florida - have been carrying the AFN service for a couple of years now. But this past summer several others suddenly became operative and, at the time of writing, at least two more sites - in Washington state and Iceland - are expected to become active.

Here is the current line-up as we have them at the moment:

| MHz    | Station           | MHz    | Station           |
|--------|-------------------|--------|-------------------|
| 4.319  | Diego Garcia      | 10.320 | Pearl Harbor,     |
| 4.933  | Sigonella, Sicily |        | Hawaii            |
| 5.765  | Barrigada, Guam   | 10.320 | Keflavik, Iceland |
| 6.350  | Keflavik, Iceland | 10.940 | Sigonella, Sicily |
| 6.350  | Pearl Harbor,     | 12.579 | Diego Garcia      |
|        | Hawaii            | 12.689 | Key West, FL      |
| 6.4585 | Roosevelt Roads,  | 13.362 | Barrigada, Guam   |
|        | Puerto Rico       |        |                   |

The list above is likely not the final version as some of the sites have not been confirmed and, as mentioned above, we're also expecting at least two more stations to be added to the list. Most of the frequencies are used on either a 'day' or 'night' basis, apparently according to local time.

There are several different program 'streams' so what you hear on one station probably won't be the same as what the next one may be carrying. All broadcasts are in upper sideband. Reception reports can be sent to: **Naval Media Centre, NDW Anacostia Annex, 2713 Mitscher Road, S. W., Washington, D.C. 20373-5819.** I'd suggest asking that the site(s) you are reporting be specified on the QSL. You can also send a report via E-mail to [qsl@mediacen.navy.mil](mailto:qsl@mediacen.navy.mil)

Brazil still has a healthy list of active short wave broadcasters and, over time, most if not all of them can be heard. Among those logged in North America recently are:

| MHz    | Station  |
|--------|--|
| 2.380  | Radio Educadora de Limeira                     |
| 2.490  | Radio Oito de Setembro, Descalvado             |
| 3.245  | Radio Transamerica Light, Varginha             |
| 4.755  | Radio Educacao Rural, Campo Grande             |
| 4.825  | Radio Cancao Nova, Cachoeira Paulista          |
| 4.865  | Radio Alvorada, Londrina                       |
| 4.885  | Radiodifusora Acreana, Rio Branco              |
| 4.905  | (Nova) Radio Relogio, Rio de Janeiro           |
| 4.915  | Radio Anhanguera, Goiania                      |
| 4.935  | Radio Capixaba, Vitoria                        |
| 4.945  | Radiodifusora, Pocos de Caldas                 |
| 4.955  | Radio Clube Rondonopolis                       |
| 4.985  | Radio Brazil Central, Goiania                  |
| 5.013  | Radio Copacabana, Rio de Janeiro (reactivated) |
| 5.015  | Radio Pioneira, Teresina                       |
| 5.970  | Radio Itatiaia, Belo Horizonte                 |
| 5.980  | Radio Guarua, Florianopolis                    |
| 6.105  | Radio Cultura Filadelfia, Faz de Iguacu        |
| 6.120  | Radio Globo, Sao Paulo                         |
| 6.135  | Radio Aparecida, Aparecida                     |
| 9.565  | Radio Tupi, Sao Paulo                          |
| 9.615  | Radio Cultura, Sao Paulo                       |
| 9.630  | Radio Aparecida, Aparecida                     |
| 9.645  | Radio Bandeirantes, Sao Paulo                  |
| 9.665  | Radio Marumby, Florianopolis                   |
| 9.695  | Radio Rio Mar, Manaus                          |
| 11.735 | Radio Nova Visao, Sao Paulo                    |

Some of the frequencies may be slightly variable. Many of these receptions are during the first hours of the station's broadcast day, i.e. 0900 and on, a near impossible time in Europe. But checking during the evening hours and later should produce results.



## Station News

It looks like private Canadian station CHNX-6130 in Halifax, Nova Scotia, may be a goner. The station is silent at the time of writing, in need of some parts and equipment repairs. And the owners of the m.w. station which it relays are apparently not very interested in whether the short wave is active or not, especially if it requires an expenditure of money to get it up and running again!

Radio HERT, 4.960, in Puerto Lempira, Honduras, is active again on this frequency. It IDs as 'Radio Buenas Nuevas'. Check around midnight UTC.

However, watch out for Radio Villa in the Dominican Republic, which was also recently reactivated and also uses 4.960, give or take a decimal place or two. Also check 4.930 for Radio Barahona, another Dominican Republic station that seems to operate on a rather inconsistent basis.

Moving further south, here are some Ecuadorian stations that have been noted recently:

| MHz   | Station  |
|-------|--|
| 3.280 | La Voz del Napo, Tena                          |
| 4.770 | Radio Centinela del Sur, Loja                  |
| 4.801 | Radio Oriental, Tena (nominal 4.780, variable) |
| 4.815 | Radio El Buen Pastor, Saraguro                 |
| 4.840 | Radio Interoceanica, Santa Rosa de Quijos      |
| 4.919 | Radio Quito, Quiot                             |
| 4.950 | Radio Baha', Otavalo                           |
| 5.040 | La Voz del Upano, Macas                        |

All of the above frequencies should be considered slightly variable. Of all of the Ecuadorian short wave stations Radio El Buen Pastor and Radio Interoceanica are probably the most difficult to hear in North America.

LRA36 - Radio Nacional Arcangel San Gabriel, in the Argentine Antarctic has had its schedule cut to just three hours per day, 1800-2100, and only Mondays through Fridays at that! There are no weekend broadcasts at present.

Argentine medium wave and f.m. stations continue to be relayed on short wave, albeit on a very much sporadic basis and at no scheduled times. 8.098 lower sideband has recently carried La Red, B.A. (Buenos Aires) and Mil Ciento Diez (a.m. - 1110). 13.3635 has been noted carrying Radio Continental. 15.820 has had Radio Diez and Mega 98 f.m. 20.276 has aired Radio Rivadavia. You have to keep checking the appropriate frequencies on a regular basis.

Argentina isn't the only South American country relaying broadcast stations over a utility transmitter on a new and then basis. CBV, the Chilean utility station at Valparaiso, has been noted carrying a 'futbol' match between Chile and Bolivia from Radio Portales in Santiago on 8.759 at around 2130.

If one were determined enough it might be possible to find a source for the schedules of such games and then consulted a good utility frequency directory the chances of hearing these rare relay events might be taken out of the realm of pure chance.

Radiodifusora Nacional Colombia has appeared on 9.635, in addition to its 4.955 spot, and is sometimes heard quite well during the North American evenings. If you don't find them, try 9.655 or 9.685, two frequencies they tried briefly before settling (?) choosing 9.635. Somewhat surprisingly, the 9.635 broadcasts are different from what you'll hear on 4.955.

New from Peru is Radio Univision 2000 on variable 5.855, in Soritor, San Martin department. Another is Radio Andina, 6.673, Huancabamba, which is fairly widely heard during the evening hours. This one has no connection with the Radio Andina in Huancayo, long an occupant of 4.996, at least that we know of. Also new is Radio San Antonio, 3.375, in Callalli, Arequipa.

In Chile there is an amateur radio group that does a bit of broadcasting every couple of weeks. Radio Club de Chile is active on 7.120 lower sideband. According to their every 15 day formula, future broadcast dates should be November 12 and 26, December 10 and 24, January 7 and 21. Their transmissions start at 1600, not at all a good time for reception in North America. Reports can be sent to **RCC, Departamento de Radioescucha, Box 13.630, Santiago 21, Chile.**

Nicaraguan Radio Miskut, 5.770, has returned to the air (again). It's heard occasionally to sign off at 0000. Radio Miskut began life as a clandestine broadcasting in opposition to the Sandinista regime during the civil war there.

Alaska's KNLS (World Christian Broadcasting) station is going to add a second 100kW transmitter and additional antennas at their Anchor Point transmitting site. Once in operation this will allow a doubling of their on-air hours. One transmitter will continue to focus primarily on Russia and the other will broadcast mainly in Chinese.

That's all from this side of the pond for now. We'll have another Bandscan America for you in three months. Until then, good listening!



Greetings from Nova Scotia

Canada's Ocean Playground

**It looks as though we've heard the last from an old friend - CHNX in Halifax, Nova Scotia.**

**Towers for several broadcasting bands occupy the transmitter site at Radio Bandeirantes, one of many Brazilian stations active on short wave.**

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

# LM&S

Frequent disturbances to reception in the short wave broadcast bands may occur in the months ahead so a few words about them may be appropriate here. The Sun is said to be 'quiet' during periods of low level solar activity and 'active' when an eruption or 'solar flare' takes place on the surface.

Solar flares occur without warning and vary in magnitude and effect. Frequently they are located close to a major sunspot and emit intense bursts of electromagnetic radiation, consisting of X-rays, ultra-violet, visible light and radio waves, which reach the Earth in 8.3 minutes. The ultra-violet and X-ray radiation may increase the ionisation of the D-layer of the ionosphere to the point where all radio waves are absorbed before they can reach the reflecting F-layers. The result is a 'sudden ionospheric disturbance' (s.i.d.), which might last a few minutes, but could be as long as an hour.

Fast moving streams of charged particles are also emitted by a flare and any that travel towards the Earth will arrive here about two days after a s.i.d. has occurred. They may cause another form of radio blackout known as an 'ionospheric storm', which can last anything from a few hours to several days!

There are two types of ionospheric storm - 'isolated' and 'recurrent'. The isolated type often occur during the peak years of a sunspot cycle and may well arise just now. Fast moving particles from other sources on the Sun's surface may result in the recurrent type of storm, which reappear about every 27 days, being the approximate rotation period of the Sun as seen from Earth. They usually occur a few years after a sunspot maximum and initially their effects may last a few days but they gradually diminish. So if reception suddenly deteriorates don't jump to the conclusion that your receiver has developed a fault!

**WARNING:** Any attempt to look at the Sun through binoculars or a telescope can result in permanent blindness.

## 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.

Good conditions were observed early in the evening on some days in August. The Radiotelevisione Italiana (RAI) 10kW outlet at Caltanissetta, Italy, on **189kHz** was heard for the first time by **Simon Hockenhill** (E.Bristol) at 2020UTC on the 8th. He says "Apart from the obvious Italian language, I identified this by tuning another radio to **846** and **900kHz** in the medium wave band and to 6.060MHz in the 49m band".

At 2115 on the 25th **Sheila Hughes** (Morden) heard faintly under DLF Donebach, Germany (500kW) on **153kHz**, ballad type songs or a light opera and a man talking which she presumed was broadcast by Societatea Romana De Radiodifuziune via Bod (1200kW), which shares that frequency. At best the transmission rated 22212 and faded to 12211.

Over in Co.Down, **Eddie McKeown** (Newry) received exceptionally well on one occasion a broadcast from Rikisutvarpid (RUV) in Reykjavik via their 300kW outlet at Gufuskalar, W.Iceland, on **189kHz**. He logged it as 35233 at 0030UTC.

Music, then a time signal followed by the news in Italian broadcast by RAI via Caltanissetta, Italy, on **189kHz** were picked up between 1955 and 2010 on the 30th by **Fred Pallant** in Storrington. The transmission rated 13242. He also noticed that some N.African stations were audible co-channel with European ones.

## Medium Wave Reports

Although the hours of darkness are now increasing there were no reports of m.w. transatlantic reception during August. However, the listeners who searched the band after dark for the sky waves from m.w. stations in the Middle East, N.Africa, Europe and Scandinavia were fairly successful and they compiled some interesting logs - see chart.

Some listeners enjoyed searching the band during daylight for the ground waves from distant local radio stations. Over on the Isle of Wight **George Millmore** (Wootton) found that those from R.Kiran, the new station serving the Nottingham area on **1413kHz** (see 'LM&S' October *SWM*), were completely blocked by Premier R, which has outlets at Heathrow and Dartford on that frequency.

## Short Wave Reports

Many listeners have been hoping that more use will be made of the **25MHz (11m)** band during the coming months but so far there is no indication that will happen. In fact Radio For Peace International (RFPI), Costa Rica has now vacated **25.930** and moved to **21.815** in the 16m band and Radio France International (RFI) is now the sole occupant. Throughout the summer RFI has broadcast daily to listeners in E/C.Africa on **25.820** (Fr 0900-1300). The reception of them must have been

exceptionally good most days because potent signals have been reaching the UK in the 10m amateur band from stations in that area. It is most disappointing that no reception reports have arrived here for 'LM&S' to confirm this.

Unfortunately reception of the broadcasts from RFI is unreliable in the UK because it is dependent upon back scatter and other modes. Some of the SINPO rating noted in the reports during August were 34433 at 0900 by **Vic Prier** in Colyton; 32223 at 1030 by **Bernard Curtis** in Stalbridge; 55444 at 1104 in Newry; 25533 at 1126 by **David Edwardson** in Wallsend; 25343 at 1213 by **Fred Wilmshurst** in Northampton; 25522 at 1215 in E.Bristol.

The high level of activity in the **21MHz (13m)** band has continued and good reception from many areas has been reported by listeners in the UK. During the morning R.Thailand, Udun Thani **21.795** (Eng to Eur 0530-0600) was rated 44434 at 0530 in Morden; HCJB Quito, Ecuador **21.455** (Eng [u.s.b. + p.c.]) 34333 at 0702 by **David Hall** in Morpeth; R.Australia via Shepparton **21.725** (Eng to Pacific areas 0200-0900) 44434 at 0710 by **Stan Evans** in Herstmonceux; R.Denmark via R.Norway Int **21.755** (Da to E.Asia 0930-1000) 44333 at 0930 by **Thomas Williams** in Truro; BBC via Seychelles **21.470** (Eng to Africa 0900-1300) 32333 at 1030 by **Gerald Guest** in Dudley; R.Pakistan **21.460** (Ur to Eur 0800?-1100, Eng 1100-1105) 35553 at 1103 in Wallsend.

After mid-day, R.Australia via Shepparton on **21.820** (Eng to Asia 0900-1400) was rated 35343 at 1304 in Northampton; UAER, Dubai **21.605** (Eng to Eur 1330-1350) SIO 433 at 1330 by **Tom Smyth** in Co.Fermanagh; R.Ext.España via Noblejas **21.570** (Sp to S.America 1000?-1700) 45544 at 1355 in E.Bristol; BBC via Cyprus **21.470** (Eng to Africa 1300-1700) 55555 at 1446 by **Tom Winzor** in Plymouth; WYFR Okeechobee, USA **21.455** (Eng to Eur 1600-2100?) 34423 at 1700 in Colyton; R.Denmark via R.Norway **21.730** (Dan to Africa 1730-1800) 34333 at 1735 by **Robert Hughes** in Liverpool; R.Nederlands via Bonaire, Ned.Antilles **21.590** (Eng to C/W.Africa 1830-2025) 44444 at 1833 by **Martin Venner** in St.Austell; R.For Peace Int (RFPI), Costa Rica **21.815** (Eng [u.s.b.] to N.America 1200?-?) 22222 at 1935 in Stalbridge; HCJB Quito, Ecuador **21.470** (Various) 33233 at 2056 by **Peter Pollard** in Rugby.

In the **18MHz (15m)** band R.Denmark via R.Norway **18.910** (Da to Australia 0930-1000) was rated 45433 at 0945 in Northampton; R.Sweden **18.960** (Eng to N.America 1230-1300?) 34333 at 1253 by **Vera Brindley** in Woodhall Spa; R.Sweden **18.960** (Eng, Sw to N.America 1330-1430) SIO 555 at 1330 in Co.Fermanagh; Christian Science BC via WSHB Cypress Creek **18.910** (Eng, Fr to E/C.Africa 1800?-?) 33122 at 2100 in Rugby; WYFR via Okeechobee, USA **18.980** (Eng to Africa, Eur 1600-2200) 34444 at 2120 in Morden.

Good reception over long distances has been evident in the **17MHz (16m)** band. During the early morning R.New Zealand's transmission to Pacific areas from Rangitaki, N.Island on **17.675** (Eng ?-0705) was rated 34522 at 0633 in E.Bristol & 43433 at 0700 in Herstmonceux. R.Australia via Shepparton on **17.750** (Eng to Asia 0000-0500, 0600-1100) was noted as 35543 at 0704 in Wallsend, SIO 333 at 0754 by **Francis Hearne** in N.Bristol & 43443 at 0943 in Plymouth.

Also mentioned in the reports were R.Austria Int via ? **17.870** (Eng to M.East 0730-0800), rated 44444 at 0730 in Morden; Israel R, Jerusalem **17.545** (Heb [Home Svce relay] to Eur, N.America 0600-?) 54554 at 0900 by **Bill Griffith** in W.London; R.Jordan via Al Karanah **17.680** (Eng to N.America 1000-1200) 45444 at 1042 in Northampton; R.Bulgaria, Sofia **17.500** (Eng to Eur 1100-1200) SIO 555 at 1100 in Co.Fermanagh; Israel R, Jerusalem **17.535** (Eng to Eur, N.America 1300-1330) 33333 at 1310 in Truro;

R.Romania Int **17.770** (Eng to W.Eur, N.America 1300-1356) 54444 at 1314 by **Tony Hall** in Freshwater Bay, IoW; R.Romania Int **17.790** (Eng to Asia, Australia 1300-1356) 33333 at 1320 in Woodhall Spa.

Later, Qatar BS, Doha **17.895** (Ar to Eur 1700-2130) was 54454 at 1750 in Liverpool; Channel Africa via Meyerton **17.870** (Eng to W.Africa 1800-1830) 44444 at 1810 in St.Austell; Swiss R.Int via Julich, Germany **17.580** (It, Ar, Eng, Ger, Fr to Africa 1830-2130) 45444 at 1830 in Colyton; HCJB Quito, Ecuador **17.660** (Eng to Eur 1900-2200) 32233 at 1900 by **Clare Pinder** in Appleby; BBC via Ascension



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) Eddie McKeown, Newry.  
(D) George Millmore, Wootton, IoW.  
(E) Fred Pallant, Storrington.  
(F) Tom Smyth, Co.Fermanagh.  
(G) Fred Wilmshurst, Northampton.

## Long Wave Chart

| Freq (kHz) | Station       | Country    | Power (kW) | Listener           |
|------------|---------------|------------|------------|--------------------|
| 153        | Bechar        | Algeria    | 1000       | E*                 |
| 153        | Donebach DLF  | Germany    | 500        | B,C*,D,E*,F*,G     |
| 153        | Bod           | Romania    | 1200       | B*                 |
| 162        | Allouis       | France     | 2000       | B,C*,D,E*,F*,G     |
| 171        | Nador Medi-1  | Morocco    | 2000       | A*,E*              |
| 171        | B'shakovo etc | Russia     | 1200       | C*,G*              |
| 177        | Oranienburg   | Germany    | 500        | A*,B*,C*,D,E*,F*,G |
| 183        | Saarlouis     | Germany    | 2000       | B,C*,D,E*,F*,G     |
| 189        | Gufuskalar    | W.Iceland  | 150        | C*                 |
| 189        | Caltanissetta | Italy      | 10         | A*,E*              |
| 198        | Droitwich BBC | UK         | 500        | B,C*,D,F*,G        |
| 207        | Munich DLF    | Germany    | 500        | C*,D,E*,F*,G       |
| 207        | Azilah        | Morocco    | 800        | A*,E*              |
| 216        | Roumoules RMC | S.France   | 1400       | B,C*,D,E*,F*,G     |
| 225        | Polskie R-1   | Poland     | ?          | A*,B*,C*,E*,G      |
| 234        | Beidweiler    | Luxembourg | 2000       | B,C*,D,E*,G        |
| 243        | Kalundborg    | Denmark    | 300        | A,B,C*,D,E*,G      |
| 252        | Atlantic 252  | Eire       | 500        | C*,D*,F*,G         |
| 261        | Burg(R.Ropa)  | Germany    | 85         | A*,C*,D,E*,G       |
| 270        | Topolna       | Czech Rep  | 1500       | A*,B*,C*,D,E*      |
| 279        | Sasnovy       | Belarus    | 500        | A*,B*,C*,E*        |

**£99.95**

**LOG PERIODIC MLP32**  
 Freq. Range 100-1300MHz  
 Length 1420mm Wide Band 16 Element directional beam which gives a maximum of 11-13Db Gain Forward and 15Db Gain Front to Back Ratio. Complete with mounting hardware. (The Ultimate Receiving Antenna - a must for the Dedicated Listener.)

**£49.95**

**ROTATOR AR-300XL**  
 \* Rotation Torque-222Kg  
 \* Vertical Load-45Kg  
 \* Mast Size - 28-44mm  
 \* Control Box-230v AC  
 \* Cable-3 core  
 \* Direct Compass Bearings (Ideal for Light to Medium Beams, i.e. LOG PERIODIC above.)

**£6.00**

**6" STAND OFF BRACKET**  
 Complete with U Bolts

**£9.00**

**9" STAND OFF BRACKET**  
 Complete with U Bolts

**MD37 SKY WIRE (LONG WIRE BALUN KIT)**  
 25 METRES OF ENAMELLED WIRE & INSULATOR

FOR USE ON WITH RECEIVER 0 - 40 Mhz. ALL MODE NO ATU REQUIRED 2 "S" POINTS GREATER SIGNAL THAT OTHER BALUNS. MATCHES ANY LONG WIRE TO 50 OHMS

**£9.00**

**IMPROVED RECEPTION**

**£29.95**

**5' SWAGED POLES**  
 Heavy Duty Ali (1.2mm wall)  
 SINGLE 1 1/4 ..... £6.00  
 SET OF FOUR 1 1/4 . £19.95  
 SINGLE 1 1/2 ..... £9.00  
 SET OF FOUR 1 1/2 . £29.95

**CONNECTORS**

PL259/9..... 0.75 each  
 PL259/6..... 0.75 each  
 PL259/7 for mini 8 1.00 each  
 BNC (Screw Type) 8 1.00 each  
 BNC (Solder Type) 8 1.00 each  
 N TYPE for N58 .....2.50 each  
 N TYPE for RF213 ..2.50 each  
 SO239 to BNC .....1.50 each  
 PL259 to BNC .....2.00 each  
 N TYPE to SO239 ..3.00 each

**CABLE**

RG213 MILITARY 0.85 per mtr.  
 MINI RF8 ..... 0.85 per mtr.  
 RG58 STANDARD 0.35 per mtr.  
 RG58 MILITARY 0.60 per mtr.

**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**

**£29.95**

**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 AIR BASE (Airband)**  
 (Stainless Steel)  
 Freq. Range Receive 117-140MHz  
 Transmit 117-140MHz  
 Length 825mm  
 Connector-N TYPE

This is a transmitting & receiving antenna designed for the aircraft frequency range. (For the control tower & aircraft listener.)

**£39.95**

**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)

**£49.95**

**MULTI SCAN STICK II**  
 Freq. Range Receive (0-2000MHz) Transmit (144-146 MHz)  
 Gain 4.00Dbd (420-430 MHz) Gain 6.00Dbd Length 1500mm

Same as Super Scan Stick but with extra gain, makes it an even better antenna for the amateur and expert alike. (Ideal for the Ham Radio user)

**£39.95**

**MULTISCAN STICK**  
 Freq. Range Receive - 0-2000 MHz.  
 Transmit 144 - 146 Mhz  
 gain 2.5 DBd  
 420 - 430 Mhz  
 gain 4.5 DBd  
 Length 1000 mm.

Although marginally compromising sensitivity the multi scan stick has within its transmitting capabilities plus gain makes it an excellent antenna for the amateur and expert alike. Comes complete with mounting hardware and brackets. (Ideal for the amateurs ham radio - user).

**£89.95**

**IVX 2000**  
 Freq. Range Receive - 0-2000 MHz.  
 Transmit 50 - 52 Mhz  
 gain 2.00Dbd  
 144 - 146 Mhz  
 gain 4.00 DBh  
 420 - 430 Mhz  
 gain 6.00 DBd  
 Length 2.5 m.

For external use, but at a pinch can be used in the loft. It has been finely tuned to make this Antenna the best there is. It has stainless steel radials and hardware. (THE BEST)

**FULL RANGE OF SCANNERS AVAILABLE. PLEASE PHONE FOR PRICE.**

**£29.95**

**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.)

**£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.)

**£49.95**

**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**

**TRI SCAN III**  
 Freq. Range 25-2000MHz Length 720mm

Desk Top Antenna for indoor use with triple vertical loaded coils. The tri-pod legs are helically wound so as to give it its own unique ground plane. Complete with 5mts of low loss coax and BNC plug. (Ideal for Desk Top Use.)

**£34.95**

**£39.95**

**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).

**£19.95**

**MRW-100**  
 (Super Gainer) (Rubber Duck) Wideband extra sensitive Dedicated VHF/UHF all mode Length 400mm. PP £2.00

**MRP-125 (Preamplifier)**  
 Freq Range 118-137 Mhz  
 9-15v input (Battery not included)  
 14 db Gain Complete with lead and BNC connectors.

**£19.95**

**MRW-40 (Rubber Duck)**  
 Dedicated for Civil & Military Airband VHF/UHF RX & TX Capabilities Length 215mm. PP £2.00

**£19.50**

**UK SCANNING DIRECTORY**  
 7th edition

**£19.95**

**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)

**£49.95**

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

**£44.95**

**CIVIL AND MILITARY RECEIVING ANT**

AR30 (Length 1000mm GAIN 3.6 & 6.5) Price £39.95  
 AR50 (Length 1500mm GAIN 5.0 & 7.5) Price £64.95

## Tropical Bands Chart

| Freq (MHz) | Station               | Country        | UTC  | DXer        |
|------------|-----------------------|----------------|------|-------------|
| 3.230      | SABC Meyerton         | S. Africa      | 2010 | E           |
| 3.255      | BBC via Meyerton      | S. Africa      | 2009 | E,I         |
| 3.270      | Namibian BC, Windhoek | Namibia        | 2008 | D,E         |
| 3.316      | SLBS Goderich         | Sierra Leone   | 2000 | E           |
| 3.320      | SABC (RSG) Meyerton   | S. Africa      | 2008 | D,E         |
| 3.335      | CBS Taipei            | Taiwan         | 2020 | E,I         |
| 3.365      | GBC R-2               | Ghana          | 2006 | D,E,I       |
| 3.380      | NBC Blantyre          | Malawi         | 2007 | E           |
| 3.915      | BBC via Kranji        | Singapore      | 2100 | B,C,I,J     |
| 3.955      | R. Taipei via Skelton | England        | 1800 | C,E,G,H,K,L |
| 3.970      | R. Korea via Skelton  | England        | 2100 | B,F,G,J     |
| 3.975      | R. Budapest           | Hungary        | 2130 | D,G,I,J     |
| 3.975      | R. Taiwan via Skelton | England        | 2344 | D           |
| 3.985      | Nexus, Milan          | Italy          | 2016 | I           |
| 3.995      | DW via Julich         | Germany        | 2145 | C,D         |
| 4.760      | ELWA Monrovia         | Liberia        | 2120 | I           |
| 4.770      | FRON Kaduna           | Nigeria        | 2012 | C,D,E,I     |
| 4.783      | RTM Bamako            | Mali           | 2353 | D           |
| 4.800      | LNBS Maseru           | Lesotho        | 1852 | D           |
| 4.815      | R.diff TV Burkina     | Duagadougou    | 2014 | D,E,I       |
| 4.820      | R. Botswana, Gaborone | Botswana       | 0310 | A           |
| 4.825      | R. Cancao Nova        | Brazil         | 0315 | A           |
| 4.835      | R. Tezulutlan, Coban  | Guatemala      | 0330 | A           |
| 4.835      | RTM Bamako            | Mali           | 2010 | B,C,E,I     |
| 4.845      | DRTM Nouakchott       | Mauritania     | 2012 | D,E         |
| 4.850      | R. Yaounde            | Cameroon       | 2132 | I           |
| 4.860      | AIR Delhi             | India          | 1915 | C,D,E       |
| 4.885      | KBC East Sce Nairobi  | Kenya          | 1825 | D,E         |
| 4.890      | RFI Paris             | via Gabon      | 0400 | A           |
| 4.890      | R. Port Moresby       | Pap. N. Guinea | 2011 | E           |
| 4.915      | Armonias del Caqueta  | Colombia       | 0006 | D           |
| 4.915      | GBC-1, Accra          | Ghana          | 2047 | B,C,E       |
| 4.915      | KBC Cent Sce Nairobi  | Kenya          | 1825 | E           |

| Freq (MHz) | Station               | Country    | UTC  | DXer    |
|------------|-----------------------|------------|------|---------|
| 4.915      | R. Cora de Peru, Lima | Peru       | 0324 | A       |
| 4.935      | KBC Gen Sce Nairobi   | Kenya      | 1910 | E       |
| 4.950      | VOA via Sao Tome      | Sao Tome   | 1928 | D,E,G,I |
| 4.960      | VDA via Sao Tome      | Sao Tome   | 0330 | A       |
| 4.965      | Christian Voice       | Zambia     | 1920 | E,I     |
| 4.975      | R. Uganda, Kampala    | Uganda     | 1921 | D,E,I   |
| 4.980      | Ecoss del Torbes      | Venezuela  | 0009 | D       |
| 4.985      | R. Brazil Central     | Brazil     | 0013 | D       |
| 5.009      | R. TV Malagasy        | Madagascar | 1826 | E       |
| 5.020      | La V du Sahel, Niamey | Niger      | 1921 | C,E,I   |
| 5.025      | R. Parakou            | Benin      | 0018 | D       |
| 5.025      | R. Uganda, Kampala    | Uganda     | 1827 | E       |
| 5.030      | AWR Latin America     | Costa Rica | 0020 | A,D     |
| 5.030      | RTM Kuching           | Sarawak    | 2009 | E       |
| 5.047      | R. Togo, Lome         | Togo       | 1922 | D,E     |
| 5.050      | R. Tanzania           | Tanzania   | 1828 | E,I     |
| 5.060      | Sist d'Em Progreso    | Ecuador    | 0022 | Q       |

### DXers:-

- (A) David Hall, Morpeth.  
 (B) Simon Hockenhill, E. Bristol.  
 (C) Sheila Hughes, Morden.  
 (D) Rhoderick Illman, Dxted.  
 (E) Fred Pallant, Storrington.  
 (F) Clare Pinder, Glasgow.  
 (G) Clare Pinder, while in Appleby.  
 (H) Peter Pollard, Rugby.  
 (I) Vic Prier, Colyton.  
 (J) Tom Smyth, Co. Fermanagh.  
 (K) Martin Vennet, St. Austell.  
 (L) Tom Winzor, Plymouth.

Is **17.830** (Eng to Africa 0800-2100) 44444 at 1950 in Morpeth; R. Netherlands via Bonaire, Ned. Antilles **17.605** (Eng to Africa 1830-2025) 34343 at 2004 in Newry; WHRI via Maine, USA **17.650** (Eng to Eur, M. East, Africa 1600-2200) 44444 at 2008 in Rugby; VOA via Philippines **17.820** (Eng to E. Asia 2100-0030) 33323 at 2205 in Stalbridge.

Despite the increased activity in the 13m and 16m bands many broadcasters still rely on the propagation conditions prevailing in the **15MHz (19m)** band to reach listeners in selected areas. R. Australia has been heard in the UK on three frequencies from Shepparton: **15.240** (Eng to Pacific areas 0100-0900), rated 42443 at 0530 in Morden & 43334 at 0815 in Stalbridge; **15.415** (Eng to Asia 0100-0400, 0600-0900) 24542 at 0645 in Wallsend; **15.515** (Eng to Pacific, N. America 0200-0900) 32332 at 0625 in Morpeth.

During the morning HCJB Quito, Ecuador **15.160** (Eng to Eur? 0600-0800) was a potent 54444 at 0719 in Plymouth; R. Austria Int via Moosbrunn **15.410** (Eng to Eur, N. Africa, M. East 0730-0800) 43433 at 0750 in Herstmonceux; R. For Peace Int, Costa Rica **15.050** (Eng to N. America?) 33333 at 0815 in Truro; V of Armenia, Yerevan **15.270** (Various to Eur, M. East [Eng 0840-0900] Sun) 32222 at 0850 in Colyton; Swiss R. Int via Julich, Germany **15.315** (Eng, Ger, Fr, It to SW. Eur 1000-1230) 33333 at 1000 in Woodhall Spa; WEWN via Vandiver, USA **15.745** (Eng to Eur 1000-2200) 44444 at 1100 in Dudley; R. Bulgaria **15.700** (Eng to W. Eur 1100-1200) 44333 at 1115 in St. Austell.

After mid-day Israel R, Jerusalem **15.650** (Eng to Eur? 1400-1430) was 55555 at 1400 in Appleby; R. Oman via Thumrait **15.140** (Eng to M. East) SIO 322 at 1430 in Co. Fermanagh; All India R. via Bangalore **15.200** (Eng to W. Africa 1745-1945) 35333 at 1812 in E. Bristol; Africa No.1, Gabon **15.475** (Fr to W. Africa 1600-1900) 34433 at 1849 in Storrington; V of Indonesia, Jakarta **15.150** (Eng to Eur, Africa 2000-2100) 34343 at 2011 in Newry; RCI via Sackville **15.325** (Eng to Eur, N&W. Africa 2000-2300) 54444 at 2037 in Freshwater Bay, IoW; KTBN Salt Lake City, USA **15.590** (Eng to N. America 1600-0000) 33333 at 2045 in Liverpool; R. Korea **15.575** (Fr, Eng to Eur 2000-2130) 33343 at 2045 in Liverpool; VOA via Greenville, USA **15.580** (Eng to Africa 1800-2200) 24212 at 2140 in Newry; R. Taipei Int via WYFR **15.600** (Eng to Eur 2000-2300) 55544 at 2215 in Northampton.

In the **13MHz (22m)** band Swiss R. Int via Sottens **13.685** (Eng, It, Ger, Fr to Australia 0830-1030) rated 44444 at 0840 in Herstmonceux; R. Australia via Shepparton **13.605** (Eng to Pacific 0800-1200) 22222 at 0930 in Truro; Croatian R, Zagreb **13.830** (Cr to Pacific?) 25443 at 0945 in E. Bristol; R. Oman via Thumrait? **13.640** (Ar to M. East) 24232 at 1026 by Rhoderick Illman in Oxted; R. Prague, Czech Rep. **13.580** (Eng to Eur, Asia 1300-1330) 54444 at 1315 in Plymouth; Croatian R, Zagreb **13.830** (Eng to Eur, N. America 1800-1810) 44344 at 1805 in Liverpool; UAER, Dubai **13.675** (Eng to Eur 1600-1640, Ar to Eur 1640-2100) 42333 at 1810 in Colyton; R. Netherlands via Flevo **13.700** (Eng to Africa 1830-2025) 44444 at 1845 in Freshwater Bay,

IoW; V of Vietnam, Hanoi **13.740** (Eng, Fr to Eur 1800-2000) 32223 at 1940 in Stalbridge; Vatican R, Italy **13.765** (Eng to Africa 2000-2030) 43444 at 2015 in Rugby; R. Damascus, Syria **13.610** (Eng to Eur 2005-2105; Eng to America, Pacific 2105-2205) 34433 at 2016 in Newry; RCI via Sackville, Canada **13.650** (Eng to Eur 2000-2200) 32322 at 2036 in St. Austell; R. Havana Cuba **13.750** (Eng to Eur 2030-2130 [best on u.s.b.]) 32222 at 2110 in Morden; VOIRI Tehran **13.745** (Eng to Asia, Australia 2130-2230) SIO 222 at 2130 in Co. Fermanagh; RCI via Skelton, UK **13.670** (Fr, Eng to Eur, Africa 1800-2200) 44333 at 2150 in Northampton.

Some improvement in the reception of R. New Zealand's broadcasts in the **11MHz (25m)** band has been reported by listeners in the UK. Their early morning transmission to Pacific areas on **11.720** (Eng 0705-1005) was rated 43333 at 0710 in Herstmonceux & 44333 at 0755 in Appleby.

Also mentioned in the reports were World Harvest R. (WHRI) via Maine, USA **11.565** (Eng to Africa 0700-0800), rated 44444 at 0758 in Truro; R. Korea Int via Sackville? **11.715** (Eng to E. USA 1030-1100) 44344 at 1052 in Oxted; R. Macedonia via Thessaloniki, Greece **11.595** (Gr) 22222 at 1305 in W. London; R. Jordan via Al Karanah **11.690** (Eng to W. Eur, E. USA 1100-1730) 54444 at 1416 in Plymouth; R. Australia via Shepparton **11.660** (Various to Asia 1430-1700) 43333 at 1515 in Morpeth.

Later, R. Kuwait via Kabd **11.990** (Eng to Eur, N. America 1800-2100) was 44444 at 1833 in St. Austell; AIR via Bangalore **11.620** (Eng, Hin to Eur 1745-2230) 43434 at 1847 in Colyton; R. Bulgaria **11.700** (Eng to Eur 1900-2000) 43344 at 1900 in Dudley; V of Mediterranean, Malta via Russia? **12.060** (Eng to Eur, N. Africa 1900-2000) 45444 at 1935 in E. Bristol; China R. Int via ? **11.790** (Eng to Eur 2000-2100) 24222 at 2011 in Newry; RAI Int, Rome **11.880** (Eng to E. Africa? 2025?-2045?) 33333 at 2030 in Stalbridge; R. Romania Int **11.940** (Eng to W. Eur 2100-2200) SIO 222 at 2123 in N. Bristol; BBC via Ascension Is **12.095** (Eng to S. America 2100-0300) 43443 at 2208 in Northampton; WWCR Nashville, USA **12.160** (Eng to N. America, Eur 1200-0000) 44444 at 2250 in Morden; R. Prague, Czech Rep **11.615** (Eng to N. America 0000-0027) SIO 222 at 0000 in Co. Fermanagh.

R. Australia has been reaching the UK very well in the **9MHz (31m)** band. Although intended for listeners in Asia their transmission from Shepparton on **9.500** (Eng 1430-2130) was a potent 55435 at 2030 in Stalbridge. However,

### Listeners:-

- (A) Francis Hearne, N. Bristol.  
 (B) Simon Hockenhill, E. Bristol.  
 (C) Sheila Hughes, Morden.  
 (D) Brian Keyte, Bookham.  
 (E) Eddie McKeown, Newry.  
 (F) George Millmore, Wootton, IoW.  
 (G) Clare Pinder, Glasgow.  
 (H) Harry Richards, Barton-upon-Humber.  
 (I) Tom Smyth, Co. Fermanagh.  
 (J) Fred Wilmschurst, Northampton.

## Local Radio Chart

| Freq (kHz) | Station                 | ILR BBC | e.m.r.p (kW) | Listener     |
|------------|-------------------------|---------|--------------|--------------|
| 558        | Spectrum, London        | I       | 0.80         | B,D,F,H,J    |
| 585        | R. Solway               | B       | 2.00         | E,H          |
| 603        | Capital G, Lit't'bme    | I       | 0.10         | D,F,H,J      |
| 630        | R. Bedfordshire(3CR)    | B       | 2.00         | B,D,F,H,J    |
| 630        | R. Cornwall             | B       | 0.20         | F            |
| 657        | R. Clwyd                | B       | 2.00         | D,F,H,J      |
| 657        | R. Cornwall             | B       | 0.50         | F            |
| 666        | Cl. Gold 666, Exeter    | I       | 0.34         | A,B,C,D,E,J  |
| 666        | R. York                 | B       | 0.80         | C,D,H        |
| 729        | BBC Essex               | B       | 0.20         | C*,D,F,H,J   |
| 738        | Hereford/Worcester      | B       | 0.037        | A,B,D,F,H,J  |
| 756        | R. Cumbria              | B       | 1.00         | E,G,H        |
| 756        | The Magic 756, Powys    | I       | 0.63         | D,F,H,J      |
| 765        | BBC Essex               | B       | 0.50         | C,D,F,H,J    |
| 774        | R. Kent                 | B       | 0.70         | D,F,J        |
| 774        | R. Leeds                | B       | 0.50         | H            |
| 774        | Cl. Gold 774, Gtgs      | I       | 0.14         | A,D,F,J      |
| 792        | Cl. Gold 792, Bedford   | I       | 0.27         | C,D,H,J      |
| 801        | R. Devon                | B       | 2.00         | A,B,D,F      |
| 828        | Cl. Gold 828, Luton     | I       | 0.20         | A,D,J        |
| 828        | Magic 828, Leeds        | I       | 0.12         | H            |
| 828        | 2CR Cl. G. Boum'enth    | I       | 0.27         | F            |
| 837        | R. Cumbria/Furness      | B       | 1.50         | E,H          |
| 837        | Asian Netwk Leics       | B       | 0.45         | B,D,F,H,J    |
| 855        | R. Devon                | B       | 1.00         | D,F          |
| 855        | R. Lancashire           | B       | 1.50         | E,H          |
| 855        | R. Norfolk, Postwick    | B       | 1.50         | D,H,J*       |
| 855        | Sunshine 855, Ludlow    | I       | 0.15         | B,D,J        |
| 873        | R. Norfolk, W. Lynn     | B       | 0.30         | D,F,J        |
| 936        | Brunel CG, W. Wilts     | I       | 0.18         | D,F,I*,J     |
| 936        | Fresh AM, Hawes         | I       | 1.00         | D,H          |
| 945        | Cl. Gold GEM, Derby     | I       | 0.20         | D,H,J        |
| 945        | Capital G, Bexhill      | I       | 0.75         | D,F          |
| 954        | Cl. Gold 954, Torquay   | I       | 0.32         | D,F          |
| 954        | Cl. Gold 954, H'ford    | I       | 0.16         | B,D,H,J      |
| 963        | Asian Sd, E. Lancs      | I       | 0.80         | H            |
| 963        | Liberty R, Hackney      | I       | 1.00         | D,F,H,J      |
| 972        | Liberty R, Southall     | I       | 1.00         | D,F,H,J      |
| 990        | R. Devon, E. Devon      | B       | 1.00         | B,D,F        |
| 990        | Magic AM, Doncaster     | I       | 0.25         | D,H          |
| 990        | C. G. Wolverhampton     | I       | 0.09         | D,J          |
| 999        | C. Gold GEM Nott'ham    | I       | 0.25         | D,H,J        |
| 999        | Magic 9-99 P'stn        | I       | 0.80         | E            |
| 999        | R. Solent               | B       | 1.00         | B,D,F        |
| 1017       | Cl. G. WAABC, Shr'shire | I       | 0.70         | D,H,J        |
| 1026       | R. Cambridgeshire       | B       | 0.50         | C*,D,H,J     |
| 1026       | Downtown R, Belfast     | I       | 1.70         | F,I          |
| 1026       | R. Jersey               | B       | 1.00         | B,D          |
| 1035       | RTL C'try(Ritz)1035     | I       | 1.00         | D,F,J        |
| 1035       | R. Sheffield            | B       | 1.00         | H            |
| 1035       | West Sound AM, Ayr      | I       | 0.32         | E            |
| 1116       | R. Derby                | B       | 1.20         | D,H,I,J      |
| 1116       | R. Guernsey             | B       | 0.50         | D,F          |
| 1116       | Valley R, Ebbw Vale     | I       | 0.50         | B            |
| 1152       | LBC 1152 AM             | I       | 23.50        | D,F,J        |
| 1152       | Pic'ly 1152, Manchr     | I       | 1.50         | E            |
| 1152       | Cl. G, Birmingham       | I       | 3.00         | B,J          |
| 1161       | R. Bedfordshire(3CR)    | B       | 0.10         | D,I*,J       |
| 1161       | Magic 1161, Goxhill     | I       | 0.35         | H            |
| 1161       | Southern Counties R     | B       | 1.00         | D,F          |
| 1170       | Magic 1170, Stockton    | I       | 0.32         | H            |
| 1170       | Capital G, Ports'm'th   | I       | 0.50         | D,F          |
| 1170       | 1170AM, High Wycombe    | I       | 0.25         | D,J          |
| 1242       | Capital G, Maidstone    | I       | 0.32         | D,F          |
| 1251       | C. G. Amberbury StEd    | I       | 0.76         | D,J          |
| 1260       | Brunel CG, Bristol      | I       | 1.60         | F            |
| 1260       | SabrasSnd, Leicester    | I       | 0.29         | J            |
| 1260       | R. York                 | B       | 0.50         | H            |
| 1296       | Radio XL, Birmingham    | I       | 5.00         | D,E,F,H,I*,J |
| 1305       | Magic AM, Barnsley      | I       | 0.15         | H            |
| 1305       | Premier via             | I       | 0.50         | D,E,F,J      |
| 1305       | Touch AM, Newport       | I       | 0.20         | F            |
| 1323       | Capital G, Southwick    | I       | 0.50         | D,F,J        |
| 1332       | Premier, Battersea      | I       | 1.00         | D            |
| 1332       | Cl. Gold 1332, Ptbo     | I       | 0.60         | D,H,J        |
| 1332       | Wiltshire Sound         | B       | 0.30         | F            |
| 1359       | Breeze, Chelmsford      | I       | 0.28         | D            |
| 1359       | Cl. Gold 1359, C'try    | I       | 0.27         | D            |
| 1368       | R. Lincolnshire         | B       | 2.00         | H            |
| 1368       | Southern Counties R     | B       | 0.50         | D            |
| 1377       | Asian Sd, Rochdale      | I       | 0.10         | D*,H         |
| 1413       | R. Gloucester, Boton    | B       | 0.50         | H*           |
| 1413       | Premier via ?           | I       | 0.50         | C,D,F        |
| 1413       | Premier, Dartford       | I       | 0.50         | H*           |
| 1431       | Breeze, Southend        | I       | 0.35         | C,D          |
| 1431       | Cl. Gold, Reading       | I       | 0.14         | C,D,E,F      |
| 1449       | R. Peterboro/Cambis     | B       | 0.15         | C*,D,H       |
| 1458       | R. Cumbria              | B       | 0.50         | E,H          |
| 1458       | Sunrise, London         | I       | 50.00        | C,D,E,J      |
| 1458       | Asian Netwk Langley     | B       | 5.00         | J            |
| 1485       | Cl. Gold, Newbury       | I       | 1.00         | B,C,D,J      |
| 1485       | R. Humberside (Hull)    | B       | 1.00         | H            |
| 1485       | R. Merseyside           | B       | 1.20         | E,F          |
| 1485       | Southern Counties R     | B       | 1.00         | C,D,F        |
| 1503       | R. Stoke-on-Trent       | B       | 1.00         | D,E,F,H,I,J  |
| 1521       | Breeze, Reigate         | I       | 0.64         | D,F,J        |
| 1530       | R. Essex, Southend      | B       | 0.15         | C,D,F        |
| 1530       | Cl. Gold W. Yorks       | I       | 0.74         | H            |
| 1530       | Cl. Gold Worcester      | I       | 0.52         | F,J          |
| 1548       | R. Bristol              | B       | 5.00         | F            |
| 1548       | Capital G, London       | I       | 97.50        | D,F          |
| 1548       | Forth AM, Edinburgh     | I       | 2.20         | H            |
| 1557       | R. Lancashire           | B       | 0.25         | H            |
| 1557       | Cl. Gold B7, N. hant    | I       | 0.76         | J            |
| 1557       | Capital G, So'ton       | I       | 0.50         | D,F          |
| 1566       | CountySnd, Guildford    | I       | 0.50         | B*,C,D,E,F   |
| 1584       | London Turkish R        | I       | 0.20         | C,D,F        |
| 1584       | R. Nottingham           | B       | 1.00         | D,H,J        |
| 1584       | R. Shropshire           | B       | 0.50         | D            |
| 1602       | R. Kent                 | B       | 0.25         | D,F          |

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

their early morning transmission to Pacific areas from Shepparton on **9.710** (Eng 0800-0900) is much weaker, rating only 22222 at 0815 in Truro.

Also received during the morning were R.Canada Int via Skelton, UK **9.595** (Eng, Fr to M.East 0500-0600), rated 44444 at 0520 in Morpeth; TWR Monte Carlo, Monaco **9.870** (Eng to Eur 0655-0820) 55444 at 0710 in Northampton; AWR via Forli **9.610** (Eng to Eur? 0930-1000) 44333 at 0930 in Morden; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 53443 at 0945 in Plymouth; R.Nederlands via Wertachtal **9.860** (Eng to Eur 1030-1225) 55555 at 1040 in Herstmonceux; R.Prague, Czech Rep. **9.880** (Eng to Eur 1030-1057) 44433 at 1057 in Oxted.

After mid-day R.Macedonia via Thessaloniki, Greece **9.935** (Gr) was 44444 at 1300 in W.London; V of Turkey, Ankara **9.460** (Tur to Eur, N.America 0800-2200) 33343 at 1335 in Liverpool; R.Pyongyang, Korea **9.335** (Sp, Eng to Eur 1800-2000) 42332 at 1837 in Colyton; V of Armenia via Kamo **9.965** (Eng to Eur 1955-2015) 34443 at 1955 in Newry; Africa No.1, Gabon **9.580** (Fr to C.Africa 0500-2200) 42242 at 2006 in Storrington; R.Ext.Espana (REE), Spain **9.840** (Eng 2100-2200 Sat/Sun) 33333 at 2100 in Appleby; R.Cairo, Egypt **9.990** (Eng to Eur 2115-2245) 54444 at 2140 in Freshwater Bay, IoW.

In the **7MHz (41m)** band good reception of World Harvest Radio (WHRI) via Maine, USA on **7.580** (Eng to N.America) was noted at midnight in Morpeth. Their transmission was a potent 44444. Some of the broadcasts to Europe in this band come from R.Japan via Woofferton, UK **7.230** (Eng, Jap 0500-0700), rated 55555 at 0655 in Herstmonceux; R.Polonia (Polish R), Warsaw **7.270** (Eng 1200-1300) 44333 at 1225 in Morden; R.Polonia (Polish R), Warsaw **7.285** (Eng 1400?-1430?) 33333 at 1420 in Stalbridge; R.Norway Int **7.485** (Norw 1800-1830) 54555 at 1800 in Liverpool; R.Denmark via R.Norway **7.485** (Dan 1830-1855) 44544 at 1840 in Colyton; V of Russia **7.300** (Eng [WS]) 25422 at 1825 in E.Bristol; V of Russia **7.380**

(Various) 54444 at 1858 in Freshwater Bay, IoW; R.Minsk, Belarus **7.210** (Eng 1930?-2000) 45444 at 1935 in Newry; RAI Rome **7.290** (Eng 1935-1955) 44444 at 1935 in Appleby; DW via Sines? **7.130** (Eng 2000-2045) 44444 at 2007 in St.Austell; R.Canada Int via Woofferton, UK **7.235** (Eng 2100-2200) SIO 444 at 2109 in N.Bristol; R.Macedonia via Thessaloniki, Greece **7.430** (Gr 1600?-2300?) 44434 at 2134 in Oxted; V of Turkey **7.190** (Eng 2200-2245?) 54544 at 2225 in Northampton; R.Minsk, Belarus **7.210** (Eng 0200-0230) SIO 544 at 0200 in Co.Fermanagh.

Many more broadcasts to Europe may be received in the **6MHz (49m)** band. Those mentioned in the reports came from R.Nederlands via Julich, Germany **6.045** (Eng 1030-1225), rated 44333 at 1143 in Oxted; Deutsch Welle (DW) via Julich? **6.140** (Eng Service) SIO 222 at 1500 in Co.Fermanagh; R.Prague, Czech Rep. **5.930** (Eng 1700-1727) 54444 at 1707 in Plymouth; R.Sweden via Horby **6.065** (Eng 1730-1800) 54444 at 1740 in Morden; R.Slovakia Int **5.920** (Eng 1830-1900) 43333 at 1633 in Colyton; Swiss R.Int via Julich, Germany **6.110** (Ger, It, Fr, Eng 1730-1930) 54554 at 1920 in Herstmonceux; Sri Lanka BC via Skelton, UK **6.010** (Eng to Eur 1900-2000 Sun) 44444 at 1930 in St.Austell; R.Finland, Helsinki **6.110** (Eng 1930-1945) 43334 at 1940 in Stalbridge; R.Canada Int via Skelton, UK **5.995** (Fr, Eng 1900-2200) 54454 at 2010 in Liverpool; R.Ukraine Int, Kiev **5.905** (Eng 2100-2200) 44333 at 2100 in Appleby; R.Japan via Skelton, UK **6.115** (Eng 2100-2200) 43343 at 2122 in Newry; R.Austria Int, via Moosbrunn **6.155** (Various) SIO 333 at 2139 in N.Bristol.

Also noted were some to other areas: VOA via Sao Tome **6.035** (Eng to W.Africa 2000-2300), rated 43334 at 2000 in Dudley; BBC via Antigua, W.Indies **5.975** (Eng to C/N.America 2100-0800) 45444 at 2228 in Northampton; BBC via Sackville, Canada **6.175** (Eng to USA 2200-0500) 35433 at 2228 in E.Bristol; R.Habana, Cuba **6.000** (Eng to N.America 0100-0500) 33333 at 0430 in Morpeth.

The SINPO code is used for broadcast station reports, here is an explanation of the code.

Signal Strength  
5 excellent  
4 good  
3 fair  
2 poor  
1 barely audible

Interference  
5 nil  
4 slight  
3 moderate  
2 severe  
1 extreme

Noise  
5 nil  
4 slight  
3 moderate  
2 severe  
1 extreme

Propagation Disturbance  
5 nil  
4 slight  
3 moderate  
2 severe  
1 extreme

Overall Merit  
5 excellent  
4 good  
3 fair  
2 poor  
1 unusable

Listeners:-

- (A) Simon Hockenhill, E.Bristol.  
(B) Sheila Hughes, Morden.  
(C) Brian Keyte, Gt.Bootham.  
(D) Eddie McKeown, Newry.  
(E) George Millmore, Wootton IoW.  
(F) Clare Pinder, while in Appleby.  
(G) Tom Smyth, Co.Fermanagh.  
(H) Fred Wilmshurst, Northampton.

## Medium Wave Chart

| Freq (kHz) | Station               | Country     | Power (kW) | Listener     |
|------------|-----------------------|-------------|------------|--------------|
| 531        | Ain Beida             | Algeria     | 600/300    | E*           |
| 531        | Berg                  | Germany     | 20         | D*,E         |
| 531        | RNE5 via ?            | Spain       | ?          | E            |
| 531        | Beromunster           | Switzerland | 500        | D*,E*,G*,H*  |
| 540        | Wavre                 | Belgium     | 150/50     | D*,H         |
| 540        | Sidi Bennour          | Morocco     | 600        | D*,E*        |
| 549        | Les Trembles          | Algeria     | 600        | A*,B*,D*,E*  |
| 549        | Thurnau (DLF)         | Germany     | 200        | B*,D*,E,H    |
| 558        | Espoo                 | Finland     | 50         | D*           |
| 558        | RNE5 via ?            | Spain       | ?          | E*           |
| 567        | Tullamore(RTE1)       | Ire         | 500        | A,C,D*,E,G,H |
| 567        | RNE5 via ?            | Spain       | ?          | E*           |
| 576        | Muhlackert(SDR)       | Germany     | 500        | D*,E,H*      |
| 576        | Riga                  | Latvia      | 500        | E*           |
| 585        | Paris(FIP)            | France      | 8          | E            |
| 585        | Madrid(RNE1)          | Spain       | 200        | A*,D*,E*     |
| 585        | Dumfries(BBCScott)    | UK          | 2          | D*           |
| 594        | Frankfurt(HR)         | Germany     | 1000/400   | D*,E*        |
| 594        | Oujda-1               | Morocco     | 100        | E*           |
| 594        | Muge                  | Portugal    | 100        | D*,E*        |
| 603        | Lyon                  | France      | 300        | E*           |
| 603        | Bucharest             | Romania     | 50         | E*           |
| 603        | Sevilla(RNE5)         | Spain       | 50         | E*           |
| 603        | Newcastle(BBC)        | UK          | 2          | C,D*         |
| 612        | Athlone(RTE2)         | Ire         | 100        | A,C,D*,E,G,H |
| 612        | RNE1 via ?            | Spain       | 10         | E*           |
| 621        | Wavre                 | Belgium     | 80         | E,H          |
| 621        | Barcelona(OCR)        | Spain       | 50         | D*           |
| 630        | Vigra                 | Norway      | 100        | D*           |
| 630        | Tunis-Djedeida        | Tunisia     | 600        | D*,E*        |
| 639        | Praha(Liblice)        | Czech       | 1500       | D*,E*        |
| 639        | RNE1 via ?            | Spain       | ?          | A*,E*        |
| 648        | Orfordness(BBC)       | UK          | 500        | B,C,E,G,H    |
| 657        | Madrid(RNE5)          | Spain       | 20         | E*           |
| 657        | Vneham(BBCWales)      | UK          | 2          | C,D*,G,H     |
| 666        | Messkirch(Rohrd(SWF)) | Germany     | 150        | D*,H*        |
| 666        | Lisboa                | Portugal    | 135        | D*,E*        |
| 675        | R10 FM                | Holland     | 120        | A,D*,E,H     |
| 684        | Sevilla(RNE1)         | Spain       | 500        | A*,D*,E*     |
| 684        | Avala(Beograd-1)      | Yugoslavia  | 2000       | E*           |
| 693        | Droitwich(BBC)        | UK          | 150        | E,H          |
| 693        | Enniskillen(BBC)      | UK          | 1          | G            |
| 702        | Flensburg(NDR)        | Germany     | 5          | D*,E*        |
| 711        | Rennes 1              | France      | 300        | A,D*,E,H     |
| 711        | Murcia(COPE)          | Spain       | 5          | E*           |
| 720        | Lisnagarvey(BBC4)     | N.Ireland   | 10         | G            |
| 720        | Norte                 | Portugal    | 100        | D*           |
| 720        | Lots Rd,Ldn(BBC4)     | UK          | 0.5        | C,E          |
| 729        | Cork(RTE1)            | Ire         | 10         | C,D*,E       |
| 729        | RNE1 via ?            | Spain       | ?          | D*,E*        |
| 738        | Paris                 | France      | 4          | E            |
| 738        | Barcelona(RNE1)       | Spain       | 500        | D*,E*        |
| 747        | Flevo(Hiltv2)         | Holland     | 400        | A,D*,E,H     |
| 756        | Braunschweig(DLF)     | Germany     | 800/200    | D*,E*        |
| 756        | Bitbaol(EI)           | Spain       | 5          | E*           |
| 756        | Redruth(BBC)          | UK          | 2          | C,D*,E,G     |
| 765        | Sottens               | Switzerland | 500        | D*,E*        |
| 774        | Enniskillen(BBC)      | N.Ireland   | 1          | D*,G         |
| 774        | RNE1 via ?            | Spain       | ?          | D*,E*,H*     |
| 783        | Leipzig(MDR)          | Germany     | 100        | D*,E*        |

| Freq (kHz) | Station              | Country    | Power (kW) | Listener    |
|------------|----------------------|------------|------------|-------------|
| 792        | Lingen(NDR)          | Germany    | 5          | D*          |
| 792        | Sevilla(SER)         | Spain      | 20         | E*          |
| 792        | Londonderry(BBC)     | UK         | 1          | G           |
| 801        | Munchen-Ismaning     | Germany    | 300        | D*,E*       |
| 801        | RNE1 via ?           | Spain      | ?          | E*          |
| 810        | Volgograd            | Russia     | 150        | E*,H*       |
| 810        | Madrid(SER)          | Spain      | 20         | D*,E*       |
| 810        | Westerglen(BBCScott) | UK         | 100        | C,D*,G,H*   |
| 819        | Batra                | Egypt      | 450        | E*          |
| 819        | Toulouse             | France     | 50         | A*,D*       |
| 837        | Nancy                | France     | 200        | D*,G*       |
| 837        | COPE via ?           | Spain      | ?          | D*,E*       |
| 846        | Rome                 | Italy      | 1200       | A*,D*,E*,H* |
| 855        | RNE1 via ?           | Spain      | ?          | A*,D*,E*,H* |
| 864        | Paris                | France     | 300        | D*,E,G*     |
| 873        | Frankfurt(AFN)       | Germany    | 150        | C,D*,E*     |
| 873        | Zaragoza(SER)        | Spain      | 20         | D*,E*       |
| 873        | Enniskillen(R.U.I)   | UK         | 1          | D*,G        |
| 882        | COPE via ?           | Spain      | ?          | D*          |
| 882        | Washford(BBCWales)   | UK         | 100        | C,D*,E,G,H  |
| 891        | Algiers              | Algeria    | 600/300    | E*          |
| 900        | Brno(CRo2)           | Czech Rep. | 25         | D*,E*       |
| 900        | Milan                | Italy      | 600        | A*,Q*       |
| 909        | Lisnagarvey(BBC5)    | N.Ireland  | 10         | G           |
| 909        | B'mans Pk(BBC5)      | UK         | 140        | E*,H        |
| 918        | Domzale              | Slovenia   | 600/100    | D*,E*,F*    |
| 927        | Wolvertem            | Belgium    | 300        | D*,E,H      |
| 936        | Bremen               | Germany    | 100        | D*,E*       |
| 936        | Venezia              | Italy      | 20         | E*          |
| 945        | Toulouse             | France     | 300        | D*          |
| 954        | Brno (CRo2)          | Czech Rep. | 200        | D*,E*       |
| 954        | Madrid(CI)           | Spain      | 20         | A*,E*       |
| 963        | Pori                 | Finland    | 600        | A*,D*,E*,F* |
| 963        | Tir Chonail          | Ire        | 10         | G*          |
| 972        | Hamburg(NDR)         | Germany    | 300        | D*,E*       |
| 972        | RNE1 via ?           | Spain      | ?          | E*          |
| 981        | Alger                | Algeria    | 600/300    | B*,E*       |
| 990        | Berlin               | Germany    | 300        | D*,E*       |
| 990        | Tywyn(BBC)           | UK         | 1          | D*,G        |
| 999        | Schwerin (RIAS)      | Germany    | 20         | D*          |
| 999        | Madrid(COPE)         | Spain      | 50         | D*          |
| 1008       | Flevo(Hiltv-5)       | Holland    | 400        | D*,E,H      |
| 1017       | Rheinsender(SWF)     | Germany    | 600        | D*,E*       |
| 1035       | Lisbon(Prog3)        | Portugal   | 120        | D*          |
| 1044       | Dresden(MDR)         | Germany    | 20         | D*,E*       |
| 1044       | S. Sebastian(SER)    | Spain      | 10         | D*,E*       |
| 1053       | Talk Sport via ?     | UK         | ?          | D*,E,H      |
| 1062       | Kalundborg           | Denmark    | 250        | D*,E*       |
| 1062       | R. Uno via ?         | Italy      | ?          | D*,E*       |
| 1071       | Riga                 | Latvia     | 50         | E*          |
| 1071       | Bitbaol(EI)          | Spain      | 5          | D*          |
| 1071       | Talk Sport via ?     | UK         | ?          | D*,E*       |
| 1080       | SER via ?            | Spain      | ?          | D*,E*       |
| 1089       | Talk Sport via ?     | UK         | ?          | D*,E,G,H    |
| 1098       | Nitra(Jarok)         | Slovakia   | 1500       | D*,E*       |
| 1107       | AFN via ?            | Germany    | 10         | D*          |
| 1107       | RNE5 via ?           | Spain      | ?          | D*          |
| 1107       | Talk Sport via ?     | UK         | ?          | D*,E,G      |
| 1116       | Bari                 | Italy      | 150        | D*          |
| 1125       | La Louviere          | Belgium    | 20         | D*,E*       |
| 1134       | Zadar(Croatian R)    | Croatia    | 600/1200   | A*,D*,E*,H* |
| 1134       | COPE via ?           | Spain      | 2          | D*          |
| 1143       | AFN via ?            | Germany    | 1          | D*          |

| Freq (kHz) | Station            | Country      | Power (kW) | Listener         |
|------------|--------------------|--------------|------------|------------------|
| 1143       | Stuttgart(AFN)     | Germany      | 10         | E*               |
| 1143       | COPE via ?         | Spain        | 2          | D*               |
| 1179       | Solvesborg         | Sweden       | 600        | A*,D*,E*,H*      |
| 1188       | Kuurne             | Belgium      | 5          | D*,E*            |
| 1188       | Szolnok            | Hungary      | 135        | E*               |
| 1197       | Munich(VOA)        | Germany      | 300        | D*               |
| 1197       | Virgin via ?       | UK           | ?          | D*,E,G,H         |
| 1206       | Bordeaux           | France       | 100        | A                |
| 1215       | Virgin via ?       | UK           | ?          | D*,E,G,H         |
| 1224       | Lelystad           | Holland      | 50         | D*,E*            |
| 1233       | Nitra              | Slovakia     | 40         | D*               |
| 1233       | Virgin via ?       | UK           | ?          | D*,H             |
| 1242       | Virgin via ?       | UK           | ?          | D*               |
| 1251       | Huisberg           | Netherlands  | 10         | D*,E*            |
| 1260       | SER via ?          | Spain        | ?          | D*,E*            |
| 1269       | Neumunster(DLF)    | Germany      | 600        | D*,E*,H*         |
| 1278       | Dublin(Cork(RTE2)) | Ire          | 10         | C,D*,E*,G,H      |
| 1287       | RFE via ?          | Czech Rep.   | ?          | D*,E*            |
| 1296       | Valencia(COPE)     | Spain        | 10         | E*               |
| 1296       | Orfordness(BBC)    | UK           | 500        | C*               |
| 1305       | RNE5 via ?         | Spain        | ?          | D*,E*            |
| 1314       | Kvitsoy            | Norway       | 1200       | A*,D*,E,H*       |
| 1323       | W'brunn (V.Russia) | Germany      | 1000/150   | D*,H*            |
| 1332       | Rome               | Italy        | 300        | E*               |
| 1341       | Lisnagarvey(BBC)   | N.Ireland    | 100        | C,E*,G,H*        |
| 1350       | Cesvaine/Kuldiga   | Latvia       | 50         | D*,E*            |
| 1359       | Madrid(RNE-FS)     | Spain        | 600        | E*               |
| 1368       | Foxdale(Manx R)    | Is of Man    | 20         | C*,D*,E*,F,G*    |
| 1377       | Lille              | France       | 300        | D*,E,H           |
| 1386       | Bolshakovo         | Russia       | 2500       | B*,D*,E*         |
| 1395       | Filake             | Albania      | 1000       | D*               |
| 1395       | Lopic              | Netherlands  | 120/40     | E,H              |
| 1404       | Brest              | France       | 20         | B*,D*,E*,H*      |
| 1413       | RNE5 via ?         | Spain        | ?          | D*,E*            |
| 1422       | Heusweiler(DLF)    | Germany      | 1200/600   | D*,E*,H*         |
| 1440       | Marnach(RTL)       | Luxembourg   | 1200       | B*,D*,E*,H*      |
| 1440       | Dammam             | Saudi Arabia | 1600       | A*,B*,D*         |
| 1449       | Redmoos(BBC)       | UK           | 2          | A*,B*,C,D*,E*,G* |
| 1458       | Filake             | Albania      | 500        | E*               |
| 1467       | Monte Carlo(TWR)   | Monaco       | 1000/400   | B*,D*,E*         |
| 1476       | Wien-Bisamberg     | Austria      | 600        | A*,D*,E*         |
| 1485       | SER via ?          | Spain        | ?          | B*               |
| 1494       | Clermont-Ferrand   | France       | 20         | B,D*,H*          |
| 1494       | St.Petersburg      | Russia       | 1200       | D*,E*            |
| 1512       | Wolvertem          | Belgium      | 300        | D*,E*,F*,H*      |
| 1521       | Kosice(Cizaitce)   | Slovakia     | 600        | D*,E*,H*         |
| 1521       | Duba               | Saudi Arabia | 2000       | A*               |
| 1530       | Vatican R          | Italy        | 150/450    | C,D*,E*,H*       |
| 1530       | Penheira(VOA)      | Sao Tome     | 100        | G*               |
| 1539       | Mainflingen(ERF)   | Germany      | 350(700)   | D*,E*,G*,H*      |
| 1575       | Genova             | Italy        | 50         | A*,E*,H*         |
| 1575       | SER via ?          | Spain        | 5          | D*,E*,H*         |
| 1584       | SER via ?          | Spain        | 2          | E*               |
| 1593       | Holzkirchen(VOA)   | Germany      | 150        | D*,E*            |
| 1602       | SER via ?          | Spain        | ?          | E*,H*            |
| 1602       | Vitoria(EI)        | Spain        | 10         | D*,E*,H*         |
| 1611       | Vatican R          | Italy        | 15         | C,D*             |

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

# aor AR8600



Faris Raouf, recovering from his recent move to wild and wet North Wales, gets his hands on the very latest from AOR. Here he uses the therapy of radio to relax and discover.

## Transportable Wide-band Receiver

**B**efore I say anything else, I want to point out that the AR8600 is **not** just a repackaged AR8200. Admittedly there are more similarities than differences between the two - they share the same frequency coverage, the same basic specs, the same display and almost the same button arrangements, for example. But the AR8600 is obviously not a hand-held portable receiver, instead being more at home in your shack or in your car. It is still portable, though, or more accurately what AOR refer to as 'transportable' - an internal NiCad battery pack can optionally be fitted into the case of the receiver, allowing you to use it anywhere you want to. A more important difference between the AR8600 and the AR8200, is the fact that the new model's front-end has been very much re-designed. The end result, according to AOR, is much better performance in general, and adjacent channel rejection in particular. I'll let you know if I agree with this once I've taken you through a more in-depth tour of the radio, highlighting some other differences between the AR8600 and the AR8200 along the way.

### What's In The Box?

I always like to start my reviews with a list of what you'll actually get in the box if you decide to actually buy the product I'm writing about, and I normally do this by simply listing what I can see in front of me. In this case that would be impossible, though, as AOR

sent me a huge number of optional items to play with along with all the standard ones. But as I understand it, of the huge pile of toys I see in front of me, what you would actually get as standard is the radio itself, which is extremely well-built and should last a lifetime, a telescopic whip antenna with a flexible base joint, a medium wave bar antenna, a user manual, and a mains power supply unit. As for the options, well, these are actually pretty similar to those available for the AR8200, and I'll mention some of them as I go on to describe the specifics of the AR8600.

### The Tour

We'll start our tour around the back of the AR8600, and quite frankly there's an awful lot to say here.

For a start, there's the usual 12V power input, along with two BNC sockets. The first BNC is the main antenna connection, while the second is a 10.7MHz i.f. output. This latter socket won't be of much interest to many users, but it is invaluable if you want to attach something like AOR's SDU5500 spectrum display unit, or certain types of sophisticated data decoders, to this radio.

Next you'll find a strange rectangular connector, located towards the top of the rear panel. This is where the AR8600's medium wave bar antenna attaches. Small and easily lost, this antenna is very similar to the one supplied with the AR8200, and is actually quite effective.

# aor AR8600



Close to the bar antenna connector are a standard 9-pin RS-232 port, an external speaker output, and a proprietary connector labelled 'ACC'. The RS-232 port allows full computer control of the AR8600 via software available absolutely free from AOR's Internet web site. Indeed, the same software used to control the AR8200 is used to control the AR8600. Having said that, there are a couple of minor incompatibilities between the current version of the software and the AR8600, but AOR tell me this will be sorted out soon. (AOR tell me that the software that Faris was supplied with for the review is that intended for the AR8200, a new version that will operate with the AR8600 and the AR8200 will be available by the time you read this - Ed.)

The external speaker output, which is on a 3.5mm socket, needs no additional comment. The 'ACC' connector, however, does. Basically, it provides access to a number of interesting things, primarily an unfiltered audio output - in other words a discriminator/detector output - yahoo! The 'ACC' connector also provides a tape motor relay interface, high and low level audio outputs, a low current 12V output and a ground.

If what I've described so far doesn't excite you, what comes next will...

## Option Slots

The lower section of the AR8600's rear panel has a set of five small slots in it. These are designed to accommodate the same optional slot cards available for the AR8200, of which there are five in total; a Voice Inverter card, a CTCSS squelch and search card, a tone eliminator card, a solid-state audio recorder card, and an external memory card. However, unlike the AR8200, which only has one card slot, since there are five slots on the AR8600 and five

cards in total, you can actually fit all of the available cards simultaneously into this radio rather than just one at a time. The bad news is that only two cards can be active at any one time, and not any two at that - the cards are split into two groups, with the tone eliminator, CTCSS and voice inverter cards falling into group one, and the solid-state audio recorder and extended memory card falling into group two, and you can only select one card from each group for use at any one time. Oh well, nothing's perfect.

## Where The Action Is

Having dealt with the rear panel, it's finally time to look at the front panel. On the left hand side you'll find individual rotary squelch and volume controls, with the volume control doubling as a master power switch.

Just underneath these is a 3.5mm headphone socket.

Moving to the right hand side of the front panel you'll find a set of four cursor keys and a larger rotary knob. The primary purpose of the cursor keys is to selecting options when adjusting the AR8600, and the primary function of the knob is to adjust frequency settings. However, the knob can also be used to adjust settings, and the cursor keys can also be used to adjust frequency.

All the real action lies in the middle area of the front panel, of course. Here you'll find the radio's l.c.d., which as I said before is identical to that of the AR8200. Therefore, the top third boasts a total of 20 textual or iconic function and status indicators that appear or disappear as necessary, while the rest consists of a 30 x 70 pixel dot matrix display.

Under normal circumstances, the dot matrix area displays a very clear seven segment S-meter at the bottom, radio mode, receive mode, and step setting at the top, and AOR's trademark dual-v.f.o. frequency readout in the middle. When editing any of the radio's functions, settings or memories, the dot matrix area changes appropriately, for example showing you the alphanumeric name you've given a memory location along with the bank and location name and the frequency itself.

To the left of the display you'll see just three buttons, 'STBY', 'K.L.' and 'MONI'. 'MONI' (Monitor) normally just opens up the squelch completely, or automatically tunes to the second frequency in a duplex transmission if you've enabled this option elsewhere. 'K.L.' (Key Lock) locks the keyboard to prevent accidental changes from being made. 'STBY' (Standby) is actually the button that AOR recommend you use to switch the radio on and off in general use rather than the master power switch. Hmm!

To the right of the display you'll find the AR8600's numeric keypad, plus '.' (decimal Short Wave Magazine, November 2000

point) and 'ENT' (Enter) keys. Each and every one of these buttons, even the 'ENT' key, has a second function (which allows such things as the step size or receive mode to be adjusted), identified with an additional label just above the key itself. These are accessed by simply pressing and releasing the 'FUNC' key, which is located in an additional row of buttons at the bottom of the front panel, then pressing the key below the label for the function you want. Pressing 'FUNC' then the '2' key allows you to adjust the frequency step, for example. Many of the buttons have tertiary functions too. These are normally labelled in orange below the keys and are accessed by pressing and holding the 'FUNC' button for a short time, releasing it, then pressing the required key.

As I mentioned a moment ago, the 'FUNC' key is in a row of keys at the bottom of the front panel. Other buttons located here include one to swap between the two v.f.o. frequencies (2VFO), one to activate the AR8600's bandscope function (BAND) and ones to activate the radio's search (SRCH) and scan (SCAN) facilities. Most of these buttons have secondary and tertiary functions just like the numeric keypad ones, but annoyingly not all of these are labelled.

## Features And Facilities

This is a review, not a user manual, so I'm not going to explain exactly which keys you need to press in order to activate each function I mention. I will break this rule a few times for the purposes of illustration, however. Be assured, though, that access to all the AR8600's functions are arranged in a quite logical manner.

So, let's start with the basics. To tune to a particular frequency, you just enter it in MHz using the numeric pad, entering the decimal point as required. You can then use the large knob or the cursor keys to move up and down frequency according to the step size you've set using the 'FUNC' '2' (STEP) key sequence. Pre-programmed step sizes of 0.05, 0.1, 0.2, 0.5, 1.0, 2.0, 5.0, 6.25, 8.33, 9.0, 10.0, 12.5, 20.0, 25.0, 30.0, 50.0 and 100kHz are available, and if necessary you can also enter a user-defined step size.

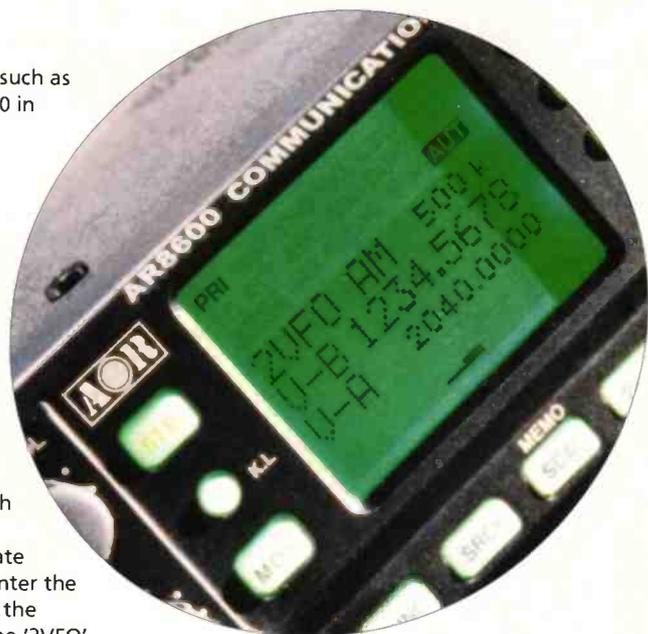
Receive mode is set using the key sequence 'FUNC' '3' (MODE), with options of w.b.f.m., n.b.f.m., s.f.m., w.a.m., a.m., n.a.m., u.s.b., l.s.b., c.w. and AUTO. Most of these are self explanatory, but two need further explanation. s.m. is basically just f.m. with a particularly narrow filter, but can be useful to home in on a particular signal in a busy band. The AUTO receive mode activates the AR8600's built-in band plan and causing its mode and step setting to be adjusted automatically for you. If configured elsewhere, it will also make fine adjustments to a receive frequency and step size based on information in the radio's band plan. For example, if you select 917MHz as your receive frequency (one of the starting points for analogue cellular telephone systems and a frequency I simply use as an example - do not tune in here yourself as it is highly illegal), the AR8600 will automatically adjust the receive frequency to 917.0125, which it will then increment in 25kHz steps. This is necessary in order to match the true band plan that is used in this frequency range. A similar facility allows you to do other things that would be impossible on less

sophisticated radios, such as tune from, say, 148.10 in 20kHz steps. All very clever stuff!

## Finding Frequencies

If you don't know an exact frequency for a transmission you are searching for, or just want to see what's out there, you can use the AR8600's v.f.o. search mode to search between any two frequencies. To activate this mode, you just enter the starting frequency in the current v.f.o., press the '2VFO' button to switch to the second v.f.o., and enter the ending frequency. Pressing and holding the '2VFO' button then causes the AR8600 to continuously search for transmissions between these two frequencies.

The AR8600 also has 40 programmable search pair banks. These allow you to program and store 40 start and end frequencies between which the radio will search at the push of the 'SRCH' button. The search pair banks are labelled simply 'a' to 't'



# Very usefully, you can program up to nine, individually selectable, scan link configurations into the AR8600

for banks '1' to '20' and 'A' to 'T' for banks 21 to 40, but you can quite easily add an alphanumeric title (e.g. 'VHF' to each bank to make it easier to identify later.

Very usefully, you can program up to nine, individually selectable, scan link configurations into



# aor AR8600



the AR8600. These allow you to link any or all of the 40 search pairs, which would then be searched through one after the other. It is also possible to have the AR8600 automatically store active frequencies it finds while searching into memory for you, to ignore non-voice transmissions, and to treat transmissions it comes across as 'active' only as long as they are above a certain signal level.

## Manual Storage

Assuming you don't want to use the AR8600's automatic frequency store feature, once you've found a frequency of interest you will undoubtedly want to store it manually in one of the radio's 1000 main user memory locations. This can be done with a push of a button or two, and you can add a 12 character alphanumeric description to each one for subsequent easy identification. The step,

mode and a number of other things to do with the current way you've configured the radio are also stored along with the frequency.

The AR8600's memory locations

are split into banks labelled 'a' to 'j' and 'A' to 'J', in a similar way to the search banks. Bank 'J', incidentally, is the bank into which the AR8600's automatic store facility always writes any active frequency it finds. By default, each of the 20 banks has 50 channels for you to store your frequencies in. You can actually alter the number of channels in each bank if you want, but only up to a point; upper and lower case banks of the same letter (e.g. D and d) are linked, and must always have a total of 100 memory locations between them. What's more, the maximum and minimum number of memory locations in any one bank is 90 and 10 respectively.

Having stored some frequencies, the next thing you'll probably want to do is scan through them. This is achieved by simply pressing the SCAN button. Selecting which bank you want to scan through is done by pressing the numeric key representing the correct bank (one press of the '1' button would scan bank 'a', and a second press would scan bank 'A', for example), or by pressing the left or right cursor keys to step up or down through all available banks.

To scan through more than one bank at once, you need to activate the AR8600's scan link facility. This is similar to the search link facility, and again you can set up nine individually selectable sets of links. It is also possible to select one or more individual channels within one or more banks, and to scan through only these selected channels. And, if required, you can tell the AR8600 not to scan through any memory locations unless they match the mode you specify (e.g. f.m.), to ignore any transmissions that are not voice transmissions, and to ignore any transmissions below a certain received signal level. Best of all, though, if you have stored a frequency and can't remember which bank it was in, you can even have the AR8600 search through all the alpha tags you've stored along with your frequencies and look for a particular string, for instance, 'MARINE'.

## Additional Features

The AR8600 has quite a few other interesting features worth mentioning, such as a built-in attenuator, a noise limiter, an AFC circuit, ten additional 'quick memory' locations, and a sophisticated memory channel/frequency pass facility. These are relatively self-explanatory, and quite frankly I don't have room to give you any more details on them. I can't finish my tour of the AR8600 without telling you about the AR8600's band scope, though. When activated, this gives you a graphical representation of the activity around the currently selected frequency, and allows you to quickly tune in to any area of interest. Like most other radio's band scope facilities, unfortunately, when the band scope is active you can't hear what's happening on any frequency unless you suspend the scope function first.

**SWM**



## In Use

I mentioned at the start of this review that the AR8600 has a redesigned r.f. circuitry. Amongst other things, this features a preselected front-end utilising varicap tuning across the range 75 to 470MHz. This receiver also utilises a temperature compensated crystal oscillator to ensure high stability. I noticed very minimum number of internal spurious. What this translates to in practice, is that the AR8600 is much more selective than an AR8200 (and most other mobile and portable receivers for that matter), and does not suffer from as much strong signal break-through, nor from as many birdies. Indeed, at my new offices, which are admittedly out in the wilds of North Wales, I encountered no break-through at all, and came across impressively few birdies. The same cannot be said of my Mark 1 AR8200 when used right next to the AR8600. What's more, I found the AR8600 much more sensitive than the AR8200 on just about every band I tried. In fact it worked a treat with just the telescopic antenna supplied as standard. I also found the AR8600 much easier to program and use than my AR8200, mainly thanks to it being fitted with individual cursor keys instead of that highly annoying four-way rocker switch.

I do have a few complaints though. For a start, I found the buttons just a tad on the small side for my liking. AOR's decision to use such small buttons is perfectly understandable, though, as if they were any bigger the radio as a whole would have to be bigger, which would have an impact on its portability. I was also annoyed about the fact that, just like the AR8200, the AR8600 pauses for up to five seconds when you change banks across one that has no frequencies stored in it. AOR suggest you make sure each and every bank has a frequency stored in it in order to prevent this happening, and this certainly does work. But it is a big disappointment on a radio of this sophistication.

Overall though, I was very impressed by the AR8600. A firm price had not been set at the time of writing, but all expectations are that it will be around £799, which isn't too bad at all considering what this radio offers. It is therefore well worth investigating further if you are in the market for a very sophisticated and sensitive radio you can use at home or in the car, or even away from any power source at all.

Thanks to **AOR (UK) Ltd., 4E East Mill, Bridgefoot, Belper, Derbyshire DE56 2UA**, Tel: **(01773) 880788**, web: **www.aoruk.com** for supplying me with one of the very first AR8600s in the UK, and effectively making Christmas come early to the Raouf household this year!

# Whips, Loops & A Bit Of Feedback

About a hundred pounds or thousands of pounds? You choose!

This month something a bit different, JW compares an active loop antenna costing around one hundred pounds to multi-thousand pound alternatives from Rohde & Schwarz. See which one you'd choose.

It's funny how several unconnected things come together and focus your mind on a subject you hadn't before considered. In my case, the unconnected subjects were DefStan 59-41, BS EN 60945, the Lowe HF-350 and Wellbrook loop antennas. To explain: DefStan 59-41 is an MOD EMC test standard which calls for (amongst many other things) measurement of E-field radiated emissions below 30MHz, by use of an active rod antenna. BS EN 60945 is the European Harmonised test standard for marine equipment, also calling for radiated emission measurement below 30MHz but using a screened loop antenna measuring the H-field component of the emissions from equipment. The Lowe HF-350 and Wellbrook antenna came together at the time of my review of the receiver, when I commented on the rather neat idea of Palstar in providing a switched d.c. feed to the centre of the coaxial antenna connector so that the user could feed an active antenna system. The receiver handbook mentions only the Lowe AA-150 (manufactured by RF Systems and badged for Lowe) as being a suitable antenna, but I had been evaluating the Wellbrook ALA-1530 loop at the EMC Centre with a view to using it as a low cost alternative to a Rohde & Schwarz loop antenna which I normally use. The low cost comes from the fact that the Wellbrook loop can be had for about £120 whilst the Rohde & Schwarz loop costs just over £3500. You can understand my interest.

The ALA 1530 is made up of three parts, the one metre diameter loop with an impedance matching network and amplifier in its base, a mains power supply which delivers 12V d.c., and an interface box which feeds the d.c. up the coaxial cable to the active bit of the antenna but prevents it from feeding back to the receiver, and also an r.f. network which allows the incoming signals from the antenna to be passed to the receiver without being shunted to ground by the low impedance of the d.c. supply. The d.c. supply can of course come from any source, such as a battery, so the ALA 1530 is equally at home when used as a portable device. If you have a receiver such as the Lowe HF-350 in

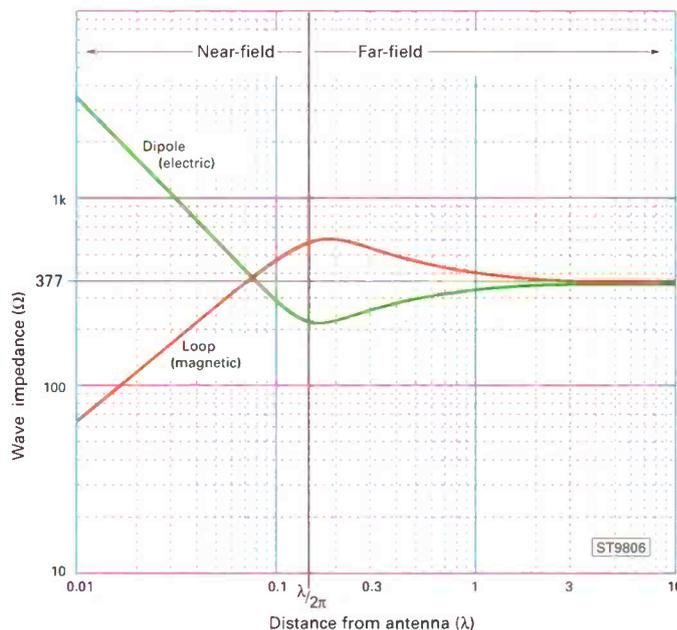
which the designer has provided a 12V d.c. feed via the receiver antenna socket, then it's even easier.

## Couldn't Resist It

So, having the ALA 1530 available I couldn't resist trying it out on the HF-350 to see how it performed. The handbook for the receiver says that the active antenna power feed is limited by an electronic fuse, and I checked that the trip limit on the review receiver operated at 140 to 150mA, which meant that the Wellbrook would operate comfortably without tripping the supply and indeed it did operate faultlessly. I used the ALA 1530 for several days on the HF-350 and it produced terrific results; so much so that I took a closer look at the relative performance of active loops and active whips and thought that the readers of *Short Wave Magazine* would appreciate an article on my findings.

First of all a bit of background. As short wave listeners, we are accustomed to having our receivers and antennas operating in what is known as the far field of any transmitting source. This is the region where a transmitted signal (or emission in EMC terms) is made up of an electric (or E) field, and a

**Fig. 1: Wave impedance, high for E-field and low for the H-field. The commonly accepted impedance plots for the near to far field transition.**

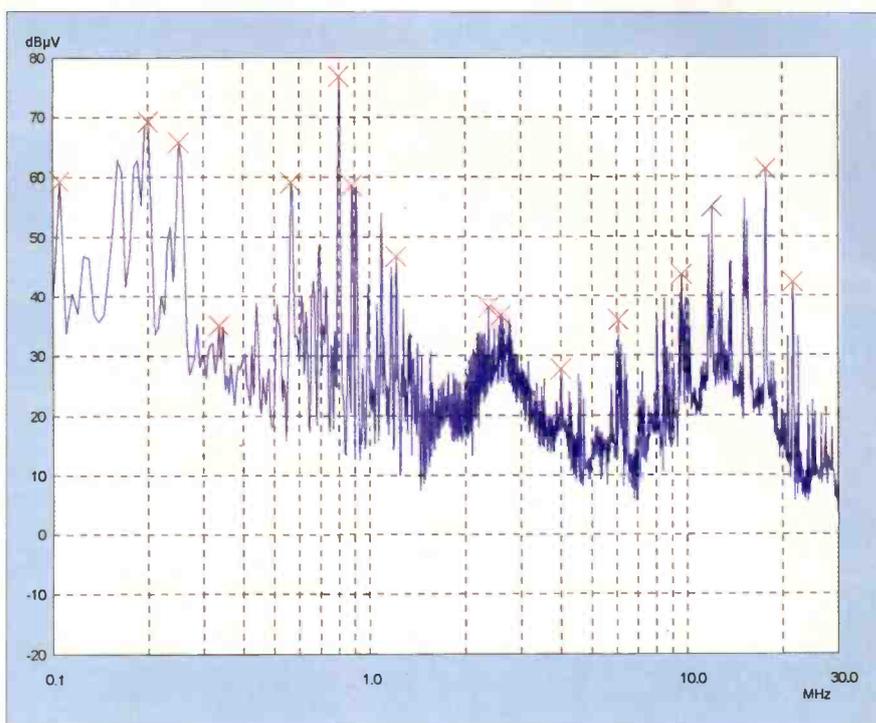


"if you consider that most sources of electrical noise such as the dreaded PC radiate their noise from the mains wiring, and that in the near field the E field dominates, it is indisputably true that an antenna which responds to the E field and which is in this cloud of radiated noise will transfer the noise to your receiver and effectively blanket any wanted signals which are arriving from the far field."

magnetic (or H) field which exist together to make up the electromagnetic wave. However, in the near field which, is commonly taken to be within a distance of  $\lambda/2\pi$  or roughly one sixth of a wavelength from the source, the relationship between the E-field and the H-field is difficult to determine, and the wave impedance becomes high for the E-field and low for the H-field. The commonly accepted impedance plots for the near to far field transition are

shown in **Fig.1** and without pursuing this much further let's think about the near field distances for the frequencies in which we might be interested as listeners. If you are listening to Rugby on 60kHz, the near field exists up to about 800m from the source, whereas at 3MHz the near field exists up to about 17m from the source, and at 6MHz up to about 8.5m. What has this got to do with the listening hobby? Well, if you consider that most sources of electrical noise such as the dreaded PC radiate their noise from the mains wiring, and that in the near field the E field dominates, it is indisputably true that an antenna which responds to the E field and which is in this cloud of radiated noise will transfer the noise to your receiver and effectively blanket any wanted signals which are arriving from the far field, in other words just those signals you want to hear and can't because of the electrical din created by your house wiring and all the devices connected to it. Haven't you ever noticed that the low frequency DXers in the USA have regular summer visits to long sandy beaches with no local inhabitants, and set up their Beverage antennas connected to receivers running from battery power? Why is that? Answers on a postcard please.

For my first tests I had at my disposal (who's a lucky chap?) a Rohde & Schwarz HFH2-Z6 active whip E field antenna and a matching HFH2-Z2 active screened H field loop antenna, together with the Wellbrook ALA 1530 active (unscreened) loop. I set each antenna in turn on a one metre tripod located just outside the EMC test centre and connected by a 10m cable to a Rohde & Schwarz ESHS-10 test receiver. I took a spectrum sweep of the frequencies from 150kHz to 30MHz and the results from the Rohde & Schwarz antennas are shown in **Fig. 2** and **Fig. 3**. The active whip (**Fig. 2**) shows signal levels approaching 80dB microvolts in the medium wave band, and apparent peaks of signals at around 2.5 and 15MHz. The screened loop (**Fig. 3**) has a much flatter response, with signal levels being down on the whip, which can be explained by the fact that



**Fig. 2: The Rohde & Schwarz active whip spectrum sweep 150kHz to 30MHz.**

the loop has an antenna factor of 20 whilst the whip's antenna factor is 8. (That's EMC talk which tells us that the whip has more built in gain than the loop.) Now for the £100 loop from Wellbrook using exactly the same set-up as for the £3500 antennas from Rohde & Schwarz. The results are shown in **Fig. 4** and it doesn't take sharp eyesight to see that not only are low frequency signals well up to those shown by the active whip, but the noise peak at 2.5MHz from the whip is no longer present and real signals can be seen, and the signal levels between 5 and 22MHz are as high as those using the whip **but** there is no background noise peak at 15MHz, simply more real signals appearing out of the noise floor and then disappearing again in between each peak.

What does this all mean? I took another sweep over the range 1 to 5MHz using the Rohde & Schwarz active whip and repeated the same sweep using the Wellbrook loop. Compare **Fig. 5** which shows the signals from the active whip, against **Fig. 6** which shows the signals from the Wellbrook loop taken three minutes after the whip measurement. The massive peak of noise around 2.5MHz from the whip can be seen to consist of a comb of discrete signals, but the loop antenna shows no sign on these at all, and indeed real signals can be seen in the very region blanketed by the noise produced by the whip. Where did this noise come from? Quite simply from the PC which was running the receiver control software, but this was located within a screened control room some 10m away from the antennas and hence within the near field.

### Surprising Results

I have to admit that I was very surprised by the results and reverted to manual control of the test receiver in order to tune around as a short wave

**Continued on page 22...**

# HAYDON

## Communications



Mail order: 01708 862524



NEXT DAY DELIVERY TO MOST AREAS, £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". Coax supplied: 20m and PL-259 plugs. SSP £129.00

INTRO PRICE **£69.95** P&P £8.50

### 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.

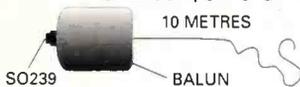
ONLY **£49.95** P&P £5



### 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.

ONLY **£29.95** P&P £3.00



### GLOBAL AT-2000

Deluxe SW ATU 0-30MHz. SO239 fittings.

ONLY **£85.00** P&P £5  
(Probably the best ATU around)



### RECHARGEABLE ALKALINE CELLS

Starter kit includes charger & 4 x AA cells.

**£13.99** + £2.50 P&P.  
Please note that only the special cells can be recharged with this charger. Extra cells available @ 8 x AA pack £10.99 £1 P&P. 4 x AA pack £5.99 £1 P&P. 4 x AAA £6.25 £1 P&P  
Rechargeable Alkaline. No memory effects. 1.5V cells. 3 x capacity of nicads. NO QUIBBLE WARRANTY



### Q-TEK BALUN

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

ONLY **£22.95** P&P £1



### Q-TEK WIRE CYCLOPSE

Your eye-in-the-sky. The ultimate short wave receiving antenna. Doesn't your short wave receiver deserve something better than just a simple long wire? Well, here it is - the wire Cyclops. A unique ready to go antenna system that works from 0-30MHz. The antenna is centre fed with coax (supplied) and incorporates six tuned coils for optimum reception. The system also incorporates an anti-interference balun and comes ready assembled for immediate use. At only 15.5mtrs (51ft) long it will certainly fit most gardens. (Mounts horizontally down garden). Includes 20m coax lead and PL-259plugs.

INTRO PRICE **£59.95** P&P £8.50



### ROYAL DISCONE

(Stainless steel)  
Frequency range: receives 25-2000MHz, transmit 6/2/70/23cm, connector N type. High sensitivity with an amazing range of transmitting frequencies. Comes complete with mounting hardware & brackets. SSP £49.99.

SPECIAL OFFER **£29.95** P&P £8.50



### REGULAR-GAINER RH-770

BNC 21cm flexible whip that is ideal as replacement

OUR PRICE **£14.95** P&P £1.50

### SUPER-GAINER RH-9000

BNC 40cm flexible model for the ultimate in gain.

OUR PRICE **£19.95** P&P £1.50



### SCANMASTER SP-55

Boost reception of your scanner with this pre-amp. 25-1500MHz, variable gain, band pass filters. (Up to 20dB gain). £69.95

SPECIAL OFFER **£49.95** P&P £3.50



### UK SCANNING DIRECTORY

7th edition  
SSP £19.50.

ONLY **£17.50** P&P £3.50



### 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

**£69.95** P&P £8.50

AIR-33 (As above) 1m long. Gain 3/6dB.  
**£44.95** P&P £8.50



### Q-TEK D.C. 2000

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

OUR PRICE **£54.95** P&P £8.50

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



### DB-32

A miniature wideband antenna. Receives 30 - 1200MHz. BNC fitting only 1.5" long. It's superb (for its size). RRP £29.95.

SAVE £10  
OUR PRICE **£19.95** P&P £1.  
TSA-6671 BNC magmount.....£22.95



### MA-339

Mobile holder for hand-helds.

ONLY **£9.99** P&P £2.



### QS-300

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



SSP £19.99  
ONLY **£14.95** P&P £3.00

### HD-1010

Deluxe padded headphones. Ideal for SW portable and hand-held scanners.



SPECIAL OFFER **£7.99** P&P £2

# HAYDON

Communications



Mail order: 01708 862524



NEXT DAY DELIVERY TO MOST AREAS, £10.00.



## ICOM IC-8500

Next generation wideband receiver.

0.1-2GHz. (All mode)

SPECIAL OFFER **£1149.95**



## AR5000

10kHz-2600MHz. (All mode). The professionals choice!

OUR PRICE

**£1299.00**

## FAIRHAVEN RD-500VX+



Superb wideband receiver (all mode) with over 50,000 memories capable of holding text.

SSP: ~~£999.00~~ SALE PRICE **£799.00**

## YAESU FRG-100



This is a high performance communications receiver providing general coverage reception in CW,

SSB, AM and FM modes from 50kHz-30MHz. Micro processor control of major functions permit ease of operation and features that both new and seasoned short wave listeners will appreciate, at an affordable price.

SPECIAL OFFER **£349.95**

(Optional FM unit £35.00)

## ICOM IC-R75



The short wave receiver for the true enthusiast.

● 0.03-60MHz (all mode) ● Synchronous AM detection ● PC control capability.

★★★★

WRTH gave it 4 star rating.

OUR PRICE **£629.00**

## 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 ★ Clock/timer  
★ Noise blanker ★ Limit scan ★ Tape output  
Was ~~£299.00~~

SPECIAL OFFER **£149.95** P&P £10

## ICOM PCR-1000



The PCR-1000 connects externally to your computer and offers exceptional receiver performance 0.5-1300MHz. (All mode).

ONLY **£279.00**

## BEARCAT UBC-9000XLT



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

SPECIAL OFFER **£249.00**  
P&P £10.00

## COMMTEL COM-225



This scanner covers 25-1300MHz (AM, FM, WFM).

TEN  
PIECES  
ONLY

**£249.00**

## AR8200 SERIES-2



Never before has one hand portable offered so much.

★ Covers 530kHz-2040MHz (all mode) ★ Computer control capability ★ 8-33kHz steps for the new airband spacing ★ Reaction tune capability ★ Includes nicads/charger/antenna and car lead.

SALE PRICE  
**£389.00**



## 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.

SPECIAL OFFER  
**£199.95**

NEW MVT-7300  
PHONE FOR LOWEST UK PRICE

MVT-9000MkII Hand-held scanner .....£319.95  
Soft case for 7100EU/9000 - specify .....£19.99



## AOR AR-3000A

Wideband communication receiver (100kHz - 2036MHz) all-mode.

ONLY **£679.00**

AR-5000 Special Offer .....£1299.00

## ICOM IC-R2

Miniature wideband hand-held scanner covers 0.5-1300MHz (AM, FM/WFM). Search banks memories and many more features.

**£129.00**

IC-R10 Wideband scanner .....£249.95



## COMTEL CM-307

Palm sized dedicated airband scanning receiver. Covers airband 108-136.975MHz VHF 136-180MHz with 99 memories (AM/FM).

SPECIAL OFFER **£59.95**

Optional batteries + charger £13.99.



## WATSON HUNTER

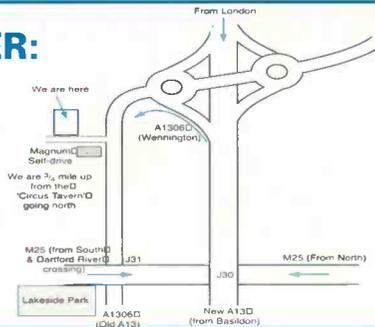
Frequency counter covers 10MHz-3GHz. Supplied with telescopic antenna, nicad & charger.

ONLY **£59.95** P&P £5.

Techtoyz micro counter .....£69.95  
Opto Cub frequency counter .....£99.95  
Opto Mini Scout 10MHz-1.4GHz .....£139.00  
Opto Scout (400 memories) .....£319.95  
Opto CD-100 multiscanner .....£349.95

## SHOWROOM & MAIL ORDER:

Unit 1, Thurrock Commercial Park,  
Purfleet Industrial Estate, London Rd,  
Nr. Aveley, Essex RM15 4YD  
TEL: 01708 862524  
FAX: 01708 868441  
Open Mon - Fri 8am - 4.30pm.  
Sat 8am - 1.00pm



## W. MIDLANDS SHOWROOM

Unit 1, Canal View Ind. Est.,  
Brettley Lane,  
Brierley Hill  
W. Mids. DY5 3LQ  
Open Mon-Fri 9.30-5pm.  
Sat 9.30-2pm  
**NO MAIL ORDER TO  
MIDLANDS BRANCH**

### REACTION TUNE COMBOS

#### Mini Scout + AR8200

Complete with lead  
ALL FOR

**£535.00**



#### Scout MkII + AR8200 II

Complete with  
reaction lead

**£719.00**



### PMR-446 RADIOS MOTOROLA TA-200

Licence free two way radio. Up to  
3km range dependent upon terrain.

ONLY **£69.95**  
or 2 for £129.00



### ICOM IC-F4SR

The affordable high quality general  
purpose radio.

ONLY **£199.00**  
or 2 for £299.95



### SANGEAN ATS-909

A superb performance  
portable/base  
synthesized world  
receiver with true SSB

and 40Hz tuning for ultra clean reception. The same  
radio is sold under the 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.

SPECIAL OFFER **£139.00** P&P £10

Optional deluxe stereo/mono headphones  
for short wave portables .....only £7.99 P&P £2



### RM-913

RADIO CONTROLLED CLOCK.

- 12/24hr alarm function
- Auto clock from "Rugby" RF signal
- Alarm function
- Backlight & more
- Incl's batteries

SPECIAL OFFER **£11.99** P&P £2.00



### GARMIN GPS SYSTEMS

#### STREET PILOT UK



The Street Pilot UK  
package includes dash  
mount, 8MB datacard, PC  
interface cable, 12V  
adaptor, UK metroguide

map source CD.

**£549.00**

Garmin Street Pilot mono

Special offer £419.00

#### STREET PILOT COLOUR MAP UK



Package includes UK  
metro guide  
mapsources CD, 8  
megabyte datacard,  
PC interface cable,  
cigarette lighter  
adaptor, portable  
antenna + dashboard  
mount.

SPECIAL OFFER **£649.00**

Garmin Street Pilot colour .....£549.00  
Carry case for Street Pilot.....£14.99  
8 meg-mem + mapsources CD.....£139.95  
16 meg-mem + mapsources CD.....£169.95  
Mapsources CD .....£79.95  
8 meg data card.....£69.95  
16 meg data card.....£99.95

#### GPS-12 NAVIGATOR



(now with 24 hour battery life) 12  
channel receiver. Includes:- UTM,  
ordnance survey, waterproof to IPX-7  
standard).

SALE PRICE **£129.95**

#### GARMIN GPSIII+



Powered by AA cells or  
13.8V, this compact  
navigational system gives  
detailed maps of the UK  
& Europe. Supplied with  
data lead and free on-  
board maps.

SALE PRICE **£329.95**

#### GARMIN ETREX SUMMIT



First combination GPS, altimeter and  
electronic compass in one small box.

SALE PRICE

**£189.95**

Etrex Special offer .....£109.95  
Emap Special offer .....£199.95

### SONY SW-30



The ideal holiday partner!

- ★ Fully digital world receiver
- ★ FM/MW/SW ★ Covers all short wave broadcast/MW plus FM stereo (on h/phones)

★ Programmable memories ★ Sleep timer + alarm  
function ★ 1kHz tuning for short wave. RRP £79.95.

HALF PRICE **£39.95** P&P £7.00

### SANGEAN ATS-818 ACS



★ Portable SW receiver with  
built-in cassette deck ★ 54  
memory presets ★

Continuous coverage 150kHz-  
30MHz (all mode) ★ SW tuning in 1kHz steps ★ FM  
coverage 87.5-108MHz.

SPECIAL OFFER **£139.95** P&P £10

### 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 RRP £229.95.

SPECIAL OFFER **£129.95** P&P £10

### SONY SW-55E



In our opinion the best SW  
portable on the market. covers  
150kHz-30MHz (all mode), FM,  
SW, MW & LW. Comes complete  
with compact pull out antenna, stereo earphones, carry  
case and power supply. RRP £299.00.

OUR PRICE **£249.00**

### BA-888U

WEATHER/RADIO CONTROLLED CLOCK.



- Supplied with one remote (wireless)  
sensor ● Weather forecast
- Barometer ● 24 hr "radio" clock
- Thermometer

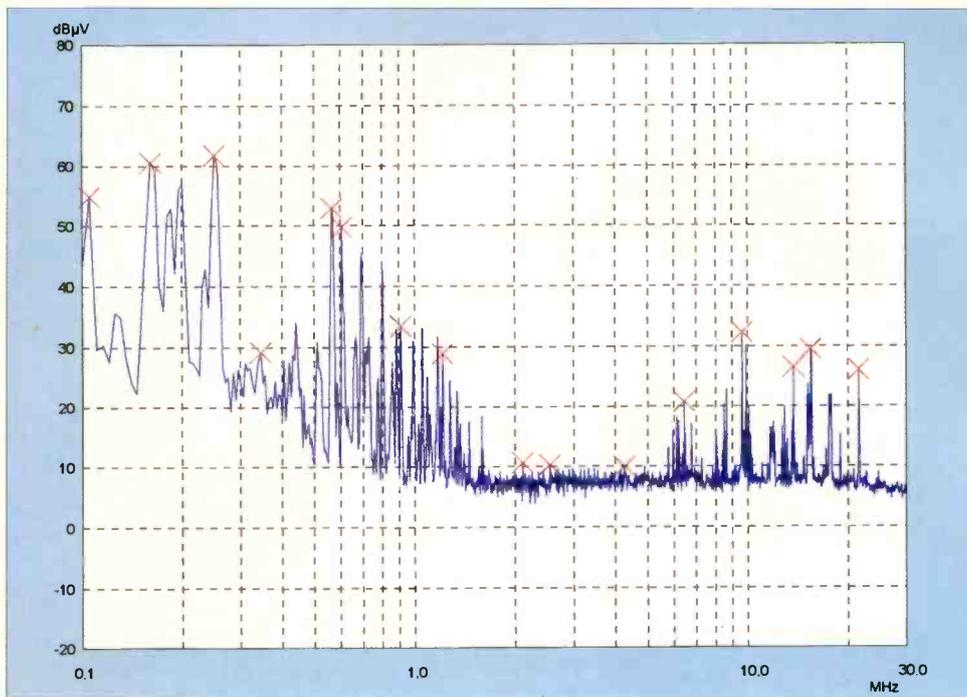
**£69.95** P&P £4

### JM-838



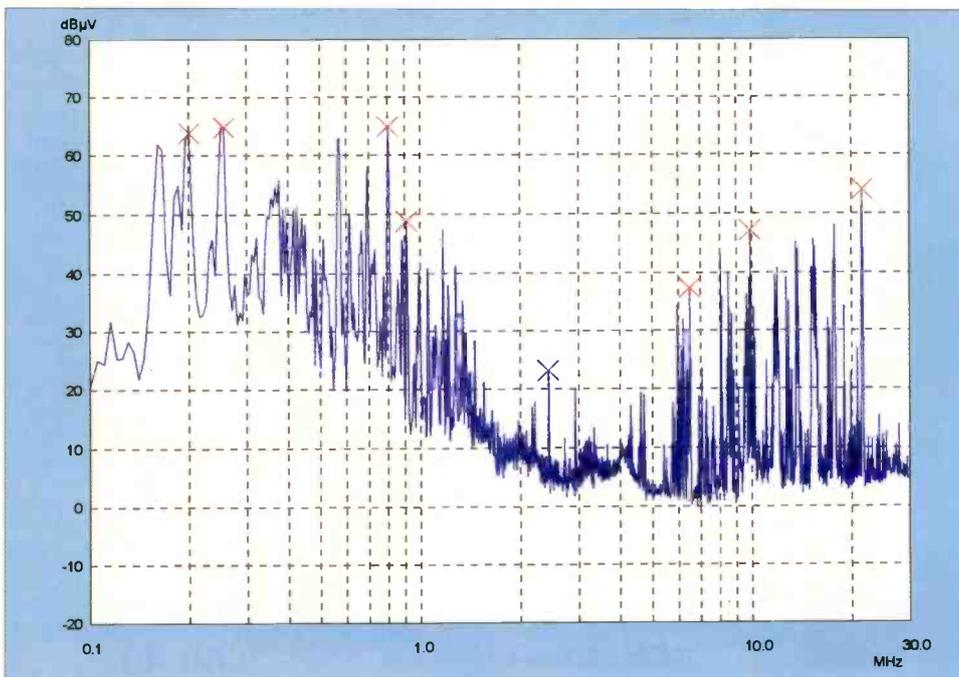
- JUMBO WALL/DESK CLOCK.
- Wide screen/2" digit time  
display ● Barometer ●

Calender ● Temp ● Auto RF synch clock from  
Rugby. **£59.99** P&P £4.50



**Fig. 3: The Rohde & Schwarz screened loop 150kHz to 30MHz.**

**Fig. 4: Wellbrook's £100 loop using exactly the same set-up as for the £3500 antennas from Rohde & Schwarz.**



listener. Sure enough, between 1.5 and 5MHz there was an unholy din from the Rohde & Schwarz whip, and a quiet background from the Wellbrook loop. Switching off the control computer killed the received noise from the whip, but there was still a higher background present, presumably coming from the general noise on the mains wiring of the building. Its really rewarding when theory and practice coincide, and this was just such an occasion. However, to prove the point I took the Wellbrook loop home again and simply plonked it on to my work bench where I do all my receiver measurements. I set my own spectrum analyser (Rohde & Schwarz) [*He's right about being lucky - Ed.*] to sweep between 2 and 5MHz and connected my usual 10m balun fed wire to the input. The results are shown in **Fig. 7**, and you can see evidence of a familiar comb of signals extending right across the frequency range. These were traced

to my own computer (at which I am now sitting) in the next room about 8m from the spectrum analyser, although the 10m wire runs directly away from the PC. I then connected the Wellbrook loop to the spectrum analyser and the results can be seen in **Fig. 8**. Where is the comb? Not there; and doing the same comparison with the HF-350 connected to the wire and then the loop confirmed that you could hear real signals using the loop but nothing but PC generated hash when using the 10m wire. Take a look at the marker on the spectrum analyser display which is set to a signal at 4.711MHz, and compare the recorded levels between the 10m wire and the Wellbrook loop. The loop actually gives a 6dB increase in the received signal and without any background noise. These measurements were taken less than four minutes apart, so they do constitute a real signal

difference. I should also mention that the PC in question is only a month old and carries the proper CE labelling, so it fairly represents any recent computer set-up and is not some old clunker of a system from the Dark Ages.

I went on to take a look at another incidental advantage of the using a loop antenna in sorting out signals, particularly at low to medium frequencies. As anyone who has rotated a portable radio will know, the loop (or ferrite rod, which is just another loop) shows a broad peak and very narrow nulls in signal strength the classic figure of eight pattern. The Wellbrook loop exhibits these sharp signal nulls when the plane of the loop is at 90° to the direction of the incoming signal, and this can be used to notch out, or at least reduce the level of an unwanted signal. I used my 900/909/918kHz set-up and watched the amplitude of the 909kHz Radio 5 signal as I rotated the loop (just held in my hand). I was able to see a 20dB reduction in the 909kHz signal, and when I did the same thing on a receiver it was dramatic to hear the 918kHz signal become so much clearer when the 909kHz was nulled out. I am told that you can null out Atlantic 252 and hear signals behind it. Amazing!

As another practical observation, the Rohde & Schwarz handbook for their active whip lays great stress on the susceptibility of the whip amplifier to inadvertent damage from electrostatic discharge. Being such a high impedance device, (several MΩ), a single touch from a charged finger will destroy the input amplifier. If you use an active whip and place it outside on a pole, there is a serious danger that a nearby (and I mean within several kilometres) electrical storm or even a rainstorm will generate a high enough voltage on the whip to cause damage. When I was an active radio amateur using a G5RV antenna with open wire feeders into a parallel tuned antenna coupler, I could

always tell when a thunderstorm was around because I could hear the spark discharges between the plates of the antenna tuning capacitors in the tuner and they were proper wide spaced variables. By total contrast the loop is a very low impedance device and highly unlikely to have any such problems, making it a much safer bet for the hobby listener.

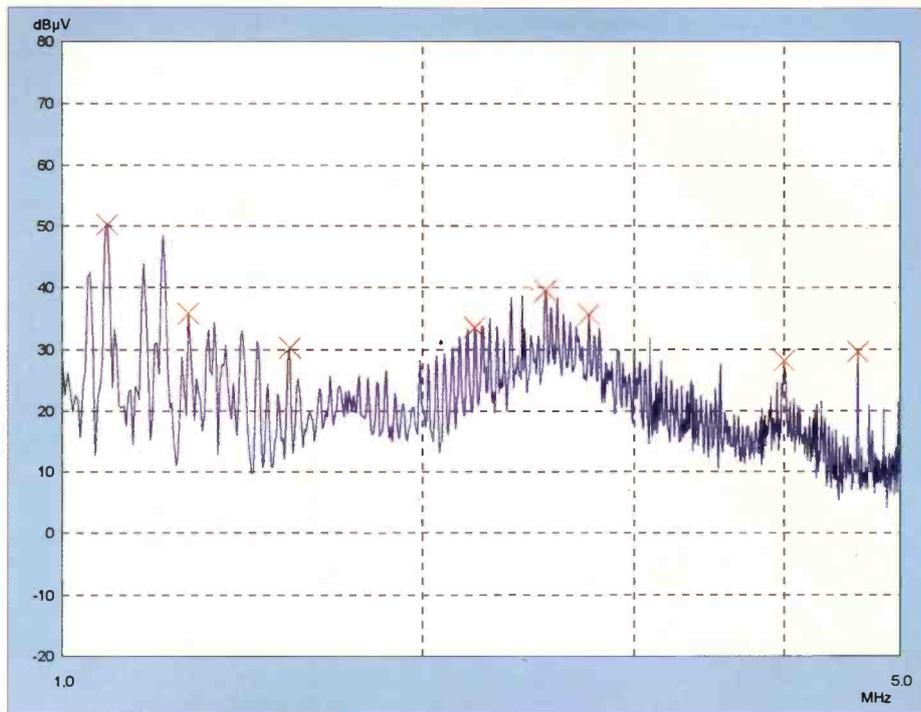
Conclusions? I am going to buy and keep the Wellbrook ALA 1530 active loop since it is clearly a much better listening antenna than my 10m balun fed wire. Everything I have read in the Wellbrook literature is absolutely borne out in practice, and I have to say that you would be well advised to get copies of this literature because it expands on what I have said here and is very informative about antennas in general and loops (of course) in particular. 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 (although you need to rotate it), and is much less likely to suffer damage from electrostatic charges when used as the listener is likely to use it. Its a magic device and works particularly well with the HF-350.

I also intend to send a slightly modified Wellbrook loop off for formal calibration at the National Physical Laboratory, because I can see it as a very useful backup for the Rohde & Schwarz HFH2-Z2 at the EMC Centre. If you want to do the same, be prepared for a calibration bill from NPL for something like £600.

## And So To Other Things

The AR88 review certainly stirred up some activity. I have been truly astonished at the number of readers who own an AR88, and this may explain why so few are available on the market. Regular users obviously feel like I did about the sheer pleasure of having one quietly simmering in the corner and taking a surreptitious twiddle at the tuning dial when the latest solid state device irritates ones ears. Typical comments came from Mike Penn who said, "Closing my eyes I could almost smell that unmistakable odour that came with operating that beautiful radio", and Ted Walker who wrote "I have two SP-600 Hammarlund receivers, an HRO-60, an NRD-525 and AR7030. For audio quality of h.f. and m.w. broadcast band stations, however, I favour the AR88D with its superb tuning and practical control layout". Ted also says that his AR88D which he lifted out of its original box, was complete with all documentation and spare parts such as filter choke assemblies, output transformer and an 'S'-meter which was a 5mA movement zeroed to the right and labelled dB above 1µV reading from 6 to 100dB. However, the meter is marked with the familiar MOD arrow which may suggest non RCA origin, although the spares box is labelled with Canadian Westinghouse markings. Does anyone else have more information? The final remark from Ted is Black boxes may come and go but an AR88 and the like, it seems, go on forever.

Tony Lawes also remembers having an AR88D to



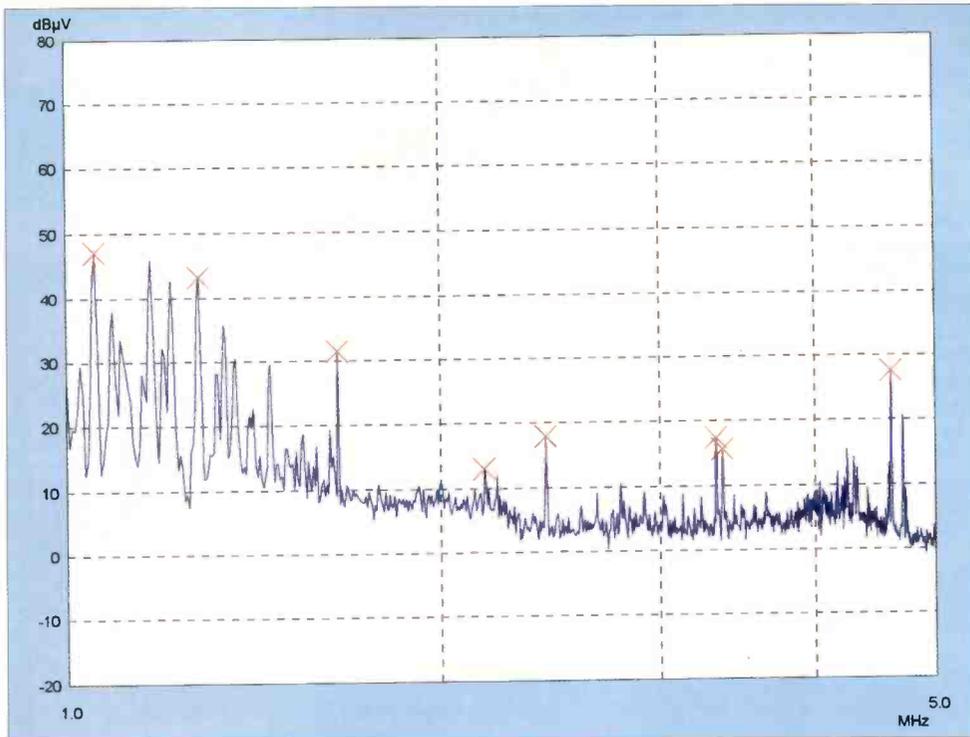
**Fig. 5 The off air signals from the Rohde & Schwarz active whip.**

which he fitted what may have been a correct 'S'-meter which had a scale in the same amber colour as the main dial and mounting arrangements which allowed the meter glass to fit almost flush with the receiver front panel. He recalls spending some time in Gibraltar with the RAF, where the club station (remember ZB2A?) used an AR88LF which had the same meter, albeit with a cracked front glass. Jacques D'Avignon recalls that the AR88D used at the Montreal h.f. station for the North Atlantic h.f. circuits in the mid-50s had an 'S'-meter fitted in place of the RCA logo panel and goes on to tell that these were the days when BOAC were flying Stratocruisers and making transit stops in Gander, Newfoundland, and when all h.f. traffic was in a.m., not s.s.b.

A detailed letter from Paul Essery GW3KFE who compares the AR88 performance to that of a recent h.f. transceiver comments, "Perhaps the greatest thing it (the AR88) had was an absence it was designed to be a communications receiver not an ornamental addition to an advert! It lacked hundreds of buttons, the hundreds of memories and the bells and whistles but a stranger could walk up to it and drive it immediately. It would receive c.w., s.s.b., a.m., even f.m. quite happily, one could switch off the a.g.c., and above all it demonstrated the truth of the adage there's nowt that a single valve can do that can't be done nearly as well by a score of i.c.s plus a couple of hundred discrete transistors". Strong words from a man who can truly be said to know what he is talking about.

Finally, a note on an unusual variety of AR88 came from Mr. M. Dixon who has a sample with a blue/grey front panel, a main tuning dial without the bands designated alternately dark and light, and the tone control replaced by one labelled 'Diversity IF gain'. Well there's one clue for a start, because it's fairly clear that this particular AR88 was used as part of a dual or triple diversity receiver set-up. The only information I have on this topic is the RCA handbook for something known as the DR-89 which is a receiving system

"Black boxes  
may come and  
go but an  
AR88 and the  
like, it seems,  
go on  
forever!"

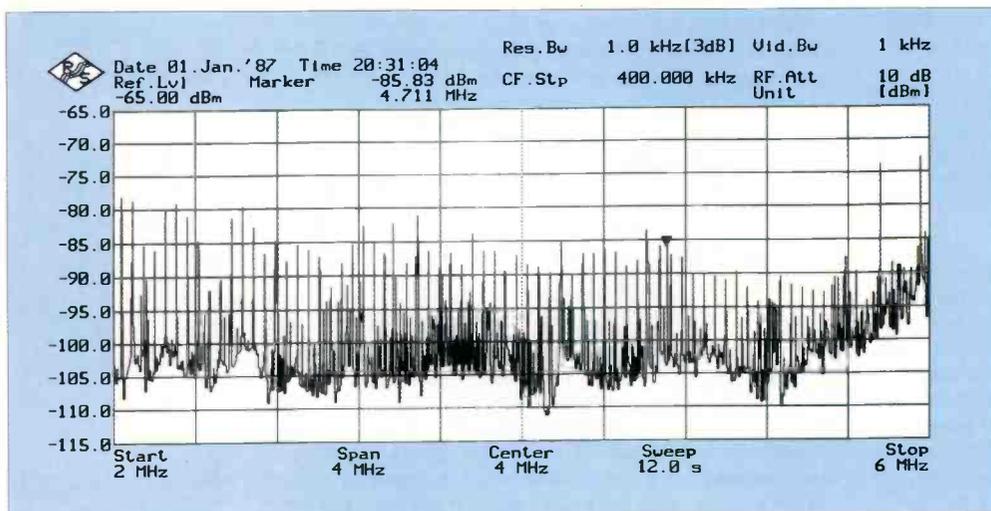


**Fig. 6** The off air signals from the Wellbrook loop taken three minutes after the whip, Fig. 5, measurement.

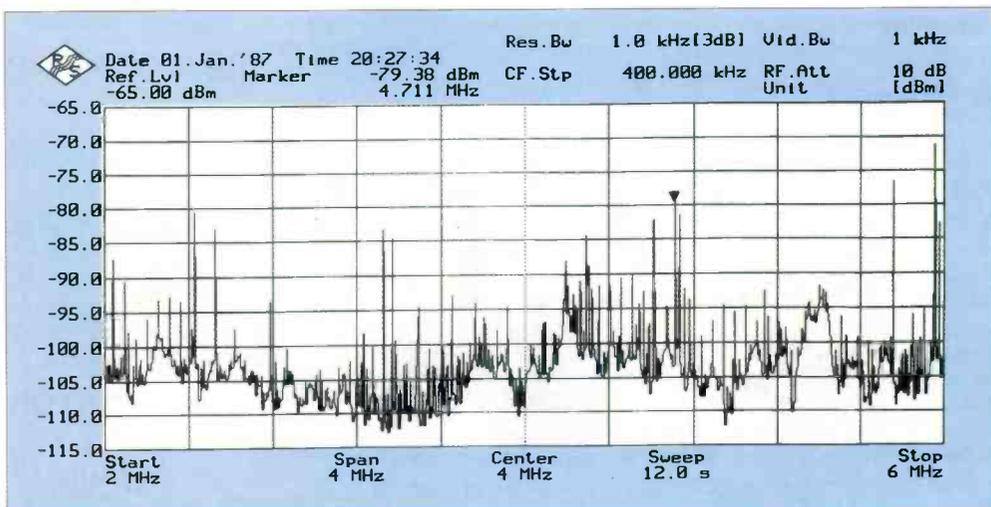
made up from three AR88s mounted in a rack with a unit called a Tone Keyer and another called a Monitor Unit. The handbook contains a wonderful dissertation on the principles and

practice of diversity systems which is almost worth reprinting as a separate article, because it is a useful commentary on the clever engineering that existed in the 1940s and how those engineering skills were used to ensure continuity of h.f. service under difficult ionospheric conditions. If you have a DR-89 and want to use it, RCA recommend that your antennas are erected as an equilateral triangle with a minimum of 1000 feet along each side. Not quite the thing for the suburban garden. However, back to the blue/grey AR88; the receivers shown in the DR-89 handbook have the normal black crackle finish and the tone control in place at the top left hand corner. There is however a small control knob labelled 'Diversity IF gain' fitted between and below the selectivity and noise limiter switches, the position matching that of the phones jack on the left hand side of the lower panel. Having thus failed to identify Mr. Dixon's receiver I turned to the bible covering this

subject, otherwise known as Raymond Moores *Communications Receivers The Vacuum Tube Era: 1932-1981* and located on page 102 the very receiver listed as the CR-88A dating from the 1940s, having a smooth grey panel and forming part of the DR-89A triple diversity receiver unit. So presumably that is the end of the story, except for the fact that the CR-88A should have a crystal phasing control under the main tuning knob, so I am writing to Mr. Dixon to find out more about his particular receiver. The bible also mentions a rather tasty sounding CR-88B manufactured from 1951 which had push-pull 6K6s in the audio and a single band in use tuning dial. Has anyone actually got one of these? Incidentally, Raymond Moores book has just come out in its 4th Edition and is available from the SWM Book Store. Since mine is only the 3rd edition I had better get my skates on before they sell out.



**Fig. 7:** Spectrum sweep of John's usual 10m balun fed wire, note the comb of computer generated noise extending right across the frequency range.



Finally, finally, I am looking for a BC-348 or BC-312 receiver for my own pleasure and would be willing to pay a fair price or better still swap one of my own receivers for it. How about my Trio R-820 as a straight swap? You'll never get a better deal than that (but it has to be an unmodified, complete and immaculate BC-348).

Happy listening, and my thanks to all those who have written in appreciation of my efforts to show just how good the classics can be. At my age (62) there is a tendency to believe that older is better! **SWM**

**Fig. 8:** The Wellbrook loop connected to the spectrum analyzer. Where is the comb?

# WORLDSPACE

Over 40 channels of crystal-clear, fade-free programming direct from satellite to your portable digital receiver.

**ENTERTAINMENT, NEWS, and EDUCATIONAL BROADCASTS from WORLDSPACE.**

**BBC World Service • CNN International  
Sunrise & Radio Asia • World Radio  
Network and WORLDSPACE  
branded services:**

**24 x 7 – International Dance**

**RIFF – Traditional Jazz**

**RITMO – African, Latin and Reggae**

**MAESTRO – European Classical**

**Plus local broadcasts from AFRICA,  
ASIA, EUROPE and the MIDDLE EAST**

**The portable WorldSpace digital radios operate  
either as stand alone or connect to your HiFi.**

To order or for more information contact our customer service on:  
**0207 494 8222, UKService@worldspace.com or  
www.worldspace.com.**

For information about dealer demonstrations,  
contact Dipa Naran on 020 7494 8200

IF YOU LIVE HERE YOU CAN...



# GET MORE



**Or see us at the London Amateur Radio and Computer Show,  
Picketts Lock Lane, Saturday 25 and Sunday 36 November 2000**

## PRACTICAL WIRELESS

THE UK'S BEST AND ONLY INDEPENDENT AMATEUR RADIO MAGAZINE

### CAN YOU AFFORD TO MISS IT?

#### REVIEWED

\* It's a Classic - **Rob Mannion G3XFD** - always on the look out for a good second-hand buy takes a look at the Yaesu FT-707.



#### CLUB SPOTLIGHT

\* If your club entered this year's competition see how you fared as we 'spotlight' the winners.

Bargain Basement, Carrying on the Practical Way, Keylines, What is A ..?, News, Radio Scene, Valve & Vintage, Antenna Workshop...

**...and much, much more!**

\*Contents subject to change

#### THEORY

\* **Joe Carr K4IPV** looks at the different types of variable capacitors and explains their uses and differences.

#### ALL IN A YEAR

\* Another 12 issues of *Practical Wireless* have been published - so to help you remember what we did when, read the full 2000 Index.

#### ELECTRONICS IN ACTION

\* More useful and intriguing ideas presented by **Tex Swann G1TEX** in his bi-monthly electronics column.

**FREE**  
with the  
**December issue**

32-page Nevada Catalogue packed with info and the very latest products!

**DECEMBER 2000 ISSUE ON SALE 9 NOVEMBER - PLACE YOUR ORDER TODAY!**



Steve's latest creation left him more free time to enjoy the new Maplin Catalogue...



Maplin Electronics' new catalogue is your essential guide to the hottest technology products you can buy – you won't be able to put it down! Now also on CD-ROM!



INCLUDES  
**£100**  
OF MONEY-OFF  
VOUCHERS

**MAPLIN**  
ELECTRONICS

To order your copy call  
**0870 264 6000**

quoting ref AD050. Also available from Maplin stores and from our web site at [www.maplin.co.uk](http://www.maplin.co.uk). We accept the following cards for telephone orders



No postage or packing will be charged for catalogues purchased via mail order. The catalogue is ONLY available through Maplin stores, mail order or the internet. E & OE. All trademarks acknowledged. All prices Inc. VAT. All prices correct at time of going to press. All prices are subject to change without notice. All offers are subject to availability.



Fig. 2: Meteorological satellite constellations - (graphic courtesy NOAA).



Fig. 3: METEOSAT-7 graphic, courtesy Eumetsat.

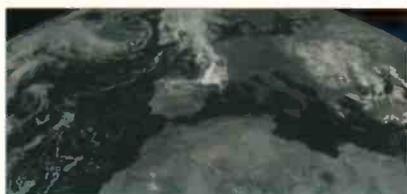


Fig. 4: Primary Data image METEOSAT-7 26 August 2000 1158UTC (unencrypted).

...continued from page 26

in WXSAT monitoring, produced the hardware necessary to decode the signals.

Firms such as Spectrum Communications, Timestep Weather Systems, Martelec, Spacotec and Feedback, were retailing products to those who wanted to buy 'off-the-shelf'

equipment - some producing products for 'cult' computers that would later disappear. In August 2000, Timestep is the only UK company remaining in the field.

Politically, the scene had little to compare with the situation of today. America's NOAA satellites were the only polar WXSATs that could be relied upon to deliver images routinely. Russia's COSMOS and METEOR satellites added the mystique element: you could guarantee raised eyebrows if you told your neighbours that you were receiving signals from Russian satellites!

During a chat with a friend - while discussing astronomy - I mentioned that a long dead Russian satellite had come back to life, for reasons that were not immediately obvious, and that I had picked up some form of picture transmission from it. The reason was later identified by someone (I forget his name) who had the resources to check which old satellites were in the vicinity; he speculated that while commanding a new satellite, the Russians had inadvertently switched an old one back on! Never a dull moment with Russian satellites.

China did not have any WXSATs, but they published plans calling for a FENGYUN (translates as 'wind and clouds') series in geostationary and polar orbits. Both are now operational.

### WXSAT Transmissions - What Satellites?

There are two types of WXSAT: Geostationary and polar orbiting.

Geostationary WXSATs are situated on the Clarke belt, about 35,790km above earth, where the orbital period is 24-hours, so their motion keeps pace with the earth's rotation. Depending on your longitude, you may be able to receive transmissions from more than one geostationary WXSAT, and many provide virtually continuous transmissions. All have an uninterrupted view of the hemisphere over which they are positioned. From any single location on earth, only those above the local horizon can be monitored, but with several operating at various positions around the globe, there will always be one for you!

Polar WXSATs are in near-circular, low earth orbits some 800 to 1200km above the earth. They have orbital inclinations - the angle between their orbital planes and the earth's equator - near 90°, so they pass near the poles on every orbit. Because the earth is rotating, they pass over every place on earth during each 24-hour period.

### Geostationary WXSATs

METEOSAT-7 provides a number of data transmissions, of which two that are of prime interest to us are WEFAX and

Primary Data.

WEFAX (weather facsimile) is one of the most common forms of picture transmission. It is used extensively for transmitting pictures on terrestrial h.f. bands, and is transmitted by several - but not all - geostationary WXSATs. METEOSAT-7 provides WEFAX transmissions on 1691.0 and 1694.5MHz, at specific times during the day, with occasional gaps.

WEFAX images are transmitted according to an easily obtainable schedule, and comprise sequences of images of nominal resolution - see Fig. 5. All images are black-and-white, but because each format always shows the same region, a mask comprising country outlines can be generated to demarcate land and sea.

A computer program then converts the WEFAX image to a fairly realistic colour equivalent in real-time, with shades of white, green and blue in the right places! It is not surprising that people who see these images, get the impression that the satellite actually transmits colour pictures!

Another application of WEFAX images is the production of animations. Because they cover the same regions, identical formats can be presented on screen sequentially, showing the actual movements of cloud systems. Once you understand something of the methods of interpreting these movements, your skill at short-term weather forecasting is likely to increase.

Some years ago, I found myself being asked to forecast summer - in early March! It is not too difficult to forecast the weather for the next few hours, when you have animating METEOSAT WEFAX images in front of you, but a reporter looking for a good story is liable to imagine that your capabilities exceed that of the Met Office.

WEFAX schedules have one more surprise. The images transmitted include specific pictures from some of the other satellites in this group. Selections from the American GOES, the Japanese GMS, METEOSAT-5 (over the Indian Ocean) are included. The return of scheduled images from the next Russian GOMS satellite is also possible. If you are seriously into WXSAT monitoring, you should look at WEFAX reception - direct from the satellites.

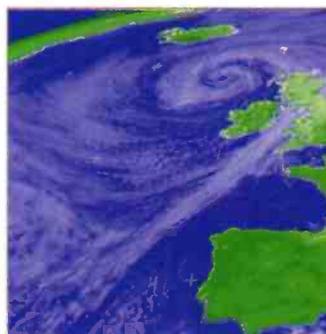


Fig. 5: WEFAX image METEOSAT-731 August 2000 C02 format 1030UTC.

### Primary Data

Wonderful stuff - see Fig 4! I first bought a Primary Data User Station (PDUS) nearly ten years ago, finally enabling me to see near continuous high resolution images. Primary Data is the highest resolution imagery routinely transmitted by METEOSAT.

As with WEFAX, transmissions occur according to a schedule. Each image contains considerably more data than WEFAX images, and is transmitted in digital form on 1694.5MHz. Primary Data formats (the individual images) are of basically three types: European sector, full disc and water vapour. Many images are multi-plexed - they contain interleaved data from both visible and infra-red images.

Only the image transmitted at 1134UTC each day (the AV format) carries the maximum resolution visible-light image - and this is encrypted. All other visible-light images are of half resolution.

One highly regrettable difference between METEOSAT-7 and all other geostationary WXSATs is that Eumetsat encrypt virtually all METEOSAT Primary Data images, leaving only those at synoptic hours (00, 06, 12, and 1800UTC) in the clear. This results from a directive by the individual nations - including Britain - that fund METEOSAT. More about this situation in an accompanying article on page ??.

Transmissions of Primary Data include a selection of high resolution images produced by other satellites, including GOES, GMS and METEOSAT-5. These images are not encrypted,

so add significantly to the value of operating a PDUS system within the severe limits imposed by Eumetsat.

## METEOSAT-6

A few degrees further west, we find *METEOSAT-6*. This spacecraft serves as a standby *METEOSAT* in case of *METEOSAT-7* failure. Located at 9°W longitude, it is regularly tested to maintain operational readiness. These tests may sometimes cause interference on small dish WEFAX systems due to the overlapping footprint of *METEOSAT-7* and wide aperture of the small dish. In general, such interference does not last long.

## GOES - Geostationary Operational Environmental Satellite

Continuing west in longitude, the next WXSAT is *GOES-E* (east), positioned at 75°W longitude, above the east coast of America. Continental USA encompasses a large spread of longitudes, so the nation's weather organisation, the National Oceanographic and Atmospheric Administration, operates a second geostationary WXSAT off the west coast - *GOES-W* (west) - positioned at 135°W longitude.

Both *GOES* WXSATs transmit WEFAX and PD imagery almost continuously from their respective positions. *GOES-E* transmits native images - see **Fig. 6** - with the addition of selected regions produced from the polar WXSAT *NOAA-14*, notably including the polar regions that are effectively out of range of geostationary WXSATs.

Meteorological charts are included, as are selected formats from *METEOSAT-7* and *GOES-W*. The latter transmits a similar range of images - see **Fig. 11** - including those from *GMS*.

This is only part of the *GOES* story. There are several earlier *GOES* WXSATs located at various longitudes over America, and in various states of operability. *GOES-2*, *GOES-3* and *GOES-7* are stand-by spacecraft; *GOES-9* is a stand-by spacecraft in storage mode. New satellites are launched and manoeuvred to either the east or west positions, or in between.

Currently, the east WXSAT location is occupied by *GOES-8* and *GOES-10* is in the west position. The recently launched *GOES-11* has been tested satisfactorily and is now available as a replacement.

One final note about *GOES*. From some regions on the west of Britain, including the south-west and parts of Wales, *GOES-8* is just above the western horizon. Using suitable equipment it is possible to receive WEFAX from *GOES-8* - an attractive proposition when you consider the wealth of imagery available (even if a little noisy at only 3° elevation).

## GMS - Geo-synchronous Meteorological Satellite ('Himawari')

We can continue westwards to the Japanese WXSAT *GMS-5*, but it is further west than 180°, so can alternatively be described as located at 140°E longitude, measured from Greenwich. *GMS-5* is operated by Japan and the satellite is a copy of *GOES-7*. It was launched in spring 1995 and became operational in June that year. It has a design life of five years and was due to be replaced by the first Japanese digital data satellite *MTSAT* (Multipurpose Transportation Satellite). Unfortunately, the Japanese rocket launch failed in November 1999. A replacement satellite will not be available until March 2003. *GMS-5* operations are being extended until June 2003.

## FENGYUN-2

*FENGYUN-2* is China's geostationary meteorological satellite, built by the Shanghai Institute of Satellite Engineering. It is very similar to the Japanese *GMS* (and therefore *GOES-3/7* spin-stabilised satellites, originally built by the Hughes Corporation in the USA). They are operated by the China Meteorological Administration (CMA), National Meteorological Satellite Centre (NMSC).

*FY-2B* can obtain hourly, full-disc earth images of three channels: visible (0.55-1.05µm), infrared (10.5-12.5µm) and water vapour (6.2-7.6µm). The resolution at ground-level of the image is 1.25km for the visible channel and 5km for infrared and water vapour channels.

The current WXSAT, *FY-2B* was launched on 25 June 2000, to replace *FY-2A*, and is in its orbital slot at 105°E longitude over the equator. There is a six-month on-orbit checkout of the satellite before it goes into full operation by early next year. The design life of *FY-2B* is three years and it transmits WEFAX.

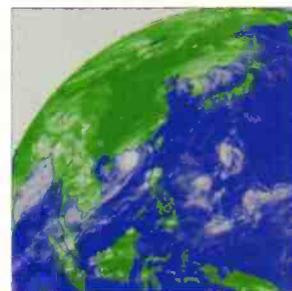


**Fig. 6: GOES-8 via METEOSAT-7 WEFAX LZ format showing hurricane Alberto.**

## INSAT - Indian Satellite

*INSAT-2E* was launched on 3 April 1999, and is different from all the official WXSATs. The *INSAT* series are geostationary, multipurpose (telecommunications, broadcasting and meteorology) satellites, operated by the Indian Space Research Organisation (ISRO) for the Department of Space, Government of India. The satellites carry meteorological imagers.

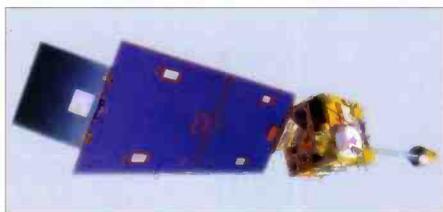
Following failure of the imager at the end of 1999, current images (provided via the Internet by the Indian Space Research Organisation) are from *INSAT-2D*. I asked the ISRO for some information and received the requested details. The *INSAT* system carries a Very High Resolution Radiometer operating in the visible and infrared regions. Spatial resolution is 2km in the visible and 8km in the infrared.



**Fig. 7: GMS-5 via METEOSAT-7 WEFAX GMSN format 31 August 2000.**

## GOMS (Geosynchronous Operational Meteorological Satellite - Russia)

The Russian Federation operated *GOMS-1*, their first geostationary WXSAT, at 76°E, from June 1996 until it failed in 1999. During its lifetime, selected images were re-transmitted by *METEOSAT-7*. A replacement is planned for launch in 2001.



**Fig. 9: GOES satellite - courtesy NOAA.**

## METEOSAT-5

The final geostationary WXSAT is *METEOSAT-5*, located at 63°E over the Indian

ocean. It was moved from 0° longitude to a location near this position to aid with the Indoex project between 1998 and 1999. Following the end of that mission, Eumetsat has continued to operate it from this location, a service known as the Indian Ocean Data Coverage (IODC) Service, likely to last until the end of 2001.

That completes our review of current geostationary WXSATs.

## POLAR WXSATs

These satellites are in relatively low earth orbits - some 800 to 1200km above the earth - although the oceanographic satellites have even lower orbits. There are different types of polar orbit and the NOAA, *METEOR* and *RESURS* orbits illustrate these. Some (notably the *METEORs*) are in orbits that precess - that is, their orbital planes slowly move around the earth, with respect to the sun.

Others (notably NOAA and *RESURS*) are in sun synchronous orbits. Currently active polar WXSATs include the American NOAA WXSATs, a Russian *METEOR* and *RESURS* and the Chinese *FENGYUN-1C*. Short transmissions may also be heard sometimes from *SICH-1*, *OKEAN-4* (also known as 1-7) and *OKEAN-O* oceanographic satellites.



**Fig. 8: METEOSAT-5 (IODC) via METEOSAT-7 WEFAX ITOT format 31 August.**



**Fig. 10: GOES-E Primary Data image 26 August 2000.**

Continued on page 33...

**WE WILL MATCH OR BEAT  
COMPETITIVE PRICES OF  
GENUINE UK STOCK.**

**RETAIL MON-SAT 9.00-5.30pm**

**22 Main Rd, Hockley**

**WATERS & STANTON**

**It's BIG**

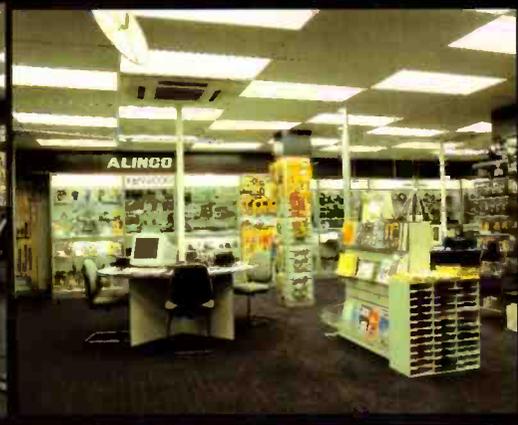
**VERY BIG**

**NEW 2000 SQ. FT.**

**3000 SHOWROOM  
Products On Display NOW OPEN**

No clutter or cramped surroundings.  
Air conditioned with plenty of seating.  
50 radios on permanent demonstra-  
tion. New customer car park at front

We've created the UK's most spacious amateur radio showroom, with comfortable surroundings and plenty of space to sit down and try any radio of your choice. There are no compromises. Imagine sitting in comfort, with coffee and tea on call, and being able to play with whatever rig takes your fancy. Experience the widest range of accessories ever displayed. Browse through an amazing variety of items dedicated to radio communications. There's only one truly dedicated Ham Store!



**Scancat Has Arrived!**

**Adds Features  
Views Spectrum  
Creates Logs  
Keyboard Entry**



**Direct  
From USA**



**Virtual Receiver**

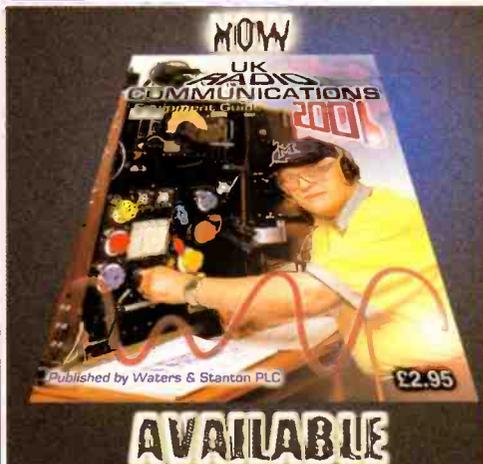
**Spectrum Scope**

Control your radio from your PC. With virtual receiver (illustrated) your handheld becomes a base station receiver. Supports all data port receivers from AOR, Icom, Yaesu, Kenwood and some Bearcat. And you get the following exciting features.

- \* Unlimited memories
- \* Spectrum scope
- \* 100 scan bands
- \* CTCSS & DCS mode
- \* Direct keyboard entry
- \* Logging File
- \* Personal data base
- \* Access import
- \* Voice recording (SE version only)

**Scancat Gold £99.95**  
**Scancat Gold SE £159.95**  
*Programmes for PC Windows  
Send for details*

**The latest version of this software is now available for immediate shipment.**



**Now Available**  
is our year  
2001 catalogue  
containing over  
300 colour A4  
size pages  
making it the  
largest of its  
kind in the  
world full of  
technical speci-  
fications with

over 2500 products and over 2000 photographs featuring all the major manufacturer's rigs and every conceivable accessory with additional articles. This is the best ever buyers guide only

**£2.95 + £1.25 P&P.**

**AOR-3000A Receiver 100kHz - 2036MHz**

The AOR-3000A goes on and on. It offers a wide frequency range at a very competitive price. Features include USB, LSB, CW, AM, FM \* Fast 50 channels per sec search \* GaAsFET RF amplifier \* Wide range of tuning steps from 50Hz \* RS-232 port \* 400 memory channels \* Built-in clock \* Channel pass feature \* Back illumination \* Rear whip antenna etc. Ask for leaflet.



**£699**  
Plus £7.50 Carr.

**Special Offer**

**30kHz - 30MHz NASA HF-4E Receiver**  
Computer Compatible FREE Software Disk



**SAVE £50**

**£149**  
Plus £8.00 Carr.

This new receiver covers 30kHz to 30MHz and is designed for SSB, CW and AM reception. A much improved version of the Target HF-3, it is fitted with 2.6kHz SSB filter, advanced mixer design, backlighted display, active antenna facility, and computer output. Included in the package is a software disk and 12V AC mains adapter **Optional self-powered active antenna £59.95**

Was £199.95

**IC-R75 Receiver 30kHz - 60MHz**  
**FREE AC PSU & DSP Unit**

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 \* Automatic Notch Filter \* 101 Alphanumeric Memories \* RF Gain/Squelch \* Clock \* Numeric keypad \* Attenuator \* 2-level Pre-Amp \* Scanning.



**£629**  
Plus £7.50 Carr.

**YAESU FRG-100 Receiver**  
50kHz - 30MHz

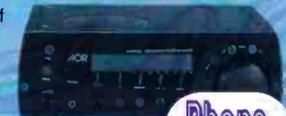


**£389**  
Plus £7.50 Carr.

The FRG-100 has stood the test of time. It offers full coverage of the short wave bands plus long wave and medium wave. It features, \* USB, LSB, AM, CW, \* 50 memories \* 2 stage attenuator \* Noise Blanker \* Band Scanning \* Memory Scanning \* Dual Speed AGC \* High and low impedance antenna inputs \* Programmable steps from 10Hz - 1kHz \* Optional Narrow Filters, PSU and FM board \* BFO reverse for CW \* Twin Clocks. Ask for leaflet.

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

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. Send for leaflet.



**Phone**  
Plus £7.50 Carr.

**Fairhaven RD-500VX 20kHz - 1.75GHz**



**Phone**  
Plus £7.50 Carr.

This very wide range receiver offers a complete listener station in one package. Features include USB, LSB, CW, AM, FM, Video out \* 5Hz step accuracy \* Over 13,000 memories with 20 Alphanumeric Characters \* Noise Blanker \* Text Search \* Pass Band Tuning \* Stereo CW Reception \* Notch & Peak Filter etc.



# FIRST IN RADIO COMMUNICATION

## wsplc.com

Fax: 01702 205843  
Enquiries: 01702 206835  
01702 204965

Orders only: 08000 73 73 88

e-mail: sales@wsplc.com

Wey, Essex, SSS 4QS



### Yupiteru MVT-9000EU 100kHz - 1.99GHz

Latest Mk2 Version

Here's your chance to purchase the latest scanning receiver from Yupiteru at an unbelievable price. 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.

Phone Plus £7.50 Carr.



Phone Plus £6.00 Carr.

### Yupiteru MVT-7100EU 100kHz - 1.65GHz

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.

£179 Plus £6.00 Carr.

### Yupiteru MVT-7000EX 100kHz - 1.3GHz

The ideal scanner for those who are mainly interested in VHF and UHF listening. Features include, FM, WFM, AM reception \* 200 memories in 10 banks \* 20 steps per sec scanning \* 6 Tuning steps \* Good sensitivity \* Supplied with rechargeable ni-cads and AC charger. Telescopic antenna included.



### 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 \* 8.33kHz steps for air band \* Rechargeable ni-cads, AC charger and helical antenna.

Phone Plus £6.00 Carr.

£249 Plus £7.50 Carr.

### 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 \* Ni-cad pack, AC charger and helical antenna.



### IC-R2 500kHz - 1309MHz

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.

£129 Plus £7.50 Carr.

### Bulk Purchase!

### GARMIN GPS-12

£99

Plus £6.00 Carr.



Ideal for walking or driving. With 12-channel reception it locks up very fast. And with the built-in antenna it is totally shower proof. Offers accurate positioning with selection of grids including British National Grid. Gives forward speed, compass direction, altitude, sunset/sunrise, ETA, waypoints and routes, zoom map display (user programmes points), and very accurate positioning to around 50ft. Requires 4 x AA cells (not supplied). Made by the top name in GPS, this is an absolute bargain!

### UBC - 220XLT HANDHELD SCANNER

£119.95

Plus £6.00 Carr.

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.



### Double Your Life!! NiMH Cells

These Nexcell Ni-MH cells have around twice the capacity of ni-cads and no memory effect. The AA size are 1350mAh. Ideal for handhelds and digital cameras. As supplied to the police.

- 4 x AA cells £9.95
- 4 x AAA cells £9.95
- Charger for above £9.95
- Carriage £2 maximum. Quantity discounts - phone.



### ICOM PCR-1000 10kHz - 1300MHz Computer Controlled Receiver

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

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.



LAPTOP COMPATIBLE

£279.95 Plus £6.00 Carr.

### Hoka Gold-3 Decoding Software



THE SECRET'S OWN!

We are now the UK distributors. As used by governments, it can decode just about any form of data transmission on HF and VHF. Simply connect between PC and Rx audio. Can be loaded on any number of PCs. This is very advanced programme, £349.95 Plus £2.00 Carr.

### GPS is now ten times more accurate!

Thanks to the American's switching off the error system

Full details and great prices on

On-line Catalogue **wsplc.com**

### WATSON Capture that Frequency!

10MHz - 3GHz  
Hunts down Frequencies



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. £59.95 Plus £8.00 Carr.

### FBI - 9 Skin Coloured Earpiece

£9.95

Plus £2.00 Carr.

The FBI-9 is a brand new design that is skin coloured to make it far less obvious when worn. The cable and cable exits will take a strain of 12kg so it won't break in commercial applications.



### W-LWB MkII Long Wire Balun



Just attach any length of wire and feed back to radio with coax cable. Reduces interference and improves matching to receiver. £22.95 Plus £2.00 Carr.

### JM-838WF

### WWC-411

### MFJ-125



Jumbo 12 hour radio locked clock with weather forecaster, barometer, date & time, internal temperature. £49.95 Plus £2.00 Carr.

Jumbo 266mm diam wall clock. 12/24 hours, day date and internal temp C or F. £34.95 Plus £2.00 Carr.

24 hour quartz clock with smaller day, date and 12 hour sweep dials. Each can be set independently. £34.95 Plus £2.00 Carr.

### WS-Desktop

The answer to those who want to improve the scanner performance using an indoor antenna. Covers 25 - 1300MHz and includes coax cable terminated with BNC plug. £49.95 Plus £2.00 Carr.



### WS-Mobile Antenna

Just 0.9m high with magnetic base and 4m cable terminated with BNC plug. Covers 25 - 1300MHz and is the ideal choice for scanner users. £24.95 Plus £2.00 Carr.



### SWL DX-1 HF Ant.



Covers 1.5 - 30MHz and is 50m long. With 10m feeder wire back to receiver. An ideal general purpose antenna. £25.95 Plus £8.00 Carr.

### Global AT-2000

The classic wire antenna tuner for short wave listening. Covering 1.8 - 30MHz, it includes our exclusive O-switch, which improves front-end selectivity. Just connect a random length of wire and connect a coax cable from ATU back to receiver. £89.95 Plus £2.00 Carr.



### High Quality Coax Switch

Select two antennas or feeding two receivers at the flick of a switch. Rated up to 600MHz and almost half the price of competitive models. SO-239 sockets. £12.95 Plus £2.00 Carr.



### RM-838 Radio Controlled

A radio controlled clock at a price, only W & S offers! Large display with signal strength indicator. 2 programmable alarms and snooze feature. £9.95 Plus £2.00 Carr.



### BA-928U Weather Station

Self-contained indicating weather forecast, pressure with 24-hour history (altitude adjustment), indoor and outdoor temperature, moon phases, time, day week, alarm, table or wall mount, AA cells included, plus wireless linked remote temp. sensor. £79.95 Plus £2.00 Carr.



### WS-Base Discone

The classic antenna covering 25MHz to 1300MHz. Ideal for all scanners. Height is 1.2m. Just connect coax cable to the SO-239 socket. Suitable for indoor or outdoor use. £49.95 Plus £2.00 Carr.



### QS-300 Desk Stand

Designed for all handheld scanners. Your scanner sits on the adjustable holder and a short BNC cable runs to an SO-239 socket, ready for you to plug your external antenna into. A really smart device. £13.95 Plus £2.00 Carr.



### QS-400

The dash mount that enables any handheld to be mounted on the vent grill of your car. £9.95 Plus £2.00 Carr.

# ASK ELECTRONICS LTD

248/250 TOTTENHAM COURT ROAD  
LONDON W1P 9AD

Tel: 0171-637 0353/0590

Fax: 0171-637 2690

PLEASE MAKE ALL  
CHEQUES PAYABLE  
TO: ASK ELECTRONICS  
All products are  
subject to a posting &  
packaging charge

## YOUR SONY<sup>®</sup> SPECIALIST

All products covered by a total  
manufacturers guarantee

### NEW FROM SONY

ICF-SW1000T RRP £449 .....ASK price **£360.00**

As reviewed in Short Wave Magazine April '96 issue

ICF-SW77150-29995kHz, usb/lb cw, 160 memories &  
labelling facility, 5 event timer, world timer

RRP £429.95 .....ASK price **£330.00**

ICF-SW07 New inc PSU &

ANLP-1 antenna .....ASK price **£250.00**

ICF-SW100S RRP £299.95 .....ASK price **£239.00**

ICF-SW100E RRP £219.95 .....ASK price **£169.95**

ICF-SW7600G RRP £199.95 .....ASK price **£120.00**

ICF-SW35 RRP £79.95 .....ASK price **£69.95**

ICF-SW11 RRP £49.95 .....ASK price **£39.95**

ICF-SW40 RRP £119.95 .....ASK price **£84.95**

AN1 Active SW antenna RRP £74.95...ASK price **£59.95**

AN-71 Wire antenna .....**£7.99**

AN-100 Active antenna for

ICF-SW100 or ICF-SW7600G .....**£49.95**

AN-102 Compact active antenna .....**£59.95**

AN-71 antenna .....**£59.95**

## ROBERTS

R-862 .....**£30.00**

R-881 .....**£70.00**

R-809 .....**£90.00**

R-876 .....**£115.00**

R-827 .....**£140.00**

R-861 .....**£175.00**

RC-828.....**£189.00**

## GRUNDIG

Yacht Boy 500 ..**£79.95**

Yacht Boy 400 ..**£89.95**



# NEVADA<sup>®</sup>

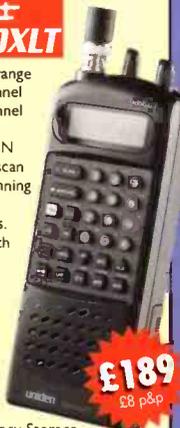
Serving the  
**SHORTWAVE & SCANNING  
ENTHUSIAST**  
for more than  
**30 YEARS!**



## Beacat UBC 3000XLT

Uniden's top of the range scanner has 400 channel near continuous channel coverage from 25 to 1300MHz. New TWIN TURBO search and scan allow high speed scanning or searching to give lightning quick results. The set is packed with new features:

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



**£189**  
£8 p&p

## YUPITERU MVT 3300

**BULK PURCHASE ENABLES US TO BRING YOU THIS STUNNING JAPANESE MANUFACTURED SCANNER AT AN UNBEATABLE PRICE. THE RECEIVER HAS EXCELLENT PERFORMANCE AND COVERS UP TO 1000MHZ WITH SELECTABLE MODES.**

- 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/ sec
- Requires 4 x AA batteries
- SUPPLIED WITH: Antenna, Earpiece, Carrying Strap and built-in Desk Stand

**SPECIAL OFFER**

**ONLY**

**£159**  
**£129**  
£8 p&p



## YUPITERU MVT 7300

**NEW**

The LATEST handheld from Yupiteru. New smaller size - SEE REVIEW OCT 2000

- 520kHz - 1.32GHz
- 1000 Memories
- 8.83kHz Airband
- Duplex reception
- Descramble function
- Clock timer
- Signal strength meter
- Auto memory write
- Supplied c/w Mains adaptor, NiCads, Belt clip

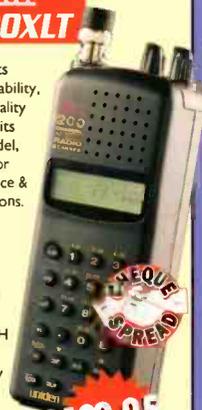


**£289**  
£8 p&p

## Beacat UBC 220XLT

Uniden has built its reputation on reliability, ease of use and quality of reception with its most popular model, the 220XLT. Ideal for Aircraft, Public Service & UHF Communications.

- 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 complete with earphone, belt clip, charger and rubber duck antenna



**£129.95**  
£8 p&p

## Beacat UBC 120XLT

Perfect for long distance reception of Aircraft, Public Services, Land Mobile and much more! Outstanding value for money!

- 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



**£99.95**  
£8 p&p

## Beacat UBC 860XLT

**AIRBAND Base Scanner**

- A stylish low profile base scanner with TWIN TURBO scan and search facility. Covers civil airband, marine, police, cellular plus more!
- 66-88, 108-174, 406-512, 806-956MHz
- 100 mems ● Turbo Scan - 300 steps/sec



**£129.95**  
£6 p&p

## Beacat UBC 9000XLT



**£249**  
£8 p&p

- 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

## Beacat UBC 60XLT

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



**£79.95**  
£8 p&p

## SCANMASTER ANTENNAS

**DOUBLE DISCONE  
SCANMASTER DD 1300**

- A high performance wideband antenna
- 25-1300MHz
- Ultra wideband TX capability



**£59.95** **£39.95** £6.00 p&p

**SCANMASTER LP1300**

The ULTIMATE Scanner Antenna! High quality 16 element beam

- 105 - 1300MHz
- Gain 11 - 13 dBi
- 'N' Type connection
- 500W TX



**£129.00** £8.00 p&p

**NOMAD PORTABLE**

Fully portable flexible wire scanning receiving antenna. Covering both VHF & UHF it's compatible with all scanning receivers. Compact & lightweight, simply suspend it with the cord supplied. Length: 1.5Mtrs 4M coax & fitted BNC.



**£19.95** £4.75 p&p

**DXI SHORTWAVE ANTENNA**

Covers ALL shortwaves

Standard enamelled copper wire antenna up to 50 metres long with 10 metres of single feed wire. May be adjusted to suit garden. ● (Max) 50mtrs long



**£25.95** £4.75 p&p

## GOODMANS TRACKER

**2 WAY BUSINESS & PERSONAL COMMUNICATIONS SYSTEM**

**SPECIAL OFFER!**



**PAIR**  
**£99**  
£8 p&p

**PMR 446 LICENCE FREE RADIOS!**

- NO LICENCE FEE
- NO CALL CHARGES
- NO LINE RENTAL
- Typical range: up to 3km

THIS MONTH ONLY we will include **FREE OF CHARGE**

- 2 X DROP IN CHARGERS
- 2 X VOX HEADSETS
- NiCad BATTERIES

worth **£34!**

## USED EQUIPMENT

ALL SAFETY TESTED & GUARANTEED FOR 3 MONTHS

| SHORTWAVE RECEIVERS |                                    |
|---------------------|------------------------------------|
| AOR AR3000A         | Wideband Base Receiver..... 475    |
| DRAKE SW2           | HF Receiver - ex demo..... 399     |
| GRUNDIG R5000       | SW Portable - ex demo..... 99      |
| SONY ICF SW77       | Shortwave Portable..... 189        |
| ICOM IC-R72         | HF Receiver..... 399               |
| ICOM IC-R75+UT102   | HF Receiver..... 525               |
| JRC NRD 535         | HF Receiver..... 499               |
| JRC NRD 535         | Quality HF RX Base..... 799        |
| KENWOOD R5000       | HF fitted VHF module..... 699      |
| REALISTIC DX394     | HF Receiver..... 119               |
| YAesu FRG880V       | HF Receiver+VHF Converter..... 329 |
| SCANNING RECEIVERS  |                                    |
| AOR AR8000          | Handheld Scanner..... 189          |
| BEACAT UBC 3000XLT  | Handheld Scanner..... 110          |
| BEACAT UBC 9000XLT  | Base Scanner..... 189              |
| COMTEL 510          | Handheld Scanner..... 129          |
| ICOM IC-R1          | Handheld Scanner..... 159          |
| REALISTIC PRO 2005  | Base Scanner..... 175              |
| REALISTIC PRO 2035  | Base Scanner..... 125              |
| YUPITERU VT225      | Airband Scanner..... 185           |
| YUPITERU MVT1700    | Handheld Scanner..... 179          |

STOCK ARRIVING DAILY - CALL



**USE YOUR CREDIT CARD FOR SAME DAY DESPATCH!**

**023 9231 3090**

e-mail: info@nevada.co.uk • website: www.nevada.co.uk

**NEW OPENING HOURS**

MON - FRI 9.30 - 5.30

CLOSED ALL DAY SATURDAY

• Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT



OUR 12,000 SQ FT WAREHOUSE CRAMMED WITH STOCK READY FOR IMMEDIATE SHIPMENT

PART OF OUR SHOWROOMS

WE GOT A BARGAIN!

THIS IS WHERE WE TAKE YOUR ORDERS

ANOTHER BUSY DAY

# can't wait?

We ship FAST 'cos we've got the stock!

**ICOM IC-R75** **CHEQUE SPREAD**

**IN STOCK! READY TO SHIP!**

The **LATEST HOT Receiver** from ICOM

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

**PRICE MATCH** **£599** **£8 p&p**

**JRC NRD-345** **CHEQUE SPREAD**

**SPECIAL!**

- AM synch detector
- Low noise PLL chip
- Noise blanker
- Wide dynamic range
- Sensitive receiver
- RS232 computer I/F
- 100 memories
- Clock/Timer functions
- Supplied c/w AC mains adaptor
- INCLUDING MAINS AC SUPPLY

**£399** **£8 p&p**

**GRUNDIG YB400** **CHEQUE SPREAD**

**PRICE MATCH**

**PORTABLE SW RADIO**

"Best performance for price size category, and among the choicest portables of any size, at any price."

"The 400's FM performance is right up there with the very best among world band radios." *Passport to World Band Radio*

- General coverage receive (144kHz - 30MHz)
- SW: 1.711-26.1MHz
- FM Stereo: 87.5-108MHz
- MW/LW
- SSB reception (both USB/LSB) (+1kHz fine tuning)
- 40 station preset
- Fine tuning
- Dual alarm clock
- Narrow/Wide bandwidth
- DX/Local sensitivity
- Auto Search
- Sleep timer
- Snooze timer
- Mains or Battery powered (with optional mains adaptor)
- Supplied c/w: SW Handbook, Carrying case, Ext Wire Antenna, Carry Strap

**£120** **£6 p&p**

**AR 8200 Mk II** **SPECIAL!**

- 530kHz-204MHz
- All Mode including 8.33kHz AM
- 1000 Memories
- Plus LOTS MORE!

**£399.95**

We carry the **FULL RANGE** of accessories!

**LATEST model!**

**YAESU FRG-100** **PRICE MATCH** **CHEQUE SPREAD**

This receiver provides solid coverage from 50kHz to 30MHz with all mode reception of AM, SSB and CW. The set requires 12V DC.

**£369** **£8 p&p**

**FAIRHAVEN RD-500DX** **CHEQUE SPREAD**

**NEW UPDATED MODEL - 20kHz - 1.7GHz**

**IN STOCK READY TO SHIP**

**£799** **£8 p&p**

**GRUNDIG PORSCHE P2000** **CHEQUE SPREAD**

A stylish radio designed by F.A. Porsche

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

**£89.95** **£6 p&p**

**YAESU VR 500** **SPECIAL!**

**ULTRA COMPACT RADIO**

- 100kHz - 129999.9kHz
- FM, Wide FM, USB, LSB
- 1901 Memory channels
- Weight: 220 g!
- C/w Antenna, carrystrap, Belt clip
- Optional Charger

**£199.95** **£8 p&p**

**SANGEAN AT5909** **CHEQUE SPREAD** **PRICE MATCH**

**ULTRA COMPACT Digital Multiband Radio with SSB**

- Covers: FM Stereo MW/LW/SW
- 307 memories
- Auto Tune System
- RDS (Radio Data System)
- Plus LOTS MORE!

**OPTIONAL MAINS ADAPTOR £9.95**

**£169** **£8 p&p**

**SANGEAN AT5B18** **CHEQUE SPREAD**

**UNBEATABLE VALUE FOR MONEY!**

**SW WITH SSB**

**SPECIAL!**

- 150kHz - 29.99MHz
- 87.5MHz - 108MHz
- 54 memories
- AM/FM/SSB
- AM Wide/Narrow filter
- RF gain control

**£99** **£8 p&p**

**OPTIONAL MAINS ADAPTOR £9.95**

**GRUNDIG PORSCHE P2000** **CHEQUE SPREAD**

A stylish radio designed by F.A. Porsche

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

**£89.95** **£6 p&p**

**ICOM IC-R2** **SPECIAL!**

- 500kHz - 1310MHz
- AM/FM/WFM
- 400 memories

**£139** **£8 p&p**

**ROBERTS RB61** **CHEQUE SPREAD**

**Synthesised Receiver FM Stereo MW/LW/SW PLL**

- 307 memories
- ATS auto scan
- E2 PROM for mem.
- FM stereo via earphones
- 29 pages SW stations memory
- 8 characters for editing station name

**£179** **£6 p&p**

**FULL RANGE OF ROBERTS IN STOCK - CALL**

**SONY SW30** **CHEQUE SPREAD**

**FULLY DIGITAL WORLD BAND SHORTWAVE FM, MW & LW PORTABLE RADIO**

**£39.95** **£6 p&p**

**GRUNDIG YACHT BOY 500** **CHEQUE SPREAD**

Covers:

- 1.6kHz-30MHz... SW
- 513kHz-1611kHz... MW
- 150kHz-353kHz... LW
- 87.5-108MHz... FM STEREO
- Mode: AM/FM/SSB
- Radio Data System
- 40 Station Memory
- Dual Alarm Clock
- Supplied c/w Leatherette Carrying case, mains adaptor

**SPECIAL PURCHASE**

**£139** **£6 p&p**

**JRC ST3** **CHEQUE SPREAD**

**HEADPHONES**

A real quality pair of headphones designed for the discerning shortwave and communications enthusiasts

**£69.95** **£4.95 p&p**

**AOR AR 5000** **CHEQUE SPREAD**

**IN STOCK READY TO SHIP**

**PRICE MATCH**

- 10kHz - 2.6GHz

All mode top class receiver & scanner packed with features

**AR 5000+3** .....£1799

**YAESU VR 5000** **CHEQUE SPREAD**

**MOBILE WIDEBAND RECEIVER**

- 100kHz - 1,300MHz
- Multi mode
- Real time band scope
- Optional DSP bandpass, notch & noise reduction
- Optional filters

visit our website for full details [www.nevada.co.uk](http://www.nevada.co.uk)

**ECALL**

**£6 p&p**

**BEST PRICES ON GARMIN GPS PRODUCTS!**

**GPS III PLUS** **£349** **£8 p&p**

Garmin's most popular GPS with detailed maps & street data.

|            |         |
|------------|---------|
| GPS 12     | £129.95 |
| GPS 12 CX  | £239.95 |
| GPS 12 MAP | £329.00 |
| GPS 12XL   | £189.95 |
| E-MAP      | £199.95 |
| E-TREX     | £119.95 |
| GPS 148    | £209.95 |

**SCANMASTER SP55** **CHEQUE SPREAD**

**WIDEBAND PREAMP**

Improve the reception of your scanner!

- 24 - 1500MHz
- Variable gain (-3dB to +20)
- 3 bandpass filters
- Battery or 12V operation

**£59.95** **£7.95 p&p**

**AOR AR 3000A** **CHEQUE SPREAD**

**SHIPPED TODAY!**

**PRICE MATCH**

- 100kHz - 2036MHz

Classic receiver as used by Government, Military etc

**AR 3000A +** .....£889 **PRICE MATCH**

**ICOM PCR 1000** **CHEQUE SPREAD**

**COMPUTER RADIO SYSTEM**

- 100kHz - 1300MHz
- ALL MODE RECEPTION
- PLUS LOTS MORE!

**PCR OPTION DSP UNIT MS 106** **£82.00**

**£349.95** **£8 p&p**

**STREET PILOT** **CHEQUE SPREAD**

**MONO PILOT** Package inc CD, 8Mb Data Card etc. **£549**

**COLOUR PILOT** Package inc CD, 8Mb Data Card etc. **£649**

**MAP SOURCE CD ROMS**

Available for UK, France, Germany, Italy etc...£69.95

**FULL RANGE OF GARMIN ACCESSORIES IN STOCK - CALL FOR INFO & PRICES**

**Palstar AM30** **CHEQUE SPREAD**

**Active Antenna/Preamplifier**

- ACTIVE ANTENNA
- SHORTWAVE PRE-AMPLIFIER
- ACTIVE ANTENNA/TUNER
- Freq: 100kHz-30MHz
- Power: 12V DC/battery (supplied)
- Antenna: Telescopic whip included for use as an active antenna

**£69.95** **£8 p&p**



## ITS EASY TO PAY - Pay by three post dated cheques!

- Simply divide the price into 3 equal payments.
  - Write 3 cheques dated in consecutive months starting with today's date.
  - Write your telephone No, cheque card No & expiry date on the back of each cheque.
- (ON ANY ITEM OVER £100)
- Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.



...continued  
from page 33

## Geostationary WXSATS - PDUS & WEFAX Reception

Receiving WEFAX: The constant stream of images from METEOSAT offers considerable temptation to those whose interests in life do not end when switching on the television. Before spending money on setting up a receiving system, you need to ensure that your location is suitable.

From Britain, METEOSAT is located approximately due south (varies with your longitude), at an elevation of about 30° (varies with your latitude). If you cannot get a clear view of this area of the sky, you may not get a signal from

METEOSAT of sufficient strength for decoding. A north-facing balcony is unlikely to offer scope for reception. If you currently receive television from an Astra satellite, then METEOSAT can be found with a dish pointing further to the west.

A complete system comprises a suitable dish, pre-amp, feed, down-converter, 137MHz-band WXSAT receiver and decoding system. Alternatively, and

preferably, the down-converter can be replaced by a direct reception (METEOSAT) receiver, removing the need to use your polar WXSAT receiver.

WEFAX transmissions (1691.0MHz, with additional transmissions on 1694.5MHz), require a Yagi (with perhaps 45-elements), or a fixed 1m dish. The dish does not require accurate surface construction: chicken wire mesh will suffice. A surplus Astra dish might be obtainable free of charge.

A small resonant dipole or tuned cavity (a suitably-sized coffee tin!) can be adjusted to collect the reflected signal from the focus of the dish. A low-noise pre-amp is almost essential to provide a suitable signal for decoding and a good quality, balanced feed cable takes the signal to the receiver.

Whichever method (direct or down-conversion) is used to receive the signal, the receiver's output can be decoded by a computer and a commercial system will include both hardware and software to produce the final WEFAX images. I have reviewed economically priced commercial hardware for this purpose, in recent editions of *SWM*. (For instance, in the May 2000 issue of *SWM* I looked at a new low-cost 'add-on' system from Timestep. Then, back in July 1999, I reviewed PROSat For Windows LC and in September 1999 a look at Timestep's PDUS system).

Typical costs: approximately £200 to £300.

## Receiving PDUS

You want the best? The best is PDUS - and you have to pay for it! Primary Data from METEOSAT-7 is simply superb - see Fig. 4. Because of Eumetsat's data encryption policy, imagery is limited to a small number of home-produced images, but all the foreign formats (GOES, METEOSAT-5 and GMS) are free-to-air.

You require a large dish (1.8m works fine) and a low-noise pre-amp, and of course a PDUS receiver. Once set up - like WEFAX - the system should run continuously without problems. If you wish to buy the Eumetsat encryption decoder and proprietary interface, you can expect to pay about £600, though the precise sum may vary.

Typical costs: contact **Timestep Weather Systems** on (01440) 820040 for latest prices.

## Receiving APT

The polar satellites listed all provide compatible a.p.t., so one a.p.t. system can receive and decode all. A typical system includes an antenna, feed, receiver and decoder. One of the most common types of antenna is the crossed dipole, phased for the right-circular polarisation signals transmitted by NOAA WXSATS.

Another recently popular type is the quadrifilar helix antenna - see Fig. 20 - which, when well designed, can sometimes provide better quality reception than the more conventional crossed-dipole.

The signal is fed to the receiver using low-loss, balanced cable. This should be a purpose designed receiver, or the various problems affecting the 137MHz band are likely to be experienced. Conventional scanners are not normally able to produce a signal of sufficient quality to ensure good reception for decoding.

Commercial WXSAT systems include the hardware and software required to decode the various forms of a.p.t. - NOAA twin channel, METEOR and RESURS single channel and OKEAN-type multi-channel.

Typical costs: approx £450 to £500.

## Receiving HRPT

A separate review of Timestep's high resolution picture telemetry system will appear in a subsequent issue of *SWM*. There is no other manufacture that I know of in Britain that is producing systems with a price tag within £2,500 or so. Reception of this 'ultimate' in image resolution for the amateur requires a tracking dish for the 1700MHz band, and a multi-frequency receiver, and software to process the resulting signal in real-time. This is a specialist interest!

Typical costs: approximately £2,200 to £2,500.

## The Future

In the longer term, the WXSAT scene will be completely different from that of today. All current imagery is to be replaced by higher resolution digital images from both geostationary and polar orbiting satellites. My monthly column 'Info in Orbit' will include the latest details of these developments as they become available.

## And Finally - Why?

Most people have hobbies for a reason, rather than just a pastime. Why do I take such a keen interest in WXSAT monitoring? It started with my wish to re-involve myself in satellites after changing career from satellite operations to teaching. When I realised how useful the results could be for seeing whether the night sky was likely to be clear for my telescope to be set up, I was hooked.

I am a member of SpaceGuard UK which uses sensitive CCD cameras for deep space studies for asteroid searches. Figure 21 shows a recent picture taken using my telescope which is in the middle of the yard - surrounded by dishes! Remember the neighbours - let them see your results so that they know that you are genuine!

## Credits & Thanks

Information on the current status of satellites has been provided by Eumetsat, the World Meteorological Office, China Meteorological Administration, NOAA and a selection of web sites operated by NOAA/GOES staff. Where satellite images were not from my own equipment, credits are included in the captions.

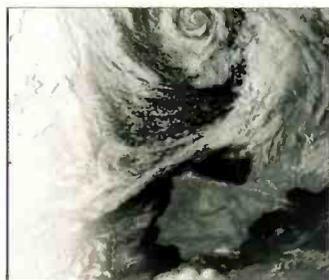


Fig. 16: NOAA-12 h.r.p.t. image 1711UTC 31 August visible-light (channel 2).

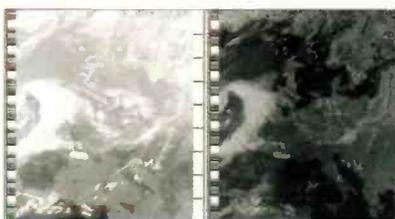


Fig. 17: NOAA-14 a.p.t. 1508UTC 22 August.



Fig. 18: METEOR 3-5 1042UTC 23 August.



Fig. 19: RESURS 01-N4 1109UTC 31 August.



Fig. 20: Quadrifilar helix antenna testing courtesy Paul Hayes.



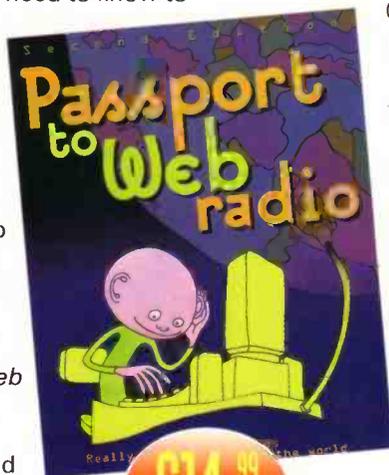
Fig. 21: Star cluster M13 - a clear sky in Plymouth!

# Book Profiles

A selection of books for you to choose from this month. Remember, you can order your books from the SWM Book Store by 'phone, FAX, E-mail or good old-fashioned post!

## Passport To Web Radio - 2nd Edition

Web radio is an alternative source of f.m./a.m. stations from America and around the world. All you need is your PC and *Passport To Web Radio*. User friendly, *Passport* tells you everything you need to know to enjoy the world of web radio. From advice on how to get started, what's on, what's worth hearing, how to tune into a station, which stations stand out and why, *Passport To Web Radio* is an excellent introduction and comprehensive guide to Webcasters world-wide. All for **£14.99**.

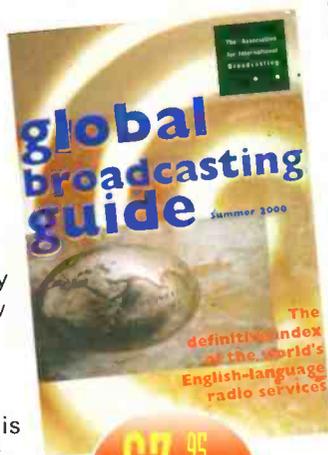


£14.<sup>99</sup>

ever, there's a selection of television information included. The *Global Broadcasting Guide* has been designed to slip easily into your pocket, briefcase or overnight bag, so wherever you're going, you can always be sure of being in touch - don't leave home without it! Order your copy now for **£3.95**.

## Ferrell's Confidential Frequency List - 11th Edition

Why settle for second best when you can have the ultimate in utility frequency guides. *Ferrell's CFL* is now produced by the publishers of SWM and PW, PW Publishing Ltd. The 11th edition is the culmination of years of monitoring experience and loggings. If you hear a utility station, you can be confident in discovering who, what and where with *Ferrell's CFL*, the distinctive first choice. Order your very own copy now for **£19.95**.



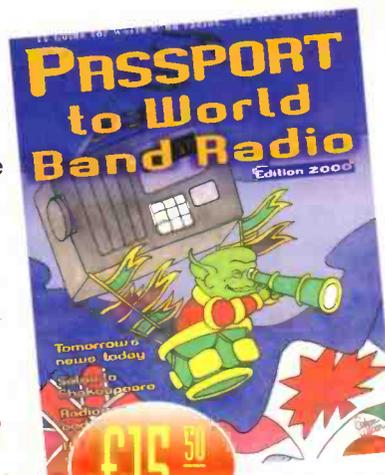
£3.<sup>95</sup>

## Global Broadcasting Guide - Summer 2000

The world's airwaves are bubbling with a multitude of programmes throughout the day and night. But how do you discover what's on the air right now? The answer is inside this unique guide book. Every radio station broadcasting on short wave with English-language international programmes is listed. This book is all you need to listen to the world! And, for the first time, to make this guide more useful than

2000 Edition

It's already tomorrow on the other side of the world, yet with world band radio, tomorrow springs into life while it is happening. World

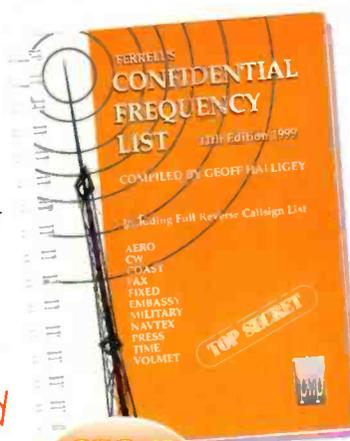


£15.<sup>50</sup>

band radio is unlike anything on ordinary radio or TV. It's non stop, refreshing and *Passport To World Band Radio* covers it all. With chapters on how to get started, best times and frequencies, how to choose a world band radio, table top receivers and loads more, this book is a definite must for your bookshelf. Begin your personal adventure and order your copy now for **£15.50**.

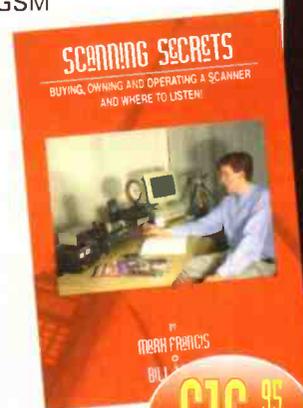
## Scanning Secrets

*Scanning Secrets - Buying, Owning & Operating A Scanner And Where To Listen* contains everything, from the 'birth of the scanner', understanding your scanner, kits, interference, airband listening, the marine band, p.m.r. bands, GSM



£19.<sup>95</sup>

and advice on buying and operating your scanner, where to listen and how to gather frequencies. All the information you need to unlock the potential of your scanner! Get your copy from the SWM Book Store for **£16.95**.



£16.<sup>95</sup>

# New ML&S

## Dressler active antennas

The full range of dressler antennas are now available from ML&S.

### ARA 40

#### Technical performance

**Frequency range** 40kHz-40MHz at full performance 40MHz-108MHz 2.3dB gain

**Output impedance** 50-75 ohm coaxial

**Connector to Rx** PL comes as the standard. Other standards can be fitted upon request

**Gain** 5dB +/-0.2dBs

**Intercept Point** +45dBm IP 3rd order (10MHz/12V)

**DC power supply** 11.5-13 volt DC at 70mA typ. (230V mains adaptor for 12V DC is supplied with the antenna)

**Mast diameter** 30-50mm can be fitted

**Dimensions** **ARA40** 115cm total length with glassfibre whip. Antenna tube 40mm x 140mm  
**ARA40 TEL** 125cm total length with telescopic whip extended. 45cm minimum length. Antenna tube 40mm x 140mm  
Ideal for portable radio

**£139**

### ARA 60

#### Technical performance

**Frequency range** 40kHz-60MHz (full performance) 60-120MHz 2.3dB less gain

**Output impedance** 50-75 ohm coaxial

**Connector to Rx** PL type delivered as standard. Other standards can be fitted upon request

**Gain** 10dB +/-0.2dBs

**Intercept Point** +50dBm IP 3rd order (10MHz/12V)

**DC power supply** 11.5-13 volt DC at 80mA typ. (230V/12V DC stabilised mains adaptor is supplied with the antenna)

**Mast diameter** 30-50mm can be fitted

**Dimensions** 115cm total length. Antenna tube 50mm x 160mm  
Ideal for base stations

**£169**

### ARA 2000

#### Technical performance

**Frequency range** 50-2000MHz

**Output impedance** 50-75 ohms coaxial

**Gain** 19dB -1000MHz  
18dB -1400MHz  
16dB -2000MHz

**Noise figure** 1.5-2dB -1000MHz  
1.8-2.5dB -1500MHz  
2.5-4dB -2000MHz

**3rd order IP** +35dB typical

**Output impedance** 50-75 ohms coaxial

**Connector standards** N type connector at the antenna. BNC male connector to the receiver

**Power supply** 12V DC at 160mA DC. Power supply for 230V AC is delivered comes with the antenna

**Dimensions** Length 450mm  
Diameter 90mm

**Weight** 2kg

**Accessories** Mains wall plug adaptor (230V A/12V DC). Interface unit (remote supply unit) 1.2m coaxial cable and mast mounting clamps

**£169**

This outstanding range is ideal for use with all base station receivers, the ICR-8500, AR-5000, PCR-1000, NRD-545, FRG-100 & more! Beautifully constructed and designed in Germany - we are pleased to be appointed for this range of products.

**NOW BACK IN STOCK!**

# The JRC NRD 545 Deluxe Receiver

**RRP £1699 ML&S £1299.**  
Also available on finance,  
**NO DEPOSIT & 48 payments**  
of only **£39.53 p/m**

## Special Package Deal

A new NRD-545 with matching Deluxe Speaker NVA-319 & optional VHF/UHF converter CHE-199 allowing coverage on AM/FM/WBFM up to 2000MHz.

**Total RRP £2197.00 ML&S £1649.**  
Also available on finance, **NO DEPOSIT & 48 payments of only £57.63 p/m**

**Save almost £500 off the package deal & pay nothing until APRIL 2001**

## Specifications

- Frequency Range .1 - 29.9999MHz
- Type of reception USB, LSB, CW, RTTY, AM, FM, WFM (When CHE-199 installed)
- Memories 1000 channels
- Receiving system Triple superhetrodyne
- Image rejection 70dB or more
- IF rejection 70dB or more
- Dimensions 330W x 130H x 285D (mm)
- Weight Approx. 7.5kg

## Features

- Digital Signal Processing by One-Chip DSP
- Wide Band 30-2000MHz
- Converter option (CHE-199)
- Remote control by PC

## NEW YAESU VR5000

Yaesu have just announced a new base scanner. This is their first scanner since the legendary FRG9600 and looks to become another benchmark.

#### Features include:

- 12 volt operation
- 100kHz - 25999.9998MHz frequency range
- Operating modes are CW, LSB, USB, AM, AM-N, WAM, FMN AND WFM
- Real Time Band Scope
- 2000 memories

- World Clock
- Case size is 180w x 70 h x 203 deep. (Weight approx 1.9kg).

#### Options include:

- DSP Bandpass, Notch and Noise Reduction Filters
- Digital Voice Recorders

**ARRIVING MID-NOVEMBER. ESTIMATED RRP £799. CALL NOW TO SECURE AN EARLY DELIVERY.**

**Yaesu VR-500 Pocket Scanner**  
100kHz - 1.3GHz  
AM/FM/WFM/SSB/CW  
BAND SCOPE  
PC PROGRAMMABLE  
**Only £199.95**



## NEW AOR AR-8600

At last the long-awaited base version of the AOR8200.

While the operation and logic of this unit are the same as the AOR8200 the AOR8600 front end is re-designed to cope with base antennae. This radio will be at home in the car or on the desk top. Coverage is 500kHz - 2040MHz.

Options include computer control, Plug-in memory module for 400 memories, CTCSS decode, Record Chip for 20 seconds of audio, Tone Eliminator and Voice Inverter.



**PRICE TO BE ANNOUNCED!**

## Icom IC-R75E

AVAILABLE ON FREE FINANCE - ZERO APR  
ONLY £99 DEPOSIT, THEN 12 x £50 p/m.



**FREE**  
MyDel AT-2 Antenna Tuner Worth £69.95

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

**MARTIN LYNCH & SONS**  
140-142 NORTHFIELD AVENUE,  
EALING, LONDON W13 9SB

TEL: 0...  
Martin Lynch can also be contacted via our website and offered with FULL

**Internationally accepted as the benchmark receiver throughout the world, the NRD-545 is still the professional's choice.**

## The JRC NRD-345 New Lower Price!

Whilst JRC offer the ultimate receiver in the shape of the NRD-545, for those of you who can't quite convince yourself, the NRD-345 makes a low cost alternative. Simple to use and built to the same standards as its big brother, take a closer look at the 345 and of course the price!

- 0.1 - 30MHz Coverage
- AM/CW/SSB/Fax
- AM Synchronous Detection
- One Chip DDS-1C
- Digital Synthesizer
- Noise Blanker
- High Sensitivity & wide dynamic range

### Icom IC-R8500



Our dear friend Mr John Wilson gave this superb all band all mode receiver the thumbs up and it's hardly surprising. Icom have actually sold more of this product to HM Governments than enthusiasts. If it's good enough for 'them' it's good enough for you and me.

ONLY £1399 NO DEPOSIT,  
THEN 48 x £42.57p/m.

### AOR AR-8200 MkII

NOW WITH HIGHER POWER NICADS, TXCXO, NEW BLACK CABINET AND OTHER ENHANCEMENTS.

In stock in limited numbers at **£419.00**  
No deposit and 48 x £12.75 p/m.

Dear Mr Lynch

I am writing to congratulate you on the service that I have received from your company.

At 13.00 on Tuesday of this week I placed an order for a Yaesu VR500 via telephone. Twenty four and a half hours later I had the unit in my hand! Not only was your delivery time extremely fast, but I also bought my receiver for forty pounds less than I could find it anywhere else.

Your staff were most helpful on the telephone and your website is easy to navigate to locate the product that was required.

Once again thank you very much for your splendid service. I look forward to using you again and I wish you and your business every success for the future.

Kind regards  
Matthew Bird



**ML&S: ONLY £399 with PSU**  
**No Deposit, then 48 x £12.14 p/m**



**AOR AR-5000A**  
RRP £1395.00  
**NO DEPOSIT,**  
THEN 48 x £42.45 p/m.

### AOR AR-5000+3

The AR-5000+3 including AFC, Synchronous AM & noise blanker.  
RRP £1699 **NO DEPOSIT,**



**AOR AR-3000A**  
RRP £749.00  
**NO DEPOSIT,**  
THEN 48 x £22.79 p/m.

**AOR AR-3000A plus**  
RRP £849.00  
**NO DEPOSIT,**  
THEN 48 x £25.84 p/m.

### Icom PCR-1000 FREE MyDEL AT2!

RRP £349. DSP UT-106 at only £59.95.  
**AVAILABLE ON FREE FINANCE - zero apr**  
**ONLY £49 DEPOSIT, THEN 12 x £25 p/m.**  
including a **FREE MyDEL ATU AT2**  
worth **£69.95!**



### Icom ICR-2E

INCLUDING MATCHING ICOM LC-143 CARRY CASE & FREE CARRIAGE.  
**£149.00**



## New ML&S

### Garmin Street Pilot

The Street pilot is an excellent in car GPS unit with map detail down to street level.

The amber backlit display is easy to read and makes the unit ideal for navigation in unknown territory. The Street Pilot is also at home with APRS when used in conjunction with a THD7E or TMD700E. Supplied with *The UK Metro Guide* on CD Rom, an 8mb Ram module cigar Lead, PC lead and a magnetic roof mount antenna the system is all **ready to go at £595.00** including delivery to your Door.



### Garmin E Map

The Garmin Emap is a hand held version of the Street Pilot and comes with Data lead, 8 mb Ram Card & *UK Metro Guide* on CD Rom at only **£329.00**.



### The Garmin GPS3plus

The ever popular GPS3 now has more map detail and allows upload to street level. **Available at £339.00**



**Road and Recreation CD Rom available at £99.00**

### FINANCE EXAMPLE

All examples do not include P&P.

|            |                |                             |       |
|------------|----------------|-----------------------------|-------|
| Cash Price | Deposit        | PAID IN 6 MONTHS            | APR   |
| £299       | NIL*           | £299                        | 0%    |
| OR         | 48 Payments of | Total Credit Price (T.A.P.) | APR   |
| Cash Price | £22.79         | £1093.92                    | 21.9% |

Written quotations available on request

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.

# SWM Book Store

## LISTENING GUIDES

### Airband

|   | Pages | Price  |
|---|-------|--------|
| ABC AIRBAND RADIO GUIDE 4th Edition   | 96    | £7.99  |
| ABC BRITISH AIRPORTS (6th Edition) A. Wright                                  | 112   | £9.99  |
| ABC CIVIL AIRLINER RECOGNITION 6th Edition Peter R. March                     | 128   | £9.99  |
| AIR TRAFFIC CONTROL 7th Edition, Graham Duke                                  | 112   | £8.99  |
| AIRWAVES 2000   | 134   | £9.95  |
| CALLSIGN 2000   | 168   | £9.95  |
| FLIGHT ROUTINGS 2000, Williams  | 160   | £7.95  |
| NORTH ATLANTIC FLIGHT COMMUNICATIONS 2nd Edition (Inc. software)              | 172   | £16.50 |
| UNDERSTANDING ACARS   |       |        |
| 3rd Edition, Aircraft Communications Addressing and Reporting System Ed Flynn | 80    | £9.95  |
| WORLD AIRLINE FLEET & SELCAL DIRECTORY  | 300   | £16.00 |
| WORLDWIDE AERONAUTICAL COMMUNICATIONS FREQUENCY DIRECTORY                     |       |        |
| 2nd Edition Robert E. Evans   | 260   | £19.95 |

### Datamodes

|  |     |        |
|--|-----|--------|
| FAX & RTTY WEATHER REPORTS Philip Mitchell   | 88  | £11.50 |
| KLINGENFUS 1999/2000 GUIDE TO WORLD-WIDE WEATHER SERVICES 19th Edition Joerg Klengenfuss             | 436 | £23.00 |
| WEATHER REPORTS FROM RADIO SOURCES Philip Mitchell   | 32  | £7.50  |
| RADIO DATA CODE MANUAL 16th Edition, Joerg Klengenfuss   | 788 | £30.00 |
| RADIOTELEX MESSAGE (25 Years of Monitoring Global Teletypewriter & Data Communications, 1st Edition) | 568 | £20.00 |

### DXTV

|  |    |       |
|--|----|-------|
| OXTV FOR BEGINNERS, Simon Hamer  | 31 | £3.95 |
| GUIDE TO OXTV, Keith Hamer & Garry Smith                               | 36 | £3.95 |
| GUIDE TO WORLDWIDE TV TEST CARDS                                       | 60 | £4.95 |
| MASTS - PRACTICAL IDEAS FOR THE OXER Hamer/Smith                       | 36 | £4.95 |
| THIS IS BBC TV - FIRST 30YRS OF TV GRAPHICS, Keith Hamer & Garry Smith | 38 | £4.95 |
| THE FIRST 30 YEARS OF BBC-2, Keith Hamer & Garry Smith                 | 60 | £4.95 |

### Frequency Guides

|   |     |        |
|---|-----|--------|
| 2000 SUPER FREQUENCY LIST ON COROM, Joerg Klengenfuss                 | n/a | £23.00 |
| FERRILL'S CONFIDENTIAL FREQUENCY LIST, 11th Edition                   | 450 | £19.95 |
| GLOBAL RADIO GUIDE 2000   | 32  | £3.95  |
| GUIDE TO UTILITY RADIO STATIONS 2000, 18th Edition, Joerg Klengenfuss | 580 | £30.00 |
| PASSPORT TO WORLD BAND RADIO 2000                                     | 528 | £15.50 |
| RADIO LISTENERS GUIDE 2000  | 128 | £4.95  |
| SHORTWAVE FREQUENCY GUIDE 2000 - 4th Edition, Joerg Klengenfuss       | 564 | £23.00 |
| SHORTWAVE INTERNATIONAL FREQUENCY GUIDE                               | 176 | £12.95 |
| WORLD RADIO TV HANDBOOK 2000  | 640 | £19.95 |

### General

|  |     |        |
|--|-----|--------|
| BUYING A USED SHORT WAVE RECEIVER NEW 4th Edition, F. Osterman           | 78  | £5.95  |
| GETTING ON TRACK WITH APRS, Stan Horzepa W4LDOU                          | 165 | £11.50 |
| POP WENT THE PIRATES, Keith Skues  | 568 | £16.95 |
| RADIO COMMUNICATIONS HANDBOOK, New 7th Edition, Dick Bidulph/Chris Lorek | 580 | £28.00 |
| RADIO SCIENCE OBSERVATION Volume 1 (inc. CD-ROM), Joe Carr               | 414 | £26.95 |
| SHORT WAVE COMMUNICATIONS, Peter Rouse G1UOKO                            | 187 | £4.50  |
| SHORT WAVE EAVESDROPPER CD-ROM   | n/a | £16.50 |
| SHORT WAVE RADIO LISTENING FOR BEGINNERS                                 | 174 | £14.95 |
| SHORT WAVE RECEIVERS PAST & PRESENT (NEW 3rd Edition)                    | 450 | £25.95 |
| THE COMPLETE SHORT WAVE LISTENER'S HANDBOOK New 5th Edition Andrew Yoder | 410 | £19.95 |

### Maritime

|   |     |        |
|---|-----|--------|
| ELECTRONICS AFLOAT, Tim Bartlett                  | 92  | £8.95  |
| GMDSS FOR SMALL CRAFT, Alan Clemmensen            | 94  | £11.95 |
| RADAR FOR SMALL CRAFT, Tim Bartlett               | 96  | £11.95 |
| SCANNING THE MARITIME BANDS, 2nd Edition          | 158 | £9.75  |
| THE VHF GMDSS HANDBOOK, New Edition, Michael Gale | 64  | £8.95  |
| WATCHERS OF THE WAVES, Brian Faulkner             | 118 | £13.50 |

### Satellite

|   |     |        |
|---|-----|--------|
| AN INTRODUCTION TO SATELLITE COMMUNICATIONS BP326.F.A. Willson      | 230 | £5.95  |
| ARRL SATELLITE ANTHOLOGY 5th Edition                                | 150 | £11.50 |
| NEWNES GUIDE TO SATELLITE TV, Oarek Stephenson                      | 371 | £19.95 |
| SATELLITE HANDBOOK (ARRL) New Edition                               |     |        |
| Martin Davidoff K2UBC   | 370 | £15.50 |
| SATELLITE PROJECTS HANDBOOK, Lawrence Harris                        | 174 | £14.99 |
| SATELLITE TELEVISION, A layman's guide, Peter Pearson               | 73  | £1.00  |
| WEATHER SATELLITE HANDBOOK, 5th Edition, Or Ralph E. Taggart W6BDQT | 192 | £15.50 |

### Scanning

|  |     |        |
|--|-----|--------|
| AN INTRODUCTION TO SCANNERS AND SCANNING BP311, I.D. Poole | 152 | £4.99  |
| SCANNER BUSTERS 2, D.C. Poole                              | 100 | £6.00  |
| SCANNERS 2 INTERNATIONAL, Peter Rouse G1UOKO               | 261 | £12.95 |
| SCANNERS 3 PUTTING SCANNERS INTO PRACTICE                  |     |        |
| 4th Revision, Peter Rouse                                  | 271 | £10.95 |
| SCANNERS 4 SCANNING INTO THE FUTURE, Bill Robertson        | 245 | £10.95 |
| SCANNING SECRETS, Mark Francis                             | 280 | £16.95 |
| UK SCANNING DIRECTORY New 7th Edition                      | 604 | £19.50 |
| ULTIMATE SCANNING GUIDE, Richard Allport                   | 640 | £19.99 |

## AMATEUR RADIO

### Amateur Television

|  |     |       |
|--|-----|-------|
| AN INTRODUCTION TO AMATEUR TELEVISION, Mike Wooding G6IQM & Trevor Brown G8CJS | 156 | £5.00 |
| THE AMATEUR TV COMPENDIUM, Mike Wooding G6IQM                                  | 104 | £3.50 |

## Antennas & Transmission Lines

|   | Pages | Price  |
|---|-------|--------|
| 25 SIMPLE AMATEUR BAND AERIALS BP125, E.M. Noll   | 63    | £1.95  |
| 25 SIMPLE INDOOR AND WINDOW AERIALS BP136, E.M. Noll  | 50    | £1.75  |
| 25 SIMPLE TROPICAL AND MW BAND AERIALS BP145, E.M. Noll   | 54    | £1.75  |
| ANTENNA IMPEDANCE MATCHING (ARRL), Wilfred N. Caron   | 195   | £15.50 |
| ANTENNA TODDKIT (inc. CD-ROM), Joseph J. Carr   | 214   | £25.00 |
| ARRL ANTENNA BOOK 18th Edition  | 732   | £24.00 |
| ARRL ANTENNA BOOK ON CD-ROM   | n/a   | 0/P    |
| ARRL ANTENNA COMPENDIUM Volume One  | 175   | £10.50 |
| ARRL ANTENNA COMPENDIUM Volume Two  | 208   | £10.50 |
| ARRL ANTENNA COMPENDIUM Volume Three, Edited by Jerry Hall K1TD   | 236   | £11.50 |
| ARRL ANTENNA COMPENDIUM Volume Four   | 204   | £16.50 |
| ARRL ANTENNA COMPENDIUM Volume Five   | 200   | £16.50 |
| ARRL ANTENNA COMPENDIUM Volume Six (inc. CDROM)   | 200   | £18.50 |
| BACKYARD ANTENNAS, Peter Dodd G3LDO   | 200   | £18.99 |
| BEAM ANTENNA HANDBOOK, W.I. Orr W6SAI & S.D. Cowan W2LX   | 268   | £8.95  |
| BUILDING & USING BALUNS, Jerry Sevick   | 125   | £18.95 |
| CUBICAL QUAD ANTENNAS 3rd Edition, William Orr W6SAI and Stuart Cowan W2LX  | 110   | £8.95  |
| EXPERIMENTAL ANTENNA TOPICS BP278, H.C. Wright  | 70    | £3.50  |
| G-ORP CLUB ANTENNA HANDBOOK   |       |        |
| Compiled and edited by P. Linsley G3POL & T. Nicholson KA9WRI/GWOLND  | 155   | £7.25  |
| HF ANTENNA COLLECTION (RSGB), Edited by Erwin David G4LOI   | 233   | £9.99  |
| HF ANTENNAS FOR ALL LOCATIONS (RSGB), Les Moxon G6XN  | 322   | £7.99  |
| MORE OUT OF THIN AIR (PWP)  | 112   | £6.95  |
| "ONJUN'S" LOW BAND OXING (ARRL), J. Devoldere   | 330   | £23.00 |
| PHYSICAL DESIGN OF YAGI ANTENNAS (ARRL)   | 270   | £15.50 |
| PRACTICAL ANTENNAS FOR NOVICES, John Heys G3B00   | 52    | £6.30  |
| PRACTICAL ANTENNA HANDBOOK 3rd Edition, (inc. software) Joseph J. Carr  | 580   | £33.45 |
| RADIO ANTENNAS & PROPAGATION, William Gosling   | 260   | £19.99 |
| RADIO AMATEUR ANTENNA HANDBOOK, W.I. Orr W6SAI & S.D. Cowan W2LX  | 188   | £8.95  |
| RECEIVING ANTENNA HANDBOOK, Joe Carr  | 189   | £17.50 |
| SIMPLE, LOW-COST WIRE ANTENNAS FOR RADIO AMATEURS   | 224   | £8.95  |
| THE RIGHT ANTENNA, How To Select & Install Antennas For Entertainment & Communication Devices, 2nd Edition Alvin J. Evans | 78    | £16.95 |
| THE TRUTH ABOUT CB ANTENNAS, (Orr & Cowan) W.I. Orr W6SAI & S.D. Cowan W2LX   | 188   | £8.95  |
| VERTICAL ANTENNAS, W.I. Orr W6SAI & S.D. Cowan W2LX   | 192   | £8.95  |
| VERTICAL ANTENNA CLASSICS (ARRL), R. Schetsen   | 123   | £11.50 |
| W1FB'S ANTENNA NOTEBOOK (ARRL), Doug DeMaw W1FB   | 123   | £8.00  |
| WIRE ANTENNA CLASSICS (ARRL)  | 144   | £11.50 |
| YOUR ANTENNA COMPANION, Paul Danzer   | 130   | £7.50  |

## Beginners (inc RAE)

|   |     |        |
|---|-----|--------|
| AN INTRODUCTION TO AMATEUR RADIO - New Edition, Ian Poole G3YWX                       | 150 | £4.99  |
| BASIC RADIO PRINCIPLES & TECHNOLOGY, Ian Poole G3YWX                                  | 262 | £14.99 |
| BASIC RADIO & ELECTRONIC CALCULATIONS, Ray Petri G0OAT                                | 160 | £13.95 |
| AN RAE STUDENTS NOTEBOOK, Bob Griffiths G7NHB   | 76  | £6.95  |
| PRACTICAL RECEIVERS FOR BEGINNERS (RSGB), John Case GW4HWR                            | 165 | £14.50 |
| PRACTICAL TRANSMITTERS FOR NOVICES, John Case GW4HWR                                  | 126 | £12.50 |
| RADIO AMATEURS EXAMINATION/END OF COURSE TEST PAPERS, Ray Petri G0OAT                 | 104 | £13.95 |
| RAE MANUAL (RSGB), New Revised Edition  | 127 | £15.00 |
| THE NOVICE LICENCE STUDENTS NOTEBOOK, John Case GW4HWR                                | 124 | £6.00  |
| THE NOVICE RADIO AMATEURS EXAMINATION HANDBOOK (BP375) Ian Poole G3YWX                | 150 | £4.95  |
| THE RADIO AMATEURS' QUESTION & ANSWER REFERENCE MANUAL                                |     |        |
| Fifth Edition, Ray Petri G0OAT  | 208 | £13.95 |
| TRAINING FOR THE NOVICE LICENCE - A MANUAL FOR THE INSTRUCTOR (RSGB) John Case GW4HWR | 101 | £6.75  |
| YOUR FIRST AMATEUR STATION, (RSGB) Colin Redwood G6MXL                                | 120 | £5.75  |

## Callbooks

|  |     |        |
|--|-----|--------|
| JOINT INTERNATIONAL & NORTH AMERICAN CALLBOOK (CD-ROM) | n/a | £30.00 |
| PW UK & EIRE AMATEUR CALLSIGN (CD-ROM)                 | n/a | £7.50  |
| RSGB YEARBOOK 2000 EDITION                             | 432 | £19.99 |

## Computing

|   |     |        |
|---|-----|--------|
| AN INTRODUCTION TO THE WORLDWIDE WEB FOR PC AND MAC USERS, (BP390) D.C. & O. Bishop | 148 | £6.99  |
| HOW TO EXPAND & UPGRADE YOUR PC BP450   |     |        |
| R. A. Penfold   | 170 | £6.99  |
| INTERFACING PCs AND COMPATIBLES BP467, R. A. Penfold                                | 86  | £4.99  |
| NEWNES COMPUTER ENGINEER'S POCKET BOOK Third Edition, Michael Tootley               | 256 | £12.95 |
| PERSONAL COMPUTERS IN THE HAM SHACK (ARRL)  | 284 | £11.50 |
| THE INTERNET AND WORLD WIDE WEB EXPLAINED, J. Shelley                               | 130 | £5.95  |
| WINDOWS '98 ASSISTANT' (BP454), L. Sinclair   | 160 | £6.99  |
| WINDOWS '98 EXPLAINED (BP456), N. Kantaris & P. Oliver                              | 160 | £6.99  |
| WINDOWS '98 - HARD DISK & FILE MANAGEMENT, (BP455) J. Gatenby                       | 160 | £6.99  |

## EMC

|  |     |        |
|--|-----|--------|
| ARRL RFI BOOK (Practical Cures For Radio Frequency Interference) | 316 | £15.50 |
| INTERFERENCE HANDBOOK, William R. Nelson WA6FQG                  | 250 | £9.50  |
| RSGB GUIDE TO EMC, 2nd Edition, Robin Page-Jones G3JWI           | 204 | £18.50 |

## Historical

|   |     |        |
|---|-----|--------|
| 100 RADIO HOOK UPS, 2nd Edition (reprinted)                                       | 48  | £3.35  |
| 1934 OFFICIAL SHORT WAVE RADIO MANUAL, Edited by Hugo Gernsback                   | 260 | £11.85 |
| COLLECTOR'S GUIDE TO TRANSISTOR RADIOS (2nd Edition), Mary & Sue Buris            | 320 | £16.95 |
| COMMUNICATIONS RECEIVERS - THE VACUUM TUBE ERA, R. S. Moore                       | 141 | £17.95 |
| GUIDE TO OLD RADIOS, POINTERS, PICTURES, PRICES, David & Betty Johnson            | 278 | £19.95 |
| HENLEY'S 222 RADIO CIRCUIT DIAGRAMS (1924)  | 271 | £9.45  |
| HOW TO BUILD THE TWINPLEX REGENERATIVE RECEIVER, Lindsay                          | 63  | £5.75  |
| HOW TO BUILD YOUR FIRST VACUUM TUBE REGENERATIVE RECEIVER, T.J. Lindsay           | 127 | £7.30  |
| HOW TO BUILD YOUR RADIO RECEIVER (A4) (Popular Radio Handbook No. 1)              | 100 | £6.95  |
| HOW TO MAKE A NEUTRODYNE RECEIVER, Webb   | 53  | £5.00  |
| OLD TIME RADIOS - RESTORATION & REPAIR, J. Carr                                   | 256 | £20.95 |
| SECRETS OF HOMEBUILT REGENERATIVE RECEIVERS (Rockey)                              | 127 | £7.95  |
| SEEING BY WIRELESS - THE STORY OF BAIRD TELEVISION, Ray Herbert                   | 27  | £4.95  |
| THOSE GREAT OLD HANDBOOK RECEIVERS (1929 + 1934)                                  | 94  | £6.95  |
| TRANSISTOR RADIO! - A COLLECTOR'S ENCYCLOPEDIA & PRICE GUIDE, David & Robert Lane | 170 | £19.95 |
| VISION BY RADIO (1925) (Jenkin)   | 140 | £7.85  |
| DOUBLE TESLA-ODDIN COIL   | 24  | £3.95  |
| RADIO TESLA - THE SECRETS OF TESLA'S RADIO AND WIRELESS POWER                     | 36  | £5.30  |
| TESLA COIL  | 24  | £3.95  |

|   | Pages | Price  |
|---|-------|--------|
| TESLA - THE LOST INVENTIONS   | 32    | £4.75  |
| TESLA - THE TRUE WIRELESS   | 16    | £3.95  |
| THE MAN WHO INVENTED THE TWENTIETH CENTURY: NIKOLA TESLA, FORGOTTEN GENIUS OF ELECTRICITY | 245   | £12.99 |
| THE TESLA HIGH FREQUENCY COIL (1910)  | 120   | £6.95  |

## Crystal Set Books (Xtal Set Society)

|   |     |        |
|---|-----|--------|
| THE XTAL SET SOCIETY NEWSLETTER, Volume 1 & 2 Combined, Phil Anderson WDXI        | 96  | £14.00 |
| THE CRYSTAL SET HANDBOOK & VOL. 3 XTAL SET SOCIETY NEWSLETTER, Phil Anderson WDXI | 134 | £8.00  |
| THE XTAL SET SOCIETY NEWSLETTER, Volume 4, Phil Anderson WDXI                     | 89  | £7.00  |
| CRYSTAL SETS, The Xtal Set Society Newsletter, Volume 5, Phil Anderson WDXI       | 88  | £7.00  |
| CRYSTAL RADIO HISTORY, FUNDAMENTALS AND DESIGN, P.A. Kinzie                       | 122 | £8.00  |
| CRYSTAL SET PROJECTS - 15 RADIO PROJECTS YOU CAN BUILD, Phil Anderson             | 160 | £10.00 |
| CRYSTAL SET LOOPERS, A3 TUBER & MORE, Volume 8 Xtal Set Society Newsletter        | 128 | £10.50 |

## Maps & Log Books

|  |              |       |
|--|--------------|-------|
| AMATEUR RADIO LOGBOOK (RSGB)                 | 50           | £4.25 |
| AMATEUR RADIO WORLD ATLAS (A4 SIZE)          | 20           | £8.00 |
| GREAT CIRCLE MAP 600mm x 600mm               | n/a          | £1.50 |
| NORTH ATLANTIC ROUTE CHART                   | 740 x 520mm  | £9.00 |
| QTH LOCATOR MAP OF EUROPE, New Edition       | 1060 x 680mm | £7.00 |
| RADIO AMATEURS MAP OF THE WORLD, New Edition | 960 x 680mm  | £7.00 |
| RECEIVING STATION LOG BOOK (RSGB)            | 60           | £3.75 |

## Morse

|   |    |       |
|---|----|-------|
| SECRETS OF LEARNING MORSE CODE Mark Francis | 84 | £6.95 |
|---|----|-------|

## Microwaves

|  |     |        |
|--|-----|--------|
| AN INTRODUCTION TO MICROWAVES (BP312), F.A. Wilson             | 134 | £3.95  |
| ARRL UHF/MICROWAVE EXPERIMENTER'S MANUAL Various Authors       | 446 | £15.50 |
| ARRL UHF/MICROWAVE PROJECT MANUAL VOL. 2                       | 160 | £11.50 |
| ARRL UHF/MICROWAVES PROJECT MANUAL (ARRL)                      | 352 | £15.50 |
| MICROWAVE & WIRELESS COMMUNICATIONS TECHNOLOGY, Joseph J. Carr | 436 | £35.00 |
| MICROWAVE HANDBOOK - COMPONENTS & OPERATING VOL. 1 (RSGB)      | 110 | £12.00 |
| MICROWAVE HANDBOOK - CONSTRUCTION & TESTING VOL. 2 (RSGB)      | 120 | £18.99 |
| MICROWAVE HANDBOOK - BANDS & EQUIPMENT VOL. 3 (RSGB)           | 140 | £18.99 |

## Operating & Handbooks

|  |     |        |
|--|-----|--------|
| ALL ABOUT HAM RADIO, Harry Helms   | 290 | £16.50 |
| ARRL HANDBOOK 2000 78th Edition  | 380 | £24.00 |
| ARRL HANDBOOK 2000 ON CDROM  | n/a | £33.00 |
| ARRL OPERATING MANUAL NEW EDITION  | 420 | £18.50 |
| ARRL RADIO BUYERS SOURCEBOOK VOL. 1 (QST Reviews 1981-1991)                                  | 280 | £11.50 |
| ARRL RADIO BUYERS SOURCEBOOK VOL. 2 (QST Reviews 1991-1993)                                  | 240 | £11.50 |
| ARRL VHF/UHF RADIO BUYER'S SOURCEBOOK  | 120 | £11.50 |
| COMPLETE DX'ER, Bob Locher   | 204 | £9.50  |
| DISCOVERING DXING (2nd Edition), John Zondlo   | 90  | £7.50  |
| GUIDE TO VHF/UHF AMATEUR RADIO, Ian Poole G3YWX  | 106 | £8.99  |
| HAM RADIO MADE EASY (ARRL), Steve Ford   | 204 | £11.50 |
| HINTS AND KINKS FOR THE RADIO AMATEUR  |     |        |
| Edited by Charles L. Hutchinson and David Newkirk  | 129 | £9.50  |
| LOW PROFILE AMATEUR RADIO (ARRL), Jim Kearman KR1S   | 124 | £7.50  |
| SETTING UP AN AMATEUR RADIO STATION BP300, I.D. Poole  | 81  | £3.95  |
| TRANSMITTER HUNTING - RADIO DIRECTION FINDING SIMPLIFIED, Joseph D. Moell & Thomas N. Curlee | 325 | £24.95 |

## Packet

|   |     |        |
|---|-----|--------|
| HF DIGITAL COMPANION, Steve Ford                                  | 120 | £7.50  |
| NOS INTRO, TCP/IP OVER PACKET RADIO, Ian Wade G3NRW               | 356 | £11.50 |
| PACKET RADIO PRIMER (RSGB), Dave Comber G8VZ & Martyn Corft G8NZU | 266 | £8.95  |
| PACKET, SPEED & MORE SPEED APPLICATIONS (ARRL)                    | 148 | £10.50 |
| PRACTICAL PACKET RADIO, Stan Horzepa                              | 140 | £10.50 |
| YOUR PACKET COMPANION, Steve Ford WB8IMY                          | 170 | £7.50  |

## Propagation

|   |     |       |
|---|-----|-------|
| AN INTRODUCTION TO RADIO WAVE PROPAGATION BP293, J.G. Lee | 116 | £3.95 |
| YOUR GUIDE TO PROPAGATION (RSGB) Ian Poole                | 88  | £6.95 |

## QRP

|   |     |        |
|---|-----|--------|
| ARRL LOWER POWER COMMUNICATIONS - THE ART & SCIENCE OF QRP, Richard Arland K7SZ | 204 | £11.50 |
| QRP POWER (ARRL)  | 188 | £11.50 |
| G-QRP CLUB CIRCUIT HANDBOOK, Edited by Rev. G. Dobbs G3RJV                      | 96  | £9.00  |
| INTRODUCING QRP, Dick Pascoe G0BPS  | 48  | £6.95  |
| W1FB's QRP NOTEBOOK (ARRL) 2nd Edition, Doug DeMaw W1FB                         | 175 | £8.00  |

## Test Equipment

|   |     |        |
|---|-----|--------|
| AN INTRODUCTION TO THE ELECTROMAGNETIC WAVE BP315, F.A. Wilson      | 122 | £4.95  |
| BUILD YOUR OWN TEST EQUIPMENT, Davidson                             | 285 | £19.95 |
| GETTING THE MOST FROM YOUR MULTIMETER BP239, R.A. Penfold           | 102 | £2.95  |
| HANDS-ON GUIDE TO OSCILLOSCOPES, Barry Ross                         | 228 | £20.95 |
| HOW TO USE OSCILLOSCOPES & OTHER TEST EQUIPMENT BP267, R.A. Penfold | 104 | £3.50  |

|   | Pages | Price  |
|---|-------|--------|
| OSCILLOSCOPES - HOW TO USE THEM/HOW THEY WORK, 4th edition, Ian Hickman | 259   | £17.99 |
| TEST EQUIPMENT CONSTRUCTION BP248, R.A. Penfold                         | 104   | £3.99  |
| TEST EQUIPMENT FOR THE RADIO AMATEUR, Clive Smith G4FZH                 | 170   | £10.95 |

## VHF

|  |     |        |
|--|-----|--------|
| ALL ABOUT VHF AMATEUR RADIO, W. I. Orr W6SAI | 163 | £8.95  |
| VHF/UHF HANDBOOK (RSGB), Dick Biddulph G8PDS | 180 | £22.00 |
| YOUR MOBILE COMPANION, Roger Butch           | 190 | £8.50  |
| YOUR VHF COMPANION, Steve Ford               | 230 | £7.50  |

## ELECTRONICS

### General

|  |      |        |
|--|------|--------|
| BEGINNERS GUIDE TO MODERN ELECTRONIC COMPONENTS BP285  | 166  | £4.99  |
| CIRCUIT SOURCE BOOK 1 - BP321, R.A. Penfold  | 182  | £4.95  |
| CIRCUIT SOURCE BOOK 2 - BP322, R.A. Penfold  | 214  | £4.95  |
| DIGITAL ELECTRONICS (CD-ROM), Mike Tootley   | n/a  | £45.00 |
| ELECTRONIC PROJECT BUILDING FOR BEGINNERS, R. Penfold, (BP392)                                     | 110  | £4.95  |
| ENCYCLOPEDIA OF ELECTRONIC CIRCUITS Vol. 7   | 1128 | £32.95 |
| FAULT FINDING ELECTRONIC PROJECTS BP391  | 133  | £4.99  |
| GETTING STARTED IN PRACTICAL ELECTRONICS BP345, Owen Bishop  | 198  | £4.95  |
| HOW ELECTRONIC THINGS WORK... AND WHAT TO DO WHEN THEY DON'T, Goodman                              | 390  | £16.95 |
| HOW TO TEST ALMOST EVERYTHING ELECTRONIC   | 326  | £16.95 |
| LADDER CRYSTAL FILTERS, John Pivnichny N2DCH   | 134  | £14.95 |
| NEWNES AUDIO AND HI-FI ENGINEER'S POCKET BOOK 3rd Edition, Vivian Capel                            | 210  | £14.95 |
| PARTS GALLERY & ELECTRONICS CIRCUITS & COMPONENTS (CD-ROM), Mike Tootley                           | n/a  | £35.00 |
| PICTUTOR (CD-ROM), John Decker   | n/a  | £45.00 |
| POWER SUPPLY PROJECTS BP76, R.A. Penfold   | 89   | £3.99  |
| PRACTICAL DIGITAL ELECTRONICS FOR TECHNICIANS, Will Kimber   | 262  | £12.99 |
| PRACTICAL ELECTRONIC FILTERS BP299, Owen Bishop  | 89   | £4.95  |
| PRACTICAL ELECTRONICS HANDBOOK, Ian Sinclair   | 439  | £14.95 |
| PRACTICAL OSCILLATOR CIRCUITS BP393, A. Flind  | 136  | £4.99  |
| RADIO ENGINEERS FACTFINDER FOR WINDOWOS (Floppy Disk) John Davies                                  | n/a  | £18.00 |
| RADIO FREQUENCY TRANSISTORS, PRINCIPLES & PRACTICAL APPLICATIONS Dye/Granberg (Motorola), Hardback | 235  | £39.95 |
| SCROGGIES - FOUNDATIONS OF WIRELESS & ELECTRONICS 11th Edition                                     | 292  | £19.99 |
| TECHNICAL TOPICS SCRAPBOOK (RSGB) 1990-94, Pat Hawker  | 310  | £13.50 |
| THE ART OF SOLDERING BP324, R. Brewster  | 94   | £3.99  |
| UNDERSTANDING BASIC ELECTRONICS (ARRL)   | 314  | £15.50 |
| UNDERSTANDING DIGITAL TECHNOLOGY, F. Wilson, (BP376)   | 110  | £4.95  |
| W1FB's DESIGN NOTEBOOK (ARRL), Doug DeMaw W1FB   | 195  | £8.00  |

## Data

|   |     |        |
|---|-----|--------|
| ARRL ELECTRONICS DATA BOOK, Doug DeMaw W1FB                       | 260 | £8.95  |
| ELECTRONIC HOBBYIST DATA BOOK BP396, R.A. Penfold                 | 242 | £5.95  |
| LF SOURCE BOOK (RSGB) 2nd Edition, Peter Dodd                     | 130 | £8.99  |
| PRACTICAL ELECTRONIC DESIGN DATA BP316, Owen Bishop               | 327 | £5.99  |
| PRACTICAL RF HANDBOOK (2nd Edition), Ian Hickman                  | 302 | £19.99 |
| RF CIRCUIT DESIGNS, Chris Bowick                                  | 176 | £18.99 |
| SECRETS OF RF CIRCUIT DESIGN, New Edition (Hardback), Joseph Carr | 405 | £41.95 |
| SOLID STATE DESIGN FOR THE RADIO AMATEUR (ARRL)                   | 256 | £11.50 |
| Les Hayward W7Z01 & Doug DeMaw W1FB                               | 320 | £11.50 |
| SPREAD SPECTRUM SOURCE BOOK                                       | 226 | £15.50 |
| TOWERS INTERNATIONAL MOSPOWER & OTHER FET SELECTOR                | 140 | £19.95 |
| TOWERS INTERNATIONAL TRANSISTOR SELECTOR - UPDATE 5               | 476 | £24.95 |
| TRANSISTOR DATA TABLES (BP401)                                    | 178 | £5.95  |

## Projects

|  |     |        |
|--|-----|--------|
| 33 SIMPLE WEEKEND PROJECTS/CO  | 68  | £7.95  |
| BUILD YOUR OWN INTELLIGENT AMATEUR RADIO TRANSCEIVER, Randy L. Henderson                 | 350 | £25.95 |
| COIL DESIGN & CONSTRUCTION MANUAL BP160, B.B. Babani                                     | 106 | £3.95  |
| HOW TO DESIGN & MAKE YOUR OWN PCBs BP121, R.A. Penfold                                   | 66  | £3.99  |
| MORE ADVANCED POWER SUPPLY PROJECTS BP192, R.A. Penfold                                  | 92  | £2.95  |
| POWER SUPPLY PROJECTS (A collection of Innovative and practical design projects), Newnes | 170 | £10.95 |
| PROJECTS FOR RADIO AMATEURS & SWLs BP304, R.A. Penfold                                   | 92  | £3.95  |
| RADIO RECEIVER PROJECTS YOU CAN BUILD  | 312 | £20.95 |
| SIMPLE SHORT WAVE RECEIVER CONSTRUCTION BP275, R.A. Penfold                              | 88  | £3.95  |

## Valves/Tubes

|   |     |        |
|---|-----|--------|
| ELECTRON TUBE LOCATOR, George H. Farhauer   | 350 | £21.95 |
| ESSENTIAL CHARACTERISTICS (TUBES & TRANSISTORS) (Original publishers General Electric)  | 475 | £10.50 |
| Re-published by Antique Electronic Supply (Arizona)   | 40  | £2.95  |
| HANDBOOK OF RADIO, TV, INDUSTRIAL & TRANSMITTING TUBE & VALVE EQUIVALENTS   | 60  | £2.95  |
| RADIO VALVE GUIDE BOOK VOL. 1   | 54  | £2.95  |
| RADIO VALVE GUIDE BOOK VOL. 2   | 42  | £2.95  |
| RADIO VALVE GUIDE BOOK VOL. 3   | 40  | £2.95  |
| RADIO VALVE GUIDE BOOK VOL. 4   | 48  | £2.95  |
| RADIO VALVE GUIDE BOOK VOL. 5   | 44  | £2.95  |
| MASTER INDEX TO VALVE TYPES, BOOKS 1-5  | 40  | £1.50  |
| RCA RECEIVING TUBE MANUAL (Original Publishers Radio Corporation Of America), Re-published by Antique Electronic Supply (Arizona) | 384 | £10.50 |
| RCA TRANSMITTING TUBES  |     |        |
| (Original Publisher Radio Corporation of America) Re-published by Antique Electronic Supply (Arizona)                             | 318 | £10.50 |
| TUBE SUBSTITUTION HANDBOOK  | 150 | £15.50 |
| VALVE AMPLIFIERS, Morgan Jones  | 374 | £25.00 |
| VALVE & TRANSISTOR AUDIO AMPLIFIERS, John Lindsay Hood  | 310 | £19.95 |

Check out our Website for a selected description of these books

[www.pwpublishing.ltd.uk/books](http://www.pwpublishing.ltd.uk/books)

CALL SHELAGH OR JEAN ON

**Telephone**  
(01202) 659930



OR USE THE ORDER FORM ON PAGE 76

Please note: Cash not accepted with mail orders.

**W**ant to subscribe to *Short Wave Magazine* but can't afford the initial subscription fee? Well, why not take this opportunity to order a subscription and pay for it in **three easy instalments?**\*

Your subscription will begin with the **December 2000 issue** of *Short Wave Magazine* and end with the **November 2001 issue**.

Payments will be accepted by three post dated cheques drawn on a UK bank. (You must send three cheques with your order - the first cheque dated immediately, the second dated 1/03/2001 and the third dated 1/07/2001).

To order, please write to our subscription department, sending your contact address and cheques, quoting order number **SWM11**.

# Subscribe To SWM In Three Easy Instalments!

## Subscription Prices

|                    |            |
|--------------------|------------|
| <b>UK only</b>     |            |
| <b>Cost of Sub</b> | <b>£33</b> |
| 1st payment        | £11        |
| 2nd payment        | £11        |
| 3rd payment        | £11        |

send your order to:  
 Subscription Dept,  
 PW Publishing Ltd,  
 Arrowsmith Court,  
 Station Approach,  
 Broadstone,  
 Dorset BH18 8PW.

\* Sorry but this offer is not available to overseas customers.

## Special Offer... More Than Just a Torch!

### Dynamo Solar Torch Radio

**Only £17.<sup>95</sup>**



The Dynamo Solar Torch Radio is more than just a torch. Features include: a torch/flashlight, siren and an a.m./f.m. radio. Also, the batteries in the torch/radio will never let you down as it can be powered in four different ways:

- 1) Solar Power - four hours sunshine gives a complete charge
- 2) Dynamo Charging - winding the generator handle for three minutes provides fifteen mins of radio play
- 3) AC/DC Adapter
- 4) Three AA cells (not included)

How often do you stumble out to your shack at night tripping over things as you go? Or discover that the batteries in your torch have died just when you need it most? This could all be a thing of the past if you take advantage of our special offer this month!

Please send me ..... Dynamo Solar Torch(es) at the special price of **£17.95 plus £3 P&P** (UK only, Overseas customers please ring for postage rate).

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

Please charge my Access/Visa/Debit card the sum of £.....

Card number:

Valid from:..... to:..... Issue No:.....

Signature:.....

Name: .....

Address: .....

Postcode: .....

Tel:..... Fax:..... E-mail:.....

**Send to:** PW Publishing Ltd., SWM Dynamo Solar Torch Offer, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW. Offer open until 22 November 2000.

To order either fill in this coupon or telephone the **Credit Card Hotline on (01202) 659930**

If you don't want to cut the coupon, just send the corner flash with your details.



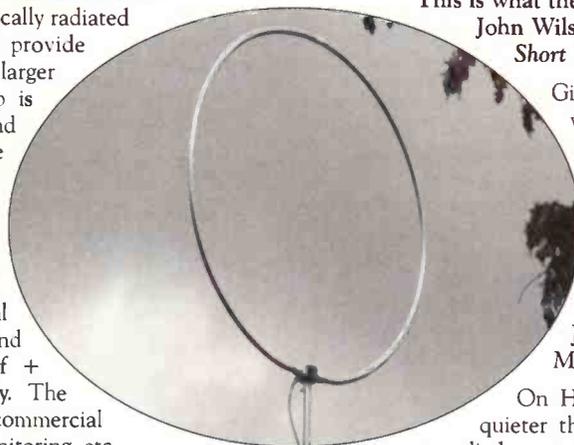
**November 2000  
 WS/SWM 11  
 Dynamo Solar  
 Torch Radio  
 Coupon**

# WELLBROOK COMMUNICATIONS

## ALA 1530 LOOP ANTENNA

This active 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 sensitivity compared to larger antennas. 1m dia. Aluminium loop is designed for outdoors, even at ground level. The loop has a frequency range from 150kHz to 30MHz and matches directly to the receiver. With 30dB nulls to reduce interference, LW, MW and SW its reception is outstanding. Professional performance is assured for high signal environments with excellent with 2nd and 3rd order intercept points of +70dBm and +40dBm respectively. The antenna is currently being used for commercial broadcast and navigation beacon monitoring, etc.

Supplied complete with Antenna Interface and a PSU.



This is what the experts say:-  
John Wilson; November 2000,  
*Short Wave Magazine*

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.

Jacques d'Avignon;  
*Monitoring Times*

On HF the Wellbrook loop was not only quieter than my normal wire antenna, but it supplied a stronger and cleaner signal than that supplied by the active short dipole that I had been using for many years.

£119.95 incl. postage. Add £20 overseas.

Wellbrook House, Brookside Road, Bransgore, Hants BH23 8NA

Tel: (01425) 674174 E-mail: [sales@wellbrook.uk.com](mailto:sales@wellbrook.uk.com)

Visit our web site: [www.wellbrook.uk.com](http://www.wellbrook.uk.com) Also from *The Shortwave Shop* (01202) 490099

# KNOCKDOWN DEALS AT PICKETT'S LOCK

(before redevelopment)

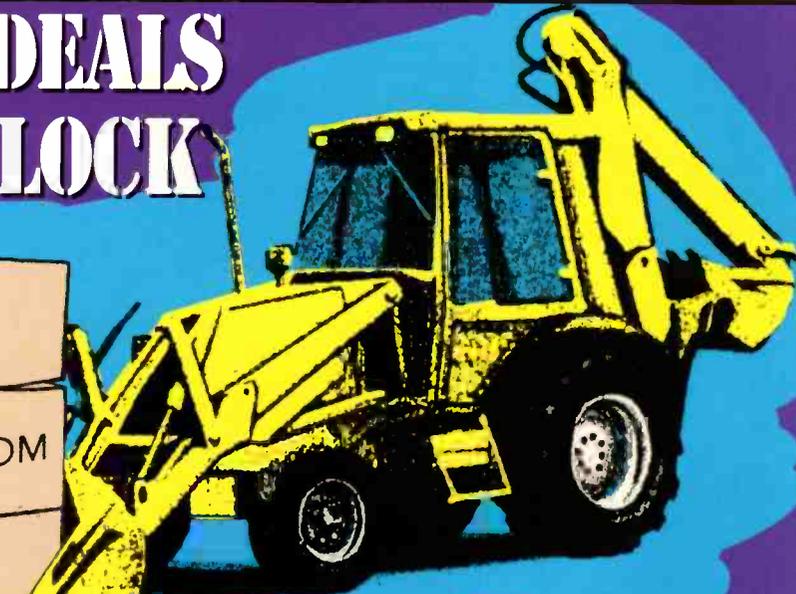
Saturday November 25th  
10am - 5pm

Sunday November 26th  
10am - 4pm

Adults: £3.00  
Concessions: £2.50

Lee Valley Leisure Centre  
Picketts Lock Lane  
Edmonton  
London N9 0AS

see our website  
[www.radiosport.co.uk](http://www.radiosport.co.uk)  
for more information



**OUR LAST EVENT AT PICKETT'S LOCK**  
will be on November 25/26 where there will be  
**BARGAINS GALORE!**

Then we move to Alexandra Palace for April 21/22 2001

How do I find  
Lee Valley Leisure  
Centre?  
BY CAR on the A1055.  
Follow the signs from  
junction 25 of the M25.  
BY PUBLIC TRANSPORT  
bus WB from Edmonton  
Green B.R. Station

**RadioSport Ltd** 126 Mount Pleasant Lane • Bricket Wood • Herts • AL2 3XD

• Tel: 01923 893929 • Fax: 01923 678770

```

(PRI)
FRI0 NFM
MKR 145.0000
144M HAMBAND
S_■■■■■■■
  
```

```

ADJ
2UFO NFM 14.0k
U-A 145.2100
U-B 76.1000
S_■■■■■■■
  
```

```

(DUP)
2UFO NFM 20.0k
U-A 439.9000
U-B 88.0000
-
  
```

```

(AFC)
2UFO NFM 20.0k
U-A 1295.0000
U-B 88.0000
-
  
```

```

COPY 2320
LOAD SAVE
ALL-DATA
Next
  
```

```

SCAN-GROUP 1
ABCDEFGHIJ
abcdefghij
BANK LINK
  
```

```

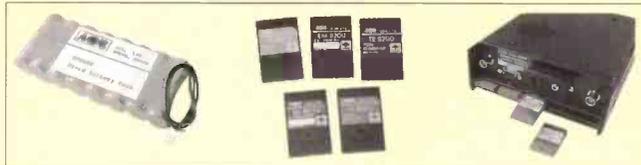
2UFO AM 25.0k
U-A 123.5000
M-WRITE E25
PROTECT OFF
  
```

```

HLD
80.000 ↔ 10M
MKR 80.000
  
```

```

EDIT MEM-CH
MEM LSB 0.05k
A29 14.200
BANK/CH SEL
  
```



# NEW AR8600

MOBILE - BASE - TRANS-PORTABLE

The AR8600 is an extremely versatile **all mode** receiver (530kHz - 2040MHz) which can be used virtually anywhere, mobile, base or trans-portable... powered from an external 12V d.c. power supply, optional d.c. lead from a 12V vehicle or from an optional internally fitted NiCad battery pack. 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.

Although many microprocessor features have been adopted from the trendsetting AR8200 Series-2 hand portable receiver, **the AR8600 RF front-end is an all new**

**design with preselection around VHF to ensure the highest levels of adjacent channel rejection with software spuri cancellation.** In addition to a hinged telescopic whip aerial, the AR8600 is supplied with a **detachable plug in medium wave bar aerial** which locates on the rear chassis of the receiver for localised medium wave monitoring. An additional BNC socket is mounted on the rear chassis so that **10.7MHz i.f. output** may be extracted for use with external spectrum display and vector analyser units such as the AOR SDU5500. The TCXO ensures **high stability** with **minimal internal spuri** and is usually only seen in top of the range (more expensive) models such as the AR5000 and AR7030.

The chassis is manufactured from two metal compartments, effectively a **metal chassis inside a metal cabinet...** this provides excellent screening characteristics and great robustness highlighting its multi application role. The **front panel** is also manufactured from **die-cast aluminium**. Size is 155(W) x 57(H) x 195(D) excl. projections, weight less than 2kg.

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. In addition, **'optional internal SLOT CARDS'** (which fit into the rear chassis of the AR8600) extend the capabilities even further, five cards may be fitted with two operational simultaneously. **Supplied with:** Swivel base telescopic whip aerial, MW bar, comprehensive illustrated operating manual with RS232 listing, a.c. power supply.

# AR8200 SERIES-2

NEVER BEFORE HAS ONE HAND PORTABLE OFFERED SO MUCH



The AR8200 represented a beacon when first released, technology marches forward with the **NEW AR8200 SERIES-2** keeping the innovative concept and forward thinking alive and bright. It has not been easy improving on what many thought to be the ultimate, however the **NEW AR8200 SERIES-2** does provide even more with nothing taken away.

A Temperature Compensated Crystal Oscillator (**TCXO**) now forms the heart of the **AR8200 SERIES-2**, this ensures **high stability** with **minimal internal spuri**. Performance too has seen the AOR R&D team fine tuning the design for **best sensitivity and strong signal handling** over the extremely wide coverage of 530kHz to 2040MHz (all mode receive without gaps). The aerial has also been replaced by a **telescopic whip** on a swivel base, this ensures the best results, a medium wave bar aerial is also provided as standard. The design team have certainly been taking account of customers wishes, the keyboard **ZERO** key has been swapped in position with the **DECIMAL** to match the telephone layout, LCD illumination has been increased (for improved visibility) and following requests for longer operation between charges, the **4 x AA size NiCads have been increased in capacity**, again reflecting improvements in modern technology. The obvious change has been left for last... the **cabinet colour** has been changed from green to **black!**

The list of features is vast, tuning step sizes are programmable in all modes down to 50Hz with comprehensive step adjust and correctly implemented **8.33kHz** for the new VHF airband spacing. Connection to a computer is possible with the optional CC8200 lead/interface with free PC software available from the AOR web site. Unique optional slot cards further enhance features (CTCSS, tone eliminator, record / playback, external memories, voice inversion).

# UNPARALLELED SHEER PERFORMANCE

## AR7030 'receiver' winning against the very latest 'transceivers'



**AR7030 £799**  
**AR7030 PLUS £949**  
 0 - 32MHz all mode receive

**Peter Hart** is without doubt one of the most recognised and internationally authoritative technical reviewers with regular reviews appearing in RadCom, the journal of the RSGB. In the July 1996 edition of RadCom, Peter Hart presented a thorough technical review of the standard AR7030 with tabular results supporting his findings. It is interesting to note that over time, Peter Hart has proved very consistent in his approach to reviews, this makes the results available to compare side-by-side.

Presented here is a table of comparison. The first table is for the AOR AR7030 standard receiver, the list price being £799 (RadCom July 1996). The second table (Manufacturer A, model X) is a DSP top end amateur band transceiver with general coverage receive, the list price stated being £2099 (RadCom March 2000). The third table (Manufacturer B, model Y) is another DSP top end amateur band transceiver with general coverage receive, the list price stated being £2799 (RadCom October 2000). The criteria for each model is INTERMODULATION (50kHz spacing), CLOSE-IN INTERMODULATION (7MHz band) and RECIPROCAL MIXING.

**INTERMODULATION (50kHz spacing):** The section of each table presents strong signal handling across the spectrum using a standard 50kHz tone spacing, IP3 is a calculation based upon the receiver noise floor (sensitivity) and dynamic range, a negative figure such as -10dBm is considered fair, 0dBm is good, +10dBm very good and +20dBm excellent... the higher the figure the better. Dynamic range can also be compared, 85dB is good, 95dB is very good and 100dB is excellent, again the higher the figure the better.

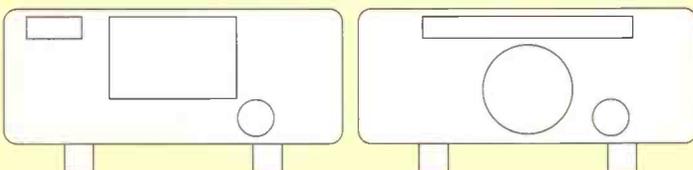
**CLOSE-IN INTERMODULATION (7MHz band):** The second section of each table presents CLOSE-IN dynamic range, this is a measure of how the receiver will perform on a crowded band such as during good propagation or an amateur band contest, the same applies as per 50kHz spacing with 100dB, or higher than +20dBm at 15kHz separation being considered excellent.

**RECIPROCAL MIXING:** The third section of each table presents reciprocal mixing, this is a measure of the receiver purity and is something of a speciality for Peter Hart. If the local oscillator is impure, it will poison the receiver and lead to degradation of the receiver's selectivity resulting in poor selectivity and poor sensitivity close to strong signals. A figure of 80dB at 3kHz is very good with the aim of better than 120dB at 200kHz.

**The matter of comparing the tables will lead to your own conclusions!**

AR7030 & AR7030 PLUS, undoubtedly the best analogue short wave receiver in its class. Voted best receiver of the year 1996/1997 by WRTH, awarded five stars (editors choice) by Passport to World Band Radio in every edition since the launch of the AR7030, many other accolades abound.

The RSGB can be contacted at: Radio Society of Great Britain, Lambda House, Cranborne Road, Potters Bar, Herts. EN6 3JE



| AR7030 - RadCom July 1996            |                     |                      |                     |                      |                      |
|--------------------------------------|---------------------|----------------------|---------------------|----------------------|----------------------|
| INTERMODULATION (50kHz Tone Spacing) |                     |                      |                     |                      |                      |
| Frequency                            | PREAMP IN           |                      | PREAMP OUT          |                      | 2 tone dynamic range |
|                                      | 3rd order intercept | 2 tone dynamic range | 3rd order intercept | 2 tone dynamic range |                      |
| 3.5MHz                               | +22dBm              | 102dB                | +30dBm              | 101dB                | 101dB                |
| 7MHz                                 | +25dBm              | 104dB                | +33dBm              | 103dB                | 100dB                |
| 14MHz                                | +24dBm              | 102dB                | +29dBm              | 100dB                | 100dB                |
| 21MHz                                | +26dBm              | 104dB                | +31dBm              | 102dB                | 102dB                |
| 28MHz                                | +27dBm              | 104dB                | +30dBm              | 100dB                | 100dB                |

| CLOSE-IN INTERMODULATION ON 7MHz BAND |                     |                      |                     |                      |                      |
|---------------------------------------|---------------------|----------------------|---------------------|----------------------|----------------------|
| Spacing                               | PREAMP IN           |                      | PREAMP OUT          |                      | 2 tone dynamic range |
|                                       | 3rd order intercept | 2 tone dynamic range | 3rd order intercept | 2 tone dynamic range |                      |
| 3kHz                                  | -6dBm               | 83dB                 | +5dBm               | 85dB                 | 85dB                 |
| 5kHz                                  | -6dBm               | 83dB                 | +5dBm               | 85dB                 | 85dB                 |
| 7kHz                                  | -2dBm               | 86dB                 | +10dBm              | 88dB                 | 88dB                 |
| 10kHz                                 | +3dBm               | 89dB                 | +30dBm              | 101dB                | 101dB                |
| 15kHz                                 | +21dBm              | 101dB                | +34dBm              | 104dB                | 104dB                |
| 20kHz                                 | +25dBm              | 104dB                | +34dBm              | 104dB                | 104dB                |
| >30kHz                                | +25dBm              | 104dB                | +34dBm              | 104dB                | 104dB                |

| RECIPROCAL MIXING |       | MIXING FOR 3dB NOISE |  |
|-------------------|-------|----------------------|--|
| FREQUENCY OFFSET  |       |                      |  |
| 3kHz              | 80dB  |                      |  |
| 5kHz              | 85dB  |                      |  |
| 10kHz             | 95dB  |                      |  |
| 15kHz             | 100dB |                      |  |
| 20kHz             | 104dB |                      |  |
| 30kHz             | 109dB |                      |  |
| 50kHz             | 114dB |                      |  |
| 100kHz            | 122dB |                      |  |
| 200kHz            | 127dB |                      |  |

*A photo-copy of the complete review is available to request*

| (Manufacturer A, model X) - RadCom March 2000 |                     |                      |                     |                      |                      |
|---|---------------------|----------------------|---------------------|----------------------|----------------------|
| INTERMODULATION (50kHz Tone Spacing)          |                     |                      |                     |                      |                      |
| Frequency                                     | PREAMP IN           |                      | PREAMP OUT          |                      | 2 tone dynamic range |
|   | 3rd order intercept | 2 tone dynamic range | 3rd order intercept | 2 tone dynamic range |                      |
| 3.5MHz  | +3dBm               | 90dB                 | +13dBm              | 92dB                 | 92dB                 |
| 7MHz  | +0dBm               | 89dB                 | +11dBm              | 92dB                 | 92dB                 |
| 14MHz   | +2dBm               | 90dB                 | +13dBm              | 93dB                 | 92dB                 |
| 21MHz   | +0dBm               | 89dB                 | +13dBm              | 92dB                 | 92dB                 |
| 28MHz   | -2dBm               | 88dB                 | +14dBm              | 92dB                 | 92dB                 |

| CLOSE-IN INTERMODULATION ON 7MHz BAND |                     |                      |                     |                      |                      |
|---------------------------------------|---------------------|----------------------|---------------------|----------------------|----------------------|
| Spacing                               | PREAMP IN           |                      | PREAMP OUT          |                      | 2 tone dynamic range |
|                                       | 3rd order intercept | 2 tone dynamic range | 3rd order intercept | 2 tone dynamic range |                      |
| 3kHz                                  | -27dBm              | 71dB                 | -18dBm              | 72dB                 | 73dB                 |
| 5kHz                                  | -26dBm              | 72dB                 | -17dBm              | 73dB                 | 74dB                 |
| 7kHz                                  | -26dBm              | 72dB                 | -16dBm              | 74dB                 | 76dB                 |
| 10kHz                                 | -22dBm              | 74dB                 | -12dBm              | 76dB                 | 82dB                 |
| 15kHz                                 | -14dBm              | 80dB                 | -4dBm               | 86dB                 | 90dB                 |
| 20kHz                                 | -8dBm               | 84dB                 | +3dBm               | 92dB                 | 92dB                 |
| 30kHz                                 | -2dBm               | 88dB                 | +9dBm               | 92dB                 | 92dB                 |
| 40kHz                                 | +4dBm               | 92dB                 | +12dBm              | 92dB                 | 92dB                 |
| 50kHz                                 | +0dBm               | 89dB                 | +11dBm              | 92dB                 | 92dB                 |

| RECIPROCAL MIXING |       | MIXING FOR 3dB NOISE |  |
|-------------------|-------|----------------------|--|
| FREQUENCY OFFSET  |       |                      |  |
| 3kHz              | 83dB  |                      |  |
| 5kHz              | 86dB  |                      |  |
| 10kHz             | 92dB  |                      |  |
| 15kHz             | 96dB  |                      |  |
| 20kHz             | 98dB  |                      |  |
| 30kHz             | 101dB |                      |  |
| 50kHz             | 106dB |                      |  |
| 100kHz            | 111dB |                      |  |
| 200kHz            | 115dB |                      |  |

| (Manufacturer B, model Y) - RadCom October 2000 |                     |                      |                     |                      |                      |
|---|---------------------|----------------------|---------------------|----------------------|----------------------|
| INTERMODULATION (50kHz Tone Spacing)            |                     |                      |                     |                      |                      |
| Frequency                                       | PREAMP IN           |                      | PREAMP OUT          |                      | 2 tone dynamic range |
|   | 3rd order intercept | 2 tone dynamic range | 3rd order intercept | 2 tone dynamic range |                      |
| 3.5MHz  | +6dBm               | +16dB                | +21dBm              | 91dB                 | 93dB                 |
| 7MHz  | +13dBm              | +16dB                | +18dBm              | 95dB                 | 95dB                 |
| 14MHz   | +12dBm              | -                    | +24dBm              | 95dB                 | 99dB                 |
| 21MHz   | +11dBm              | -                    | +13dBm              | 95dB                 | 91dB                 |
| 28MHz   | +2dBm               | -9dB                 | +2dBm               | 88dB                 | 85dB                 |

| CLOSE-IN INTERMODULATION ON 7MHz BAND - PREAMP OUT |                     |                      |                      |
|--|---------------------|----------------------|----------------------|
| Spacing  | PREAMP IN           |                      | 2 tone dynamic range |
|  | 3rd order intercept | 2 tone dynamic range |                      |
| 3kHz   | -9dBm               | 77dB                 | 77dB                 |
| 5kHz   | -14dBm              | 73dB                 | 73dB                 |
| 7kHz   | -12dBm              | 75dB                 | 75dB                 |
| 10kHz  | -5dBm               | 79dB                 | 79dB                 |
| 15kHz  | +10dBm              | 89dB                 | 89dB                 |
| 20kHz  | +18dBm              | 95dB                 | 95dB                 |
| 30kHz  | +18dBm              | 95dB                 | 95dB                 |
| 40kHz  | +18dBm              | 95dB                 | 95dB                 |
| 50kHz  | +18dBm              | 95dB                 | 95dB                 |

| RECIPROCAL MIXING |       | MIXING FOR 3dB NOISE |  |
|-------------------|-------|----------------------|--|
| FREQUENCY OFFSET  |       |                      |  |
| 3kHz              | 82dB  |                      |  |
| 5kHz              | 87dB  |                      |  |
| 10kHz             | 95dB  |                      |  |
| 15kHz             | 100dB |                      |  |
| 20kHz             | 104dB |                      |  |
| 30kHz             | 109dB |                      |  |
| 50kHz             | 114dB |                      |  |
| 100kHz            | 120dB |                      |  |
| 200kHz            | 123dB |                      |  |

**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

# Info In Orbit

## The Column

There has not been so much weather satellite (WXSAT) activity for months. *METEOR 2-21* re-activated, *METEOR 3-5* in trouble - then 'fixed' - while *NOAA-15* continued its unpredictable performance. The good news is that *NOAA-L* (to be renamed *NOAA-16* when in orbit) should be fully operational as our early afternoon WXSAT by October, replacing *NOAA-14*.

### NOAA-15's Variable Imagery

Engineering tests of the *NOAA-15* AVHRR continued during September. During high elevation passes over the NOAA Command and Data Acquisition stations, the Manipulated Information Rate

Processor (MIRP) was commanded from internal to AVHRR (the imager) synchronisation, then returned to internal sync. before it went out of range. This allowed NOAA engineers to gather instrument telemetry from the AVHRR.

Periodically, we saw some good images from *NOAA-15* and understandably attributed this to specific actions taken by NOAA. Wayne Winston of NOAA, commented that "The recent observation of better quality h.r.p.t. and a.p.t. images from

*NOAA-15* is not related to this, and not the result of something that NOAA has done to the satellite. As we have observed since the failure in July, the AVHRR sync. periodically falls into the operational limits, and produces usable images. But it is just as likely to drift out of sync. at any time. NOAA continues to collect and analyse the instrument data".

One batch of good imagery from *NOAA-15* came during early September, as seen in **Fig. 1**, an infra-red h.r.p.t. image from the early evening pass. Resolution was so good that rivers and land surface features can easily be seen in the picture. On this occasion, I did not capture the a.p.t. image.

### Other WXSAT Operations

*METEOR 3-5* joined the 'ailing WXSATs' group during late August when its image content lost synchronisation. Wavy clouds and landscapes made images unusable. Near the end of August, *METEOR 3-5* was travelling southbound during the morning, and was apparently switched off a few minutes after acquisition of signal (a.o.s.). After a wait of a few more minutes, it resumed transmissions.

First time round I assumed this was fortuitous, but I logged the same event each day. I know the reception characteristics of my antenna well enough to know that this was not a 'null' effect caused by antenna insensitivity. By 4 September, its imagery was once more synchronised, so perhaps some live commanding was in progress.

**Kevin Hughes** of Tamworth recorded a picture from *METEOR 3-5* on 15 August, shortly before the problems occurred.

*METEOR 2-21* was commanded on during the early hours of 5 September, the first report coming from **Mike Kenny** of Melbourne, Australia. Transmission was confirmed on 137.40MHz, as last used by the satellite. Reception tends to be poor when the WXSAT is to the east.

### Seasonal Effects

The changing of the seasons is most noticeable on the sun-

synchronous WXSATs. With RESURS and NOAA WXSATs maintaining a near constant aspect to the sun, their imagery is very much a function of the sun's 'power'. When *NOAA-15* has provided recognisable evening images, the visible channel has quickly shown the loss of illumination enjoyed during the summer months.

Similarly, *NOAA-12's* morning passes now lack 'zing' (to use a technical term!), and need enhancing. Fortunately, the infra-red channels show cloud detail that is absent in the low illumination visible-light channels.

**George Newport** was impressed with the view of the Canaries - see **Fig. 3** - imaged by *NOAA-14* on 11 September, commenting that he had not seen the islands as clear as this in a long time. The islands are right on the limit of visibility from my location, so I had to wait some time before managing to get an image of this region free from cloud cover. Interestingly, the islands do not show up well on the visible-light channels, but are clear on the infra-red - see **Fig. 4** and **Fig. 5**.

### The ScanEx Image Archive

ScanEx is a private company based in Moscow, Russia. Since its foundation in 1989, they have developed and produced high technology products for applications in education, meteorology and environmental monitoring. They produce hardware and software for the entire production chain of satellite information, from the reception of satellite images, through to their processing and the creation of thematic maps.

Their 'mission' is to make RESURS-type satellite information more accessible in terms of price and technology. They developed Personal Ground Stations (PGSs) to make this vision a reality. Sometime back, I asked Ippolitov Vitaly, their engineer, whether they could check their archive of RESURS images to see if they had a high resolution image of the south-west region near Plymouth.

A few weeks later, they E-mailed me **Fig. 6**, an image of Kingsbridge and Dartmouth. The image was received on 8 April 2000 from *RESURS-01 N3* satellite. Spatial resolution is 30m/pixel. ScanEx explained: "This image was received by a ScanER personal ground station produced by our Centre. Image was received by ScanER station, installed in Moscow". This is the first image that I have received of the 8GHz band from RESURS and from Moscow.

**Figure 7** shows south-west Britain as seen by NOAA high resolution imagery for comparison.

During E-mail correspondence with ScanEx, they mentioned their **Transparent World** project to me, so I requested further details. I have done minimal editing of their reply:

"Transparent World Project. This satellite constellation is a proposal. We offer a new satellite series that can transmit 50m spatial resolution images free of charge, and continuous - like NOAA. It follows the concept of 'Open Sky' of the World Meteorological Organisation. To receive images you need the receiving station. The main idea of this project is democratisation of access to Earth remote sensing data of high spatial resolution - up to 50m on the first stages, and more later. Such data has always had high prices, being distributed from centralised data reception centres. The use of this data was therefore accessible for only a narrow circle of users. In this period of rapid development of computer technologies, the use of such data is becoming accessible for a widening range of users, for example, for a student on their own personal computer.

We developed ScanER personal - it means low price, easy exploitation, use of personal computer for data reception and processing, compact size of antenna station for Resurs

**Fig. 5: Canaries from METEOSAT-7 14 September 1201UTC Primary Data infra-red image.**



**Fig. 1: NOAA-15 h.r.p.t. infra-red image southern Britain 12 September 1832UTC.**



**Fig. 2: METEOR 3-5 15 August 1312UTC from Kevin Hughes.**



**Fig. 3: Canaries from NOAA-14 1615UTC 11 September from George Newport.**



**Fig. 4: Canaries from NOAA-14 channel 4 (infra-red) h.r.p.t. 22 July 1606UTC.**



# 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 Newmarket CB8 8XB England**  
**Tel: 01440 820040 Fax: 01440 820281**  
**www.time-step.com email information@time-step.com**

# Aerial Techniques

59 Watcombe Road, Southbourne, Bournemouth, Dorset BH6 3LX  
 Tel: 01202-423555 Fax: 01202-425055  
 E-mail: atech@aircon.co.uk

## Panasonic TU-DSB30

Digital Satellite Receiver.

Complete system including 60cm dish kit

For reception of BBC1, BBC2, Channel 4, Channel 5, BBC Choice, BBC Knowledge and BBC News 24.

**£399.00**

inc VAT

You may also subscribe to Sky pay to view channels.

No subscription to pay. No phone line connection required.



## THOMSON

**MULTI-SYSTEM 14" PAL/SECAM/NTSC colour TV**

(with infra-red remote control)

- 14" screen multi-standard ■ PAL/SECAM
- NTSC (via Scart) ■ VHF-UHF hyperband tuner
- 59-channel memory ■ Fastext teletext ■ S-VHS (via Scart) ■ Headphone socket ■ 240V AC operation.

Covers VHF (bands 1, 2 & 3), UHF, plus in between cable channels. PAL system 1 (for UK); PAL systems B/G (for Europe); SECAM L (for France); SECAM B/G. Including NTSC 4.43MHz via the scart.

**£269.00 inc VAT**

**MULTI-SYSTEM PAL/SECAM/NTSC video recorder** (with infra-red remote control)

- Tuner reception: PAL L/G, D/K, SECAM B/G, L, L'
- Nicam hi-fi stereo ■ 99

- channel memory ■ Hyperband tuner ■ 4 head dual azimuth ■ Auto long play ■ NTSC via scart ■ Video plus ■ 8 event - 1-year ■ Satellite control ■ 2 Eurocart sockets ■ 3 phono video/audit L/R ■ Autoprogramming ■ Jog shuttle

Multi-system compatibility. Covers VHF, UHF and cable channels.

**£399.00 inc VAT**

## FULLY COMPREHENSIVE 35 PAGE CATALOGUE

Available by return of post for only £1.50 or ring with your credit card (fully refundable on first purchase over £20).

Overnight delivery by insured courier £10.00

WE SUPPLY/STOCK THE VARIOUS EQUIPMENT WITHIN.

### Interested in vintage wireless or military radio?

Why not subscribe to *The Vintage Wireless Trader*. Published approx every eight weeks. 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. at affordable prices as well as subscribers wants and sales. Send £10 for the next eight issues.

### BOOKS, MANUALS AND REPRINTS

**Mullard Valve Data and Equivalents Handbook.** Over 275 pages of valve data, base connections, characteristics operating conditions for Mullard Valves and their equivalent makes. Facsimile reprint. **£16.50 P&P £2.25.**

**The Ultra-Magic Deals** by B. F. Smith. A well researched book on Ultra codebreaking operations providing a fascinating study of the technologies, personalities and politics of Britain and America's most mysterious secret - the pooling of their cryptological intelligence against Germany and Japan. Includes recently released details of Bletchley Park operations and is one of the few books published on cryptanalytic operations. 276 pages. Published at £17.95. Our price **£11.50 P&P £2.75.**

**AVO Valve Tester Switch Selector Code and Valve Data and Equivalents Book.** Covers AVO testers type CT160, VT160, VCM MkI, VCM MkII, VCM MkIII, VCM MkIV, VCM163. Over 240 pages covering all the necessary settings and data for testing 1000's of valves. Facsimile reprint. **£15 P&P 2.25.**

**Taylor Valve Tester 45A, 45B, 45C and 47A Data Book.** 76 pages of valve settings for the above testers. Facsimile reprint. **£9.50 including P&P.**

**R1155 Receiver Data** 47 pages **£11.75** including P&P.

**T1154 Series Transmitter Manual** 54 pages **£14.75** including P&P.

**Wireless Set (Canadian) No. 19 Mk3 Technical Manual** 62 pages **£13.50** including P&P.

**Wireless Set No19 Mk1 and 2** Circuits and notes. Large format. Facsimile reprint. **£7.50** Including post.

**R210 Army Communications Receiver Data** 35 pages **£9.25** including P&P.

**Racal RA17 Communications Receiver Technical Service Manual** 46 pages **£9.50** including P&P.

**Racal RA121 Transistorised HF Communications Receiver Manual.** Notes, circuits, faults, operation, etc. Nearly 80 large format pages. Facsimile copy. **£17.50** including P&P.

**A.T.Sallis. Government Surplus Radio Sales Catalogue 1959.** An excellent catalogue contains 200 photos and details of govt. surplus wireless items including components, receivers, equipment and accessories. 92pp. Facsimile copy. **£9.50** including P&P.

**Eddystone 358 Receiver Handbook.** A large format 33 page manual with photos, circuits, layouts, parts lists and specifications of this pre-war short wave receiver with plug in coils. Even if you do not own a set, this manual gives insight into pre-war Eddystone technology. Facsimile reprint. **£9.75** including post.

### SCOOP PURCHASE

**Fluke hand-held digital multimeter model 8024B.** Cancelled exports order. 750V AC/DC, 2 amp AC/DC. Resistance 20 megohm + Siemens range. Also measures temp. -20C to +125C. Temp probe not included. Calibrated for K type thermocouple. Peak hold facility. Supplied brand new & boxed but with original purchasing organisations small identifying mark on case. Test leads and handbook included offered at a fraction of original price. **£47.50 P&P £6.50.**

### WANTED

Valve communication receivers. Government surplus wireless equipment. Radio books and magazines. Cash paid. We can collect anywhere in the UK.

### (Dept SW) CHEVET SUPPLIES LTD.

157 Dickson Road, BLACKPOOL FY1 2EU

Tel: (01253) 751858. Fax: (01253) 302979.

E-mail: chevet@globalnet.co.uk TELEPHONE ORDERS ACCEPTED.

Callers welcome Tuesday, Thursday, Friday and Saturday 10am - 6pm



## DEDICATED TO THE SCANNING AND SHORTWAVE ENTHUSIAST. WE'RE MORE THAN JUST SOFTWARE!

NEW!  
JUST RELEASED!  
VERSION 7.5

### SCANCAT GOLD for Windows "SE"

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 (NPD) Plus PRO-2005/B/35/42 (with OS456/535), Lowe HF-150, and Watkins-Johnson.

### SCANCAT GOLD FOR WINDOWS "SE"

(Surveillance-Enhanced) All Scancat Windows Features Plus...

- Selective Sound Recording using PC-compatible sound card. "Point & Shoot" playback by individual hits.
- Demographic search for frequency co-ordination and 2-way Usage Analysis.
- Detailed logging to ASCII type files with DATE, TIME, Sig Str, Air Time.
- 6 New sweep Analysis Functions.
- Exclusive "MACRO" control by frequency of Dwell, Hang, Resume, Sig. Threshold and even 6 separate programmable, audible alarms.
- Command line options for TIMED ON/OFF (Unattended) logging/searches.
- Run as many as 6 different CI-V addressable radios as "Master/Slave"
- New! Scheduling/Recording Functions.

With Scancat Gold for Windows "SE", your spectrum never looked so good! Load virtually "any" database and Scancat "SE" will examine your database, plot each and every frequency, no matter what the range...and "paint" the entire analysis on your screen.

### SEVERAL GRAPHICAL ANALYSIS MODES AVAILABLE

- By Signal Strength per frequency in a "histogram".
- By Signal Strength plotted in individual dots.
- By Number of hits per frequency in a "histogram".
- IF THAT ISN'T ENOUGH, try this...Multicolored, 3-D "Spatial/Landscape".

SCANCAT GOLD "SE"... **\$159.95 + s & h\*** UPGRADE SCANCAT GOLD V7.5 "SE"... **\$59.95 + s & h\***

### SCANCAT'S WINDOW FEATURES

- Unattended Logging of frequencies
- Scan Create Disk Files.
- Spectrum Analysis to Screen OR Printer.
- Supports PerCon, Mr. Scanner, and Betty Bearcat CD Roms.
- Scan VHF & HF Icom's Simultaneously.
- LINK up to 100 Disk files or ranges
- MULTIPLE search filters for Diskfile Scanning.
- New - Programmable Favorite Frequency "Quick Buttons"
- Search by CTCSS & DCS tones with OS456/535 or DC440 (ICOM only).
- INCLUDES several large shortwave and VHF/UHF databases

SCANCAT GOLD FOR WINDOWS (NON-"SE")..... **\$99.95 + s & h\*** UPGRADE TO V7.5 ..... **\$29.95 + s & h\***

All the features you EXPECT from a true Windows application such as:

- VERSATILE "Functional" spectrum analysis. NOT just a "pretty face". Spectrum is held in memory for long term accumulation. Simply "mouse over" to read frequency of spectrum location. "CLICK" to immediately tune your receiver. You can even accumulate a spectrum from scanning DISKFILES of random frequencies!
- DIRECT scanning of most DATABASE, FOXPRO, ACCESS, BTRIEVE files WITHOUT "importing".
- UNIQUE database management system with moveable columns. Even SPLIT columns into doubles or triples for easy viewing of ALL important data on one screen.
- Exclusive "SLIDE RULE" tuner. Click or "skate" your mouse over our Slide-Tuner to change frequencies effortlessly! OR use our graphical tuning knob.

\*\$5 U.S. \$7.50 FOREIGN

FREE FREQ FILES WEB ADDRESS - www.scancat.com FREE DEMOS

Order direct or contact your favor ite dealer

### COMPUTER AIDED TECHNOLOGIES

P.O. Box 18285 Shreveport, LA 71138

Phone: (318) 687-4444 FAX: (318) 686-0449

Info/Tech Support: (318) 687-2555 (9 a.m. - 1 p.m. Central M-F)





**Fig. 6: Kingsbridge, UK, RESURS 01N3 courtesy ScanEx.**

satellite series reception and developed technological chain for image processing, so the user can receive images from space on their own personal computer. In several minutes after image receiving, the user can view and process image. Such technology was tested and showed its viability in Russia where the net of ScanER stations was created that allows satellite images to cover all territory of Russia and neighbouring areas. All the chain of this technology can be applied for satellites of 'Transparent World' project because the formats and standards of transmitted data will be the same as the Resurs satellite series. The realisation of 'Transparent World' project will give the possibility to everyday Earth cover observation and monitoring, with relatively high spatial resolution. Moreover this data will be accessible for any who want to receive it".



**Fig. 7: Devon and Cornwall NOAA-14 h.r.p.t. 11 September 1534UTC.**

The technical specification of the project was sent to me in detailed form, and indicates that the transmission frequency is 8.192GHz, in line with RESURS transmissions (RESURS 01-N4 also transmits on 137.85MHz). If the project receives the necessary funding - some \$10 million - it could certainly provide unprecedented imagery. A suitable reception system for current high resolution RESURS imagery unfortunately remains far from amateur level prices.

The name of satellites series will be 'Transparent World'. ScanEx hope that the satellites will be launched in 2002, but all depends on the project financing. "The price for ScanER station for reception TW satellites is \$250 000". I enquired about the possibility of non-Russian companies becoming involved in developing reception systems for the TW series, but their view was that their systems are already receiving information from RESURS and OKEAN satellites.

ScanEx is very interested in the creation of receiving centres for TW satellites' data reception in different countries all over the world on the basis of ScanER station. "It is very important for us and we are very interested in this, as it gives the possibility to cover any part of the Earth".



**Fig. 8: WEFAX CTOT METEOSAT-7 14 September 1200UTC.**

## Beginners' Questions

Whenever we start a new hobby, questions immediately come to mind. For those who have been in the field for decades, it is not always easy to see things from the perspective of a beginner. An E-mail from **Carol Bain** posed a series of questions that perhaps might be of interest to others who have only recently joined the hobby.

My thanks to Carol for the idea.

## 'Near Polar' Orbits?

Polar orbits are those that have an inclination near 90°. Satellites have orbits that are carefully set to achieve a specific goal. By careful adjustment, a satellite in a 'near polar' orbit will not only pass over every place on earth each day, but can also meet other requirements - such as keeping pace with the sun's apparent daily motion - or alternatively, deliberately moving with respect to the sun. A study of the orbits of NOAA and METEOR satellites shows how different

results can be achieved by changes of inclination and altitude.

When do you need to track satellites with your antenna, and when will a fixed antenna do? There are two situations here. The type of antenna used to receive a signal depends primarily - but not wholly - on the frequency in use.

Monitoring the WXSAT 137MHz

band using a crossed-dipole or quadrifilar helix antenna, we can receive enough signal to decode and produce images. Because of the nature of these antennas, they are susceptible to interference on these same frequencies. Consequently, a basic antenna will receive plenty of WXSAT signal, but the resulting image may be spoilt by different types of interference.

It is possible to set up a high-gain antenna having a stacked 137MHz array that produces a considerably larger signal. The cost of this is higher, and there is a need to track the satellite. Whereas a QFH has a much larger beam-width, and can therefore receive the satellite during its passage across the sky, a high-gain antenna has a consequent narrow beam-width that requires accurate pointing - hence the need to track the satellite.

The other case where tracking is required is where the frequency is high enough to need a high gain antenna. A good example is the 1700MHz band transmissions from the NOAA WXSATS. At this frequency, a dish or Yagi is essential. A 1m dish with suitable feed design can pull in plenty of signal, but the narrow beam-width makes tracking essential.

In general terms, many satellites can be monitored using fairly basic antenna systems - such as a simple dipole. For real quality - where you wish to use the signal for decoding or other analysis - you must abandon the basic form and go for a purpose designed unit.

## What Satellites Are Visible With The Naked Eye?

Anyone who spends time star gazing will be familiar with the sight of satellites regularly crossing the sky. Here in Plymouth, one of the most frequently asked questions that I face during radio interviews and 'phone calls is the request to identify a satellite. In almost all cases it is nearly impossible to identify because the questioner made no record of any relevant information - such as the time and direction.

Yet, with a computer, satellite tracking program and access to the Internet, one can predict times for any selected satellite. Visit the OIG page (details given in the 'Special'), and after collecting the zipped file referred to in that article, open up the 'visible.tle' file and check how many are listed.

NASA advises that although a satellite might be listed, changing circumstances might prevent it being seen and of course there are satellites that might be seen but are not yet included. The list shows that many METEOR and COSMOS satellites are visible, as well as NOAA-12.

## WEFAX

Having included pictures in a.p.t., h.r.p.t., PDUS (and even RESURS high res.) formats, **Fig. 8** completes the sequence. It shows the daily WEFAX whole disc, visible light image, transmitted around 1222UTC each day on channel A2 of METEOSAT-7 - with my added artificial colour! Whole-disc images from METEOSAT-5 (positioned over the Indian Ocean) are also transmitted several times each day on channel A2. Do make sure that your METEOSAT monitoring includes both channels!

## Shuttle Launch Schedule

STS-92 *Discovery* scheduled launch 5 October 5th ISS Flight (3A) Payload Z-1 Truss, PMA-3, Inclination 51.6°.

STS-97 *Endeavour* scheduled launch 30 November 6th ISS Flight (4A) - PV Module P6, Inclination 51.6°.

A comprehensive listing of all Shuttle flights and payloads, together with associated information is available from me, at the address at the head of the column, as the *Shuttle Pack*. Please include £1.50 and stamped s.a.e. for the A4 booklet.

## Kepler Elements - WXSATS & MIR

If you want a computer disk file containing recent elements for the WXSATS, AMSATS and others of general interest, together with a large file holding elements for thousands of satellites please enclose 50p with a PC-formatted disk and stamped envelope. A print-out is included that identifies NASA catalogue numbers for the WXSATS. The disk file is ideal for automatic updating of tracking software.



## Frequencies

NOAA-12 transmits a.p.t. on 137.50MHz.  
 NOAA-14 transmits a.p.t. on 137.62MHz.  
 NOAA-15 transmits a.p.t. on 137.50MHz.  
 NOAA-16 likely to transmit a.p.t. on 137.62MHz.  
 METEOR 3-5 transmits a.p.t. on 137.30MHz.  
 METEOR 2-21 may transmit a.p.t. on 137.40MHz.  
 RESURS 01#4 transmits a.p.t. on 137.85MHz.  
 OKEAN-4 and SICH-1 use 137.40MHz for brief transmissions.  
 METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.

IC-R10  
IC-R2

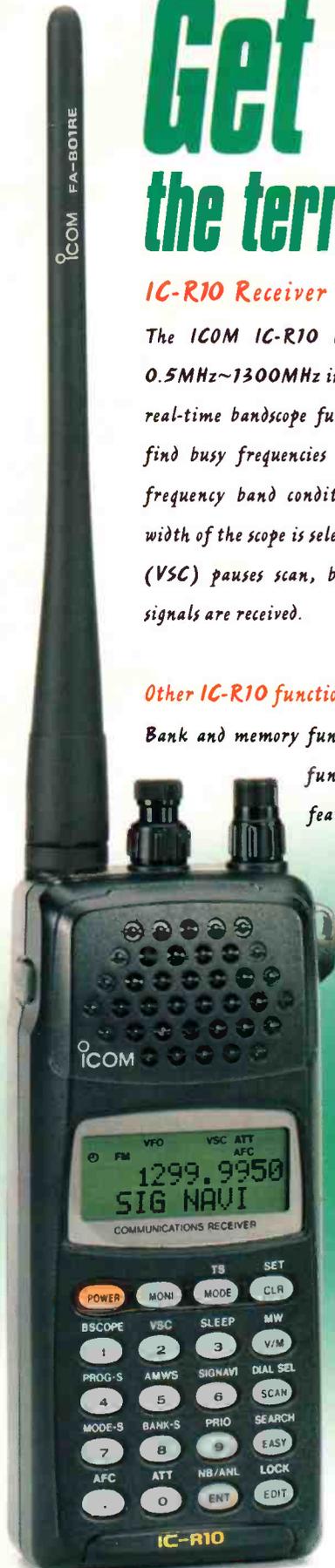
# Get to Grips with... the terrific twosome! - IC-R10 & IC-R2

## IC-R10 Receiver

The ICOM IC-R10 handheld receiver covers 0.5MHz~1300MHz in all-modes. It also boasts a real-time bandscope function, making it easy to find busy frequencies and observe the receiving frequency band conditions. Also, the passband width of the scope is selectable. Voice-scan function (VSC) pauses scan, but only when modulated signals are received.

### Other IC-R10 functions and features include;

Bank and memory functions plus new SIGNAVI function; this additional feature speeds up scanning and adds to the already impressive range of scan modes available in this power-packed ICOM handheld. Optional CS-R10 P.C. software allows you to edit and load memory data from your computer. The IC-R10 has proved that it has 'Rx appeal', so why not see for yourself just how appealing this handful can be!



## IC-R2 Receiver

The IC-R2 is one of the smallest receivers around! This simple receiver is easy to operate and has a drip-resistant construction to provide protection against outdoor use

### IC-R2 functions and features include;

- Wide frequency range easily receives 0.495~1309.995MHz
- Economical to run - only 2 x AA (R6) alkaline or Ni-Cd batteries needed
- Ultra-compact body 58(W)x86(H)x27(D) mm. Fits in your pocket
- Receives most AM, FM, TV broadcasting and public communications using the AM, FM and WFM modes
- 400 memories provided for storing operating frequencies and tuning steps etc. Plus, 50 channels (25 pairs), for program scan edges
- Easy band-switching operation system
- Digital squelch for high-speed squelch attack and release



- Tone squelch for quiet operation
- Built-in 10dB attenuator
- Backlight CD with timer
- Power-save function
- Large internal loud-speaker gives clear, top quality audio
- Competitively priced.

Pop along to your authorized Icom dealer today!

# SRP TRADING

1086 Bristol Road South, Rednal, Birmingham B45 9TZ

★ ★ TRADE AND EXPORT ENQUIRIES WELCOME ★ ★

## NOW BACK IN STOCK!!

### COMMTEL COM-225



500 channel base station scanning receiver.

Continuous coverage 25-1300MHz.

'NO GAPS'. AM/FM/WFM

**£299.95.**

**£249.95** + P&P



### YUPITERU MVT-7300

Frequency coverage:-  
531kHz-1320MHz.  
FM, WFM, AM, NAM,  
USB, LSB and CW.  
**INCLUDING NEW  
8.33kHz STEPS.**

**Special price!!!**



### ATS-505 FM-STEREO/ MW/LW/SW/ PLL SYNTHESISED RECEIVER

Professional digital  
multi-band world

receiver. Continuous coverage 150-29999kHz.

**£109.00** + P&P



### COMMTEL COM-307 COMPACT CIVIL AIRBAND SCANNER

Frequency coverage:-  
108MHz-136.975MHz  
AM.

136MHz-180MHz FM.

**£59.95** + P&P



### SANGEAN ATS-909

Full featured compact portable  
digital world band receiver with  
RDS and true SSB reception.

**£139.95** + P&P

AM/FM/USB/LSB

### DC INVERTORS - 12V DC IN 240V AC OUT

150W version 12V only (for notebook computers etc.)...**£39.95** + P&P £5

300W version 12/24V (for small power tools etc.).....**£59.95** + P&P £5

600W version 12/24V (for medium power tool etc.)..**£109.95** + P&P £10

1000W version 12/24V (for large power tools etc.)....**£139.95** + P&P £10

### UNIDEN BEARCAT 9000XLT

AM/FM/WFM switchable base scanner.



25-550MHz and 760-1300MHz.

**£219.95** + P&P



### SKY SCAN TELESCOPIC

Centre loaded telescopic  
whip antenna for hand-  
held radio. Improved  
reception on hand-held  
scanners. Receives 25-  
1300MHz. Connection  
BNC type.

**£9.95** + P&P



### WIDEBAND PRE-AMP

100MHz-1GHz.

With adjustable

amplification level of up to 20dB.

**£39.95** + P&P.

### ROTATOR AR300XL

Max load 60kg (with support bearing)

360deg. rotation in  
approx 65sec.

(Support bearing

optional £14.95)

**£39.95** + P&P.



### RECHARGEABLE NI-MH BATTERIES

"No memory effect".

Over twice the capacity of Nicads.

|          |         |   |      |            |      |
|----------|---------|---|------|------------|------|
| AA cell  | 1500mAh | @ | 1.2V | .....£2.00 | each |
| AAA cell | 550mAh  | @ | 1.2V | .....£2.40 | each |
| C cell   | 2200mAh | @ | 1.2V | .....£3.99 | each |
| D cell   | 2200mAh | @ | 1.2V | .....£3.99 | each |
| PP3 cell | 150mAh  | @ | 1.2V | .....£3.99 | each |

CHARGERS FOR ALL SIZES AVAILABLE

### WM-918 ELECTRONIC WEATHER STATION

Allows the measurement  
and display of weather  
data. Includes PC software  
and lead.

**£199.95** + P&P



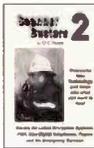
Opening times: Mon-Sat 9.30am to 5.15pm. We are Kenwood, Yaesu, Icom, & Alinco dealers.

**Trade customers are you getting the best deal? Phone and find out!**

Call Mary (MOBMH) or Dave on

**0121-460 1581, 0121-457 7788 FAX: 0121-457 9009**

## Great books for Christmas



**The UK Scanning Directory, 7th edition** .....£21.50  
Tens of thousands of VHF/UHF frequencies include civil and military aviation, army, navy, the largest police list, DSS, Eye-in-the-Sky links, prison, OB, motor racing and much more. Plus scanning articles. Still the undisputed leader in the field.

**North Atlantic Flight Communication, 2nd edition** .....£18.25  
The great new software plots flights across the Atlantic on your computer in high resolution, gives full flight information and the book describes radio comms. in depth.

**World Airline Fleet and SELCAL Directory** .....£19.00  
List over 5,000 Selcals and details of over 10,000 aircraft.

**Scanner Busters 2** .....£5.00  
How to tune into more frequencies and beat new technology.

**Scanning the Maritime Bands** .....£10.75  
Gives the channels and frequencies used by every Western Europe port and harbour.

**Shortwave Eavesdropper CD ROM** .....£12.00  
Instant access to over 32,000 utility frequencies and 42,000 call signs on a database.

**Fax, Satellite and RTTY Weather Reports** .....£11.50  
Shows how to receive great weather pictures and reports from around the world.

**Weather Reports from Radio Sources** .....£7.50  
Tune into weather reports from London to Beijing.

**Mobile Phones - The Tricks of the Trade** .....£15.00  
Inside information on how the system works.

THE ABOVE BOOKS INCLUDE UK POSTAGE  
Ask for free catalogue. Allow 14 days delivery

**INTERPRODUCTS (SW110)**  
3 Abbot Street, Perth PH2 0EB, Scotland  
Tel: (01738) 441199 Fax: (01738) 626953  
E-mail: interproducts@ukf.net Web site: www.interproducts.ukf.net

## Amateur Radio Communications Ltd

38 Bridge Street, Earlestown,  
Newton-le-Willows, Merseyside WA12 9BA

OPEN Tue-Sat 10am-5pm FREE PARKING

We are the largest stockists of both new and secondhand amateur radio equipment in the north of England - fact not fiction! Our company boasts a full time service department authorised by all the major suppliers. **When you buy from us you have complete peace of mind!**

We stock most items advertised in this magazine - we may not quote the cheapest price but we do give the best service both before, during and after the sale. that is why we have been in business for more than 15 years.  
Ask any of our customers!

WE CURRENTLY HAVE A LARGE QUANTITY OF USED EQUIPMENT ON DISPLAY IN OUR SHOP. BELOW IS ONLY A SMALL SELECTION AND IF YOU CANNOT SPOT THE ITEM YOU ARE LOOKING FOR PLEASE GIVE US A CALL WE MAY JUST HAVE IT ON OUR SHELVES.

### BASE STATIONS

Good home wanted for an Icom IC-765 - boxed and in excellent condition .....£1250  
Full line-up - FT-101ZDMKII + FC-902/FV-901R (2 modules) .....£650  
HF + 6m rig - Kenwood TS-680 + desk mic .....£575  
Dualband base station + 6m fitted - Yaesu FT-736R .....£TEL  
Budget radio - Yaesu FT-747GX incl FM board .....£350  
Hardly used and in immaculate condition - Icom IC-756, boxed .....£1200  
2 x HF lines for sale - Yaesu FL-2100B & FL-2500 each .....£350  
Yaesu FT-757GX I with matching ATU .....£599  
Yaesu FT-101B .....£250  
Icom IC-745 HF transceiver .....£475  
Icom IC-751A plus PS-60 PSU .....£TEL  
Icom IC-781 - impressive HF radio with CRT display .....£1100  
Full Yaesu FT-757GX line up - FC-757AT & FP-700 PSU .....£TEL  
Kenwood TS-830S .....£299  
Trio TS-520S + VFO .....£TEL

Top quality receiver - Drake R-8E .....£650  
Excellent hand-held scanner - AR8000, boxed .....£199  
Pocket size scanner - Welz WS-1000 complete .....£100  
Desktop scanner - Comtel 215 - excellent condition .....£125  
Lookalike to the AR2002 - the Regency MX-8000 .....was £299 now £225  
Fairhaven RD-500 + keypad and remote control - as new .....£TEL  
Icom PCR-1000 + DSP-106 - hardly used .....£TEL  
Kenwood R-2000 receiver .....£275  
JRC NRD-525 top quality receiver .....£400  
AOR AR7030 + PSU/manual & remote control .....£TEL  
Icom IC-R70 - immac. condition .....£250

### MOBILE RADIOS

Dualband plus 6m board fitted - Kenwood TM-741E .....£450  
TM-741E + 10m board fitted including D-24 duplexer .....£375  
Budget 2m radio - AKD-2001, boxed .....£90  
Collectors items - Icom IC-402 & IC-202 both SSB/CW only .....each £175  
2m FM rig - Icom IC-21G .....£99  
Dualband Standard C-560B + bk/mic/MB/duplexer .....£275  
Kenwood TM-701 dualband radio .....£175  
Yaesu FT-780R + MML 423/50 linear/Datong AST .....£275  
2m mobile - Alinco DR-150E boxed in v.g.c. ....£150  
Trio TR-7730 + speaker mic .....£TEL

### HAND-HELD RADIOS

ADI-18 2m handie + speaker mic .....£99  
2 x Icom IC-TBE - silent key sale .....each £175  
Kenpro KT-22 basic 2m radio with thumb-wheel operation .....£35  
Icom IC-X21ET + CTCSS fitted .....£225

### MISCELLANEOUS

2 x Motorola Handipros + chargers and cases .....£225  
Tokyo HX-240 transverter .....£150  
Benchner Key + MFJ-407C electronic keyer .....£75  
Icom AT-500 ATU 500 watts .....£299  
Cushcraft A355 antenna .....£TEL  
Kenwood MC-80 desk microphone - boxed .....£50  
Trio CO-1303G monitor scope .....£TEL  
PK-232MBX packet unit .....£150  
Yaesu FT-V707 .....£125  
MFJ-948 .....£85  
MFJ-784 DSP filter .....£100

### RECEIVERS/SCANNERS

Small compact desktop scanner - AOR AR2800 + DC adaptor .....£175  
Icom IC-R71 general coverage receiver was £499 .....now £425

To whom it may concern... if you own one of the older VHF radios we can carry out the 12.5KC modification which narrows the receive band width and deviation.  
Please phone now for details.

### SPECIAL PROMOTION

Twin handset pack of Goodmans Tracker with free pair of drop in chargers, 2 sets of hands-free kits and 6 x nicads.  
All for **£99.95**

### NOW IN STOCK

25 amp switch mode PSU.  
Only **£99.95**

Finance example: £699 deposit £69,  
36 x £25.52 p/m. APR 29.8%.

HP AVAILABLE UP TO 3 YEARS REPAYMENT PERIOD



**Tel: 01925 229881**  
**Fax: 01925 229882**

# JAVIATION

Carlton Works, Carlton Street,  
Bradford BD7 1DA

**AOR AR8200 Series II**  
Call for latest package deals

**ICOM IC-R2**  
**£149.00**  
including  
**RS-232 Interface**

**MVT-7100's**  
**£215.00**

With our own 40 page "English" manual

**MVT-9000 MkII**

For the best price on this new model, give us a call.

If you would like a printed catalogue, please feel free to contact us or send a large S.A.E. (40p).

Thanks.

Telephone: (01274) 732146

www.javiation.co.uk

## Computer Interfaces

### RS-8200

Housed in DB-25 the RS-8200 allows computer control of the AR8200 and supports both software and hardware squelch detect. £39.99.

### RS-8200D

As above but with a NEM Discriminator output

### RS-2700/8000

Housed in DB-25 this interface is compatible with both the AR7200 & AR8000. Supplied with a Flat Flexible Cable for use with both these models. Now available for just £34.99.

### JAV-232

Not only compatible with the AR8200 but many other receivers also including the AR8000, AR2700, Alinco DJ-X10, Icom IC-R10 and IC-R2 to name a few. When used with the AR8000 or AR8200 the JAV-232 also provides a squelch activated tape recording circuit and audio. The AR8200 connections also provide a FM Discriminator output for DATA decoding. The JAV-232 costs £69.99 but for connection to the AR8200 an optional OS-8200/DIN lead is required at £17.50.

Other interfaces for the Icom IC-R2, IC-R10 Trident TRX-100XLT and Alinco DJ-X10 also available.

# WXSAT WWW

## A Guide To Information Sources On The Web

The Internet is one of the best sources of information on most subjects, available at low cost to many people. All you require is a suitable computer, modem, software and a telephone line. Lawrence Harris's own introduction to the Internet was in the years before the name was coined. Here he explains all.

**A**s a scientific establishment, the Radio and Space Research Station in Slough (which later changed its name and then merged with another Laboratory) was closely involved in various NASA and European space projects and was linked across the world to other Laboratories. The emergence of easy access to the expanded version that became known as the Internet, mushroomed in the early 1990s and I became a subscriber.

### Web Sites Bookmarked See the SWM web page for these links

Can I interest you in a selection of web sites? I have 'bookmarked' (to use Internet browser jargon) a number of official sites that I visit regularly.

#### China

<http://nsmc.cma.gov.cn/> and <http://www.cma.gov.cn/> - select the National Satellite Meteorological Centre. China's National Satellite Meteorological Centre is a facility affiliated to the China Meteorological Administration. Their sites carry a wealth of information about the FENGYUN satellites, as well as daily images. There is even a photograph of the computing room where data processing is performed. The webmaster has been kind enough to give permission for me to use site images to illustrate my columns - hence my use of their graphics.

#### USA

<http://www.goes.noaa.gov/> This site is the geostationary satellite server, and carries updating images from continental America, as well as selected regional images. This is a prime source of current USA imagery on the Internet, and full disc images from GOES-8 and GOES-10 are available, together with storm sectors, archived images, and links to other geostationary satellite image sources.

**NOAA Satellite Status Information**  
<http://psbsg11.nesdis.noaa.gov:8080/EBB/ml/nic14.html> This page provides frequency information and equipment status for operational NOAA and GOES satellites. There are also links to current news bulletins and summaries.

#### NOAA Satellite & Direct Readout Information System

<http://140.90.207.25:8080/noaasis.html> This is another page that forms part of the public information dissemination service, and carries links to a range of other NOAA sites.

#### POES (Polar Orbiting Environmental Satellite) Home Page

<http://poes2.gsfc.nasa.gov/> A huge amount of information and links to launch schedules. Remember the whole philosophy of America's WXSAT program is one of availability of information to the American taxpayer, and in effect, the world.

#### Space Monitoring & Information Support Laboratory (SMIS) Of The Space Research Institute (IKI RAN)

<http://smis.iki.rssi.ru/> This site carries various types of information, but perhaps the most interesting is its schedule of h.r.p.t. pass images. They collect images from the NOAA WXSATs, and small versions of these - as received over Russia - are available for download.

#### Sputnik Server

This is a joint project of SRC PLANETA Rosgidromet & IKI RAN

<http://sputnik.infospace.ru/> The site carries a wealth of information about Russian WXSATs, although it is not-updated very often. Information on the fault conditions noted by monitors of METEOR and other WXSATs will (unfortunately) not be found.

#### World Meteorological Organisation

<http://www.wmo.ch/> and <http://www.wmo.ch/hinsman/imagery.html> The home page leads to a very large number of potential sites. For satellite information, select the *WWW-World Weather Watch*, click on the left-hand down arrow

### Getting Access To The Internet

For efficient access, you require a suitable computer. A PC is probably the best, simply recognising the easy availability of upgrades and software. For a web browser, the choice is somewhat limited! Internet Explorer version 5 is probably your best choice. If you wish to collect files, you can use a web browser, but it is more efficient to use a file transfer program, such as WS\_FTP - this and other suitable programs can be downloaded from sites linked from the advisory sites.

### Suitable Mailing

So you now have an Internet access account. You may get the best value from your subscription (in whatever form it takes) by joining (we use the word subscribing, though there is no actual charge) to some suitable mailing lists. The world of weather satellites has several such lists, to which I occasionally refer in my monthly column.

**wxsat-l** - this was the original Internet list for WXSAT enthusiasts, and is American-based. Send a request to join: [wxsat-request@met.fsu.edu](mailto:wxsat-request@met.fsu.edu)

**rig-l** - this was started as a UK-based list (it is not actually run by the Remote Imaging Group). Send a blank E-mail to: [rig-l-subscribe@ONElist.com](mailto:rig-l-subscribe@ONElist.com)

**satelliteimaging** - this is a UK-based list. **weathersat** - another WXSAT group. For mailing lists run via the egroups system (including the latter two), visit: <http://www.egroups.com/mygroups> and subscribe and set-up each list according to your own preferences. I have opted for the digest form - a daily summary of all messages, rather than receiving each individual message.

The reasons for so many groups starting up with apparently similar objectives is historical; sometimes members of one group have decided to split off and form a different group having a slightly different *modus operandi*.

and the option will be found near the end. A link to the *Global Observing System* can be found, from which *satellites* can be selected. A final selection *satellite activities* leads to the essential data on the global WXSAT system and its future. The second link (given above) is part of Donald Hinsman's collection of links to the major satellite image sites.

#### GOES Project Science

<http://rsd.gsfc.nasa.gov/goesb/chesters/web/goesproject.html> Dennis Chesters maintains this personal site that carries a wealth of data and links to the WXSAT program. Foreign geostationary WXSAT links are available, as are movies of weather systems that made the news for all the wrong reasons.

### EUMETSAT

<http://www.eumetsat.de/en/area5/imagery/foreign.html> The European Weather Satellite organisation provides not only information and imagery from the operational METEOSAT satellites (5 and 7), but provides links direct to other national WXSAT web sites. Current transmission schedules, documentation on current and future projects

#### India Meteorological Department

[http://www.imd.ernet.in/main\\_new.htm](http://www.imd.ernet.in/main_new.htm) A few years ago I wanted to include a picture from INSAT, the Indian satellite that carries an imager with its communications package. I had to write to the authorities in New Delhi, and eventually received an excellent photograph that I used in the column. Visit this site and you can download the latest imagery from *INSAT-1D*. Select the *satellite images* option and the choice of full disc or sector, in visible-light, infra-red or colour composite is freely available.

**National Weather Association (NWA) Remote Sensing Committee** [\[net.nesdis.noaa.gov/arad/pd/nwasat.html\]\(http://net.nesdis.noaa.gov/arad/pd/nwasat.html\) This site is maintained by Gary Ellrod of NOAA/NESDIS, and is a page of links to professional \(and some amateur\) sites all over the world. From Antarctica to Bermuda, although the emphasis may appear to be on American sites, there are sections covering Asia, Europe, the western Pacific and Latin America.](http://orbit-</a></p>
</div>
<div data-bbox=)

### Commercial Sites

**ScanEx - Research & Development Centre**  
<http://www.scanex.ru/> ScanEx is a private Russian company providing full integrated solutions for satellite remote sensing applications. The site carries links to information on Resurs satellites and the company's own reception systems.

#### TimeStep Weather Satellites - UK

<http://www.time-step.com> TimeStep is a commercial company providing complete systems for weather satellite reception and customised element sets for their tracking software.

#### Kepler Elements

<http://oig1.gsfc.nasa.gov/scripts/foxweb.exe/ap01?> There are several sites on the Internet where the latest Kepler elements can be collected to update your satellite tracking program. The original one is that of the Orbital Information Group given here. When the page is loaded, you can select 'OIG main page', where several options are available. If you want regular, specialist information, you can register and receive a personalised service. For simple Kepler updates, proceed to 'downloadable files', an option near the end. We are nearly there! Seek 'specialist interest TLEs', near the bottom, and by clicking on this, you can download a zipped collection of everything you need. The file is updated at least daily and contains a compressed set of files of geostationary, weather, amateur, visible and other categories of satellites. Use the WXSAT set to update your program.

## The Big One!

If you are doing more than average satellite monitoring, you may wish to collect a file from NASA that includes virtually every known satellite. This big one is available, updated every few days. You can collect it using a web browser, but such files available for efficient retrieval using an FTP (file transfer protocol) program.

The advisory site listed earlier can provide links to suitable FTP programs: my favourite is WS\_FTP. For the Kepler file, you need to visit the following site:

**kilroy.jpl.nasa.gov** and set up your program for the directory: **/pub/space/elements/satelem/** at the kilroy site.

You should log in using the standard anonymous protocol. This means that (in advance) you set your user ID to anonymous and the password is then your E-mail address. This is a courtesy that theoretically allows the site to contact you. This never happens. The Kilroy site archives the year's weekly satellite elements, so the latest set is at the bottom, and is available in a generic form as well as a form that includes the date stamp. The generic form allows automatic data

retrieval by robot programs - but that is another story.

So now you know all my web site secrets! Well, not quite all. There are other WXSAT-related sites, and if you use a search engine or search program, you could find hundreds more. Try the site devoted to *OKEAN-O*. It is rather out-of-date (at least the one that I know about), but answers all the basic questions.

## Best Of The Rest

What about 'amateur' sites? There are so many sites that it would be difficult to select just a half-dozen. Some sites carry the latest images received by users around the world, and descriptions of their hardware are often provided. Let me give just one site: **http://www.riglib.demon.co.uk/index.htm**

Les Hamilton's site (see above) provides a large number of pages of advice on WXSAT matters, including archived sample images, and several 'How to' pages. If you have trouble setting up your soundcard system, Les tells you how it can be done. Have fun!



# The Ultimate Archive

## NOAA WXSAT Raw Data For DIY Processing

I hatched the idea for this feature during summer. For the many people who do not have the equipment required to receive high resolution picture telemetry (h.r.p.t.) direct from the NOAA satellites, two things had to happen that could enable them to sample the quality. NOAA provides a site - the Satellite Active Archive (SAA) - from where you can select a region almost anywhere on earth.

On request, the archive extracts high resolution imagery of your selected region from files containing the data originally downloaded from NOAA WXSATs - so there was the source. Then **David Taylor** produced *HRPT Reader* a freeware h.r.p.t. file reader and display program that reads and processes the data - so there was the answer.

While the idea for writing this article for the autumn 'WXSAT Special' was germinating, along came **Paul Gulliver** with an excellent summary description of the process, published in the June edition of the *RIG* magazine! The Archive introduced new facilities in August, so I decided to continue the project anyway, and write my own version for this 'WXSAT Special', including a description of the use of David's program. To use the whole facility, you need access to the Internet.

### How Much Data?

The amount of data transmitted by the polar orbiting NOAA WXSATs is extra-ordinary. Five channels of digital data carrying up to 1.1km resolution imagery, together with large amounts of non-image data, means that the satellites are phenomenally productive.

If you receive h.r.p.t. data direct from a satellite, you can find that a 10 minute pass may occupy some 40-50MB of space - after compression. Current satellites do not have tape recorders with the capacity to store all the channels of the AVHRR (advanced very high resolution radiometer) on a continuous basis, so a process of selected recording is scheduled.

During the satellite's pass over a specified region, data (called Local Area Coverage - LAC) is recorded on the tape recorder and later downloaded at an appropriate tracking station. LAC data are full (1km) resolution data recorded on-board the satellite, and dumped at the Command and Data Acquisition (CDA) stations (Wallops Island, Virginia and Fairbanks, Alaska) at some later time. In addition, the ground stations that collect data, also make their real-time data available.

Finally, a degraded version of h.r.p.t. is stored on the tape-recorder during the whole orbit (called Global Area Coverage - GAC) and this is also downloaded regularly. The GAC data are produced on-board the satellite by sampling the AVHRR 1km data to 4km resolution - averaging alongscan groups of four samples out of five, and skipping every third scan.

The data includes all five channels at 10 bit precision, with time tags,

Earth location and calibration information. The CDA stations relay this data to the National Environmental Satellite, Data and Information Service (NESDIS), located in Suitland, Maryland, for processing and distribution to forecasting centres of the US and other nations.

### NOAA Satellite Active Archive (SAA)

We are going to visit the SAA site, register our details, specify our requirements, then sit back and wait! The SAA's mission is to provide electronic distribution of data and derived data products from US polar-orbiting environmental satellites (POES). The SAA is an operational component of the Information Processing Division of the NOAA Office of Satellite Data Processing and Distribution (OSDPD). Both OSDPD and NCDC are line organisations of the National Environmental Satellite, Data and Information Service (NESDIS). Data is available freely for the asking.

### Prior To Site Visit

For your first request, consider some region(s) of interest. I decided on the Caspian Sea and the Kola Peninsula. The Caspian Sea is outside my *METEOR 3-5* reception range and the Kola Peninsula is tantalisingly in the noise region near the end (or beginning) of *METEOR* passes. Enter the site by going to **http://www.saa.noaa.gov**

At the top of the page, a set of tabs offer 'search page', 'order query', 'help' and other options. The sequence of operations is straightforward. Start by setting-up the 'User Profile', as indicated for new users: enter your preferred E-mail address and other information. We decide on the region we want, and then set the parameters. The 'help' section provides first-line assistance, and may be worth printing out during an early visit, to provide immediate guidance.

### Make Your Selection

For a first try, you might prefer to select parameters that will produce a relatively small file for downloading and processing. After a few trial runs, the art of region selection becomes easy yet fascinating.

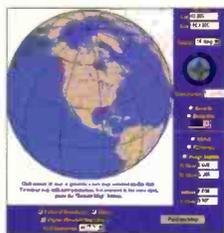
**Parameters:** 'Temporal' (time) settings, 'Spatial range', 'datatype', 'Satellite', 'receiving station' and 'distribution site' are required, but only the 'Spatial range' (location on earth) will take more than a few seconds to enter.

**Temporal:** the time period during which you would like your satellite recording to have been made. Leave at the default settings (current seven

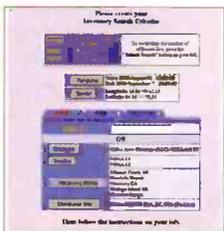
Lawrence ends his 'WXSAT Special' by looking at the alternatives to live WXSAT monitoring.



Fig. 1: SAA home page.



**Fig. 2: Region selection map (setting the desired region - the orthogonal map).**



**Fig. 3: Make your selection - parameter settings.**



**Fig. 4: First results page.**



**Fig. 5: Display a sample view.**



**Fig. 6: HRPT reader display.**



**Fig. 7: Gulf of Bothnia - raw GAC image.**

days) for test purposes. There will always be GAC data meeting this parameter.

**Spatial range:** the new SAA interface provides various methods of identifying your selected region. When I first started writing this article (some weeks ago), you had to specify longitudes and latitudes of the box that covers the desired region. This was tedious and prone to error - but you can still choose this method.

After entering co-ordinates, you click on 'redraw map' and the selected region is highlighted for you. The new option, introduced in August, allows you to directly create a box that bounds the required area. Select the 'orthographic map' and click the mouse button on the part of the globe nearest your desired region. The globe's default display is of America, so if you want central Europe (I selected the Caspian Sea for my first test) simply click near to the limb. The globe will be re-adjusted to show the new region. Click nearer the spot to bring the region nearer the centre.

With the desired region in view, you can zoom in as close as you wish, or pan, or - my recommended selection - 'range search'. Select this, then point and click your mouse at the top left of the region wanted, then repeat at the bottom right. This enters the co-ordinate sets automatically and draws your box. Everything can be edited, but let us assume you got it right! There are many other options here - but let us proceed.

**SAA data sets:** the list shows the wealth of data available. Choose GAC during your first tests, in order to limit the file sizes required for downloading.

**Satellite:** the archive goes back a long time!

For our purposes, select a current satellite - perhaps NOAA-12 or NOAA-14.

**Submit search:** when your preferred options are set, click on this button and the search proceeds.

Within seconds, the first page of results is displayed. Recent changes to this search procedure mean that it now has the ability to find hits where the sub-satellite path (nadir) does not intersect the user defined search region. The 'results' display - see **Fig. 4** - includes complete details of each 'hit', and offers a display - see **Fig. 5** - of the image.

A general glance at the pass time may indicate whether it is a night-time or daylight image - you can see the image by clicking the view option. When you are happy with the selection, tick the 'shopping cart' (yes, really!) for that pass. You can continue to check other hits and basket those that you want. Note that the total file size is listed on the left of the display, and incremented for each addition, so you know what you are going to be downloading.

Finally, click on the button to confirm data selection, and on the 'Place order' button, that completes the process. You can leave the site and go offline, or you can click to return and make a new regional selection. On my second visit, I was ready to select both regions (Kola and Caspian), and to collect several GAC images after checking that clouds did not cover the region!

A confirmatory E-mail is sent to your 'profile' information address, probably within a couple of hours. This gives details about the ftp site and directory where your file(s) will be residing. A standard ftp program (I use the freeware program WS\_FTP) is the perfect vehicle for transport to your hard drive. GAC files are likely to occupy a little over 1MB each, representing a download of just a few minutes using a good connection and 56kB transfer speed.

### LAC Data

After familiarisation with the process of data selection, the logical step forward is to find full resolution h.r.p.t. data of areas of interest. The list

of LAC areas scheduled for collection by NOAA WXSATS is circulated to the 'wxsat-l' list on the Internet once a week. This provides details of all areas that will be recorded on the on-board tape recorders. Perusing that list revealed that the Barents Sea is regularly recorded. **Figure 11** is a sample out of several passes shown in the results list of a search for this region.

### Processing The Data: David's HRPT Reader

You have a file from the NOAA Archive, so now you can complete the task by processing it using a suitable h.r.p.t. file reader. The SAA site provides links to some software; David Taylor's program is available for free downloading from: <http://www.david-taylor.pwp.blueyonder.co.uk/software/wxsat.htm>

After downloading *HRPT Reader*, while still online, download *Correct Geometry*. This is a small program that corrects full resolution processed data for the non-linearity of the scanner's image. The scanner takes picture samples at equal angles round its scan, leaving the edges covering more ground than the centre.

In addition, extra files (runtime library modules), for example VCL40.zip, may be required to be downloaded. All necessary links are provided, and if you currently use any of David's other software, these may already be installed on your computer. As of mid-September, David has just incorporated the geometry corrector program into *HRPT Reader*, and my first tests (just before press deadlines)

are very impressive - see **Fig. 6**.

The program reads h.r.p.t. files of different formats, including the Level-1B format from the SAA, amongst others. The program allows channel selection for file reading, and produces the individual channels, as well as derived vegetation images.

Install *HRPT Reader* in its own directory, and read the help file for detailed information about the program's capabilities. For our purposes (processing GAC data),

there is little more to do. Rename the downloaded GAC file by deleting the mid-file decimal point and adding the terminator

GAC. The file will then 'load' into the reader. This starts the processing, and all five channels, together with derived products, are produced - see **Fig. 7** - unless you select otherwise.

Individual images can be saved by selecting 'file', 'save rectified GAC' - see **Fig. 8** - producing a BMP format image corrected for scanner distortion. You can normally identify the direction of travel (north-bound or south-bound) by checking the satellite's pass time: an early morning NOAA-12 pass will be south-bound.

If you get it wrong - select 'options', 'flip pass direction'. The saved file can be loaded into any normal image processing program, but should not need enhancing because David's software does it all.

David does not have an h.r.p.t. system, all his development work was (apparently) done using files provided by volunteers. An impressive program!

### Summary

This archive seems to be without competition - where else can you so easily stipulate a region on earth and then collect high resolution (GAC) data within a couple of hours, and process it in all combinations? Do not forget LAC (full resolution) data. Lists of LAC recordings are issued weekly by NOAA, identifying selected regions of 1km data. The opportunities for researchers are endless.

In no way is it an alternative to having an h.r.p.t. receiving system - each achieves a different objective. NOAA have once more given the world a first class resource. My thanks to Dan Gilmore of the NOAA Satellite Active Archive for permission to use their data and to David Taylor for providing his freely available, impressive software.



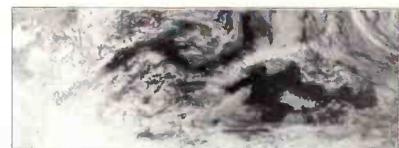
**Fig. 8: Gulf of Bothnia - corrected image.**



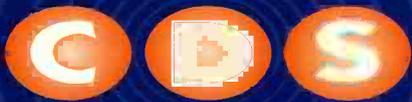
**Fig. 9: Region of Lapland.**



**Fig. 10: Region of Black Sea.**



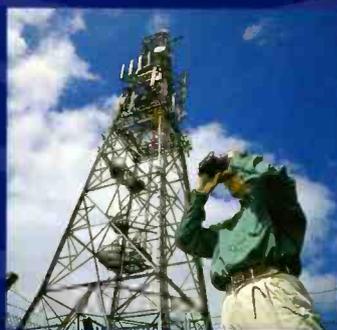
**Fig. 11: HRPT LAC image of Barents Sea from NOAA-12 on 6 September 2000 at 1142UTC.**



CDS are a friendly, independent and progressive company with a strong reputation for field measurement services in the mobile telecommunications and digital broadcasting industry.

a thorough understanding of cellular systems and technologies together with digital broadcast-ing technologies.

**A NEW CAREER FOR RADIO ENGINEERS, ASSISTANT TECHNICIANS & DATA ANALYSTS**



We have an immediate require-ment for **radio engineers, assis-tant technicians and data analysts** with experience, or willing to be trained, to work throughout the UK and Europe.

For the right people we can offer attractive, competitive salaries and an overall package commensurate with position and experience.

To find out more, please submit your detailed CV to:

**David Pearson, Technical Director, Cellular Design Services Ltd, Graylands, Langhurstwood Road, Warnham, West Sussex RH12 4QD. Facsimile: 01403 248597 Email: d.pearson@cell-des.com**

CDS can offer a comprehensive training programme to give you



FS 40498  
ISO 9002

**CELLULAR DESIGN SERVICES LTD.**

RADIO SOLUTIONS FOR THE WIRELESS WORLD

**£39.95**  
inc. VAT +  
£2.50 P&P

**AKD**

**HF ACTIVE ANTENNA**

**FREQUENCY RANGE:**

30kHz - 30MHz

**LENGTH:**

400mm

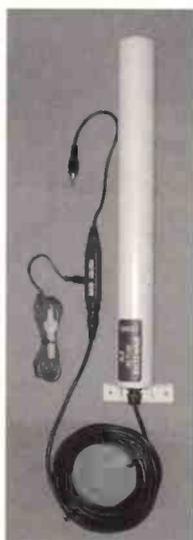
**COMPLETE WITH:**

- ★ Fused 12V power cable
- ★ Power adaptor terminat-ed with phono plug for direct connection to the Target HF3 & HF3S short wave receivers
- ★ Seven meters coaxial cable

**POWER CONSUMPTION:**

20mA @ 12V

**WATERPROOF ANTENNA ASSEMBLY**



PHONE FOR FREE CATA-LOGUE ON OUR RANGE OF TRANSCEIVERS, TU1 FILTERS, ABSORPTION WAVEMETERS

Unit 5, Parsons Green Estate  
Boulton Road Stevenage  
Herts SG1 4QG  
Tel: (01438) 351710

**£159.95**  
+ £6.00 P&P



**HF3S SHORT WAVE RECEIVER**

- ★ 30kHz - 30MHz
- ★ USB, AM & LSB
- ★ 10 PROGRAMMABLE MEMORIES
- ★ FULLY SYNTHESISED
- ★ SIGNAL STRENGTH METER
- ★ DATA LEAD FOR CONNECTION TO COMPUTER
- ★ JVFX OR HAMCOMM SOFTWARE
- ★ PSU AND LONG WIRE AERIAL

Website: [akdinfo.com](http://akdinfo.com)  
e-mail: [john@akdinfo.com](mailto:john@akdinfo.com)  
[roger@akdinfo.com](mailto:roger@akdinfo.com)



# Amateur Bands

Progress has been well maintained, to the point of UT7CT and I dropping the h.f. antenna for some rectifications.

Long-time readers will recall that almost three years ago we had a Christmas Eve gale which broke the mast and wrecked the TB3 beam. Yours Truly being a pensioner wasn't about to buy a new antenna when there were six potential triband verticals in the wreckage.

The present situation is that the upper half of a vertical dipole is made from one of the six sets of traps, with the lower part in the form of three separate quarter-wave parts made of wire, one for each band. The insulators are now totally of nylon monofilament which also keeps the wires where they belong.

This 'triband vertical dipole' can in fact also be a.t.u.-resonated on 18 and 24MHz, while 1.8, 3.5, 7 and 10MHz are handled by the end-fed wire operated against counterpoise radials - all in the space of a garden about 9m square - and there are the makings of some more antennas in reserve.

It raises a question. Most new amateurs start with nothing home-brew at all in the station. If there is no firm objective such as contesting, sooner or later boredom sets in and a 'Selling Up' advertisement appears.

## Extra Selectivity

Let's start with our anonymous correspondent who passed the RAE - good! Now she's looking at Morse, and in particular how to get some extra selectivity. Ideally, it ought to be in the antenna, but that's hardly practical yet! A c.w. crystal filter is next, but there are other possibilities.

One method is to use ancient high impedance headphones for listening - they probably have a peaky response already and you can accentuate such a peak by shunting them with a capacitor - obviously the value will depend on the impedance and the resonant frequency. The trick works well enough with modern 'cans' too.

If you insist on using the phones to listen to music as well, then the shunt capacitor can go in a little box with a plug to go in the receiver and a socket for the phones. Again, you just might find a thing called an FL-8 or FL8A which was WW2 surplus, or even the first Ten-Tec - their Active CW Filter CWF-2. I used one for years until I got sick of forgetting to switch it off. I still have both in the workshop.

Next is the thought of using four op-amps to duplicate the CWF2 performance. As an absolutely last resort you could tune the receiver for the lowest beat-note possible - a trick which was easier with receivers having a 'proper' twiddle-able b.f.o.

## Oddments

5A1A reports that 5A/UY0MF was Tripoli Slim and N8OW says he is **not** the QSL manager for VQ9TW. The W6 Bureau is now managed by N6QEK, with a new address of **PO Box 900069, San Diego, CA 92190-0069**. W6LPJ had done 27 years 'at the wheel'.

On the positive side, we see EP2AC is often on around 18.069MHz and IR50NU is a 'special' until the end of the year. SU1HM is now signing SU1HM/D2 - try 14.160 around 2300UTC.

KC4 calls are being reallocated. All KC4 calls are on the US mainland, except KC4AAA-KC4AAF and KC4USA-KC4USZ which are for Antarctica.

Piero F4AUT has finally obtained Mauritius citizenship and hence the call 3B8CO. QSL address to: **Piero Provust, BP78, Curepipe, Mauritius**. For those who missed out on the BQ9P Pratas operation, take heart - we hear of a possible repeat performance around March-April 2001. Thanks *599 DX Report*.

Ever been at the sharp end of a pile-up? **Stepson UT7CT** was the first to hear that Ukraine have signed the CEPT agreement, so a few minutes later he was on Twenty signing MW/UT7CT on sideband and then on c.w. - to my aged ears it approached the sound of a full-bore pile-up but almost 100% Ukrainian callsigns!

## Letters

As promised **Dieter DL2BQD** wrote from Schwedt. Dieter is still recovering from the shock of a complete holiday - Schwedt-Ambleside-Schwedt with not a single traffic jam. On the radio front, the SST20 produced 30 QRP contacts, while the scenery on the Wrynose and Hardknott passes was enough to make Dieter forget to switch on at the summit! Now it's back to the grind - weeding, letter-writing, and preparing for next school term.

Alas, poor **Ted Trowell!** He didn't win the Lottery last week, but he fought off the sorrow and sent us his (c.w. only) report from Sheppey. 7MHz at 1800UTC showed OH0/OZ3GF and at 2100 8J1RL. On 10MHz a session at 0400(!) stumped up with VK2RJ and W0XV. He recovered by 1900 to catch 9H3CL, VK9XY on Christmas Island, VK4FW/P and a couple of hours later VU3VLH and OY/DL8WAA.

More civilised hours on 14MHz - starting at noon - with BV2A, then at 1500 4W6MH and BX7AA. At 1800 YK1AH and at 2100 JY5IN, V26EA, C31PM, VS1AS and RZ9DX/0 on Dickson Is. On 18MHz we see JA3ADW, FR/F6KDF/T (Tromelin) A52AB, 9H1AL, HF0POL, V2/G4DIY, VK9XY, V26EA, FG/JH7BHR, YV1NX, KP2J, HK0VGJ, ZP6CW.

While on 21MHz we see VU2BK, YB2LSR, VR2GW, BV7FF, JY5IN, PP6CW, BX4AD, 8J9XPO, VK9XY, 5N3CPR, BS1AS, PY2NCM, 4S7NE, CP6EB, V26FM, 9H3CL, D2BB, CE3GLR, PY1VOY/PY0F, VP2EY, HC5AI, PY6AN, PY7LM and HK6HFY. 24MHz showed 5R8GS, YK1AO, VK9XY, ZP6CW, V59PP/L, J3/G3TBK, HF0POL, 5H3RK, PZ1AP, and KV4AN, leaving 28MHz for PY2CJ, TZ6DX, FR/F6KDF/T, SU9ZZ, CP6EB, J3/G3TBK, A45XR and V26EA.

Another note from **Godfrey 'Airband' G4GLM** anent waterproof covers notes a new supplier of waterproof containers: **Aquapac International Ltd., 7 Bessemer Park, 250 Milkwood Road, London SE24 0HG, Tel: 0207-738 4466**.

Work has been a worry to **Paul Goodhall**, so his and **Peter's** logs from Oxford have been combined. Their computer log program has been playing-up, but there are still seven pages, so I've had to delete all the EUs. 28MHz gave FY5LS, V26ET PY5BI, 18MHz A92V and 21MHz FY/F5AEG, RA2BK, VK9XY and N7UX, 4Z5FW, WA5VGI, V85BA, JJ1FDS, DU9RG; 7MHz VK1MJ and 3.5MHz 7J4AAL.

On Twenty there was c.w. from S3BGS, UR0VX, then RV9DH W3VL RA9AJX, K2CJP, KF3AA, PS8KW, VK6HD and a string of EUs on p.s.k. Back to c.w. for 4X4NJ, N7WI, W0JMK, XE2NJ, W6WO. Thence to sideband, and WX3B, VK2PS, XE1EK, VK5JJ, KD9QX, SQ8BGJ/P1 on EU129, KC6X, UA9MO, TA3D, VK2DPD, VK2OD, VK2DON, AX7FD, VK2FAY, ZL2ALZ, W2PNF, W6KW, K6IRA, KA4WDX, AD6KB, AB6CF, UA0KBU, KA7KA, KA5FDH, WA6DOJ, KC6AWX, K2KEY, K2CF, HC5SF, W4JRP, 9H4CM, N2II, 8P9JU, ZL1BO, VK7BC, N7TZ, K6DEX, K6JAJ, VE3DOP, K7RI, W6FRH, 5B4BB and N1NMU.

## New Contributor

Welcome to **Peter Bowles** ILA-028 of Seaford in Sussex. On 18MHz is where Peter was during August, finding AP2AGI, A41LZ, BV5BG, CE3CDV, CO2WL, EX8M, FO5NL, HC2RJ, JY5HO, JW7JFB, JAs, KP4IX, KL7O, LU3CQ, OH0RJ, OX2K, OY4TN, OD5LP, PT5000A, PZ5RA, SY7LH, T77M, TT8JA, TR8CA, TE6U, TF3VD, most VK call areas, V26FM, XE1VIC, YB0DX, Z21KW, ZL2AAG, ZS6BAP, 4N1KW, 5N2BHC, 5Z4IC, 70!YGF, 8P6GY, 9V1JA, 9G1MR and 1AOKM - first logged on 1 May 1990 then on 23 July 2000 at 0909.

## More Mail

It's **Colin Dean** from Barnsley who looked on 28MHz to find FR/F6KDF/T on Tromelin, OH0Z, PZ5RA, VQ9NL, 3B8GL, 5ZA4RT, 6W/DK8YY. On 21MHz Colin logged AH8A, AP2JZB, A45XM, BA4DW, BD7NQ, BV2000, BV4VE, BY1DX, DS2BVG, DU3SV, DU8DJ, D2BB, EK6TA, EK7DX, E4/JM1LJS, FK8HC, FM5GU, HF0POL, HL1JV, HL1KTX, HL4HLD, HP1BCK, HS1NGR, all JA call areas, NP2BT, OA100T, R1AND, S21YJ, S92SV, TA3J, TU2CI, VK1TX, VK9XY, VP9FX, VR2LW, V26WP, YB1-0, ZD7VC, Z22JE, 4W6GH, 5H5A, 5R8FL, 6W/DK8YY, 7M4OVD, 7N1LIO, 8M2000, 8R1Z, 9K2MN, 9M2SH, 9M6ST, 9V1WWW and 9Y4GR, leaving 17MHz for AP2JZB, AX8PW/8, DS5USH, FR5GQ, HB0/PI5TUE, JA1-0, OH0RJ, OX/DK6XR, OY/DL5LYM, TA2BK, TK5GF, VK6CTL, VK9XV, VP8DBN, V26WP, YB0DNK, ZA1E, 4W6GH and 9V1XE.

## Close

That's yer lot - your news, stories and letters - as always - to arrive by the first of the month please to: **Box 4, Newtown SY16 1ZZ**. The more you write in, the better the column...and maybe Mr Editor would then give me a mite more space!

■ JERRY GLENWRIGHT, 16 COPEMAN STREET, NORWICH, NORFOLK NR2 1HH

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

# ShackWare

**H**ello and welcome to 'ShackWare' from my new home here in Norwich. We finally made the move at the end of July and we're renting for the moment while negotiating the purchase of a house - planned moving date is end of October so bear that in mind if you choose to write to me with a query. I'll publish my (next) new address as soon as I'm able.

Meanwhile, if you've written recently and haven't had a reply please be patient - we're living out of boxes in a tiny rented house. If you haven't had a reply to a letter written within the past couple of months, it may have gone astray during the move. If you think that might have happened, I apologise and please do write again.

## Mailbag

**Gareth Lamb** of Crediton, Devon, made an interesting boot sale find over the summer which he's being trying to get to grips with ever since. He writes "At a boot sale with my wife, I found a portable PC computer the like of which I'd never seen before. It is an Amstrad machine in an oblong grey plastic case with a solid moulded handle at one end. Lifting the lid reveals a keyboard and a pop-up I.c.d. monitor screen. There are two disk drives of the 3.5in size on the side and a little slot on the top which opens to reveal a telephone cable. Apart from the Amstrad logo, there are no badges to reveal what it is. As the machine was only a fiver I bought it (much to the disgust of my wife!) but I've been unable to do anything with it so far. Please help, otherwise I'm in danger of proving my wife right".

Wives! Mine is kind and understanding, but I have to wait until she's visiting a friend before sneaking old computers into the house. I'm joking, but that scenario isn't far away...

So let's see what we can do to help you. Naming your boot sale find is easy: it's an Amstrad PPC640. This computer was an early attempt at making an affordable and above all, usable portable PC in the late 1980s. The PPC was priced in hundreds rather than thousands of pounds and came with a full complement of DOS base memory (640K), twin floppy drives, a CGA I.c.d. screen, full-size keyboard and - amazingly at the price - a 2400baud modem built in. This latter device was cutting edge back in 1988 when the PPC made its debut.

Under the bonnet, Amstrad used a V30 processor, an Intel-compatible device much like the AMD processors available today (though not so speedy!) which is fast and very compatible. The PPC ran all the popular PC software of the day and really was an excellent computer. It came in several flavours starting with the PPC512 with cut-down memory, one disk drive and no modem to the top-of-range PPC640 - your computer. If memory serves, it had a price tag of around £600.

What you may not have noticed is that the whole of the rear of the machine is covered by a fold-down flap which give access to a full complement of standard PC ports: serial, parallel and a monitor port.

So that's what it is, and now all you have to do is to use it productively. I know from experience that the PPC will run *Hamcomm* and works perfectly with the good old comparator interface. Several years ago, I used one for continuous monitoring of the Yugoslav RTTY news service and it performed faultlessly. Though the flimsy plastic case is no match for computer hash, the I.c.d. screen compensates, so signals aren't too badly distorted.

You'll need a DOS boot disk to bring the machine up but as it works fine with freely available DOS lookalikes such as Caldera OpenDOS, finding software to boot it shouldn't be too difficult. Often, you can find older versions of DOS such as 3.3 at computer fairs for a pound or two. Good luck with it and have fun.

Now for an E-mail from **Mark Harper** with an update about the Packard-Bell computers mentioned in a recent column. "I agree with your comments about Packard Bell PCs. The older Packard-Bells (Executive and Spectra Ranges)

are to some degree upgradable, although oddly, much relies on the model numbers and it is really a hit and miss affair - some models will, some won't.

Just before Christmas I upgraded an Executive P166 to a 333 with 80MB RAM quite easily, using the Spectra upgrade chips. I just swapped a few jumpers over and popped in the extra memory. However, a Packard-Bell I worked on a few weeks later, which was the next model up, would only go to 200MHz, which I thought odd". Perhaps the moral is to try to ensure that you can return upgrade spares if you find they're unusable.

Finally for this time, 'Airband' columnist **Godfrey Manning G4GLM** writes with details of an Acorn BBC Master he's unearthed and which requires a good home. "I've got a Master and disc drives (*Acorn disks were always known as 'discs' - JG*) to give away. My next door neighbour is a silent key and his widow found it. I'm desperate to pass it on to a good home - can you help or make suggestions?"

The Master is a competent computer which came right at the end of Acorn's use of 8-bit processors and was an attempt (I believe) to hang on to its massive installed user base among academic establishments while updating what was obviously an out-of-date anachronism: the BBC B. Though an excellent computer, the world had moved on and the Master was never the success it might have been.

Interested potential owners should write to Godfrey at the address given in his column. (I'd rehome it myself but see comments above!). Godfrey adds "My old Amstrad PCW8512 word processor becomes redundant in September it will then be broken for spares. If anyone wants to lay claim to parts (not the processor or disk drive) then please let me know as soon as possible". Once again, requests direct to Godfrey at the usual address.

## Online Home-Brew

Every so often web surfing throws up an excellent off-beat site from someone who really has something to contribute. That claim can definitely be applied to Harry's Home-Brew Site, web pages devoted to constructing projects of all kinds - including lots for s.w.l.s and computer enthusiasts. Friendly, easy-to-follow yet detailed instructions are available for everything from making single-transistor regen short wave receivers to QRP s.s.b. transmitters to computer projects including an excellent EPROM burner constructed from widely available components. Point your browser at <http://hem.passagen.se/sm0vpo/> and spend a pleasurable hour or two reading through the many projects.

## And Finally

Just space for a quick and welcome snippet E-mailed by **Donald MacMillan** of Oban. Donald writes "Re the item about Greenweld in 'ShackWare'. They were alive and well when they sent out my latest order on 9th August. Incidentally two of the items ordered might interest 'ShackWare' readers: a Commodore 64 Quick Data Drive for £6 and a cheap 1.5m lead Commodore 64 to 36-way Centronics. Hope this helps".

I'm sure many will be pleased to learn that Greenweld continues healthy. Until next time, good listening.

## The New CB?

If I admit to a long-time interest in CB will you hold it against me? Yes, I know all the arguments against it: lunatics, kids and the plain foul-mouthed tainting the band virtually 24-hours a day, yet CB should have been (and should still be) an excellent medium for those of us without an amateur licence (actually I must be one of the few who actually holds a current CB licence but I probably won't renew it when it expires in December).

I admit to owning several CB radios including a mobile rig in the Land Rover and a truly lovely little 80-channel hand-held set from Tandy. However, 30 minutes of tuning up and down the band and I've grown tired of hearing people insult one another (even on the road) and I'm frantically reaching for the off switch!

Recently however, I read something in *SWM* which has utterly renewed my interest in licence-free communications. Dave Roberts's 'Scanning' column made mention of the recently-introduced PMR446 band and suggested that those with suitable sets should call out on Sunday evenings for other s.w.l.s - an excellent idea.

I bought a pair of Binatone sets from Argos (£10 off if you buy a pair) and duly listened. Nothing. Weirdly though, that was rather nice after the wall of unpleasant noise to be heard on 27MHz.

That was two weeks ago and since then we've used the sets for family communications in lots of locations and the band has proved excellent. My wife especially likes being able to summon me when she's exhausted the outfits available for trying on in Norwich's clothes shops - and I like sitting in the car with a copy of *SWM* while she's doing it!

Forgive me. This column ought to concentrate on computers (and avoid sexism) but I feel that the more the word is spread, the more the band will take off among those best placed to make good use of it (you!). PMR446 performs well despite the cheap sets, has no idiots and could be everything CB should have been but isn't - though half a watt isn't going to set the airwaves alight!

There are already several web sites devoted to 446MHz. One of the best is the excellent RF-Man's page at [www.geocities.com/rf-man/pmr446/](http://www.geocities.com/rf-man/pmr446/). This features a complete - and intelligent - run-down of the band, it's users, the transceivers currently available and a host of links. Another is the user forum located at [www.insidetheweb.com/mbs.cgi/mb907766](http://www.insidetheweb.com/mbs.cgi/mb907766)

Just one more quick point: Dave suggested listening and calling out on channel 7 without CTCSS for other s.w.l.s. There's also a move among 446ers to adopt channel 8/tone 8 as a general calling channel (like CB's 14 and 19 channels). If you tune to channel 7 and hear nothing, give a shout on channel 8 with CTCSS tone 8 - you never know who might be listening...

# MilAir

## No Show

After the cancellation of many Airshows last year due to the crisis in Kosovo, I had hoped to travel to a few extra shows this year. Unfortunately, fate has decided to continue to thwart many of my plans - most recently by making it impossible for me to find even a thimble full of unleaded petrol locally and thus allowing me to go a friend's wedding and the Battle of Britain show at Biggin Hill!

However, all was not lost, I did have enough left in the tank to go to the Plymouth Battle of Britain AirAid 2000 on the Sunday, the list on the Internet looked quite promising - wrong! An E-mail from a friend on the Saturday informed me that most of the military participation had apparently been cancelled due to...lack of fuel. The only items of interest were a Russian SU-27 and a Danish Air Force F-16, both of whom apparently gave excellent flying displays.

As I write this mid-afternoon on the Sunday, (from home), the airwaves have been relatively quiet so I assume that the Sunday at Plymouth was also disappointing. Hopefully, some fuel will be available next week for me to travel to the National Collective Training and Air Combat Power exercises at St. Mawgan - Ho Hum.

## Unit News

A re-location for 16(R) Squadron, with their Jaguars moving from Lossiemouth to Coltishall in the third week of July plus 1 Squadron made the shorter move from Wittering to Cottesmore. I would welcome reports from readers to confirm which Operations and Air to Air frequencies 16(R) Squadron are using at Coltishall.

The following were used at Lossiemouth: 242.025, 260.925, 297.1. 28 Squadron are due to reform at Benson this Autumn flying the Merlin HC.3 - once again any reports on Squadron frequencies would be useful.

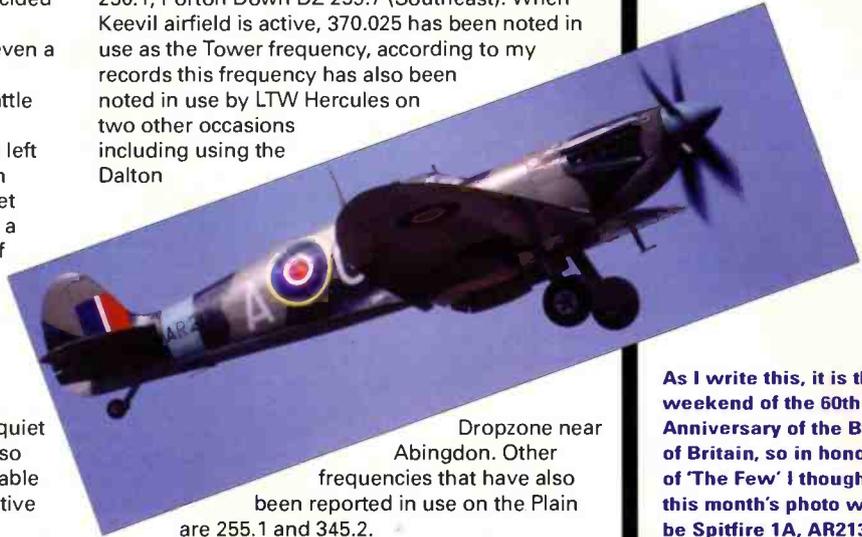
Lastly, by the time you read this, 657 Squadron/AAC will have re-located from Dishforth to Odiham. Another piece of interesting information is that in addition to the USAF C-17As that are to be leased by the RAF, they are now also planning to buy 25 of the new A400M Military Transport Aircraft.

## Salisbury Plain

Three readers were prompted to contact me regarding the September column and the subject of Hercules Paradrops over Salisbury Plain. Thanks to **Chris, Brian and Dave L** from Amesbury who contributed the following information. Some frequencies which are regularly noted in some publications as Forward Air Control (FAC), are often used for the various Dropzones around Salisbury Plain. This includes operations by both the RAF and the Army Air Corps.

Salisbury Ops is an Air/Ground station which uses the primary u.h.f. frequency 282.25 and the range common frequency 122.75 for v.h.f. Both these frequencies are included on the stud listing for AAC helicopters from three airfields located to the East of the Plain, Middle Wallop, Netheravon and Upavon. Helicopters from all three can be heard regularly operating across the Plain.

The Plain also has several Drop Zones which have been identified with their associated frequencies as follows: Everleigh DZ 246.7 (Northeast), Keevil DZ 247.1, (Northwest), Fox DZ 250.1, Porton Down DZ 259.7 (Southeast). When Keevil airfield is active, 370.025 has been noted in use as the Tower frequency, according to my records this frequency has also been noted in use by LTW Hercules on two other occasions including using the Dalton



Dropzone near Abingdon. Other frequencies that have also been reported in use on the Plain are 255.1 and 345.2.

As I write this, it is the weekend of the 60th Anniversary of the Battle of Britain, so in honour of 'The Few' I thought this month's photo would be Spitfire 1A, AR213 seen landing at Greenham Common in 1983.

## Shuttle

Not strictly 'MilAir' but I am sure still of interest to our readers. Two readers reported getting snippets of conversation from the Space Shuttle on the mission to dock with the *International Space Station* in early September. The Shuttle transmissions were received using only a discone antenna and both times the transmissions were heard around lunchtime on 259.7 n.b.f.m.

## The Frecce Are 40

I am grateful to one of our European readers for a report on the airshow at Rivolto Air Base in Italy which celebrated the fortieth anniversary of the Italian aerobatic team the *Frecce Tricolori*. He noted the frequencies used by the various Aerobatic Teams which are as follows: Team 60 123.475, Team Aquila 252.5, Patrouille Suisse 376.275, Patrouille de France, 143.1/242.65, Frecce Tricolori 307.8, 142.8 (Ground), Breitling Eagles 123.05. He has also sent a short list of callsigns, but only listed the Air Force and not the unit to which they belong. Thanks again, good to hear from overseas 'MilAir' listeners.

## MilAir Info

Finally this month I would just like to repeat a request for information that I published earlier in the year. *SWM* reader **Ken Hughes** is writing a history of the Military Airband since the Second World War and wants information regarding the equipment used in the aircraft/ground stations and the frequency bands utilised between 1945 and 1970. The reason I have repeated this request is that we have so far had a limited response, but what information we have been sent has been very interesting and I hope to write an article for *SWM* regarding this subject. A big thank you to all those who have sent in information. All correspondence via *SWM*.

■ GRAHAM TANNER, 64 ATTLEE ROAD, HAYES, MIDDLESEX UB4 9JE

■ E-MAIL: [ssb.utilis@pwpublishing.ltd.uk](mailto:ssb.utilis@pwpublishing.ltd.uk)

# SSB Utilities

## NASA On HF

The first letter this month comes from **Alex Scott** in Scotland who wants to know some more about a NASA flight that he heard on h.f. during early August. Alex reports that on 10th August he heard aircraft 'NASA 809' working Recife, Brazil, on 10.096MHz. This is part of the SAM-2 h.f. network covering the majority of the South American continent. Recife is in the north-eastern corner of Brazil.

According to *Airwaves 2000* there are no less than 19 ATC stations which operate on this frequency. The NASA flight gave a position report of 11°S 33°W, and a height of 'Flight-level 600' - naturally, it was this last part that caught Alex's attention! Flight level 600 is 60,000 feet, which even higher than Concorde. Alex says that he was unable to find any later transmissions from the flight, so he was unable to determine the approximate speed and track of the aircraft.

Well Alex, NASA 809 is a very rare bird indeed. Its official designation is an 'ER-2', but if you ever saw one you would instantly recognise it as being a U-2. The 'ER-2' designation stands for 'Earth Resources', and this indicates that the aircraft is used for research into the climate and other resources near the surface of the planet.

NASA has been using variants of the U-2 'spy-plane' since the 1960s, when the first two examples were acquired from the USAF. Events surrounding the shooting-down of Gary Powers in 1960 made the whole world aware of the capabilities of the U-2 aircraft, so the two used by NASA were known as the 'ER-1'.

Various countries around the world were happy to have an 'ER-1' overflying their airspace, but a 'U-2' was a different matter! The aircraft were used for high-altitude sampling flights - something that an orbiting satellite cannot do - and various photographic sorties to investigate land-usage.

The original U-2s/ER-1s were manufactured during the late 1950s, and during the early 1980s Lockheed built a number of improved models; these were originally known as the TR-1. NASA acquired two of these (and retired the earlier versions) and they were christened as 'ER-2'.

The USAF TR-1s were eventually re-designated as the U-2S, but the NASA ones remained with their original title. The NASA ER-2 aircraft are based at the Dryden Flight Research Centre in California, but this is part of the more well-known Edwards Air Force Base.

The exact flight that Alex heard during August is proving a little harder to pin down. I have an idea that during July and early August a number of NASA aircraft were sent to South Africa to perform some high-altitude flights searching for the limits of the ozone hole above the Antarctic. This obviously included an ER-2, and probably some support aircraft.

A similar overseas detachment occurred at the start of 2000 when an ER-2 and supporting DC-8 aircraft spent some time at Kiruna in Sweden. Therefore, I expect that Alex heard the ER-2 returning home from South Africa at the completion of the research flights. Although the NASA ER-2 and USAF U-2S aircraft regularly flight above 60,000 feet, they usually only report their Flight Level as 'above FL600' to hide their true altitude. After all, what else would be up at their altitude?

For those of you with access to the Internet, I have given details of a NASA web-page which includes a large number of pictures of the NASA ER-2 aircraft and links to information about various ER-2 flight programmes.

## Shanwick

**Roy Smart** from Scotland writes in with a question about Shanwick. Roy says that he listens to the NAT frequencies on his Yupiteru MVT-9000, and wants to know if it is true that the entire Shanwick set-up is split across two different locations. D.J Smith's *Air Band Radio Handbook* (6th edition) mentions this, and Roy wants confirmation.

Well Roy, it is true. The radio operators are at Ballygireen near Shannon in Ireland, and the ATC Controllers are at Prestwick in Scotland. There is a dedicated link between the two centres, that allows information to be passed between them. All aircraft clearances are produced at Prestwick, sent to Ballygiren, where the Operators transmit the information to the aircraft concerned. Aircraft position reports are received by the Operators, travel back to Prestwick, where they are used to update the ATC computers.

Aircraft approaching UK and Irish airspace from across the North Atlantic will have been passing regular position reports to Shanwick, so they (the Controllers) know when the aircraft is approaching the boundaries of the UK/Irish airspace. At the appropriate time, Prestwick will co-ordinate with the relevant ATC agency (for example, Scottish ATC) for a suitable v.h.f. or u.h.f. frequency and transponder 'Squawk' code.

This information is passed to Ballygireen where it is sent to the aircraft; the aircraft can then contact the ATC agency directly, and Shanwick is finished with that aircraft. When the aircraft eventually contacts the ATC agency and is picked-up on radar, the relevant flight details appear on the controllers radar screen. This is a very simple overview of the process, and there is a lot more which happens 'behind the scenes' to make everything run smoothly.

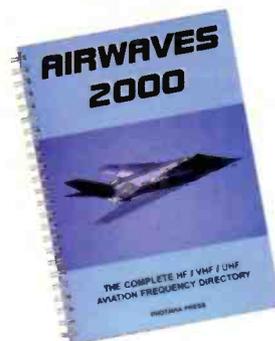
Things are never stationary in the world of communications, and the ATC system changes as time goes by. The Controllers at Prestwick are now able to talk directly to the pilots in some aircraft via a dedicated satellite 'phone link. The aircraft can call Prestwick and pass their position report, or obtain flight clearances, over an almost crystal clear phone connection instead of going via a noisy h.f. radio.

At the moment the system works in one direction only - the aircraft must call Prestwick as Prestwick cannot place a call to the aircraft. Who knows how this may change in years to come. Aeronautical h.f. is not dead yet, and it will be many years before Shanwick ceases using h.f. radio.

Roy also wants to know if there is a similar 'split' set-up at Gander, New York and Santa Maria. I have to admit that I don't know the answer to that one, but I strongly suspect that those OACC (Oceanic Aeronautical Control centre) stations operate as 'single centres'. The controllers are probably at the same site as the usual v.h.f./u.h.f. controllers, but probably in a separate part of the building. However, I suspect that the controllers at these other OACC stations are also the ones who are heard talking to the aircraft on h.f. Can anybody prove otherwise?

## Web Watch

NASA ER-2 -  
<http://www.dfrc.nasa.gov/gallery/photo/ER-2/index.html>



## More CSOS

In recent months I have mentioned several times the various CSOS sites up and down the country, including a list of their sites. Many of them are now closed, but this has prompted a letter from **A.L** who actually worked at Forest Moor. A.L says that he can remember a room with about 150 radio receivers and many acres of antennas including huge rhombics and beverages. A.L says that his job involved monitoring Russian Army signals, and also some embassy signals; later he was involved in 'radio fingerprinting' which was a study to identify transmitter and operator characteristics.

A.L finishes saying that he is still interested in utility listening, and is currently enjoying the delights of ALE. I hope that the recent articles have proved useful; a number of minor ALE networks have been discovered in recent months, but still the busiest system is the USAF set-up.

■ ROGER BUNNEY, 35 GRAYLING MEAD, FISHLAKE, ROMSEY, HANTS SO51 7RU

# Satellite TV News



**Uplink test card from Montanna for the Bill Clinton visit to the forest fires region (via NSS-K digital).**



**Bill Clinton is seen here thanking troops for their firefighting duties (NSS-K).**



**Live launches are often broadcast ex Kourou via the BR channel on Astra.**



**Live feed to Brazil from the Venice Film Festival with Clint Eastwood and Tommy Lee Jones (NSS-K).**



**The commander of the ill-fated Russian submarine, lost off Murmansk, via the Moscow (Reuters) lease on NSS-K.**

Too late for the last column was the news that the Russian submarine *Kutsk* had been lost off of Murmansk. Thoughts were that the crew might still be alive and seemingly the Russians delayed decisions, President Putin remained on holiday. Eventually a UK/Norwegian group arrived on the scene and divers established that all life had expired, the sub was totally full of seawater.

From about the 15th various news feeds were seen coming out of Russia. First were the reports (2-way) from the Reuters Moscow bureau carried on the NSS-K, 21.5°W, but then **John Locker** (Wirral) found direct feeds ex Moscow via *Eutelsat 2F3* @ 21.5°W - unusual for the Russians to let SNG equipment in to uplink out of their territory!

Remarkable VHS quality footage was noted on one transmission from Reuters Moscow showing the crew and smiling captain of the ill fated sub. (Note - despite what the Western media has said over the Russian reactions to the disaster, one of the UK divers that went to Murmansk lives near Romsey and speaks of the Russian navy making very extensive rescue attempts and in considerable danger with their own rescue operations).

The sub disaster following the early August Moscow Metro bombing was but two of Russia's misfortunes in August...August 27th and the Ostankino TV tower - the second tallest man-made structure in the World - caught fire, cabling then spread the fire both up and down the structure. This interrupted 11 radio and 12 TV channels, local mobiles, microwave links and other comms for the Moscow region and TV viewing in the capital went dark.

Dramatic pictures showing the tower smoking was carried over all networks. It is possible to monitor here in the UK a few Russian channels such as the ORT-1 network via *Express-3A* @ 11°W (3.675GHz-RHC) and the PTP network signal via the 40.5°E *Gorizont*, again 3.6765GHz - both C-Band signals analogue. The former on a 1.2m dish overloads though the PTP signal is rather sparklie but will clean up with TE input (TE = threshold extension).

The Russians provided fairly detailed news for their home viewers, PTP perhaps being the more 'aggressive'. Unfortunately, four individuals perished in the blaze, three being firemen using the lift (!) in the burning tower. It was thought the Ostankino tower might collapse or suffer demolition, but it appears the structure will be saved.

Some 30 days after the crash of a Concorde in Paris (25 July), news came that a Bahrain Air flight - Cairo to Bahrain - had crashed off-shore during landing attempts at Bahrain, killing all on board - 23rd August. There seemed to be no footage carried to the outside world over the usual Arabic news carrier *Arabsat 2B* @ 30.5°E, so I checked with the Bahrain TV output over on *Arabsat 3A* @ 26°E - part of a digital channel package on 11.767GHz-H (SR 27500+3/4).

The normal programming timetable was still carried though, with several updating news flashes breaking into the programmes. The next morning the main news carried extensive footage which in turn was also relayed over the European networks that same day. Incidentally, if any of our readers are Arabic or involved in the dish installation trade with Arabic customers, there are numerous strong digital and analogue satellite signals available on *Arabsat 3A* requiring dishes around 1m in the UK.

I found a new Lebanese TV package for example on 3A, 11.785GHz-V (27500+3/4). These included Future TV; LBC-1; Tele-Leban; MTV (not the music channel!!); Al-Manar TV plus several test channels with test cards only intended for forthcoming programme channels. Interesting to note Al-Manar which carries a considerable amount of Arabic/Israeli rhetoric and a political meeting I saw on 1 September involved a large crowd in a park waving flags and shouting.

Dramatic pictures were found when I switched on my equipment early morning of September 10 to check out NSS-K and the Reuters lease, 11.462GHz-V digital (SR 5632 + FEC 3/4). The Shuttle *Atlantis* was relaying live pictures back to earth via Mission Control, Houston, as it approached the *International Space Station*. Samples of air in the first habitable section were due to be collected for later testing to confirm the purity before any

astronauts set foot without protective space suits.

The docking and related operations were shown in great detail all day through to news feed relays in the late afternoon. Pictures from both the *Atlantis* cameras and the control room in Houston were relayed over this lease with commentary courtesy NASA-TV.

Another entertainment witness on the favourite NSS-K was August 26th when US President Clinton arrived in Nigeria. These travels were to prevail on the Nigerian government to increase oil supplies and maintain financial stability in the Western World - the American networks were very interested in the discussions and carried a 'pool' uplink out of the country which was shared by several US network providers, e.g. NBC, Fox, ABC, etc.

As part of the visit a celebratory banquet was prepared together with local native traditional dancing and a rather noisy band! Again the Reuters 11.462GHz-H lease carried pictures, this a secondary feeder link across to the 'States, the primary circuit out of Nigeria would have probably used C-Band.

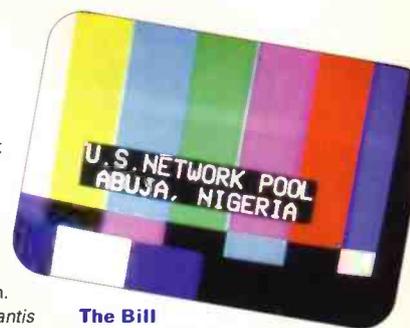
When *Eutelsat 2F3* moved from 36°E back to a slightly inclined 21.5°E the previously available news and programme feeds really took a dive. **John**

**Locker** suggested that this might be caused by the slightly inclined orbits of both 2F3 and the adjacent slotted *Astra 1D* (19.2°E), early morning around 0800 and later afternoon around 1800 the inclined orbital movement brought both satellites to under a 2° separation causing co-frequency interference.

Around the lunchtime period the craft were furthest apart and presented much easier signal acquisition. Interesting thoughts - I find that my 1.2m prime focus dish seems unable to offer much activity at all from 2F3. One report received comments on 'The Greyhound Channel' seen on 2F3 on August 26th with the *Irish Greyhound Derby* uplinked by SISLink 20 - UKI 190 @ 11.685GHz-H @ 5632+3/4 - so 2F3 action can be received!

Having commented on the lack of 36°E activity, I did a scan on September 2nd across W4 and actually found a very strong signal, that of 'HUN-002', 'SNG HUNGARY' appeared on a Philips PM5544 test card! This cut around 1730 to a football stadium and eventually there followed a football match - Hungary v Italy - the match itself being relayed over the SNG uplink for the RAI network in Italy (11.105GHz-H, SR 6111+3/4).

There's been lots of boating action around the Solent on 8, 9 and 10th September with the *BT Global Challenge* yacht race. *Meridian Tonight* were uplinking a live into their



**The Bill Clinton visit to Nigeria resulted in a shared-time basis SNG uplink facility by the American TV networks (NSS-K).**



**African dancers entertain the US President - live feed from Abuja.**



**Philips PM5544 test card via W4 @ 36°E prior to a Hungary v Italy football match.**

programme over the 'BT TES 43 UKI-587' SNG truck from Soton's Ocean Village at 1800 on the 8th using the common 10.988GHz-V - 5632+3/4. The race actually commenced 1200 on the 10th off Gilliker Point, Gosport. Checking across *Intelsat 801* again @ 31.5°W found only encrypted feeds (or MPEG 4:2:2), but the Shuttle *Atlantis* activities on *NSS-K* were more exciting and yachting activities were not pursued further that day!

Having had a tip-off, I checked out the 11.687GHz-V slot on *NSS-K* on August 31st and sure enough, at 1726, there appeared the 'HOL 091 IMAGE UNLIMITED' caption on colour bars, this cutting into footage from the Venice Film Festival running an unusual SR 5750+FEC 3/4, the service ID being 'JONSATEST'. The 45 minute insert featured four well known faces in 'Space Cowboys' namely Clint Eastwood, Tommy Lee Jones, James Garner and Donald Sutherland. The feed was primarily intended for Brazil and subsequent film offerings via 'HOL 091' appeared on September 2, 4, 6 and 8th.

Our Dorking expert **Roy Carman** spends much of his day scanning the Clarke Belt for the new, unusual and exciting...both **Roy** and **John L.** discovered the new satellite *Europe\*Star* @ 45°E running test patterns @ 12.500GHz-V (8680+3/4), the pattern included a subtle commercial inlay seeking clientele for this new craft which is ideally placed to feed all of Europe, Africa and into Asia. Actually another news satellite has also hit the airwaves though over the UK horizon.

Reader **Bandula Gunasekera**, Sri Lanka, found his 2nd analogue Ku-band signal from LMI-1 @ 75°E, on the Southern Ku beam he found the Israeli IBA-3 service in clear PAL, 12.670GHz-H, audio 6.60MHz Hebrew and 7.02 with Arabic. Radio channels are also carried - Reshet Bet 7.38; Kol Hamusica 7.74; Reshet Dalet 7.92; Reshet Gimmel 8.10GHz. IBA-3 opens 1900 Sri Lankan time, news @ 2200. Bandula's family enjoy the Sunday circus, the first programme carried often for two hours! His equipment is incidentally a 600mm offset dish with a 1dB noise Micro-Lab LNB.

I missed the summer's 'Big Breakfast' programme feeds from Southern Spain. This almost traditional annual offering used to appear over *Intelsat K* in simple analogue, but now has disappeared into the digits. This year it jumped up on *Eutelsat W2* @ 16°E, they were found on August 16th at Frengilola (?) on the usual beach location seeking folk to test fried breakfast - washed down undoubtedly with lager! On previous summer ventures a SISLink truck had accompanied the UK *Big Breakfast* troop of technicians and artists, this year however reduced programme budgets produced a Spanish uplink truck 'E17 Galia 2000'.

**Roy Carman** hasn't forgotten that often *Hotbird* @ 13°E carries the occasional news feed, August 20th and APTN were seen in the clear, 12.581GHz-H digital (5632+3/4). The topic was the ongoing naval situation in Russia, scenes of rusting naval hauls heaved on dirty shores around Murmansk, lack of investment to maintain what had been proud vessels - now fit for scrap and seagull perches. The news item then cut to show a basic flat with the grieving family of a lost submarine crewman, a country without purpose and people without money.

A signal that has always evaded me is the Dutch amateur station P16ATH that appears usually on *Eutelsat W2*, 16°E digital @ 12.729GHz-H (2000+3/4). He was seen August 24th with pictures of sailing ships gathering at Velsen, Holland, preparing to set sail on August 28th - the whole estuary was crammed full of small vessels. Oddly though, all the pictures were in black and white!

Whilst with thoughts of the outdoor life, witness *Eutelsat 2F4*, 10°E, the scene is near to a Turkish airport close to the sea. The sky not full of aircraft but full of storks and cranes - birds that is - flying everywhere. A helicopter is seen engaged flying round in a vain attempt to frighten them all away! This signal August 24th - 11.581GHz-H (SR 3000+3/4).

Check out the 7°W slot since the *NileSat-102* satellite was reported to have arrived after the August 21st launch, test signals were noted within the Telecom band from about September 10th - a strong signal noted at 12.130GHz-V. *NileSat-102* will operate with linear polarisation (i.e. vertical or horizontal) across the 12.110-12.475GHz band. I also checked out the *Express-3A* Ku allocation when I was checking out the C-Band ORT-1 downlink - at 11.518GHz-V digital (16000+3/4) there's the Serbian RTS-Sat TV channel plus several other radio channels (from Stefan Hagedorn's Internet newsletter).

On a sporting note, an unusual split feed was noted on August 22nd from the Brno, (Czech) racing circuit with the Motorcycle Grand Prix 2000. Both live and 'highlight instant replay' feeds were uplinked out of Brno, the 'live' or direct programme output downlinked on 11.080GHz-H and the 'replay'

channel on 10.964GHz (SR 10847 + 3/4) over *Eutelsat 2F4* @ 10°E.

As I type these words on September 13th the fuel shortage is now biting with all stations empty. Near Southampton is the Fawley refinery complete with a peaceful blockade. Meridian TV wheeled out their BT leased truck 'BT TES43' to provide both recorded playbacks and live coverage over the usual *Intelsat 801* frequency - 10.998GHz-V (5632+3/4) for their evening magazine programme.

Interesting to see in the background the BBC South truck with dish erect and their 2.5GHz s.h.f. terrestrial link mast fully extended - this would give line of sight input to their broadcasting centre adjacent to the Civic Centre, Southampton. The tendency for sat-zappers now is to look for digital news feed action first, analogue reception - other than C-Band - seemingly becoming more of an art form and secondary in the interest stakes. Two to three years ago the split was perhaps 50:50, five years ago mostly all feeds were analogue.

## Orbital News

There's a third Spanish language TV channel opening across the USA during 2001 hoping to win up to \$250M of advertising funds. 'Azteca America' is a Dallas, Texas based group which has existing media connections both in the 'States and in Mexico. 'Azteca' will offer 18 hours daily and rival the 'Telemundo' Sony backed network. The network will air both terrestrially and via satellite.

Interesting development from Asia with the production of a 'flatpack' LNBF comprising both C-Band (4GHz) and Ku-Band 11-12GHz) LNBs within an integrated feed for both bands. Advantage for smaller dishes is that the shadowing of the usual combined package of feed horn, polarisers and LNBs is dramatically minimised. More interesting is that a Chinese version is available for under \$50. (LNBF is an LNB package plus integrated feed/polariser).

The new *Europe\*Star* satellite now orbital at 45°W will provide direct (single hop) coverage from Western Europe/UK (52dBW) into the Middle East (49dBW), India (49dBW), the Far East (53dBW) and into South Africa (53dBW). It's a Ku-band only bird operating within the 12.5-12.75GHz, first test signals have already been received in the UK.

Problems on the *Kopernikus DFS-2* satellite @ 28.5°E - the steering mechanism has a fault - led to the *Kopernikus DFS-1* @ 23.5°E being moved along to and replacing the *DFS-2* satellite. Interesting contract has been awarded to Arianespace, Kourou for at least nine flights over the 2003-2014 period over their Series 5 rocket to supply food, water and other related cargo to the International Space Station now approaching completion of the 1st living quarters. The order is worth nearly \$960M.

After delays the *Eutelsat W1* satellite is now orbital following launch on September 6th ex Kourou launch site (carried live on the German Bayerischer Rundfunk Astra analogue transponder in their *Space Night* programme after midnight). The *W1* Ku-band craft will slot at 10°E and offer both European and African coverage down into J'burg via its 28 transponders, replacing the present // *F4* bird.

The increased activity into Africa marks the expansionist policy of Eutelsat now breaking clear of its former European confines. In another commercial development, Eutelsat have partnered Belgacom to provide 'Internet via Satellite' from October 2000, a new service for ISP/corporate users offering high speed Internet via the Eutelsat network. Initially the *2F3* sat @ 21.5°E will be used, offering cut price rates due to the inclined orbital problems of the satellite.

As Sky analogue programmes depart *Astra* @ 19°E, several German channels are queuing up to take up the vacated space with both analogue and digital programming. New arrival is the VIVA music channels on 11.127GHz-V analogue (Sky Cinema) and VIVA Zwei will establish on 11.303GHz-H analogue (Fox Kids/National Geographic) on Feb 1st, 2001.

And finally for Chinese readers, the 'TZU CHI TV' channel on *Telstar 12*, 15°W @ 12.620GHz-H has modified its digital parameters and now clocks in at SR 2482 + FEC 0.5.



**Bahrain TV with footage of the crashed airliner in shallow water 24th August via *Arabsat 3A* @ 26°E.**



**Part of the Lebanese digital package on *Arabsat 3A*, a PM5534 test card.**



**AI-Manar TV channel ex Lebanon, *Arabsat 3A*.**



**The test card seen in the Lebanese channel package on channels yet to be filled.**

**C-Band signal from Radio Television Djibouti, relaying entertainment from the Somalian Peace conference via *Arabsat 2B* @ 30.5°E.**





# RADIOWORLD

(WEST MIDLANDS)

42 BROOK LANE  
GREAT WYRLEY, WALSALL  
WEST MIDLANDS WS6 6BQ

SALES & SERVICE  
TEL: 01922 414796  
FAX: 01922 417829

WE ARE 5 MINS AWAY FROM J11 M6

**TELEPHONE SALES ON  
01922 414796**

Open  
Mon-Fri 9.30 -  
6.00pm.  
Sat 9.30 -  
4.00pm

E-mail:  
sales@radioworld.co.uk

Visit our website at:  
www.radioworld.co.uk



There is NO CHARGE for  
using credit cards

**WANTED**  
**USED**  
**EQUIPMENT**  
**PX WELCOME**  
**BEST PRICES**  
**PAID!**

Telephone  
Dave (G1LBE)  
for more  
details.

E&OE

| <b>AOR</b>  | <b>Model</b>                    | <b>Description</b>  | <b>£ RRP inc VAT</b>   |
|---|---------------------------------|---|--|
|    | <b>AR5000</b>                   | 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. | <b>£1295.00</b>  |
| <b>AR5000</b>   | <b>AR5000+3</b>                 | High performance base receiver with three enhanced options factory fitted: noise blanker, synchronous AM, automatic frequency control.  | <b>£1449.00</b>  |
|   | <b>AR3000A</b>                  | Unique all mode extremely wide band base-mobile receiver 100kHz - 2036mhz with no gaps. RS232 port fitted.  | <b>£699.00</b>   |
| <b>AR3000A</b>  | <b>AR3000A + (plus)</b>         | Customised AR3000A with switchable narrow SM & SAT filters, Tape relay, SDU ready and discriminator output.   | <b>£799.00</b>   |
|  | <b>AR8200 Series 2</b>          | New advanced wide band all mode hand-held receiver with enhanced microprocessor facilities, slot card options available, multi-function display.  | <b>£395.00</b>   |
|  | <b>AR8000</b>                   | The New Concept. Wide band all mode hand-held receiver with many microprocessor facilities, dot matrix display and computer compatibility.  | <b>£296.00</b>   |
| <b>PCR1000</b>  | <b>ICOM R2</b>                  | 0.1300mhz Handie. Fits in the palm of your hand. AM/FM, FM  | <b>£139.00</b>   |
|  | <b>IC R8500</b>                 | Narrow - 450 memory channels<br>100kHz - 2GHz Continuous. All mode no gaps. 1000 Memories. 4IF band widths  | <b>£1440.00</b>  |
| <b>PCR100</b>   | <b>IC-R75E</b>                  | Excellent all round for the professional listener<br>0-60MHz. High Stability receiver circuit 100 DB Dynamic range. Twin bandpass Tuning. Optional digital processor. Best selling receiver             | <b>£629.00</b>   |
|   | <b>IC-PCR1000 &amp; PCR 100</b> | 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.                                      | <b>PCR 1000 £299.00, PCR 100 £199.00 (SAME SPEC WITHOUT SSB)</b> |

**THIS IS JUST A SMALL SELECTION OF OUR STOCK!!!**

**FINANCE NOW AVAILABLE. PHONE DAVE FOR DETAILS!**

## 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**

# ICOM YAESU YUPIERU

**YUPIERU MVT 9000 EU**  
Yupiter's flagship 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**

## KENWOOD ALINCO

### YUPIERU MVT 3300EU

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



## AOR

### YUPIERU MVT 7100 EU

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**

## YAESU VR-500

Yaesu's years of hand-held transceiver design bring you the ultra-compact VR-500 receiver. Take the unit anywhere you go and stay on top of the action!



- 100kHz-1299.99995MHz
- NFM, WFM, AM, USB, LSB, CW
- Multiple power source capability
- Direct keypad frequency entry
- Large high-output speaker
- Polycarbonate case
- Real time 60-channel band scope
- Regular memories (1000ch)
- Search band memories (10ch)
- Preset channel memories (19ch, 10weather channels)
- Dual watch memories (10ch)
- Priority memory (1ch)
- RF squelch

**£239.00**

## 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 using steps

RRP £100.00 **£79.99**

# USED EQUIPMENT PRICE LIST

| MAKE        | MODEL                               | PRICE     | MAKE       | MODEL                                  | PRICE     | MAKE    | MODEL                                | PRICE     |
|-------------|-------------------------------------|-----------|------------|--|-----------|---------|--------------------------------------|-----------|
| AEA         | PIC 88 TNC                          | £80.00    | ICOM       | PS-55 PSU 20 amp                       | £120.00   | TRIO    | TR-9130 25 Multi-mode 2m             | £225.00   |
| ALINCO      | ADI-446 70cm MOBILE 35w             | £189.00   | ICOM       | PS-85 POWER SUPPLY                     | £175.00   | UNIDEN  | BEARCAT 860XLT SCANNER BASE          | £99.00    |
| ALINCO      | DJ-10X SCANNER (BOXED)              | £210.00   | ICOM       | R10 HANDY SCANNER                      | £199.00   | WATSON  | DPS 2012 PSU                         | £70.00    |
| ALINCO      | DJ-G1 HANDY 2M WIDE RECEIVER        | £129.00   | ICOM       | R2 HANDY RECEIVER                      | £110.00   | YAESU   | FC-107 ATU                           | £130.00   |
| ALINCO      | DR-150 2M/FM/50w MOBILE             | £200.00   | ICOM       | R71E HF RECEIVER                       | £325.00   | YAESU   | FC-20 Automatic ATU                  | £170.00   |
| ALINCO      | DR-590 DUAL BAND MOBILE             | £175.00   | ICOM       | T81E QUAD BAND HANDY                   | £250.00   | YAESU   | FC-757 ATU Automatic Antenna Tuner   | £175.00   |
| ALINCO      | DR-599 DUAL BAND MOBILE             | £245.00   | ICOM       | T8E HANDY 270/6m                       | £195.00   | YAESU   | FL-110 AMP 100w HF                   | £120.00   |
| ALINCO      | DX-70T 100W MOBILE /HF              | £475.00   | ICOM       | W-21E DUAL BAND HANDY                  | £199.00   | YAESU   | FP-757GX Power Supply                | £140.00   |
| ALPHA       | 87A FULLY AUTOMATIC AMP             | £3,750.00 | JRC        | SP-21 EXTENSION SPEAKER FOR IC-706 etc | £45.00    | YAESU   | FRG-100                              | £295.00   |
| AMERITRON   | QSK-5 2.5kw QSK SWITCH              | £199.00   | KANTRONICS | JRC-525 HF RECIEVER                    | £400.00   | YAESU   | FRG-7700 RECEIVER                    | £250.00   |
| AOR         | AR-1500 HANDY RECEIVER INC SSB      | £99.00    | KENWOOD    | KAM PLUS TNC                           | £220.00   | YAESU   | FRG-8800 incl CONVERTER              | £325.00   |
| AOR         | AR-3000A RECEIVER                   | £495.00   | KENWOOD    | AT-180 ATU                             | £130.00   | YAESU   | FRV-7700 ATU                         | £50.00    |
| AOR         | AR-3030 HF RECEIVER                 | £325.00   | KENWOOD    | AT-230 ATU                             | £140.00   | YAESU   | FRV-7700 CONVERTER                   | £60.00    |
| AOR         | AR-5000 RECEIVER                    | £1,199.00 | KENWOOD    | MC-50 DESK MICROPHONE                  | £50.00    | YAESU   | FT-1000MP AC LATEST SERIAL No. 1     | £1,495.00 |
| AOR         | AR-5000+ RECEIVER (AS NEW)          | £1,249.00 | KENWOOD    | PS-430 PSU                             | £110.00   | YAESU   | FT-1012D HF TRANSCEIVER              | £275.00   |
| AOR         | AR-7030 REMOTE CONTROL RECEIVER     | £595.00   | KENWOOD    | PS-50 PSU                              | £130.00   | YAESU   | FT-1012D MK111 FM HF TRANSCEIVER     | £325.00   |
| AOR         | AR-8000 HANDY RECIEVER              | £199.00   | KENWOOD    | R-6000 RECEIVER inc Converter          | £595.00   | YAESU   | FT-102 BASE TRANSCEIVER 150w         | £350.00   |
| AOR         | AR-8200 MK1 HANDY RECEIVER          | £280.00   | KENWOOD    | SP-31 EXT SPEAKER                      | £60.00    | YAESU   | FT-107M 100w HF BASE                 | £400.00   |
| BEARCAT     | 9000 XLT                            | £199.00   | KENWOOD    | TH-78E DUAL BAND HANDY                 | £195.00   | YAESU   | FT-2500M 50w 2m MOBILE               | £200.00   |
| DAIWA       | PS-120MK11 10amp PSU                | £50.00    | KENWOOD    | TM-255E 2M MOBILE MULTI MODE TRANS     | £475.00   | YAESU   | FT-290MK1 2M Multi-mode              | £195.00   |
| DATONG      | FL3 FILTER                          | £60.00    | KENWOOD    | TM-455E 70CM MOBILE MULTIMODE TRANS    | £495.00   | YAESU   | FT-290R MK11                         | £275.00   |
| DATONG      | RF PROCESSOR                        | £60.00    | KENWOOD    | TM-751E 2M 25W MULTI MODE              | £325.00   | YAESU   | FT-3000M 70w 2m MOBILE TRANS         | £225.00   |
| DRAKE       | DRAE 24amp PSU (GOOD QUALITY)       | £75.00    | KENWOOD    | TS-450 SAT                             | £650.00   | YAESU   | FT-50R 270 HANDY BOXED               | £175.00   |
| DRAKE       | R7 RECEIVER                         | £450.00   | KENWOOD    | TS-50S MOBILE TRANSCEIVER 100W         | £499.00   | YAESU   | FT-5100 DUAL BAND MOBILE TRANS 50w   | £200.00   |
| DRAKE       | R8E RECEIVER INC CONVERTER          | £595.00   | KENWOOD    | TS-780 DUAL M/M BASE                   | £350.00   | YAESU   | FT-5200 DUAL BAND MOBILE TRANS 50w   | £220.00   |
| HEATHERLITE | 2M EXPLORER 2m AMPLIFIER            | £399.00   | KENWOOD    | TS-811E 70cm MULTI MODE TRANSCEIVER    | £400.00   | YAESU   | FT-530 270cm HANDY                   | £175.00   |
| HENRY       | RADIO 2002 2M 1KW                   | £799.00   | KENWOOD    | TS-830S HG 'CLASSIC' MAINS             | £325.00   | YAESU   | FT-704 MAN PACK HF MILITARY SPEC     | £275.00   |
| ICOM        | IC-207 DUAL BAND MOBILE             | £210.00   | KENWOOD    | TS-850 SAT 100w HF BASE TRANSCEIVER    | £850.00   | YAESU   | FT-707 HF 100w MINT!                 | £225.00   |
| ICOM        | IC-251E AC 2M Mult-mode             | £325.00   | KENWOOD    | TS-870 DSP HF/BASE TRANSCEIVER         | £1,099.00 | YAESU   | FT-726R 270/6M TRANSCEIVER           | £599.00   |
| ICOM        | IC-275H 100w 2m Mult-mode           | £575.00   | KENWOOD    | TS-920 DSP HF/BASE TRANSCEIVER         | £1,399.00 | YAESU   | FT-730R 70cm BOXED                   | £120.00   |
| ICOM        | IC-290D MOBILE 25W MULTI MODE MINT! | £250.00   | KENWOOD    | TS-950 SD DIGITAL 150W TRANSCEIVER     | £1,395.00 | YAESU   | FT-747GX HF 100w MOBILE              | £350.00   |
| ICOM        | IC-3230 H DUAL BAND MOBILE          | £175.00   | KENWOOD    | VFO-180 VFO                            | £60.00    | YAESU   | FT-757GX                             | £395.00   |
| ICOM        | IC-3J UHF MINI HANDY                | £89.00    | KENWOOD    | BC-15 RAPID CHARGER                    | £40.00    | YAESU   | FT-757GX11                           | £425.00   |
| ICOM        | IC-475H 100w 70cm Multi-mode        | £575.00   | KENWOOD    | TH-46 UHF HANDY                        | £100.00   | YAESU   | FT-767GX 270/6M HF inc ATU           | £799.00   |
| ICOM        | IC-725 HF MOBILE 100w               | £400.00   | KENWOOD    | TR-851E 70cm Mult-Mode                 | £325.00   | YAESU   | FT-767GX HF 100w ATU AC              | £575.00   |
| ICOM        | IC-728 HF MOBILE 100w               | £425.00   | KENWOOD    | TS-950SDX HF 150w TRANS (FLAG SHIP!)   | £1,799.00 | YAESU   | FT-77 HF MOBILE/BASE TRANSCEIVER     | £250.00   |
| ICOM        | IC-730 HF MOBILE 100w               | £250.00   | LINEAR AMP | EXPLORER AMP                           | £999.00   | YAESU   | FT-840 HF MOBILE-BASE TRANSCEIVER    | £450.00   |
| ICOM        | IC-735 HF 100W                      | £450.00   | MAYCOM     | AR-108 AIRBAND HANDY                   | £50.00    | YAESU   | FT-847 HF/6M/2M/70cm/4m              | £999.00   |
| ICOM        | IC-745 HF BASE inc FM 100w          | £425.00   | MFJ        | 1278 TNC incl SSTV                     | £225.00   | YAESU   | FT-8500 DUAL BAND MOBILE TRANS 50w   | £295.00   |
| ICOM        | IC-746 HF 50/2M 100w                | £999.00   | MFJ        | MFJ-969 ATU HF 6m                      | £110.00   | YAESU   | FT-890 AT inc FILTER                 | £600.00   |
| ICOM        | IC-751 BASE HF CLASSIC!             | £425.00   | MICRO MOD  | Microwave mod's 144/100 100w 2m        | £120.00   | YAESU   | FT-900AT BOXED                       | £695.00   |
| ICOM        | IC-756 HF/6M BASE TRANSCEIVER       | £1,050.00 | OPTO ELEC  | CUB Frequency Counter                  | £80.00    | YAESU   | FT-920 HF 50 MHz BASE TRANSCEIVER    | £925.00   |
| ICOM        | IC-756PRO (AS NEW)                  | £1,799.00 | PACCOM     | TINY 11 PACKET TNC                     | £99.00    | YAESU   | FT-920 AF HF 50 MHz BASE TRANSCEIVER | £999.00   |
| ICOM        | IC-765 HF BASE 100w                 | £950.00   | PACCOM     | 320 TNC                                | £99.00    | YAESU   | MD1 DESK MICROPHONE                  | £75.00    |
| ICOM        | IC-775DSP 200w HF BASE TRANSCEIVER  | £1,799.00 | REALISTIC  | PRO-2026 SCANNER                       | £99.00    | YAESU   | VX-1R MICRO 270 WIDE RECEIVER        | £109.00   |
| ICOM        | IC-821 H 270/6M BASE TRANSCEIVER    | £750.00   | REALISTIC  | PRO-26 HANDY 25-1300 (AS NEW)          | £125.00   | YAESU   | VX-500 HANDY SCANNER                 | £195.00   |
| ICOM        | IC-W31E DUAL BAND HANDY             | £175.00   | TOKYO      | HT 180 80m HF SSB TRANSCEIVER          | £200.00   | YAESU   | FL-2025 25AMP FOR FT-290R MK11       | £100.00   |
| ICOM        | PS-15 POWER SUPPLY                  | £100.00   | TOKYO      | HY-POWER HL 166V 6m 180w               | £195.00   | YUPIERU | MVT-3300EU MULTI-BAND RECEIVER       | £100.00   |
|             |                                     |           | TONO       | 5000E TERMINAL + KEY BOARD             | £199.00   | YUPIERU | MVT-8000 BASE                        | £240.00   |

■ GODFREY MANNING G4GLM, C/O THE GODFREY MANNING AIRCRAFT MUSEUM, 63 THE DRIVE, EDGWARE, MIDDLESEX HA8 8PS

# Airband

Tolerance doesn't seem a prevalent characteristic in modern competitive Britain. Although they accept continuous, intrusive noise from road traffic (probably even contributing to it), there are groups of people who object to even occasional and relatively distant aircraft. I hope the pressure groups who object to the expansion of their local airport will practise what they preach and not expect to fly from there when they want a holiday!

Another aerodrome subject to local scrutiny, as reported to me by **P. Tarry** (Northampton), is Bentwaters. Despite being 13nm outside the MATZ, some aircraft going into Bentwaters contact Wattisham (possibly 123.3 or 125.8MHz).

Apparently, the land is private with just the occasional flight being permitted by the owners. The narrow-minded objectors even complained about a charity event in which disabled children were taken on pleasure flights. Special rules apply, see *A/C 50/2000* from the CAA. I'm not clear as to the grounds for protest, presumably occasional noise. I advise pilots, though, that being a private site, don't practise your forced landing techniques there without the owner's permission.

## Air Traffic Control

Humans do the controlling but computers feed them information that makes their job easier. One facility is s.s.r. The secondary radar head sends a signal up to the aircraft but, unlike primary 2.8GHz radar, it doesn't then 'listen' for its own echo. Instead, the airborne transponder receives the 1.03GHz interrogation signal and replies on a different frequency of 1.09GHz.

The reply is not a simple pulse but, rather, a digital code. On civil aircraft this can carry two pieces of information. The first is a four-digit identity number which, being derived from binary data, can only contain the digits 0 through to 7 (binary represented by octal). The number is set by the pilot in response to the controller's instructions, which are always read back. As long as the controller allocates unique numbers to each flight within radar coverage then every aircraft will be individually identifiable.

The second piece of information is the flight level, derived from an encoder in the altimeter or air data equipment. Flight levels are altitude in hundreds of feet assuming a standard atmospheric pressure of 1013.25hPa (was millibars), equivalent to 29.92 inches of mercury if your altimeter was made in the USA where they do everything differently.

How can this be improved upon? That helpful computer can read the transponder identity 'squawk' code and display it on the radar screen as a flight number. This means that the ground computer must already be programmed with a look-up table, the 'squawk' code for each flight number being predetermined.

If you know the flight number, you know its destination and so that, too, can appear on the screen. If it's an airport,

the last two letters of the ICAO locator will do. All UK airports have a four-letter locator beginning with EG and the entire code for Heathrow, for example, is EGLL. On the radar screen, destination appears as LL. A controller only wants to know where a flight leaves radar cover and is handed over to someone else, so the 'destination' might actually show as a waypoint on the FIR international airspace boundary.

The information shows on the radar screen as a label. The position of the aircraft, a dot, is called the target. One extra code makes the target dot flash momentarily. This is the ident code. When the controller says to 'Squawk ident' the pilot presses the ident button in the cockpit. If the correct target flashes, fine. If not, the controller had better clear up this case of mistaken identity!

The clever computer doesn't stop there. I read in *The Log* (August/September 2000, page 23) that, when the 'squawk' code is received for the first time in the case of departures from a large airport, the computer activates the flight plan. Hence, each controller along the route will receive prior notice of the flight's imminent arrival in their airspace. Usually, the computer prints out a flight progress strip at the air traffic control centre.

Recently, a flightplan was misread and entered into the computer system with a valid, but incorrect, destination locator. The controller at the intended aerodrome was surprised when the flight called on frequency. The controller at the mistakenly entered aerodrome got worried when the expected flight was 30 minutes overdue and alerted the rescue services, only to find that the aircraft had landed safely where the pilot intended but not where the computer anticipated! Could be an expensive slip of the pen.

## Frequency & Operational News

Information from *GASIL 3* of 2000 and **Martin Sutton** (to whom our thanks as always) from the CAA. Belfast (Aldergrove) Approach moves to 124.9 (was 120.9); Cardiff (Tremorfa) Heliport has a new Air/Ground service 120.65; Stansted's Essex Radar (120.625) has been replaced by Stansted Director 126.95MHz, which was itself originally Stansted Radar.

Nostell Priory is a new hang-gliding site in West Yorkshire. The Wolverhampton n.d.b. on 356kHz has a new ident of WBA (the old one, HG, ceased when Halfpenny Green aerodrome changed its name).

Just north of Edinburgh on B226 is new reporting point PIPAR. Close to Barkway v.o.r. is new reporting point BIGLI for the Luton non-airways arrivals procedure. The following new SIDs commence at Manchester, accommodating both the old and new runways: CONGA 1Y/1Z, HON 1R/1Y, MONTY 1Y/1Z, NOKIN 1Y/1Z, POL 1Y/1Z, STOCK 1Y/1Z, WAL 1Y/1Z.

Remember, you can't tell where an aircraft is unless you understand the navigation instructions given. If you want more details about a significant point, SID or STAR, write in and I'll elaborate here.

Royal flight callsigns have been updated. No. 32 (The Royal) Squadron flights carrying dignitaries are KITTYHAWK and The Queen's Helicopter Flight RAINBOW, with letter R (Romeo) following the flight number if royalty are on board. 32 Squadron positioning flights are KITTY and their other flights are ASCOT. HRH The Duke of York's helicopter callsign is LEOPARD. See last month's 'Airband' for advice on tracking royal flights.

## Where Am I?

Now for two readers who know perfectly well where they are, it's the overlying airways they're asking about. The appropriate Racal/Aerad chart will



## Abbreviations

|        |  |
|--------|--|
| A/C    | Aeronautical Information Circular                |
| AIP    | Aeronautical Information Publication             |
| CAA    | Civil Aviation Authority                         |
| CD-ROM | Compact Disc - Read Only Memory                  |
| FIR    | Flight Information Region                        |
| GASIL  | General Aviation Safety Information Leaflet      |
| GHz    | gigahertz  |
| hPa    | hectopascals                                     |
| ICAO   | International Civil Aviation Organisation        |
| kHz    | kilohertz  |
| MATZ   | Military Aerodrome Traffic Zone                  |
| MHz    | megahertz  |
| n.d.b. | non-directional beacon                           |
| nm     | nautical miles                                   |
| SID    | Standard Instrument Departure                    |
| s.s.r. | secondary surveillance radar                     |
| STAR   | Standard Terminal Arrival Route                  |
| v.o.r. | very high frequency omni-directional radio range |



Caradair Regional Jet 100.  
Christine Mlynek.

Continued on page 66

■ KEITH HAMER & GARRY SMITH, 17 COLLINGHAM GARDENS, DERBY DE22 4FS

# DX Television

**A**ugust arrived and Sporadic-E activity continued to flourish. Signals from the Middle East were in evidence as late as the 20th, which is most unusual. Settled weather conditions produced tropospheric openings throughout the month, with Luxembourg and Germany being received in central England.

## Reception Reports

**Peter Barber** (Coventry) noticed Jordan on E3 with its broken oval logo between 0942 and 0952 on the 5th. At 1117UTC, **Stephen Michie** (Bristol) logged the signal and again on the 20th, around the same time, during subtitled adverts. Jordan re-appeared at 1729UTC with a news and sports programme which was resolved by **Peter Barclay** (Sunderland). Shortly after, an unidentified station from the south-east was seen co-channelling with Spain on E2. **Ian Milton** (Ryton) also saw it and thinks it originated in the Middle East.

High m.u.f.s have been encountered at times producing f.m. band openings. **Simon Hockenull** (Bristol) heard the Channel R5 vision buzz at 93.25MHz on the 6th at 1700. The same opening produced ORT (Russia) on R3.

## Test Cards

Believe it or not, test cards are still shown! Simon Hockenull captured Slovenia airing the PM5544 at 0433UTC on the 5th. The identification at the top was 'TV SLOVENIJA'. Stephen Michie discovered the Lithuanian TV 'G-204' test card at 1515 on the 7th. This was being broadcast from the Vilnius outlet on Channel R2.

Other CIS countries broadcast the G-204 test card with subtle variations. Usually there is some form of identification in small white lettering, but this can sometimes be confusing when confronted with the Cyrillic alphabet.

Peter Barber identified the Ukrainian version earlier on the 7th at 1117 complete with the striped '1' logo in the top-right of

the screen. At 1121 it went off-air, returning at 1125. At 1130, the logo was removed and returned at 1132! The station opened at 1152.

At 1226, Peter Barclay spotted the new Estonian PM5544 test card bearing the identification 'ETV TALLINN' at the top. The lower identification block is blank but extended for some reason. Stephen Michie has seen a version with just 'TALLINN' in the lower identification block. Unidentified colour bars were seen on the 14th at 0800 on R2 from an unknown CIS country.

Tropospheric reception on the 25th produced Belgian and French stations for Peter Barclay, including Canal Plus on L5 from Lille which lasted all day. This was a 'first' for Peter, as most tropospheric signals arrive from Scandinavia or northern Germany. However, Denmark and Norway briefly showed the following morning.

## Portable TV

A five and a half inch monochrome portable is being advertised in some newspapers and magazines for £29.95. The picture suggests that the receiver covers Bands I and III as it has a band-switch marked VL (BI), VH (BIII) and u.h.f. (as well as f.m. radio). The v.h.f. scale shows numerals 4 to 13, suggesting that the receiver is intended for the South African market. However, Peter Barber has warned that some of these receivers are u.h.f. only, so before ordering obtain confirmation from the suppliers that the equipment you are likely to receive will have the v.h.f. TV band facility.

## Private Stations

**Tim Bucknall** (Congleton) tells us that a Greek private



Fig. 1: Estonia (ETV) identification caption received in Bristol by Stephen Michie.

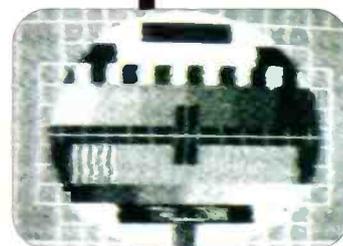


Fig. 2: The Estonian standard PM5544 with TALLINN in the lower identification panel noted by Stephen.

## DXTV Log For August

This month's reception reports have been supplied by Peter Barclay, Stephen Michie, Peter Barber, **Barry Bowman**, Simon Hockenull and **Vincent Richardson**. All reception is via Sporadic-E, except where indicated. All reception times are in UTC.

| Day | Log   |
|-----|---|
| 1   | Italy (RAIUNO) A; Spain (TVE-1) E2, E3 & E4.  |
| 2   | Spain E2, E3 and E4; Portugal (RTP-1) E3; Italy (RAIUNO) A; Italy (TVA) A; Sweden (SVT-1) E3.   |
| 3   | Slovenia (SLO-1) E3; Corsica (Canal Plus) L2; Italy (TVA) A; Belarus (BT-1) R1; Russia (ORT) R1; Lithuania (LRT) R2; Germany (ARD-1) E2; Hungary (RTL KLUB) R2; Slovakia (STV-1) R2; Czech Republic (NOVA) R2; Italy (RAIUNO) A; Spain E2 and E3; Portugal E3; Switzerland (DRS SF-1).  |
| 4   | Italy (TVA) A; Italy (RAIUNO) A and B; Corsica (Canal Plus) L2 and L4; France (Canal Plus) L3; Ukraine (YT-1) R2; Ukraine (YT-2) R2; Hungary (MTV-1) R1; Spain E2, E3 and E4; Czech Republic (NOVA) R1; Croatia (HRT) E4; Rumania (TVR-1) R2; Portugal E3; France (Canal Plus) L3; Hungary (RTL KLUB).  |
| 5   | Germany E2 and E4; Italy (RAIUNO) A; Italy (TVA) A; Croatia (HRT) E4; Hungary (RTL KLUB) R2; Austria (ORF-1) E2a; Czech Republic (NOVA) R1 and R2; Hungary (MTV-1) R1; Jordan (JTV) E3 at 1117; Slovakia (STV-1) R2; Estonia (ETV) R2; Slovenia E3; Serbia (RTS) E3; Corsica (Canal Plus) L2 and L4; France (Canal Plus) L3; Switzerland E2; Portugal E2 and E3; Spain E2, E3 and E4; Belarus (BT-1) R2; Rumania (TVR-1) R2; France (Canal Plus) L5; Belgium E8 (RTBF) and E10 (VRT TV1). Numerous f.m. stations as high as 107MHz. |
| 6   | Spain E2 and E3; Portugal E2 and E3; Italy (RAIUNO) A and B; Italy (TVA) A; Czech Republic (NOVA) R1; Moldova (TVM) R1 and R2; Rumania (TVR-1) R2 and R3; Ukraine (YT-1) R2 and R3; Ukraine (YT-2) R2; Lithuania (LRT) R2; Russia (ORT) R3; Unidentified R5 vision carrier at 1700; Norway (NRK-1) E2, E3 and E4; Sweden E2 and E4.   |
| 7   | Russia (ORT) R1; Ukraine (YT-1) R2; Estonia R2; Norway E2; Sweden (SVT-1) E2 and E3; Spain E2, E3 and E4; France L3; Portugal E3; Italy (RAIUNO) A and B; Croatia E4; Switzerland (DRS SF1) E2; Slovenia E3; Hungary (RTL KLUB) R2; Lithuania (LRT) R2; Czech Republic (NOVA) R1.   |
| 8   | Italy (RAIUNO) A; Italy (TVA) A; Ukraine (YT-1) R2.   |
| 9   | Unidentified weak signals on R1 at 0916; Portugal E3; Italy (RAIUNO) A.   |
| 10  | Netherlands (NED-1) E4 with text pages at 1311.   |
| 11  | Netherlands E4; Belgium E8 (RTBF) and E10 (VRT TV1).  |
| 12  | Sweden E4; Spain E2, E3 and E4; Portugal E2 and E3; Italy (RAIUNO) A; Slovenia E3; Croatia E4; Hungary (RTL KLUB) R2.   |
| 13  | Italy (TVA) A; Spain E2, E3 and E4; Corsica L4.   |
| 14  | Unidentified colour bars on R2 from 0800 until 0808; Portugal E3; Hungary (RTL KLUB) R2; Italy (RAIUNO) A and B; Italy (TVA) A; Spain E3.   |
| 15  | Italy (RAIUNO) A and B; Italy (TVA) A; Spain E2, E3 and E4.   |
| 16  | Norway E4; Netherlands E4 at 1325 (Tropo-scatter).  |
| 17  | Portugal E2 and E3; Spain E3; Italy (RAIUNO) A; Italy (TVA) A; Sweden E3; Norway E3.  |
| 18  | Italy (TVA) A; Serbia (RTS-1) E3; Italy (RAIUNO) A; Slovenia E3; Ukraine (YT-1) R2.   |
| 19  | Netherlands E4 at 1320 (Tropo-scatter).   |
| 20  | Italy (TVA) A; Germany E2; Slovenia E3; Hungary (MTV-1) R1; Jordan (JTV) at 0942 and 1729; Italy (RAIUNO) A and B; Corsica (Canal Plus) L2; Ukraine (YT-2) R2; Hungary (RTL KLUB) R2; Croatia E4; Serbia (RTS-1) E3; Moldova (TVM) R2; Belarus (BT-1) R1 and R2; Unidentified E2 signal from the south-east at 1756; Estonia (ETV) R2; Lithuania R2; Spain E2, E3 and E4; Portugal E2 and E3; Croatia E4; Czech Republic (NOVA) R1 and R2; Russia (ORT) R1 and R3; Sweden E2 and E4.  |
| 21  | Spain E2; Italy (RAIUNO) A; Italy (TVA) A.  |
| 22  | Netherlands E4 at 1007 (Tropo-scatter).   |
| 23  | Italy (RAIUNO) B; Portugal E3. France (Canal Plus) L5; Belgium E8 (RTBF) and E10 (VRT TV1).   |
| 24  | Netherlands E4 and u.h.f. (enhanced tropospherics).   |
| 25  | Spain E3; Portugal E2 and E3. Tropospheric DX: Belgium E3 and E8 (RTBF) and E10 (VRT TV1); France (Canal Plus) L5; Luxembourg (RTL PLUS) E7; Netherlands E4; Germany (ARD) E7.  |
| 26  | Hungary (RTL KLUB) R2; Hungary (MTV-1) R1; Serbia E3; Slovenia E3; Croatia E4; Spain E2; Ukraine (YT-2) R1 and R2; Czech Republic (NOVA) R1; Germany E2.  |
| 30  | Spain E3.   |

## DXTV

Continued from page 65

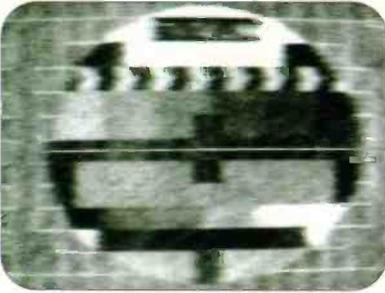


Fig. 3: Stephen Michie's photograph showing the modified PM5544 with ETV TALLINN at the top and an extended lower identification panel.

station operating on E2 has been received in South Africa during an F2 opening. Closer to home, the Italian private station VIDEO seems to have changed its name to TELE-3 or TELE-B since mid-July. Peter Barber has measured TVA's video frequency as 54.245MHz, which is some 500kHz higher than the nominal Channel A frequency of 53.75MHz.

## UK Relays

Stephen Michie informs us that the local Warmley Hill relay mast may be re-sited. A pulse-and-bar test pattern was radiated on Channel 57 on the 22nd, while a BBC survey vehicle carried out tests. A 1W vertical relay at Portbury, south-west of Bristol, is now on-air using Channels 21, 24, 27 and 31. The Middleton relay north of Manchester has

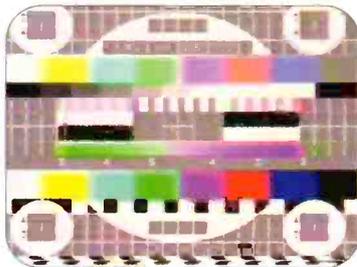


Fig. 4: The G-204 test card used throughout Russia and CIS countries. There are subtle variations radiated by certain transmitters.

recently undergone a channel change with BBC-1 moving from Channel 67 to 57.

## FM Reports

Whilst on holiday near Bantry on the south-west coast of Eire, **Adrian O'Leary** (Cork) identified high-strength signals from several Spanish stations during a Sporadic-E opening on the 4th at around 1250UTC. Stations identified using RDS include Canal Sur (104.9 MHz), Formula 1 (89.1MHz), Radio España (89.0MHz) and LP Radio/92 f.m.

Earlier in the day, Barry Bowman (Manchester) encountered Spanish and East European stations between 87.55 and 87.80MHz. High m.u.f.s were also present on the 6th at 1800 when Stephen Michie heard stations in the Ukraine and Czech Republic. During the same opening, Simon Hockenull discovered Russian stations up to 93MHz.

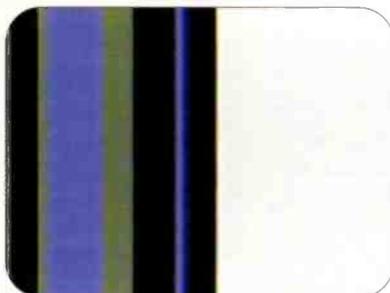


Fig. 5: A typical 'Pulse & Bar' pattern. This particular example, radiated for many years by BBC-1 and BBC-2, was recorded in December 1991.



Fig. 6: In this month's 'Down Memory Lane' spot we feature the very first identification logo to be used by Southern Television in the mid-Fifties.

On the 29th, while mobile DXing atop Great Orme near Llandudno, Vincent Richardson (Dolgarrog) noted a silent carrier from RNA Life FM, a Dublin station, operating on 106.4MHz.

Tropospheric reception on the 25th produced Manx Radio on 103.7MHz for **George Garden** (Edinburgh). Later in the day, France Inter from Lille on the same frequency was identified, along with France Info on 105.2MHz. George advises that Caste FM, a new independent station has started up in Edinburgh on 106.9MHz.

## 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.

## Airband

Continued from page 64



Zodiac HD-601.  
Christine Mlynek.

show them and the control frequencies are usually on the backs of the current issues of these charts. For sources, see my *Airband Factsheet* which I tell you how to get, below.

Let's answer the two readers. **Roy Taylor** has a host of airways overhead in Lancashire and any number of them could carry overflights routing from the Continent to the North Atlantic Organised Track System entry points. Depending on high-altitude winds, flights might first go north over Scotland, or more westerly to join at the southerly entry points. Roy lives immediately south of the London Upper Sector which is an airspace division for control purposes.

Oceanic clearances are available from Shanwick on 123.95, 127.65 and 135.525MHz. A complex range of control frequencies is listed in the *AIP* but I suggest that 120.025, 127.425, 129.425, 132.45, 134.45, 134.9, 135.05, 135.325 and 135.425MHz are likely to cover much of the immediate area.

County Fermanagh only offers a few airways to **Tom Smyth** and all are controlled by Scottish on 125.675 or 129.225MHz. Running NW/SE is UN560 and UN550 is south of that. To Tom's north is UN537 and to his east is UN517 as shown on Aerad chart UK(H)6. A lower airspace direct track between Donegal and Dublin is uncontrolled but Flight Information Service is available on 119.875MHz.

## Information Sources

This month column I mentioned reporting points and procedures such as SIDs. For UK aerodromes, these are detailed in the *AIP* which, if you have access to a computer, is cheapest on CD-ROM (which also holds current *AICs*). Single example copies are available for a modest price. The list of UK ICAO designators is also included, but a worldwide list appears in the *Racal/Aerad Flight Information Supplement*.

How do you buy these? Both are sold by mail order to the public and I list suppliers on *Airband Factsheet* of which **Issue 12** is now current. But please **don't** write to me as I haven't a photocopier! Free copies are available from the Broadstone Editorial Offices on receipt of a self-addressed pre-paid envelope to hold two A4 sheets.

If you can access the Internet then **Roy Smart** (Dalkeith) can tell you how to monitor air traffic controllers at Dallas (Fort Worth). They can be heard on [www.webevents.broadcast.com/simulflite/index.html](http://www.webevents.broadcast.com/simulflite/index.html) so presumably you need a sound-card and appropriate software for audible rendition. Simultaneous comparison with the flight arrivals board on [www.webfids.dfwairport.com/](http://www.webfids.dfwairport.com/) enables you to match up what you hear with the movements list.

I'm not told by Roy if there's a choice when listening to the controller. This airport has Clearance Delivery, Ground, Tower, Departure and Approach services. The radar services (Departure and Approach) are in turn split across different frequencies serving various geographical sectors.

All letters received up to September 13 have been answered. The next deadline (for topical information) is November 6. Replies always appear in this column and it is regretted that **no** direct correspondence is possible.

# PHOTAVIA PRESS AIRWAVES 2000

THE NEW 7th EDITION OF THE UK'S MOST COMPREHENSIVE AND UP TO DATE HF/VHF/UHF AVIATION FREQUENCY DIRECTORY  
A5/WIRE SPIRAL BOUND - FULLY UPDATED FOR 2000

TOWER - APPROACH - RADAR - GROUND - AIR TO AIR - RANGES - ATIS - GCI SQUADRON OPS - AIR REFUELLING - VOLMET - AIRLINE OPS - AWACS - SAR AIR DEFENCE RADAR (UK & EUROPE) - GROUND OPS - AEROBATIC TEAMS 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 AND AIR REFUELLING AREAS - UK RADAR SECTORS AND FREQUENCIES UK PRIMARY AIRWAYS AND REPORTING POINTS - UK SUPERSONIC ROUTES UK OCEANIC ROUTES AND FREQUENCIES - MAJOR WORLD AIR ROUTE HF AREAS  
MILITARY AND CIVIL HF DIRECTORY - (INCLUDES MANY DISCRETE FREQUENCIES AND CHANNEL DESIGNATORS) - RAF/ROYAL NAVY - WORLDWIDE/NATO MILITARY AIR-ARMS UN - US MILITARY GLOBAL HF NET - MYSTIC STAR - US NAVY - US COAST GUARD HURRICANE HUNTERS - VOLMET - SEARCH AND RESCUE - SPACE SHUTTLE - MAJOR WORLD AIR ROUTES - AIRLINE OPS - LONG DISTANCE OPERATIONS CONTROL - DOMESTIC CIVIL HF  
UK PRICE £9.95 INCLUDING FREE P&P / EIRE & EEC ADD £1

# CALLSIGN 2000

THE NEW 6TH EDITION OF OUR CIVIL AND MILITARY AVIATION CALLSIGN DIRECTORY - FULLY UPDATED - OVER 3050 CHANGES  
168 PAGES - WIRE SPIRAL BOUND - OVER 8450 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 £9.95 INCLUDING FREE P&P / EIRE & EEC ADD £1

VISIT OUR NEW WEB SITE AT: [www.photav.demon.co.uk](http://www.photav.demon.co.uk)  
(SORRY - NO CREDIT CARDS) CHEQUES/EUROCHEQUES/POSTAL ORDERS/PAYABLE TO:  
PHOTAVIA PRESS (DEPT SW) - SUNRISE BREAK  
CHISELDON FARM - SOUTHDOWN HILL - BRIXHAM  
DEVON - TQ5 0AE - UK Tel: 01803 855599



**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):- £11 (UK) £13 (EU outside UK) £15 (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 - S6D, 34 Ellerton Road, Surbiton  
Surrey KT6 7TX, England**

## 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



### LARGER SHOWROOM

For Year 2000

More receivers, scanners, transceivers, books and accessories.



SHORT WAVE ADVICE LINE  
01202 490099



ALINCO, AOR,  
AKD, BEARCAT,  
COMTEL, DRAKE,  
FAIRHAVEN,  
ICOM, KENWOOD, JRC,  
LOWE, MAYCOM, MFJ,  
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

## HIGH QUALITY ACCESSORIES

Solid State Electronics (UK)  
SCANNING RECEIVERS - PMR 446 - CB - AM - TEUR RADIO

- ①

**1. JIM PSU-101A Mk5.** UK manufactured 230V AC professional PSU with adjustable Radio Base Holder combined. For Pocket Scanners, LPD's, PMR 446, etc. Two DC output sockets, one for the Radio, one for accessories. **12 VOLT DC** output. A 9 volt version is available. CE approved. **PRICE: £26.95**
- ②

**2. JIM PSU-101AC Mk5.** As above but includes a 12" fitted 50 ohm cable BNC to BNC socket. **PRICE: £29.95**
- ③

**3. A UK manufactured adjustable DESK HOLDER STAND** for PMR 446, Pocket Scanners, CB, Ham, PMR, Marine, etc. A choice of two models. **BHA3A** - NO coaxial cable. **PRICE: £13.95.** **BHA3AC** - includes 50 ohm cable with BNC to BNC with a 'right angle' BNC plug. **PRICE: £15.95**
- ④

**4. A unique Radio Holder** by SSE for use with Pocket Scanners and Handheld Transceivers fitted with 'BELT CLIPS'. For use in **Cars, Trucks, Boats**, etc. Keep your valuable radio secure and NOT on the floor. NO risky tape or Air Vent fittings. **JIM RHM-2000.** **PRICE: £8.95**
- ⑤

**5. NF.96XI-1.** Adjustable "RF" Notch Filter (not shown) for scanning **RX**, etc. Reduce the problems of overload, breakthrough, paging tones and **SW** interference. Tuning range approximately 80- 190MHz (use up to approximately 2000MHz). Professional die-cast box with BNC sockets. **PRICE: £24.00**

Payment by **POSTAL ORDER** or **CHEQUE**. Standard postage is **(PLUS) £1.75 per order within the UK**.  
NOTE: For further information on SSE products send a **A5 SAE** to:  
Solid State Electronics (UK) SWM  
6 The Orchard, Bassett Green Village, Southampton SO16 3NA  
Tel: 023 80769598 - Fax: 023 80768315  
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)

# 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.

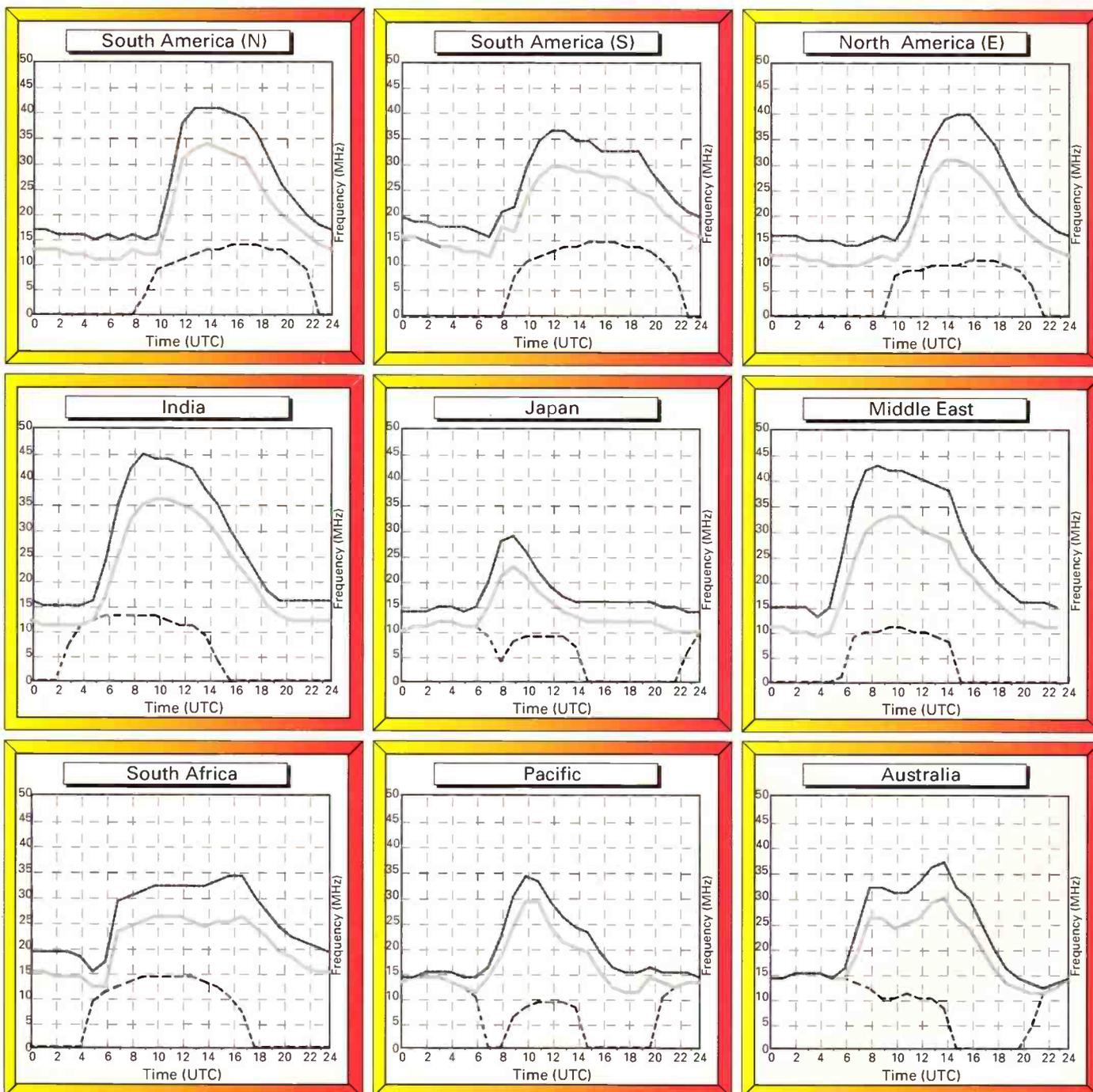
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

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 the frequency.

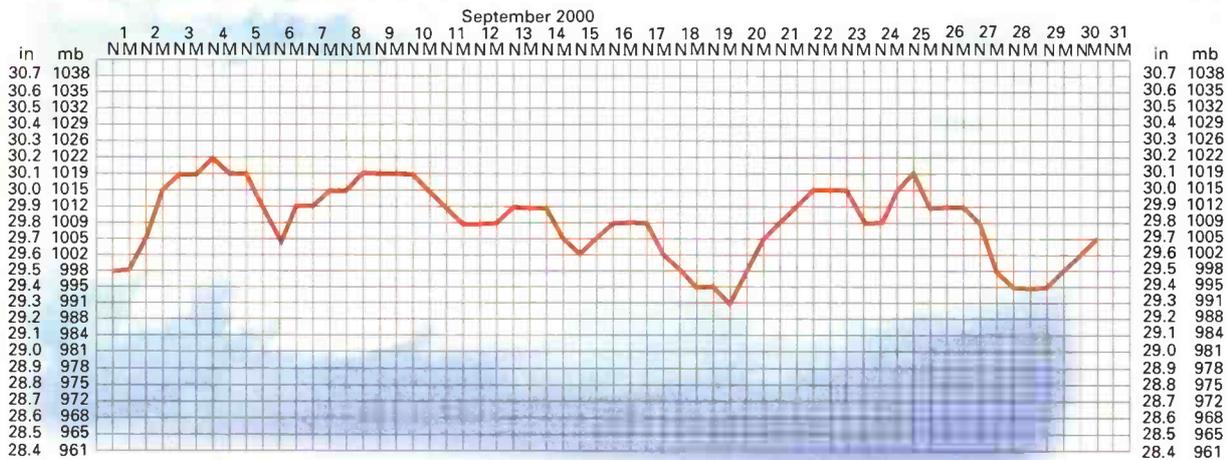
Good luck and happy listening.

November 2000  
Circuits to London



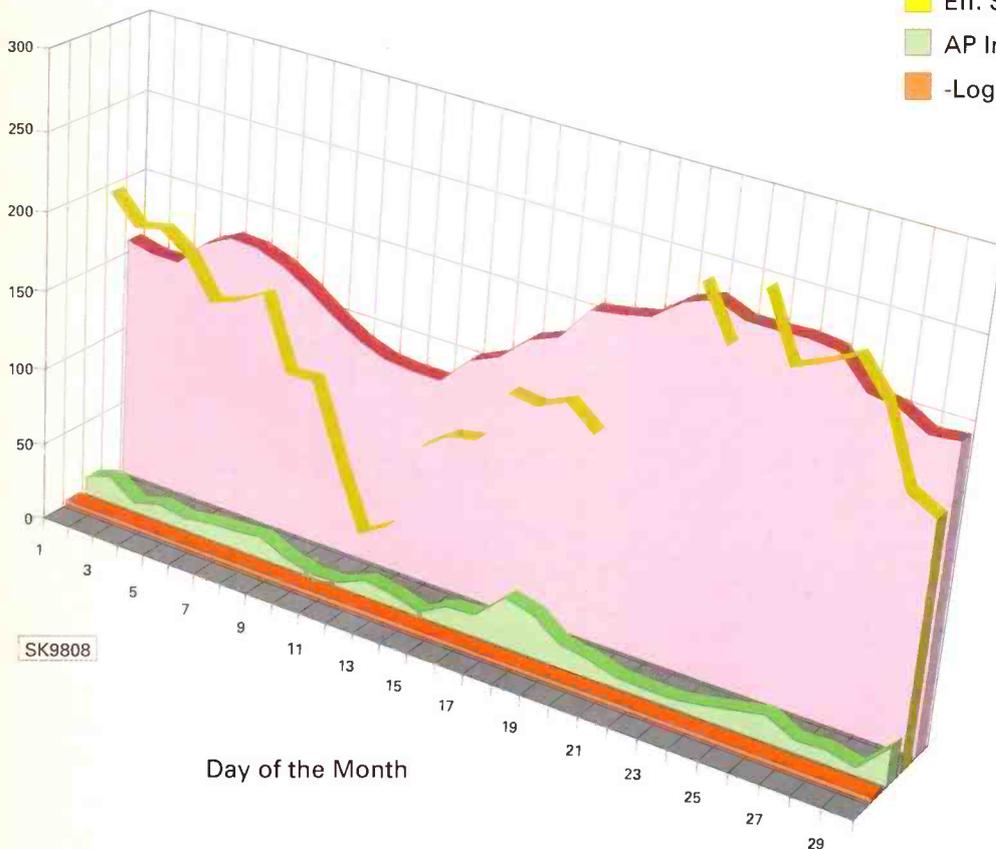
# Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, September 2000.



## September Data

- 10.7cm Flux
- Eff. Sunspot No.
- AP Index
- Log X-Ray



## 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.

■ DAVE ROBERTS c/o SWM EDITORIAL OFFICES, BROADSTONE

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

# Scanning

I know that I should get out more. The problem is that there is always something that I should be doing (like writing this!). If you happen to have radios on search or scan while you are working would you necessarily know to what you are listening? Clearly identifying the frequency is a big help in identifying the user or agency, but some obscure frequencies do crop up in the clear from time to time. As we know, the authorities are increasingly using digital modes and encryption, but on occasions you may still hear traffic that will intrigue you.

Increasingly more and more organisations are training their staff in surveillance techniques and they all use radio. The police and other authorities are particularly fond of Racal Cougar sets for surveillance and the radios used on actual jobs should always be used in training if at all possible, but from time to time you are likely to hear such training 'in the clear' when the correct radio equipment is not available.

Remember that agencies sending staff on proper surveillance courses include Customs & Excise, the military, police, government agencies and even British Telecom! The DSS and other agencies also watch folk, but they tend not to have the manpower or infrastructure to carry out full surveillance. Even shopping centre security staff will sometimes be running people in plain clothes to watch for shoplifters, especially approaching Christmas. So there is still plenty to be heard.

The old crime squad frequencies at 155MHz have been used for training for many years, but also any police simplex frequencies may be used and may occasionally be utilised for the real thing if a surveillance operation has to be 'jacked up' at short notice. The police think that they are the only users of these frequencies at 155MHz, but this is not the case. I have even heard the manufacturers of these radios demonstrating them to a potential customer from Africa.

Should you happen across a surveillance by any competent operators, whether official or commercial, it may help to understand some of the terms and practices used as far as they are relevant to the hobby listener. This is by no means a complete list. It's certainly pointless listing terms that are almost self explanatory. **See the table, bottom right.**

The surveillance operator will not use terms like left, right or stop, etc., unless the target is turning left, right or is stopping. Imagine someone saying 'I'm RIGHT up behind him at the bus STOP'. The convoy would be all over the place in no time at all. So the terms 'nearside', 'offside' and 'bus request' or 'bus pick-up point' or similar have to be used.

If you happen to hear any of this kind of traffic you will soon get the hang of it anyhow. Static observation points quite often use the callsigns 'O P 1', 'O P 2' etc. So you may have a bit more of a chance of realising just what is going on should you hear any of this stuff on air.

That's why I find simplex monitoring more fun. Clearly with most surveillance, using some sort of scrambling or encryption, the opportunities for eavesdropping are limited, but not all scrambling is immune. I read a message on the Internet recently from **Paul** who was able to decode the communications of the heavies employed by a well known London shop owner. He used an Alinco DJ-2 and just by upping the level of the audio inversion decode used by

these types was able to hear what they were saying loud and clear. They were on 169.3625 f.m. and Paul thinks that they are using 127.300 a.m. from their Range Rover to talk to the boss's helicopter.

## Tracking Device

Also some simple data transmissions can be understood. A wide-band moaning and rumbling sound in low band f.m. may well be a tracking device hidden underneath a vehicle by a surveillance agency. These units are not in such widespread use as they once were, but can still be heard. The sound that the unit makes indicates to the surveillance team whether the vehicle is stationary or moving and some other information can also be gleaned.

These units are tracked by a direction finding set fitted in another vehicle which has disguise antennas fitted. The direction of the target vehicle can then be obtained and the technical car can tell other units whether the target is moving or not. The latest tracking gear is not going to be found by the hobby scannist I'm afraid. This leads back on to the subject of d.f. units that I mentioned in September's SWM.

I received a most interesting communication from **Neil Robertson** who has an interest in this subject. Neil currently uses a d.f. circuit that switches between two identical antennas and produces a tone on top of the received signal if there is a phase shift (i.e. a path length difference) in the signals picked up between the two antennas. The antennas should be a quarter to half wavelength apart. Their length is not critical just as long as they are identical and have the same feeder length.

Neil uses two rubber duck whips which are resonant on 145MHz connected to two BNC panel mount sockets on a metal bar about two feet apart with the switching circuitry mounted in the centre, with a lead connected to the receiver. He has found that the tone null is very sharp indeed with accuracy of  $\pm 5^\circ$ . It has worked well from 2m down to the civil air band.

As Neil says, the disadvantage is that this set-up only gives you a line on which the transmitter lies, it could be in front or behind you, but as a plotting tool he has found in valuable. The circuit for Neil's system is available on the Internet and a search under 'Doppler DF' will find a number of designs. Thanks again, Neil, for the very interesting mail.



## E-Group

SWM has many readers in the Irish Republic and for those of you that are within range of Eire, **Frank Flanagan** has set up an e-group called 'scaneire' primarily for scanning enthusiasts in the Republic. Frank is keen to get subscribers, so to join, send an E-mail post to [scaneire-subscribe@egroups.co.uk](mailto:scaneire-subscribe@egroups.co.uk) and if you wish to send a posting to the list then [scaneire@egroups.co.uk](mailto:scaneire@egroups.co.uk) will do the trick.

## CB Frequencies

With a large scale protest against extortionate fuel tax ongoing as I write this, it may well be useful for monitors to listen to CB frequencies as citizen band is being utilised to co-ordinate the protest. It also seems that mould frequencies are busy at the moment with testing in progress so maybe there is a response being planned. It is possible of course that it will all be over by SWM publication date.

## Scruffy & Grubby

And finally, I read a letter in an amateur radio magazine from a nice lady who had been to a radio rally with her husband. She found many of the people attending to be rather scruffy not to say grubby. Well madam, by the time you may read this I shall have had two days at the Donnington Show and in case you wondered, I was the one with the brown leather jacket that stank like a polecat's dinnerbag...

| Term                  | Meaning   |
|-----------------------|---|
| TARGET                | Person, subject of surveillance   |
| CONVOY                | All vehicles comprising the surveillance unit   |
| EYEBALL               | Vehicle or person having primary visual contact on the target and who directs the operation for that time                         |
| BACKUP                | Second convoy vehicle   |
| TAIL END CHARLIE      | Rearmost vehicle in the convoy  |
| CONVOY CHECK          | Request from the eyeball to check position of convoy vehicles and to make sure no one is lost                                     |
| STAND BY STAND BY     | Eyeball telling the convoy that the target may be about to move   |
| MANOEUVRING           | Eyeball telling everyone that the target vehicle is moving in a car park, garage forecourt, etc. but not on a road                |
| OFF OFF OFF           | Target is now on the move   |
| HANG BACK             | Eyeball telling the convoy...oh you get it!   |
| COME THROUGH          | As above  |
| NO DEVIATION          | Eyeball is now telling the convoy that the target vehicle is going straight ahead (e.g. at a crossroads - not used on a motorway) |
| COMMITTED             | Means target is now committed to travel on a road   |
| ORIGINAL              | The target has now resumed travelling in his same direction after a stop  |
| RECIPROCAL            | He's done a U turn and is returning along the same route  |
| NOT ONE, NOT TWO, etc | On the roundabout he's not taken the first exit, or the second, etc   |
| TARGET HELD           | At traffic lights or a pedestrian crossing perhaps  |
| TEMPORARY LOSS        | Due to terrain, traffic etc.  |
| TOTAL LOSS            | That will make the boss cross   |
| EYEBALL REGAINED      | Phew!   |
| CONTACT CONTACT       | Indicates eyeball regained after a search, N.B. This means something entirely different on military jobs.                         |
| STRIKE STRIKE STRIKE  | Go and grab 'em   |
| SHADOW CAR(S)         | Vehicle used to support footman   |
| MAKE GROUND           | Eyeball's instruction to back up vehicle to get in a position to take over the eyeball  |
| WAIT                  | Don't transmit for the time being   |

■ MIKE RICHARDS G4WNC, PO BOX 1863, RINGWOOD, HANTS BH24 3XD

■ E-MAIL: decode@pwpublishing.ltd.uk ■ Web: <http://www.btinternet.com/~mikespage>

# Decode

In this month's 'Decode' I'm going to concentrate on one new program that uses the latest technology to decode and display good old-fashioned RTTY. The program uses your ordinary PC soundcard to handle the link between your radio and the PC. This means that, in most cases, you just need to get your hands on the software and you're in business!

## RTTY With Flare!

RTTY only systems are few and far between in these days of sophisticated multi-mode decoders, but there's a lot to be said for doing something simple well. That is exactly the approach that **Mako Mori JE3HHT** has taken in putting together his excellent *MMTTY* RTTY program that has just been released at version 1.58.

This program has clearly been designed with the keen amateur radio contest operator in mind, as it supports transmit and receive. It also has a host of automated facilities that will be of great benefit to the contest operator. However, there are also lots of features that will appeal to utility enthusiasts, including top quality filtering so that you can really dig stations out of the noise.

The first task is to check out the system requirements to make sure you can run it on your PC. Fortunately, the demands are reasonably modest and you should be able to run it on just about any PC that will run *Windows 95* successfully. *MMTTY* will work successfully with *Windows 95, 98* or *NT* and only requires a minimum display resolution of 640 x 480 pixels.

The soundcard needs to be a 16-bit SoundBlaster or compatible able to handle 16-bit sampling at 11025Hz - most will. If do have any problems in this area, *MMTTY* comes with an excellent Tune-up section to help you get things going. As to the processor speed you will really need a 100MHz Pentium or faster.

The best way to get a copy of *MMTTY* is via the Internet. The English language home site is: [www.geocities.com/mmtty\\_RTTY/](http://www.geocities.com/mmtty_RTTY/) I have also placed a link on my new-look Home page - [www.mikespage.btinternet.co.uk](http://www.mikespage.btinternet.co.uk) - so you can find it via that if you prefer. Once you've got the program, you just need to unzip it into a spare directory and run the Setup program to install it.

With everything loaded you just need a screened lead between your radio and the Line-in on your soundcard and you're in business. You should start seeing signs of life in the tuning indicators as you tune your receiver around. If all seems a bit dead, take a look at the program's help file - particularly the computer tune-up section that should put you on the right track.

One of the first things you'll notice when you run the program is the array of tuning screens in the top right hand corner. The three boxes provide a conventional spectrum display with vertical markers to show the tuning points, plus a tracking spectrogram and a wonderful X-Y scope display.

The spectrum display is pretty much self-explanatory as you just tune the signals so that the two peaks of the RTTY signal line-up with the markers. The spectrogram was an added bonus and gave a useful alternative.

The real masterpiece was the X-Y scope. This system was developed a very long time ago and was always a favourite with the 'expert' RTTY operators. There can be little doubt that this system provides by far

the most accurate tuning indication and is especially good when dealing with very noisy signals. I won't go into the technicalities of how it works here - all you need to know is how to use it.

## Modernised Version

Coming back to this modernised version has reminded just why it was always so popular. The best way to use it is to get the signal roughly tuned-in using the spectrum display and then fine tune it so that the scope shows as near to a plus sign or cross as you can. In many cases you will find that the best you can achieve is a vertical and horizontal ellipse - that's fine.

When you do this you will find that the tuning control you have is very fine indeed. You can also be certain that when you have the cross the tuning is absolutely spot-on and you will get the best decoded signal. I think it's this certainty and clarity that makes it so good. This is a prime example of combining established ideas with modern technology to provide an excellent result. You will also find that the display shows-up the poor quality of some of the RTTY signals.

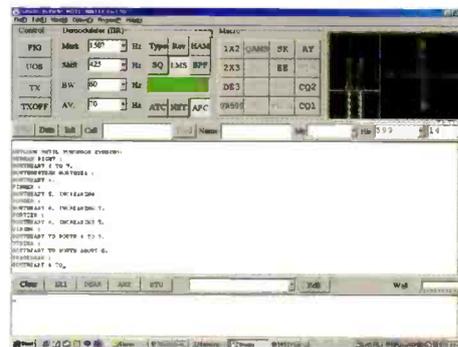
Before you get to use the program to look at some utilities you need to make a few adjustments to the set-up. This is necessary because the program has been designed primarily for radio amateurs and they almost universally use 45.45 baud with a shift of 170Hz. However, most of the commercial stations use 50, 75 or 100baud with shifts of 400, 425 or 850Hz.

Changing this is really easy. Just go to the Options menu and choose Set-up *MMTTY* - the really quick way to do this is to press and hold the Alt key and press the letter O twice. Click the Demodulator tab and adjust the shift to 425Hz. Now select the Decode tab and change the baud rate to 50 - hit OK and you're done.

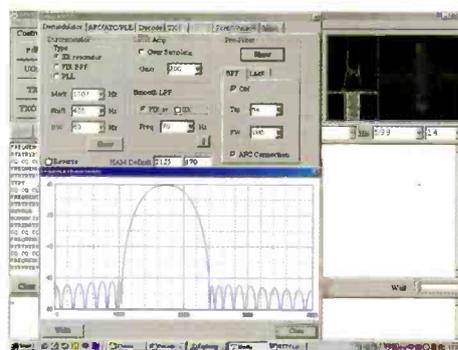
Now for your first RTTY weather station try-out Hamburg Meteo (DDK2) on 4.583MHz. This station is usually running 24 hours-a-day and puts a pretty reliable signal into the UK. When there are no weather reports to send, it usually transmits strings of RY's followed by the stations operating frequencies and callsigns. If you've managed to capture this then you have your basic set-up right and can now start playing with some of the more advanced features. You will also have seen for yourself just how good that tuning display is!

The next step is to make use of the *MMTTY*'s automated signal tracking to take the pain out of tuning. The great thing about this option is that you don't have to bother about changing the shift for different stations - the program does it for you!

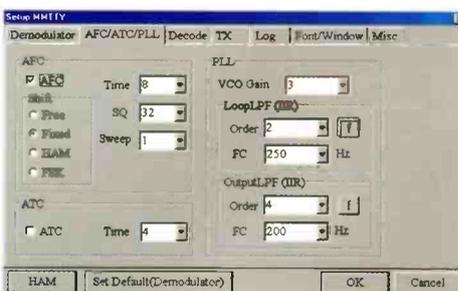
To turn this on press Alt OO to get the set-up menu then choose the AFC/ATC/PLL tab and set the Shift to Free. If you now go back to your main screen, press the AFC



MMTTY main screen receiving Hamburg Met.



Setting-up the MMTTY Bandpass Filter.



Configuring MMTTY Automatic Frequency Control.

| Frequency (MHz) | Station  |
|-----------------|--|
| 0.1473          | DDH47: Hamburg Meteo Finneberg GER 1646 RTTY/50/83   |
| 0.2950          | FUE: FN BREST 0441 RTTY 75/N/850                     |
| 2.2031          | MGJ: RN Base Clyde SCO 1958 RTTY/75/340              |
| 2.7890          | FUE: Marine Brest F 2010 RTTY/75/850                 |
| 3.3900          | MGJ: RN Base Clyde SCO 2016 RTTY/75/850              |
| 3.7820          | CTP: PN Lisbon POR 2011 RTTY/75/850                  |
| 4.2800          | PBC: RNLN Goeree Is NLD 2033 RTTY/75/850             |
| 4.5700          | HZN46: Jeddah Meteo SDA 2043 RTTY/100/400            |
| 4.5830          | DDK2: Hamburg Meteo 0123 RTTY 50/550                 |
| 4.7680          | CCS: CN Santiago 0550 RTTY 100/800                   |
| 4.8182          | CCM: CN Magellanes 0435 RTTY 100/825                 |
| 5.0775          | FDG: Air Bordeaux F 2051 RTTY/50/400                 |
| 5.0970          | CFH: CF Halifax 0440 RTTY 75/850                     |
| 5.1635          | FDG: Air Bordeaux F 2058 RTTY/50/???                 |
| 6.4830          | PBB: Dutch Navy Den Helder 0105 RTTY 75/820          |
| 7.4600          | FDG: FAF BORDEAUX 1748 RTTY 50/R/400                 |
| 7.5055          | FDY: FAF ORLEANS 1843 RTTY 50/N/400                  |
| 7.5080          | ZSJ: SAN Silvermine 0948 RTTY 75/170                 |
| 7.6250          | HZN47: JEDDAH MET 7625 RTTY 100/R/800                |
| 7.6460          | DDH7: HAMBURG MET 1258 RTTY 50/N/440                 |
| 7.7840          | NAR: USN Key West 0643 RTTY 75/850                   |
| 8.3030          | LOR: AN Puerto Belgrano 0630 RTTY 75/170             |
| 8.4545          | RFFME: Marine Paris F 1446 RTTY/75/150               |
| 8.4760          | FUX: FN Le Port 1528 RTTY 75/850                     |
| 9.3875          | FDY: FAF ORLEANS 1920 RTTY 50/N/400                  |
| 9.9650          | FDY: Air Orlans F 2133 RTTY/50/400                   |
| 10.1008         | DDK2/DDH7/DDK9: Hamburg Meteo 1605 RTTY 50/480       |
| 10.2150         | HZN48: Jeddah Meteo SDA 2128 RTTY/100/870            |
| 10.3747         | RPTMB: PP Navrad Porto Santo 1715 RTTY 75/850        |
| 10.9450         | CFH: CanForce Halifax NS CAN 2211 RTTY/75/850        |
| 11.0800         | YKP28: SANA DAMASCUS 1354 RTTY 50/R/400              |
| 11.4530         | IMB33: Rome Meteo 0123 RTTY 50/788                   |
| 11.6025         | 6MK64: YONHAP Seoul 0810 RTTY 50/400                 |
| 12.5660         | UIXJ: RTM Grafit 1010 RTTY 50/170                    |
| 12.5675         | UEXP: TSM Ostankino 0900 RTTY 50/170                 |
| 12.5690         | UBWU: TH Lesozadodsk 1140 RTTY 50/170                |
| 12.5690         | UGIO: PB Rzhikoe Vzmore 1115 RTTY 50/170             |
| 12.5720         | UBJO: BMTR Dimitry Pashchenko 1135 RTTY 50/170       |
| 12.5740         | UAZB: Russian Ship Boronin 1344 RTTY/50/170          |
| 12.6665         | RFFME: Marine Paris F 1337 RTTY/150/850              |
| 12.7320         | USU: MARIUPOL RADIO 1723 RTTY 50/R/170               |
| 12.8235         | CTP: PN Lisbon POR RTTY/75/850                       |
| 12.8775         | UIW: KaliningradRadio RUS 1628 RTTY/50/170           |
| 13.5100         | CFH: CanForce Halifax NS CAN 1129 RTTY/75/450        |
| 13.5300         | NAR: USN Saddlebunch Key 1246 RTTY 75/850            |
| 13.6650         | 6VU23/73: Dakar Meteo 1720 RTTY 50/728               |
| 13.8570         | : FAPSI Link 00063 1648 RTTY/75/500                  |
| 13.9723         | WA9XHN: 0120z RTTY 45/170R                           |
| 14.5350         | Unid: FAPSI 1641 RTTY 75/500                         |
| 14.8220         | : FAPSI Link 60069 1625 RTTY/75/500                  |
| 15.9200         | CFH: CanForce Halifax NS CAN 1611 RTTY/75/850        |
| 16.7860         | UCUC: RTMKS Leonid Gal'chenko 0650 RTTY 50/170       |
| 16.7860         | UDYO: TH Petr Zhitnikov 0840 RTTY 50/170             |
| 16.7975         | UDAB: TSM Okhotino 0840 RTTY 50/170                  |
| 16.7980         | SHIP MARCAL SADEC 1618 RTTY 50/R/170                 |
| 16.8010         | UGVX: PB Marshal Sokolovsku 0800 RTTY 50/170         |
| 16.8010         | UITZ: TH-RV Baltijsku 0815 RTTY 50/170               |
| 16.8015         | UALU: NIS Atlantida 0820 RTTY 50/170                 |
| 16.8020         | UAYC: BMRT Lovozero 0820 RTTY 50/170                 |
| 16.8025         | 3FT06: TR Malabo 0735 RTTY 50/170                    |
| 16.8035         | Unid: Sovship Zvesda 1755 RTTY 50/170                |
| 16.8040         | Unid: Sovship RTM Leningorsk 1705 RTTY 50/170        |
| 16.9150         | FUX: FN Le Port 1300 RTTY 75/850 RY/ID/SG            |
| 16.9222         | VTH: IN Mumbai IND RTTY/50/850                       |
| 16.9515         | RFTJE: FN Dakar 1551 RTTY 75/850                     |
| 16.9578         | FUJ: FN Noumea NCL 1300 RTTY/75/850                  |
| 16.9615         | FUF: FN Fort de France MRT 1609 RTTY/75/850          |
| 16.9840         | CTP: Portuguese navy Portugal 0856 21 Aug 00 RTTY 75 |
| 16.9860         | CTP: NATO Lisbon 1650 RTTY 75/850                    |
| 17.0200         | UDK: MurmanskRadio RUS 1605 RTTY/50/170              |
| 17.0900         | UAI3: Nakhodka rdo 0030 RTTY 50/170                  |
| 17.5900         | HZN49: Jeddah Meteo 1255 RTTY 100/850                |
| 18.2540         | SUU: Cairo Meteo EGY 1331 RTTY/100/640               |
| 18.3045         | : FAPSI Link 0937 RTTY/75/500                        |
| 18.7250         | Unid: FAPSI 0846 RTTY 75/500                         |
| 18.8840         | URIL: RTMKS Fedor Korobkov 0750 RTTY 50/170          |
| 19.4629         | SUNA KHARTOUM 1011 RTTY 50/N/85                      |
| 19.7230         | RLK7: ArkhangelskRadio RUS 1220 RTTY/50/170          |
| 19.7245         | UIW: KaliningradRadio RUS 1705 RTTY/50/170           |
| 22.3630         | UCQS: RTMS Eisk 0620 RTTY 50/170                     |
| 22.6035         | UIW: Kaliningrad R. 1518 RTTY 50/170                 |
| 22.6520         | UHY: MURMANSK RADIO ? 1309 RTTY 50/R/170             |
| 23.3700         | HZN50: Jeddah Meteo SDA 0955 RTTY/100/760            |

Table 1. Special frequency list of active RTTY stations.

button and return to your station, you will find that the markers in the spectrum display move around to line-up with the peaks in your signal. When doing this make sure you don't have the SQ, LMS and BPF pressed. The accuracy of the automatic tuning is really excellent and delivers a perfect cross in the X-Y scope. Once you're in tune, it's as well to turn-off the AFC or it will keep trying to retune when your signal fades.

Next area to experiment with is the type of decoding system. *MMTTY* comes with three separate software

decoders to give you the best possible change of decoding signal under a wide range of conditions. The three options are IIR, FIR and PLL with IIR being the default and the preferred choice of the author.

Switching between decoders is simply done by pressing the TYPE button on the control panel. This cycles through the available options. If you want to get really technical you can even go into the set-up and adjust the decoding parameters of each system.

Finally we need to quickly cover-off the excellent filtering system. There are two very powerful filters included with *MMTTY*, an adaptive LMS filter and a d.s.p. Bandpass Filter. Both are selectable using the LMS and BPF buttons on the main control panel. Let's just quickly explain what they do.

The LMS is a very special type of filter that can only really be created using modern d.s.p. techniques. The reason it's so special is that way it automatically adapts itself to the signal - I won't tie you up with the details of how it does it but the net result is a huge reduction in the noise level.

To see the effect, tune into a signal with all filters of a take a close look at the spectrum display. You will probably find quite a lot of noise around the two peaks of the signal. Now press the LMS button and see how clean the signal becomes - impressive isn't it!

If you want to see it working press Alt OO for the set-up menu, choose Demodulator and select the small LMS tab on the lower right. You can now hit the 'SHOW' button and watch the software adapting to the signal.

Finally, let's take a look at the Bandpass Filter. In comparison with the LMS filter this is pretty conventional, but the d.s.p. implementation still delivers an impressive performance. One point to watch here is that the default settings are optimised for narrow-band amateur RTTY so it's worth softening the filter to avoid losing one of the tones when receiving one of the wider spaced signals.

Just in case you thought RTTY was dead, a special frequency list of active RTTY stations is shown in Table 1.

## Brand New Web Site

To help overcome the occasional typo with web addresses and to give everyone a chance to get the latest software I've just completely re-vamped my web site using *Front Page 2000*. The site is bang up-to-date and using *Front Page* makes it really easy to keep that way. If you'd like to take a look, it can be found at: [www.mikespage.btinternet.co.uk](http://www.mikespage.btinternet.co.uk)

## Hot CW

Not enough space to do the program justice this month, but I've just received the latest update of the excellent *CWGET* Morse decoder which is now at version 1.10. This Windows based Morse program is just about the best around and well worth a look - more next time but here's the URL if you want to try it:

<http://www.dxsoft.com/micwget.htm>

Just one tip - make sure you keep the filter setting wide if you're listening to Morse at more than 15w.p.m. If you try to use one of the narrow settings you will introduce a lot of errors.



CWGet Web Page.

## JAYCEE ELECTRONICS LTD

20 Woodside Way, Glenrothes, Fife, Scotland KY7 5DF

Tel: (01592) 756962 • Fax No. (01592) 610451

Opening hours: Tues-Fri 9am to 5pm. Sat 9am to 4pm. Closed Sun & Mon.

**KENWOOD, YAESU & ICOM APPROVED DEALERS**

*A good stock of new and secondhand equipment always in stock.*

Check out our web site. See our secondhand list that is regularly updated.

www.jayceecomms.com

## LAR COMMUNICATIONS

SUPERSLAB CB CENTRE

★ ★ The complete radio suppliers ★ ★

CONTACT STEVE POUNDER

BRADFORD ROAD, EAST ARDSLEY, NR. WAKEFIELD WF3 2DN

Tel: 0113-252 4586 Fax: 0113-253 6621

## NORTHERN SHORTWAVE CENTRE

BLACKDYKE RD, KINGSTOWN IND EST., CARLISLE, CUMBRIA CA3 0PJ

Phone/Fax: 01228 590011

David Brown G4KFN

New and used short wave receivers, scanning radios, amateur radio equipment and accessories plus books and magazines.

Please mention

**Short Wave Magazine**

when replying to

advertisements.



# FLIGHTDECK

AVIATION  
EMPORIUM

Scanners, Books, Models, Videos, Charts,  
Apparel, Software and more.

Send £2.00 (credited against order) for our  
illustrated catalogue or visit our web site at:  
www.flightdeck.co.uk

Flightdeck, Dept SW, 252A Finney Lane  
Heald Green, Cheadle, Cheshire SK8 3QD  
Tel: 0161-499 9350. Fax: 0161-499 9349  
E-mail: FlightDek@aol.com

## The Kits with ALL the Bits!

DTR series Single-band CW, TX/RX for 80, 40 or 30m .....£97.80  
CARLTON 3-band receiver. 80, 40, 20m (kit only) .....£69.50  
TU4 Antenna tuner with built-in SWR meter, 80W .....£68.00  
TU3 Antenna tuner for receiving or low power TX .....£44.00

Postage on the above kits .....£4.00

TUA1 MkII SWR meter - very sensitive for QRP .....£20.50 P&P £1.50  
AF2 Active Audio Filter for CW .....£16.50 P&P £1.50

'NOVICE' SW and MW receivers and 'NOVICE' Amplifier kits. Ideal  
projects for the Novice RAE Course - just £8 each plus £1.00 postage.

SEND LARGE SAE FOR FULL DETAILS OF THESE AND THE REST OF OUR RANGE.

## LAKE ELECTRONICS

7 Middleton Close, Nuthall, Notts NG16 1BX  
Tel: (0115) 9382509 Callers by appointment only please



## DEMODULATORS FOR JVFAX HAMCOMM SKYSPY RADIORAFT DL4SAW & POCAG AND NOW JVCMM32 + PSK31 TRANSMIT

All Demods have 25 way female 'D' type - ORIGINAL RECEIVE ONLY £16.99  
NEW RECEIVE ONLY with SoundCard Cable (saves cable swapping) £19.99  
POCSAG RECEIVE version (as Rx only with variable hysteresis) £19.99  
NEW POCAG RECEIVE with SoundCard Cable (saves cable swapping) £22.99  
Original TRANSMIT version (Pocsag Rx + Fax/SSTV/HamComm Tx) £24.99  
JVCMM/PSK31 Tx (Pocsag Rx + Fax/SSTV/HamComm/JVC32/PSK21 Tx) £29.99  
Adaptors 25m/9F £3.00 25m/25m £3.00 25m/9F Cable (ATX/Laptop) £6.00  
4-way RS232 Switch Box £17.50 1m 25-way Cable £8.00 Shareware on 3.5" disks  
JVFA7 + HamComm 3.1 + Pktmon12 + Pocsag (PD2.05) + Wgraph + Frees £2.50  
RADIORAFT V3.20 £2.50 DL4SAW SSTV (V1.2) £2.50 JVCMM32 V1.0 (3 disks) £4.50

## REGISTERED VERSIONS OF SOFTWARE

SkySpy V2.0 £24.99 DL4SAW/GSHPC SSTV V2.3 £34.99 JVCMM32 V1.0 £49.99  
HamComm 3.1 £19.99 Pocsag (PD2.05) £19.99 RadioRaft V3.20 £24.99  
All prices UK/Eire inc VAT + P&P. For non-EU deduct 17.5% VAT.  
All products (except software) carry a full money back guarantee.  
Minimum Credit Card order £15.00. Outside British Isles add £2.00.

Pervisell Ltd, 8 Temple End, High Wycombe Bucks HP13 5DR

Tel: (01494) 443033 Fax: (01494) 448236

www.pervisell.com e-mail: ham@pervisell.com



Advertisements are expected to conform to rules and standards  
laid down by the Advertising Standards Authority. Most do.  
The few that don't we'd like you to write in about.

And if you'd like a copy of these rules for press, poster and  
cinema advertisements, please send for our booklet. It's free.

## The Advertising Standards Authority.

We're here to put it right. ✓

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

# QSL COMMUNICATIONS

UNIT 6, WORLE INDUSTRIAL CENTRE, COKER ROAD  
WORLE, WESTON-SUPER-MARE BS22 6BX

TEL 01934 512757

E-mail: jayne@qslcomms.f9.co.uk

### ICOM IC-R75



0-60MHz  
includes PSU

£PHONE

### MAIN DEALERS

ERS  
AOR  
ICOM  
YAESU  
ALINCO  
KENWOOD

Carriage charges dependant of items and weight

### AOR ARB200 Series 2



£PHONE

### YAESU VR-500



£PHONE

QSL CARDS  
SEND LARGE SAE  
FOR SAMPLES

SECONDHAND  
EQUIPMENT ALSO  
WANTED

EARTH RODS 4ft long, adjustable brass fixing  
Solid copper £10.99 P&P £4.00  
Copper plated steel £8.99 P&P £4.00

# WiNRADiO®

**TAKING THE EUROPEAN RADIO MARKET BY STORM**

**FREEPHONE 0800 0746263 TO PLACE A CREDITCARD ORDER**

*Receive a FREE Mini-Cone Antenna With Every WR-3100 order!\**

**JOIN THE TRUNKED RADIO REVOLUTION WITH YOUR WiNRADiO RECEIVER!**

1. Enjoy multiple, major trunk tracking modes
2. Automatic traffic following & sophisticated control panel
3. Take comfort in the automatic volume control
4. Single & dual receiver modes
5. Convenient inbuilt electronic logger and database
6. Comes complete with an inbuilt traffic recorder
7. Full XRS™ - compliant technology

**The WiNRADiO Trunking Option\***

Trunking systems are used by public safety, transportation, business, law enforcement, government, military and other organisations. This software includes major trunking modes: Motorola SmartNet® and MPT1327.

**ONLY £81.07 inc vat**



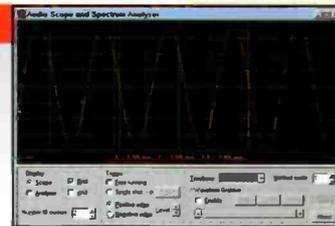
**TAKE A LOOK AT WiNRADiO's DIGITAL SUITE**

1. WEFAX / HF Fax
2. Packet Radio for HF and VHF
3. Aircraft Addressing and Reporting System (ACARS)
4. Audio Oscilloscope, real time Spectrum Analyzer with calibration cursors
5. Squelch-controlled AF Recorder
6. DTMF, CTSS decode and analyse

**The DSP applet provided with the WR3100i spectrum monitor ISA card (£995+VAT) allows continuous control of audio bandwidth and other signal conditioning functions.**

**ONLY £81.07 inc vat**

(requires SoundBlaster 16 compatible sound card)



**WiNRADiO® PC RECEIVERS**

**NEW EXTERNAL MODELS**

Available as either an internal ISA card that slips inside your PC, or as an external (portable) unit. WiNRADiO combines the power of your PC with the very latest in synthesised receivers.

**YOU CAN USE WiNRADiO™ SCANNING PC COMMUNICATION RECEIVERS FOR:**

Broadcast, media monitoring, professional & amateur radio communications, scanning, spot frequency, whole spectrum monitoring, instrumentation surveillance and recording.

If you're after the ultimate receiver-in-a-PC with full DSP then smile and say, "Hello" to the new **WR3100i-DSP** with its hardware for real-time recording, signal conditioning and decoding applications. It's all you need.

**EXTERNAL WiNRADiO™**

We are now able to offer you a complete range of stand-alone WiNRADiO comms systems:

- **WR1000e** - £359 inc VAT
- **WR1550e** - £429 inc VAT
- **WR3100e** - £1169 inc VAT

Each stand-alone unit connects to your PC through either the basic RS232, or through an optional PCMCIA adapter (for high speed control).

The units are powered through either your existing 12v supply, or through an (optional) NiMH rechargeable 12v battery pack.

"It's software is excellent.. more versatile and less idiosyncratic than that of the Icom IC-PCR1000"  
**WRTH 1999 Review**

"Five stars for its mechanical design"  
**WRTH 1999 Review**

"Most Innovative Receiver"  
**WRTH 1998 Awards**



**Model Name/Number**

Construction of internals

Construction of externals

Frequency range

Modes

Tuning resolution

IF bandwidths

Receiver type

Scanning speed

Audio output on card

Max on one motherboard

Dynamic range

IF shift (passband tuning)

DSP in hardware

IRQ required

Spectrum Scope

Visitune

Published software API

Internal ISA cards

External units

**WR-1000i & WR-1000e**

WR-1000i/WR-1550i-3100iDSP- Internal full length ISA cards

WR-1000e/WR-1550e - 3100e - external RS232/PCMCIA (optional)

0.5-1300 MHz

AM,SSB/CW,FM-N,FM-W

100 Hz (5 Hz BFO)

6 kHz (AM/SSB),

17 kHz (FM-N), 230 kHz (W)

PLL-based triple-conv. superhet

10 ch/sec (AM), 50 ch/sec (FM)

200mW

8 cards

65 dB

no

no - use optional DS software

no

yes

yes

yes

£299 inc vat

£359 inc vat

**WR-1550i & WR-1550e**

WR-1000i/WR-1550i-3100iDSP- Internal full length ISA cards

WR-1000e/WR-1550e - 3100e - external RS232/PCMCIA (optional)

0.15-1500 MHz

AM,LSB,USB,CW,FM-N,FM-W

10 Hz (1Hz for SSB and CW)

2.5 kHz(SSB/CW), 6 kHz (AM)

17 kHz (FM-N), 230 kHz (W)

PLL-based triple-conv. superhet

10 ch/sec (AM), 50 ch/sec (FM)

200mW

8 cards

70 dB

±2 kHz

no

no

yes

yes

yes

£369 inc vat

£429 inc vat

**WR-3100i & WR-3100e**

WR-1000i/WR-1550i-3100iDSP- Internal full length ISA cards

WR-1000e/WR-1550e - 3100e - external RS232/PCMCIA (optional)

0.15-1500 MHz

AM,LSB,USB,CW,FM-N,FM-W

10 Hz (1Hz for SSB and CW)

2.5 kHz(SSB/CW), 6 kHz (AM)

17 kHz (FM-N), 230 kHz (W)

PLL-based triple-conv. superhet

10 ch/sec (AM), 50 ch/sec (FM)

200mW

6-8 cards (please ask)

85dB

±2 kHz

YES (ISA card ONLY)

yes (for ISA card)

yes

yes

yes (also DSP)

£1169.13 inc

£1169.13 inc (hardware DSP only internal)

PCMCIA Adapter (external):

£69.00 inc vat when bought with 'e' series unit (otherwise: £99 inc vat)

PPS NiMH 12v Battery Pack & Chrg:

£99 inc vat when purchased with 'e' series unit (otherwise: £139 inc vat)

The WiNRADiO Digital Suite:

£74.99 inc vat when purchased with a WiNRADiO receiver (otherwise: £81.05 inc vat)

For your free (no obligation) info pack & WiNRADiO demo disk go to: <http://www.broadercasting.com>. If you don't have access to the internet then by all means feel free to phone/fax us. \*Trunked radio transmissions should only be received & decoded with permission of the originator of the transmission.

Please send all your enquiries to: [info@broadercasting.com](mailto:info@broadercasting.com) or Telephone: 0800 0746 263 or +44 (0)1245 348000 - Fax: +44 (0)1245 287057 Broadercasting Communication Systems, Unit B, Chelford Court, Robjohns Road, Chelmsford, Essex, CM1 3AG, United Kingdom



## SUBSCRIPTION RATES

See Page 42 for Special Subs Offer  
**SHORT WAVE MAGAZINE - 6 MONTHS**

£17.50 (UK)

**SHORT WAVE MAGAZINE - 1 YEAR**

£33.00 (UK)  £40.00 (Europe)

£44.00 (Rest of World Airmail)  £50.00 (Rest of World Airmail)

**SPECIAL JOINT SUBSCRIPTION WITH PRACTICAL WIRELESS (1 YEAR)**

£55.00 (UK)  £68.00 (Europe Airmail)

£74.00 (Rest of World Airmail)

£85.00 (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)

### BINDERS

Please send me .....SWM Binders at **£6.50** .....£

Postal charges: £1.25 for one, £2.50 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:** £1.25 for one item,

£2.50 for two or more items. ....£

**Overseas:** £2.50 for one item, £4.00 for two items,

then add an additional 50p 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 £2.99 inc. P&P.  
 Phone, FAX or E-mail for availability

**TELEPHONE ORDERS TAKEN ON (01202) 659930**  
 between the hours of 9.00am - 4.30pm. 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., FREEPOST, Arrowsmith Court,  
 Station Approach, Broadstone, Dorset BH18 8PW.

### PAYMENT DETAILS

Name .....

Address .....

Postcode .....

Telephone No. ....

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

Or

Charge to my MasterCard/Visa/Switch/AMEX Card the amount of £

Card No.



Valid from .....to.....

Issue No:.....Tel:.....

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.

**TELEPHONE ORDERS TAKEN ON (01202) 659930**  
**FAX ORDERS TAKEN ON (01202) 659950**

## Index to advertisers

Aerial Techniques.....47  
 AKD.....55  
 AOR (UK) Ltd.....44, 45  
 ARC Ltd.....51  
 ASK Electronics.....32  
 Cellular Design Service.....55  
 Chevet Supplies.....47  
 Computer Aided Technology.....47  
 Flightdeck.....73  
 Haydon Communications.....19, 20, 21  
 Interproducts.....51  
 Javiation.....51

Jaycee Electronics Ltd.....73  
 Lake Electronics.....73  
 Leeds Amateur Radio.....73  
 Lowe Electronics.....OBC  
 Maplin.....27  
 Martin Lynch & Sons.....38, 39  
 Moonraker (UK) Ltd.....10  
 Nevada.....IBC, 1, 3-4, 35  
 Northern Short Wave Centre.....73  
 Pervisell Ltd.....73  
 PhotAvia Press.....67  
*Practical Wireless*.....25

QSL Communications.....73  
 Radiosport.....43  
 Radioworld.....62, 63  
 Remote Imaging Group.....67  
 Roberts Radio.....IBC  
 Solid State Electronics.....67  
 The Shortwave Shop.....67  
 Timestep Weather Systems.....47  
 Waters & Stanton plc.....30, 31  
 Wellbrook Communications.....43  
 WorldSpace.....25

**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 £33, EUROPE £40, REST OF  
 WORLD (Airsaver) £44, REST OF WORLD (Airmail) £50 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 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.

# 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)

## The new ALINCO DJ-X2

micro-sized go anywhere scanner is small enough to fit comfortably into a shirt pocket and yet its in-built speaker gives amazing clarity of audio from the sensitive receiver. Take it with you to airshows, boat shows, on holiday - its discrete size enabling reception just about anywhere, without attracting unwanted attention.

Its easy to use, with a host of optional accessories and enough power for the most demanding user.

For airband enthusiasts the Alinco DJ-X2 has the new 8.33kHz Civil Airband Channels.

This has to be  
**'THE SCANNER' of year 2000!**

### FEATURES

- Receives: 522kHz - 999.995MHz AM WFM NFM
- Selectable scan modes
- 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 modes easy and expert
- RX attenuator
- Auto power off mode
- Priority channel monitoring
- Squelch control
- Volume control

### SPECIFICATIONS:

- IF: 1st 248.45MHz
- 2nd 38.85MHz, 3rd 450kHz
- Frequency range: 522kHz - 999.995MHz
- Sensitivity FM 30-770MHz: -6dB u FM 770MHz: -2.5dB u WFM 11dB u AM 0.5-1.62MHz: 15dB u AM 1.62MHz: 3dB u
- Steps 5, 6.26, 8.33, 10, 12.5, 15, 20, 25, 30, 50, 100, Auto
- Modes: AM WFM NFM
- Memories: 700
- Antenna Connector: SMA
- Power output audio: max 30mW (32 ohms)
- Power supply: 4.5V DC
- Weight: 85g
- Size: 58W x 90H x 15Dmm

### Optional Accessories

**£239.95**

£6 p&p



# Flying



## YUPITERU MVT 7100EU

Probably the most popular high end Scanner. It's easy to use and can receive just about anything going!

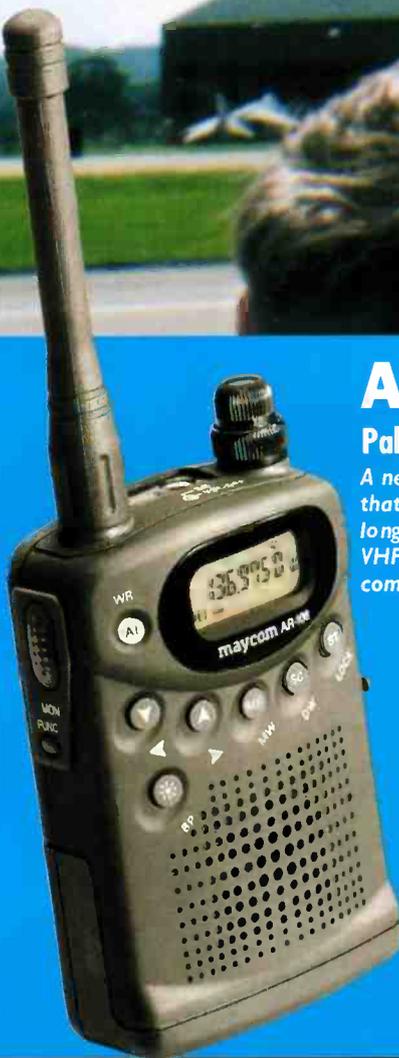
- 530kHz-1650MHz
- AM/FM/WFM/SSB/CW
- 1000 Memories
- C/w NiCads & charger

**PRICE MATCH**

**£249.95**

- OP51 Soft Case .....£17.95 + £2 p&p

We are proud to be authorised by  
**YUPITERU JAPAN**  
to distribute their SCANNERS in the United Kingdom



## AR 108

### Palm sized Airband & VHF Scanner

A new dedicated handheld scanning receiver that has been optimised to give powerful long distance reception of Civil Airband and VHF. It is compact and small enough to fit comfortably in a top pocket.

#### Features include:

- Frequency: Airband 108 - 136.975MHz VHF Band 136 - 180MHz
- Modes: AM or FM
- Memories: 99
- Selective Channel Steps: 5, 10, 12.5, 15, 25, 1MHz
- Dual Watch Function
- Key Lock
- Battery Save Function
- Battery Voltage Indicator
- Supplied C/W Earphone, Belt Clip, Carrying Strap

**£69.95**

£6 p&p

- Options: Mains Chargers .....£8.95

# NEVADA®

DISTRIBUTION DIVISION

**ORDER HOTLINE**  
**023 9231 3090**

- FAX: 023 9231 3091
- E-MAIL: info@nevada.co.uk
- WEBSITE: http://www.nevada.co.uk