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# SWM

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Reviewed**

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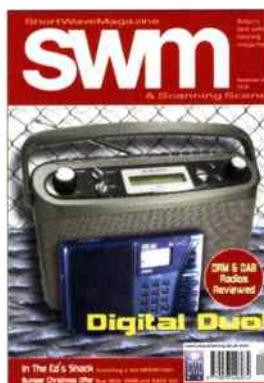
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### Share your thoughts

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Join in with the on-line action on the SWM Readers' E-mail Forum - send an E-mail to [swm\\_readers-subscribe@yahoogroups.com](mailto:swm_readers-subscribe@yahoogroups.com) to subscribe - don't miss the on-line action!

## Coming Next Month

in SWM January 2004

- \* Keith Hamer & Garry Smith start the year with their DXTV Special
- \* Resplendent Rampisham. Kevin Nice visits another UK h.f. broadcast site.
- \* Don't miss next month's action packed issue.
- \* News, reviews and essential data from the world of listening
- \* Keep on top of the world of monitoring with SWM
- \* and much more...

\*contents subject to change

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Subscriptions are available at £36 per annum to UK addresses, £44 Europe, £54 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £61 (UK), £75 (Europe) and £92 (Airmail) overseas.

### 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.

### Photocopies & Back Issues

We have a selection of back issues, covering the past three years of *SWM*. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. Back issues for *SWM* are £3.25 each and photocopies are £3.25 per article inc P&P.

Binders are also available (each binder takes one volume) for £6.50 plus £1.50 P&P for one binder, £2.75 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

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### Technical Help

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

# ED'S



## comments

### Digital Duo

We are especially pleased to provide you with a world first this month. Here at *Short Wave Magazine* we have been able to get our hands on what we believe to be the first standalone consumer DRM receiver. Lawrie Hallett shares his finding on page 24 of this issue. Additionally in this magazine, we review a set based on the other digital broadcast standard of the moment, DAB.

Martin Peters experiences the new Roberts Radio RD-3 DAB and f.m. portable radio. I personally wonder who will be first to market with a combined DAB/DRM set? For the moment though, if you wish to enjoy both systems whilst out and about, you'll need two radios.

### New Author & Goodbye

This December issue sees a new regular author join our happy throng. I'd like to extend a hearty welcome to **Oscar** who takes up the mantle and joins us this month by putting together the recently vacated 'Off The Record' bi-monthly column. I look forward to seeing OTR blossom under Oscar's tenure.

Speaking of tenure, our monthly look at the world of utility stations and their activities is being vacated this month as **Graham Tanner** departs from the 'SSB Utilites' chair. Graham has performed a sterling service over the past 12 years by producing some most fascinating reading both within the column and with additional specialist features. I'd like to publicly thank Graham for his hard work and commitment over the years and wish him all the best for the future. *Au revoir*.

### Space Weather

As I'm sure all of you realise, here on planet earth we are at the mercy of our sun's activity. Not only for matters radio but also for the maintenance of life itself. This month has seen some rather spectacular solar activity which has resulted in some very interesting propagation and superb auroral sights I've learned of some, as far south as mid Wales.



There have been enormous effects on h.f. propagation with almost total blackouts and very high noise levels. *PW* author **David Butler** reports noting auroral tones on 10m beacons on 31 October, whilst *PW* Editor **Rob Mannion** experienced open paths on 10m well into the early hours without any auroral warbling.

The cause of all this activity has been Sunspot 0484 which is a beauty! It is currently about 10 times the size of the earth and is easily visible to the unaided eye. Please don't forget to use a proper solar viewing filter if you're tempted to observe the spot. If you don't fancy looking at the sun through the proper apparatus, then take a look at the image of 0484 on this page.

Sunspot 0484 has already unleashed several strong solar flares, heading for Earth. The most significant of those being an M9 class flare with an impact date on the 24 October. Just take a look at the propagation extra chart this month on page 57 to see the effects. But something even more disturbing lurks around the corner!!

Another equally large active region 0486, already about the size of 0484 is now coming around the south east limb with the potential to unleash some of the strongest flares known.

All this extraordinary solar activity has prompted me to put together a special feature covering solar weather. Keep a look out over the next couple of months to read more on this fascinating subject.

### DRM Launch Revisited

It's smack on the wrist time now as I seem to have experienced a serious bout of getting it wrong last month, it must have been the exposure to the east coast air. It has been pointed out to me that in my 'Ed's Comments' I made the serious mistake of confusing the BBC executive who performed the unveiling of the new DRM transmitter at VT Merlin's Orfordness broadcast site.

Here then, I must present the correct information. The unveiling of the new transmitter was performed by **Benny Ammar** who is Head of Go Digital, BBC World Service. It is he who featured, along with VT Merlin's **Peter Gordon**, in the bottom picture last month (repeated here). Secondly, **Doug Umbers** welcomed everyone to the launch just ahead of the presentation lead by Peter Gordon DRM Project Manager.

Somehow I also managed quite a technical challenge, as I seem to have QSYed the DRM broadcasts emitting from Orfordness from the correct 1296kHz frequency. My most sincere apologies go to those effected.

Lastly, my advertised feature covering my visit to VT Merlin's Rampisham site has unfortunately been held over to the next issue of *SWM*.



**Benny Ammar Head of Go Digital, BBC World Service, unveiling the plaque on the new DRM transmitter. VT Merlin's DRM Programme Manager Peter Gordon watches closely.**

APM 73 Kevin

# QSL

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

## Dear Sir

I have just returned to the hobby after three years absence. I rejoined the Radio Society of Great Britain after hearing that at long last the world radio conference had come to it's senses. The Morse test had been removed as a requirement of the h.f. licence. The bands are alive again with talk of technical subjects and new stations eager to experiment with all manner of equipment are everywhere.

With all this in mind, I asked my girlfriend to pick up the available copies of *PW* (Nov) and *SWM* (Oct) in the local town and settled down to catch up. I can honestly say that it has been the best read that I can remember from both these publications for some time, especially *SWM*. The articles on broadcasting were superb. The Offshore piece was very interesting and the 'Blast' LRS was a really great piece too. The technical information was a good read.

I would like to suggest that both magazines feature a series of visits to stations in the future along these lines. *Practical Wireless* could visit well established big and not so big signal shacks on the

amateur bands and some club stations. Visiting the shacks of well know ham operators and some of the old timers too across Europe, with pictures, technical information and interviews. A good long running series with lots of useful information, tips and experiences.

*Short Wave Magazine* could go to commercial, utility and RSL installations. It would be interesting to see and read about these stations in detail. Interviews with the engineers and pictures of the antenna set-ups, history, etc. I would love to read some interviews with the engineers of the old ships like *Caroline* and *RNI*, etc. I'll bet they have a few good tales!

Keep up the good stuff, I sat all day on Friday with both magazines and read them cover to cover.

**John Edwards GM7NVA**

*John, many thanks for your kind compliments and your suggestions for future content. It is refreshing to receive unsolicited reader suggestions. Is there anyone else who would like to make suggestions? - Ed.*

## Dear Sir

I felt inspired to put finger to keyboard as a result of the excellent review of the Eddystone 6200 in the July *SWM*, this magazine just keeps getting better! Well done!

It is good to see the 6200 reviewed for two reasons. Firstly, it really is the last of the high-end analogue h.f. receivers and everyone who has experience of both analogue and d.s.p. sets, even at the top end, knows that there are some real issues with d.s.p. sets for true general purpose application. Additionally, although the set is clearly aimed at professional users, it has to be said that the receiver is actually remarkably good value for money.

John was unfortunately not given prices for the receiver. When you realises that the export price for the standard model Eddystone 6200 is £2950, it is clear that there is good value for money in this receiver. In fact, there is available a concessionary price of £2750 for sets shipped to UK addresses. Not cheap certainly, but excellent value most definitely.

I can tell you that to own a high-end receiver, of the performance of the Eddystone 6200, built to order, is a real privilege. Performance is known, production test figures are available for confirmation, you can see the individual receiver undergoing soak test and final QC approvals and there are full warranties and unrivalled technical support for which Eddystone has been famous through the years. Oh I nearly forgot, it is all designed and made in Britain!

No connection with Eddystone Radio or Ring Communications, other than I am working on three volumes covering the history of this famous marque, and I am custodian of The Eddystone Collection which exhibits most models and products manufactured by the company up to the present time, including many interesting prototypes and products never released for sale. I am always looking for new items for the collection, or any interesting anecdotes, literature or ephemera relating to Eddystone products and their applications.

The Collection is available for viewing by appointment and a formal opening will be announced shortly. Meanwhile if I can help anyone with any Eddystone matter, please send me an E-mail.

**Alan Ainslie**  
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**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.**

## topqsl

### Dear Sir

I recently purchased a copy of *SWM* and *PW*, as I do every so often and the letter in *SWM* from Mike Luxton of Powys, caught my eye, particularly his remarks about sending QSL cards all over Europe.

I wonder if he has a different copy to the one I have which has no European call addresses. Also, he is querying the performance of a advertised loop antenna for receiving, especially on 40m to the USA?

His letter seems a little vague, there is no mention of an a.t.u. with his long wire and no details on how his wire is oriented. My own wire of about 20m long runs east/west and I don't do too well to the USA because of this, but I'm stuck with that orientation and I have done quite well with it, but I do use an MFJ Versa Tuner II (MFJ-941C) with a counterpoise for each band. I listen on 80 to 10m.

I began as a s.w.l. in the early 80s and had two mentors, **Tom G2BOW**, sadly silent key for some years and **Ron G3XOV** who still keeps in touch with me and was a great help with antenna info. I had an FRG-7 by Yaesu and in a couple of months I'd heard all the continents, but I was told by both Tom and Ron that patience is essential as an s.w.l., as well as a 'safe crackers fingers'.

I also wonder if Mike has taken the time difference into account and has he made any effort to find out the band plans for other countries? The American 40m band goes higher than our own up to 4MHz.

As to noise, I think he will have to accept that there is always some noise and does he live in a rural area where there are electric live stock fences and possibly MoD stations nearby. Also, the usual household utensils all produce some, especially the all important PC - he might suffer from noise from near neighbours' equipment too.

Myself, I wouldn't be investing in a hyped-up loop, one only need read the radio magazines to realise the debate for and against loops will go on for some time yet, plus the debate about using insulated wire for antennas or plain copper. He could try to get a pole up on the chimney to get his wire away from the side of the house.

I would rather spend my money on building up a good technical library. There are good books to be had from the *SWM* Book Store and the RSGB. If the money will run to it, I would put up an antenna using 'flex weave'. I have this type of dipole in my loft along with a home-brew 5-element quad for 2m in the loft and a commercial 718 wave whip for 2m f.m. and 70cm.

I made my own 2m collinear from details sent to me by a G6 in my early days and the afternoon I put it up I worked a station on Dartmoor with an Icom IC-2A hand-held feeding it. As an s.w.l. I have QSL cards from the North Pole, South Pole, Jim Smith in Tasmania, numerous oecania stations and most USA states, mainly on 20m. I always try to tune in WWV in Colorado on a frequency near 20m (15MHz) and if I can hear it, I know that propagation is good, even more so if I hear WWWVH as well.

If he would like to contact me I'd be happy to help, but I'm 83, crippled with severe arthritis and failing eyesight. I've had glaucoma for 34 years now. I've had a cataract removed from my right eye plus a lens implant and with a bit of luck, I'll have my left eye done before Christmas.

I've been licensed since October 1982, I took the exam with my son, but due to a ruptured eardrum 'won' in the WWII conflict, Morse has always been a pain, hence I'm still a G6. I should have been a G4 long ago, my only regret is not taking up the hobby years before, but a family and a mortgage meant radio was a dream.

I'm not connected with electronics in any way, but I have made the most of my station, bits and pieces, boom mic. and HO/Phone, etc. Best wishes.

**Stan Clark**  
**Birmingham**

*Many thanks for your most interesting letter Stan. Some good advice for beginners there, though I have to disagree with your loop antenna comment. We've passed on the documents you sent for Mike. - Ed.*

# No need to be kept in the dark...

*The terrific NEW IC-R5 handportable receiver from Icom gives a truly satisfying experience in a truly portable package - no need to miss a thing!*

The IC-R5's combination of small size, powerful performance and outstanding features will get you straight to the action.

Although compact to the extreme, the IC-R5 wideband receiver (0.150~1309.995MHz), covers virtually everything from AM broadcast to UHF TV audio. Every TV broadcast channel is programmed into the IC-R5. Listen to AM and FM radio stations, utility comms and much more. For the motor racing fan, the IC-R5 will put you so close to the asphalt that only the man on the track experiences more!

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- Auto-Squelch and Squelch Monitor
- Built-in Attenuator
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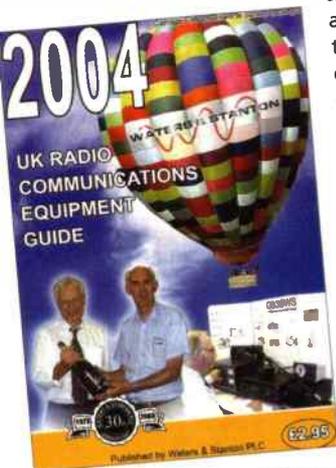
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## Out Now!

The **Waters & Stanton 2004 UK Radio Communications Equipment Guide** is out now and is claimed to be the best yet, featuring over 350 pages packed with photos, products, stories and equipment specifications. This is your handy guide to what's in store at W&S, Lowe and Jaycee shops. There's even a vouchers page at the back of the catalogue for free delivery on mail order purchases (subject to conditions).

Copies of the **2004 UK Radio Communications Equipment Guide** from Waters & Stanton costs £2.95 plus £1.75 P&P. Order your copy from W&S now at

**www.wsplc.com** Tel: (01702) 205835, FAX: (01702) 205843 or freephone on 08000 737388



## Radio Presentation

Back in September, St. Dunstons, the charity for blind ex-Service men and women, was presented with a Rigid Inflatable Boat (RIB) at Ocean Village Marina, Southampton. The 6.2m long Humber RIB was acquired thanks to a generous donation from RAF Uxbridge. On hand to donate a radio communication system to go with the RIB was **Icom (UK) Ltd.**'s Marketing Manager, **Ian Lockyer** and Marine Dealer Manager, **Jon Brooks**.

A trumpet fanfare from the Central Band of the Royal Air Force accompanied the unveiling of the newly named RIB *Ad Astra* - meaning 'to the stars' from the RAF motto *per ardua ad astra*. **Mark Threadgold**, who is totally blind, received the RIB on behalf of St. Dunstons. It was Mark who set a new world record last year for the blind, by driving the RIB around a single lap of the Isle of Wight - a total distance of 57.74 nautical miles. In doing so, Mark set the World Endurance for the Blind Unlimited Class.

Icom (UK) Ltd. supplied *Ad Astra* with a fixed waterproof radio communication system featuring the IC-M503 v.h.f. transceiver, together with its optional 'Class D' DSC controller, DS-100. Ideal for the harsh demands of the RIB market, both units feature large, flush-mountable front panels, together with large backlit function buttons and I.c.d. for confident operation under all lighting conditions.

The RIB will be used as part of St. Dunstons activities program at the national training centre in Ovingdean, Brighton. This includes fishing, diving and a range of watersports and training courses.

Icom (UK) Ltd. can be reached at **Sea Street, Herne Bay, Kent CT8 8LD, Tel: (01227) 741741, FAX: (01227) 741742** or visit **www.icomuk.co.uk**



From left to right: **Jon Brooks**, Icom Marine Dealer Manager, **Mark Threadgold** from St. Dunstons and **Ian Lockyer**, Icom Marketing Manager.

## Tattoo's Early Take-Off Announced

A spectacular Fighter Meet plus a major celebration marking the 50th anniversary of the Lockheed Martin C-130 Hercules will be among the attractions at next year's **Royal International Air Tattoo** (RIAT) at RAF Fairford, Gloucestershire taking place on **July 17-18 2004**. The Tattoo will also host Defence 04, an ambitious series of exciting demonstrations and activities bringing defence to the nation by illustrating the wide range of UK military warfare capabilities at close quarters.

For a limited period only, Tattoo organisers are inviting people to enjoy all the excitement of the 2004 airshow at 2002 prices. From now until the end of February 2004, you can purchase Tattoo tickets at the discounted price of £24.95 either online at **www.airshow.com** or by calling **0870 758 1918**. The administration fee of £3 has also been waived during this period. From March 2004 the cost of the advance tickets will increase to £29.95 and tickets purchased on the day will cost £35.

**Paul Bowen**, RIAT Director said, "Reducing the cost of a ticket by £10 makes the Royal International Air Tattoo even better value than it already is. A family of four\* can now enjoy on the summer's biggest and best days out for less than £50. It is by continually listening and adapting to meet our customers' needs that the Royal International Air Tattoo has grown to become the world's biggest and most exciting military airshow".

\*accompanied children aged 15 and under enjoy free entry to the Tattoo.

## Strategic Partnership

**Virgin Radio UK** and **WorldSpace Corporation**, the pioneer of direct satellite delivery for digital audio radio services (DARS), today announced a strategic partnership. Under the agreement, Virgin Radio will be featured as a premium channel on the WorldSpace satellite service.

Initially available for free during a promotional period, Virgin Radio will become a cornerstone of WorldSpace's new international premium subscription service 'Home Team Radio'. Specifically created for US and UK expatriates as well as military stationed overseas.

With a weekly audience in the UK of almost three million people, Virgin Radio is the UK's rock and roll station and has been providing 'today's best music and classic tracks' since 1993. "Virgin Radio has one of the world's best media brands and this deal with WorldSpace allows us to reach millions overseas," said Lee Roberts, Virgin Radio's Sales Director. "Virgin Radio has been the world's largest on-line radio

station since webcasting was invented and now we can expand into mobile satellite listening across Europe, Africa and the Middle East. This continues our strategy to expand onto all potential platforms".

"Virgin Radio's success to date shows its strong ability to create true premium content. We knew an agreement would ensure WorldSpace is offering expatriate and military audiences with what they want to hear, where they want to hear it", said Noah Samara, Chairman and CEO of WorldSpace.

Virgin Radio is heard in the UK on a.m. and f.m. via terrestrial digital, as well as satellite. Claimed to be the most listened-to radio station on the Internet, the Virgin Radio website **www.virginradio.co.uk** has one million unique visitors per month, as measured by an independent organisation. The site features DJ profiles, music and pop culture information, promotions and live streaming.

# communiqué

## RAOTA News

The **Radio Amateur Old Timers Association (RAOTA)** maintains the traditions and spirit of amateur radio. Their motto is 'Enjoy the Present, Honour the Past, Ensure the Future'. Membership is open to anyone who shares these interests regardless of how long (if ever) they have held an amateur radio licence. Details of RAOTA membership are available from their acting membership secretary **Edward Rule G3FEW, 15 Norwich Road, Lenwade, Norwich NR9 5SH** or E-mail to [edit@raota.fsnet.co.uk](mailto:edit@raota.fsnet.co.uk)

The RAOTA website has moved and has been re-designed. It is now at [www.raota.supanet.com](http://www.raota.supanet.com) RAOTA wishes to express its gratitude to **John Bourne G3LNK**, who managed the website up to this move and to **David Reynolds G3ZPF** who did the re-design and is now managing the website.

## Making Machines See

Following their second annual Young Innovator of the Year competition, **Telecom Design Communications Ltd.** (TDC) Basingstoke-specialist technical electronic components distributor, was delighted to present the four winners with their prizes at a ceremony and lunch at the company offices in Basingstoke on Wednesday 22 October.

This year students were given the task of thinking of ways of *Making Machines See*. The competition invited students to think of the car of 2010 and to consider how many cameras will be built into them. Schools and colleges in Hampshire and Berkshire were each sent a competition pack which invited them to look at a website [www.tdc.co.uk/competition](http://www.tdc.co.uk/competition)

Managing Director **Jerry Sandys** was also invited to return to Costello Technology College, winners of last year's competition, to hold an assembly for 200 students in September. Following difficult judging of over 150 entries, TDC is delighted to announce that the winners of this year's competition are as follows:

1st Prize - **Rebecca Stirk**, Swanmore College of Technology - Polaroid Digital Camera, leather bag and memory card, kindly donated by OmniVision. 2nd Prize - **Jennifer Dingley**, Swanmore College of Technology - Siemens M50 Mobile 'Phone, kindly donated by Siemens. Runner Up - **Michael Alder**, Swanmore College of Technology - Natwest Bank Account with £50, kindly donated by Natwest. Runner Up - **Victoria Nugent**, Costello Technology College - Natwest Bank Account with £50, kindly donated by Natwest.

Each prize winner will be presented their prize by the sponsor at the event. **Barbara Bryant**, Chief Executive of the North Hampshire Chamber of Commerce and Industry, will be presenting the school prize of £200 of book vouchers to Swanmore College of Technology in Southampton on behalf of TDC. Each of the winners will also receive a framed certificate from the day and will be invited back for a Winners Day.

Jerry Sandys, Managing Director of TDC comments, "We have been very impressed with the amount and quality of entries received. It is most exciting to see the effort and initiative that has been taken by all of these students, we particularly hope that this has also given students a further chance to consider the exciting opportunities that are available in the electronics industry".



## Heat Your Shack

It's a familiar problem, you have one room where no one in the family dare interrupt you! One room is all you ask for, be it the garage, shed or shack, where you can work away happily on your hobby. Unfortunately, the room is not always the warmest of places, but with a Calor portable heater, you can have the privacy as well as the warmth and comfort you would expect in the rest of your home.

Hobbies can be a pricey business, so the last thing you need is to rack up expensive heating bills. A Calor portable heater is a relatively inexpensive heating option and with one 15kg gas cylinder producing 204 hours of warmth (based on a 1kW setting) many cosy hours can be spent enjoying your favourite hobby.

At the touch of a button, a portable heater can produce instant spot heating, whenever it is needed. Plus, Calor's new range of portable heaters is more stylish than ever before and their easy manoeuvrability means they can be utilised in most rooms in the house.

For simple, stress free ordering, visit [www.calorheatershop.co.uk](http://www.calorheatershop.co.uk) or freephone Calor Gas Direct on **0800 662 663**.



## Testing...Testing

The **SWM Newsdesk** have been informed by **Mike Taylor of Sonnet Radio (RTI Digital Limited)** that Sonnet Radio Europe will be testing on short wave from the VT Merlin Communications transmitter in Norway operating at 400kW omni-directionally on December 16 & 26 at 1900 for one hour, subject to frequency clearance.

A pilot programme will be transmitted with a mixture of music from the 1970s to today. From February 2004, Sonnet Radio will be transmitting every night from 1900 until 0100. More information at [www.rtidigital.com/index3.htm](http://www.rtidigital.com/index3.htm) You can also E-mail your enquiries to: [studio@rtidigital.com](mailto:studio@rtidigital.com)

## Wakey Wakey Rise & Shine!

**B**ush enters the DAB market with the launch of a stylish cube shaped bedside Digital Alarm Clock Radio. Incorporating a state-of-the-art DAB tuner, it delivers superior sound quality and access to a far wider choice of radio stations compared to standard analogue radios.

Wake-up with that instant 'feel good' factor each morning and listen to interference-free digital radio. DAB technology means there's no need to fiddle with the controls to get the best radio reception. Operating this new Bush radio is simple. Each of the DAB stations available in your particular area are automatically displayed so you simply select the one you want at a press of a button. For extra convenience, you can store your top 10 favourite radio stations.

The Bush DABCR2003 has a large clock display with orange back-lit l.c.d. and dimmer facility. Also, with DAB technology, you'll not only see the time boldly displayed, but also useful scrolling text information about the radio station, song playing and artist.

This funky little bedroom accessory looks and sounds great and with a price tag of under £80, it makes DAB technology truly affordable. On sale in Comet, Dixons and Argos, telephone **0870 873 0079** for stockist information.



## Wythall Rally

**T**he **Wythall Radio Club** are holding their **19th Annual Radio & Computer Rally** on **14 March 2003** at Woodrush Sports Centre, Shawhurst Lane, Hollywood, near Birmingham on the A435, just three km from J3 of the M42. Doors open 1000 'till 1600 and admission is just £1.50.

There will be plenty of traders in two large halls and refreshment facilities are available on site. There will also be a Bring & Buy, easy comfortable parking on site. All are welcome. For licensed radio amateurs, a talk-in is available on S22. More information by visiting [www.wrcrally.co.uk](http://www.wrcrally.co.uk) or by contacting Rally Organiser **Martin G8VXX** on **0121-474 2077** (24hr answerphone) or FAX: **0121-742 3471** working hours. E-mail enquiries to [enquiries@wrcrally.co.uk](mailto:enquiries@wrcrally.co.uk)

## rallies

**December 7:** The West Manchester Radio Club are holding their Red Rose Winter Rally at Lowton Civic Centre, just off the A580 East Lancs Road. Bigger and better than last year's inaugural event at this superb venue, with more traders, low cost Bring & Buy, special interest groups, free parking, licensed bar and excellent catering. There will be an RSGB bookstall, disabled facilities and large social area. Talk-in on S22. Doors open 1000. More information from the club's website at [www.wmrc.org.uk](http://www.wmrc.org.uk) or contact **Steve** on **(01942) 895198**.

**2004**

**February 8:** The Harwell Rally is to be held at the Didcot Leisure Centre, Mereland Road, Didcot, Oxon, signposted from the A34. Bring & Buy, trade stands, special interests, crafts, catering, licensed bar and talk-in on S22. Free car parking. Doors open 1030 (1015 for disabled visitors) and admission is just £1.50. **Ann G8NVI** on **(01235) 816379** or E-mail: [ann.stevens@btinternet.com](mailto:ann.stevens@btinternet.com) or visit [www.hamradio.harwell.com](http://www.hamradio.harwell.com)

**February 15:** The Northern Cross Radio Rally is to be held at Thornes Athletics Stadium, Wakefield, West Yorkshire. One large hall on ground floor - just out of town on the Horbury Road. There will be ample parking on-site, with easy access from M1 J39 & 40 - well signposted. All the usual attractions and doors open at 1030 (1015 for disabled visitors and Bring & Buy). Admission charge is £2. More details from **John G7JTH** on **(01924) 251822** or visit [www.wdrs.org.uk](http://www.wdrs.org.uk)

## Club Corner

Members of the **Gorleston Amateur Radio Society** meet on the third Tuesday of each month at 1930 at the United Reform Church, Back Chapel Lane, Gorleston, Nr. Great Yarmouth. More details from **David Buddery G3OEP** (Press Officer) on **(01493) 662323**.

Members of the **Bangor & DARS** meet on the first Wednesday of every month in 'The Stables', Groomsport, from 2000. On Wednesday 3 December, there will be a talk on *Effects of Solar Weather on Propagation* by Professor Brian Gilbody. Visitors and new members are, as always, most welcome. More information from **Mike G1XSF** on **0284-277 2383** or visit the club's website at [www.bdars.com](http://www.bdars.com)

## Annual Conference

**M**embers of The **World Association Of Christian Radio Amateurs & Listeners** met at The Hayes Conference Centre, Swanwick, Derbyshire over the weekend of Friday 26 to Sunday 28 September for their annual conference. The conference was opened by its organiser **Geoff Grundy G4YJW**.

The Friday evening lecture given by WACRAL member **Rev. George Dobbs G3RJV**, the founder of the G-QRP club who gave an informative talk on 'Minimalist Radio'. Rev. George Dobbs was later to lead everyone in evening prayers.

The WACRAL Annual General Meeting took place after breakfast on the Saturday morning and proved to be very lively and informative. **Victor Brand G3JNB** after many years service to WACRAL stepped down as Publicity Officer in 2002 and members present elected **Paul J. Goodhall M3JFM** as Publicity Officer.

On the Sunday morning after breakfast Paul Goodhall M3JFM assisted by his son **Peter M3PHP** gave a talk and presentation on the history of WAMRAC/WACRAL. The Sunday morning Church service was lead by WACRAL President **Rev. Phyl Fanning G6UFI** and after the Church service the conference construction contest results were announced for the best constructed Howes 80m receiver, this award went to **Richard Paul G7KMZ**.

**Alistair McGoff M3BIB** was awarded the certificate with merit for his very first attempt at construction. The conference closed after lunch on Sunday.



**Seventeen year old WACRAL member Peter A. Goodhall M3PHP with his certificate.**

# LM&S

## Long, Medium & Short Wave Bands

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

**M**any detailed and interesting reports of actual reception in the broadcast bands were sent to me during the year, which formed the basis for the data in LM&S. I would like to express my sincere thanks to all those concerned. Please keep sending them to me.

Before detailing their latest findings may I take this opportunity to wish all listeners and readers a Happy Christmas and good reception in the New Year.

### Long Wave Reports

A holiday on the mainland of Shetland and Orkney during two weeks of superb weather enabled **Michael Wasley** (Scunthorpe) and his family to explore a number of locations for the first time. It also provided Michael and his daughter **Louisa** with an opportunity to search the long and medium wave broadcast bands!

Reception indoors in Lerwick, Shetland on August 30 was marred by electrical interference. Eventually, Michael found this

was partly caused by four lights with touch-switches. Unplugging them improved things somewhat. A Grundig Yacht Boy 400 portable was then used to compile his first log - see chart.

Whilst visiting three locations on Shetland (Jarishof in the extreme south, Esha Ness in the west and Skaw in the north) during the mornings of September 1, 2 & 3, Louisa and Michael searched the band with the Volvo car radio. The reception of RUV via Eider, E. Iceland on **207kHz** was possible at all three locations but the Gufuskalar, W. Iceland outlet on **189kHz** was inaudible - see chart. Whilst at Skaw in Unst, at the end of the most northerly public road in the UK, Michael tried using his Grundig Yachtboy 400 portable in close proximity to a long wire fence and it then became possible to hear Gufuskalar on **189**, also Ingoy in the far north of Norway on **153kHz**.

Reception in the house at Kirkwall, Orkney was also plagued with interference. The TV was on 'standby' and turning it off at the mains and disconnecting the antenna virtually eliminated the problem. He searched this band after dark on the 11th and again during daylight on the 12th - see chart. Whilst exploring Orkney on the 12th he parked the car at Cumlaquoy in the west of Mainland and searched this band with Louisa at 1230 - see chart.

Down in E. Bristol **Simon Hockenhull** received most of the entries in his report at night. On the 16th he logged Azilal, Morocco on **207kHz** as 25443 at 2155. At 0020 on the 17th he picked up a transmission on **261kHz** with Slavic like speech and music but coming from a more south easterly point which he logged as Sofia. It rated 25442. On the 17th, Sasnovy on **279kHz** was heard at 2102 peaking 24443.

Sasnovy was also mentioned in the report from **Sheila Hughes** in Morden. She says, "I sometimes wish that reception was clearer for this station as they play nice music". Sheila also enjoys listening to the broadcasts from Denmark and finds the reception is usually good on **243kHz**.

Over in Co. Down **Eddie McKeown** (Newry) has noticed that the best reception from Sasnovy can usually be obtained around 2000. Closer to their close-down at 2200 the noise level is high and reception much worse. After their close-down he has sometimes picked up a weak transmission on **279kHz**, which may have come from Yuzhno-

Sakhalinsk in far east Russia. On one occasion he logged it as SINPO 25132 at 2333.

The RTE tests from the Clarkestown, Eire transmitter on **252kHz** have attracted the attention of several contributors to LM&S - see chart. In his latest report **Bernard Curtis** (Stalbridge) wrote "It is not quite clear now whether transmissions will actually go ahead on the **252kHz** transmitter in Ireland on a regular basis. It should have been officially launched on October 1 but the Irish Authorities at RTE are having second thoughts about the expense involved. The start time has been put back to January 1 next year but even that is not guaranteed". The last time Bernard heard the Clarkestown transmitter was on Sunday September 28, when a commentary on an Irish football match was broadcast at full power.

### Medium Wave Reports

Some listeners searched this band after dark for the sky waves from m.w. stations in the Middle East, N. Africa, Europe and Scandinavia. Good reception from some of the outlets in Spain was evident during most nights in E. Bristol but from time-to-time the conditions changed. During the evening of the 16th the outlets in Saudi Arabia at Damman on 1440 and Duba on **1521kHz** became audible - both peaked 24432 at 2212. On the 17th Beograd, Yugoslavia on **684kHz** was logged as 24432 at 0028. On the 23rd RNE-5 via Santa Cruz, Canary Is reached SINPO 32532 at 2245.

Further to a report of the Voice of America (VOA) on **1593kHz** being received at 2338 (see 'LM&S', SWM October 2003), **Harry Richards** (Barton-on-Humber) has informed me that this transmission originates from a station in Kuwait.

Some interesting m.w. logs were compiled after dark and during daylight by **Michael Wasley** while in Lerwick and Kirkwall using his Yacht Boy 400 portable. At other locations the car radio was employed in a joint effort by Michael and Louisa to search the band - see chart entries.

Surprisingly few distant local radio stations were received on the Shetland Is. but the clear sea path to all of the east coast of England down to Norfolk must have helped the ground waves from BBC R.York (0.5kW) on **666kHz** and BBC R.Newcastle (2kW) on **1458kHz** to reach them.

Some 47 local radio stations were logged by **Fred Wilmshurst** in Northampton - see chart. A close runner-up was **Robert Connolly** (Kilkeel, Co. Down) with 45 entries. Impressive lists were also compiled by **Simon Hockenhull** with 39 entries; **Richard Reynolds** (Guildford), who heard 29 stations during daylight and a further 12 after dark; also **Ernie Strong** (Ramsey, Cambs), who received for the first time ILR Magic 1152 via Newcastle on **1152kHz** and BBC R.Cumbria via Carlisle on **756kHz**.

### Short Wave Reports

The broadcasts from Radio France International (RFI) in the **25MHz (11m)** band reached the UK more frequently during

#### Listeners:-

- (A) Bernard Curtis, Stalbridge.
- (B) Simon Hockenhull, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) Eddie McKeown, Newry.
- (E) Ernie Strong, Ramsey, Cambs.
- (F) Michael Wasley, while in Lerwick, Shetland.
- (G) Michael Wasley, while in Kirkwall, Orkney.
- (H) Louisa & Michael Wasley, while at Jarishof, Shetland.
- (I) Louisa & Michael Wasley, while at Esha Ness, Shetland.
- (J) Louisa & Michael Wasley, while at Skaw, Shetland.
- (K) Louisa & Michael Wasley, while at Cumlaquoy, Orkney.
- (L) Thomas Williams, Truro.
- (M) Fred Wilmshurst, Northampton.

kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	E*
153	Donebach DLF	Germany	500	B,C,D,E,F*,G,H,I,J,K,L*,M
153	Ingoy	Norway	100	G*,J
153	Bod	Romania	1200	C*,D*
162	Allouis	France	2000	C,D,E,F*,G,H,I,J,K,L*,M
171	B'shekovo etc	Russia	1200	B*,C*,D*,E,I,K,L*,M*
171	R.Chechnya	Russia	1200	E
177	Oranienburg	Germany	500	B,C,D,E,F*,G,M*
183	SaarLouis	Germany	2000	C,D,E,F*,G,K,L*,M
189	Gufuskalar	W.Iceland	150	F*,G,J
198	Droitwich BBC	UK	500	C,D,E,M
198	Burghhead BBC	UK	50	F*,G,H,I,J,K
207	Munich DLF	Germany	500	B*,C*,D*,E*,G*,I*,M*
207	Eider	E.Iceland	100	D*,G,H,I,J,K
207	Azilal	Morocco	800	B*
216	Roumoules RMC	S.France	1400	B,D,E,F*,H,I,K,M
225	Polskie R-1	Poland	?	B*,C*,D*,E*,G*,H,I,J,K,M
234	Beidweiler	Luxembourg	2000	D,E,F*,G,H,I,J,K,L*,M
243	Kalundborg	Denmark	300	B,C,D,E,F*,G,H,K,M
252	Tipaza	Algeria	1500	B*,C*,D*,M
252	RTE Test Txms	Eire	500	A,B,D,E,G,K,L*,M
261	Sofia	Bulgaria	60	B*
261	Taldom Moscow	Russia	2500	C*
270	Topolna	Czech Rep	1500	B*,C*,D*,E*,F*,M*
279	Sasnovy	Belarus	500	B*,C*,D*,L*,M*
279	Yekaterinburg	Siberia	150	D*

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

DXers:-

- (A) Bernard Curtis, Stalbridge.
- (B) Ian Evans, Ebbw Vale, Gwent.
- (C) Stan Evans, Herstmonceux.
- (D) David Hall, Morpeth.
- (E) Simon Hockenhill, E.Bristol.
- (F) Clare Pinder, Appley.
- (G) Peter Pollard, Rugby.
- (H) Vic Prier, Seaton.
- (I) Richard Reynolds, Guildford.
- (J) Thomas Williams, Truro.

September. On the 12th their transmission on **25.820** (Fr, Eng to E. Africa, Indian Ocean 0900-1300) was rated 15421 at 1132 in E. Bristol but during the remainder of the month reception gradually improved. It was rated 25112 at 1230 by **Peter Pollard** in Rugby; 35323 at 1220 in Stalbridge; 43333 at 1215 on the 28th by **Thomas Williams** in Truro.

Reception over long distances in the **21MHz (13m)** band proved to be erratic during September. Sometimes R.Australia's early morning transmission to Pacific areas via Shepparton on **21.725** (Eng 0200-0900) could be received in the UK but frequently it was buried in the noise. When the conditions were favourable it was rated SINPO 44333 at 0740 by **Stan Evans** in Herstmonceux. At 0900 they broadcast to Asia on **21.820** (Eng 0900-1400), which also reached the UK during some days. In Truro it was rated 33333 at 1342 on the 17th; 22222 at 1155 on the 25th; 33333 at 0940 on the 29th. Over in Newry, Co. Down it was rated 24222 at 1140.

Broadcasts from a number of other areas reached the UK in this band. Mentioned in the reports were Swiss R. Int (SRI) via Sottens

### Tropical Bands Chart

MHz	Station	Country	UTC	DXer
3.200	TWR Manzini	Swaziland	0431	
3.230	WYFR via Meyerton	S.Africa	2034	
3.240	TWR Manzini	Swaziland	0335	
3.255	BBC via Meyerton	S.Africa	2130	H,I
3.320	SABC (RSG) Meyerton	S.Africa	0439	
3.350	R.Ext.Espana	Costa Rica	0317	
3.365	AIR Delhi	India	1740	
3.390	BBC via Meyerton	S.Africa	2039	
3.915	BBC via Kranji	Singapore	2120	E,H,I,J
3.955	R.Korea via Skelton	England	2100	C,F,H
3.955	R.Taipei via Skelton	England	1805	A,B,C,E,F,G
3.965	RFI Paris	France	2241	E
3.975	R.Budapest	Hungary	1924	E
3.985	Nexus Milan	Italy	2115	H
3.995	DW via Julich?	Germany	2115	E,H,I
4.005	Vatican R.	Italy	2110	E,H
4.765	R.Rural, Santarem	Brazil	0115	D,I
4.765	RTV Brazzaville	Congo	1827	
4.770	FRCN Kaduna	Nigeria	2130	D,H,I
4.775	AIR Imphal	India	1643	
4.775	TWR Manzini	Swaziland	0342	
4.783	RTM Bamako	Mali	0556	
4.790	Azad Kashmir R.	Pakistan	1703	
4.790	R.Atlantida	Peru	0226	
4.800	CPBS 2 Beijing	China	2230	H,I
4.800	AIR Hyderabad	India	1705	
4.800	LNBS Maseru	Lesotho	1837	
4.805	R.Nac.Amazonas	Brazil	0147	
4.820	R.Botswana, Gaborone	Botswana	2145	H,I
4.820	Xizang, Lhasa	China	2245	D,I
4.820	AIR Calcutta	India	1708	
4.825	R.Cancao Nova	Brazil	0242	
4.830	R.Tachira	Venezuela	0445	
4.832	R.Litoral, La Ceiba	Honduras	0344	
4.835	RTM Bamako	Mali	2242	D,E,H,I
4.840	AIR Bombay	India	0153	
4.845	R.Cultura Ondas,Trop	Brazil	0155	

MHz	Station	Country	UTC	DXer
4.845	ORTM Nouakchott	Mauritania	2235	D,E,H,I
4.860	AIR Delhi	India	1820	A,E,I
4.865	R.Alvorada, Londrina	Brazil	0533	
4.875	R.Roraima, Boa Vista	Brazil	0512	
4.880	AIR Lucknow	India	1648	
4.880	SABC Radio 5	S.Africa	1902	
4.885	R.Clube do Para	Brazil	0120	D,I
4.890	RFI Paris	France	0448	
4.895	AIR Kurseong	India	1651	H,I
4.895	RTM Kuching	Sarawak	2249	E
4.897	Murun	Mongolia	2116	
4.905	Xizang-Tb, Lhasa	China	2200	H,I
4.910	AIR Jaipur	India	2301	E,H,I
4.910	R.Zambia, Lusaka	Zambia	0257	
4.915	R.Anhanguera	Brazil	0255	
4.915	R.Difusora, Macapa	Brazil	0127	D
4.915	GBC-1, Accra	Ghana	2140	H,I
4.915	KBC, Cent Soc Nairobi	Kenya	0353	I
4.920	Xizang-Tb, Lhasa	China	2303	E,I
4.920	AIR Chennai	India	1649	H,I
4.925	R.Difusora, Taubate	Brazil	0138	D,I
4.940	AIR Guwahati	India	1659	
4.940	R.Amazonas	Venezuela	0240	
4.950	R.Nacional, Mulvenos	Angola	0302	I
4.950	VOA via Sao Tome	Sao Tome	1906	E,F,I
4.960	VOA via Sao Tome	Sao Tome	0452	D,I
4.975	R.Uganda, Kampala	Uganda	2040	
4.985	R.Brazil Central	Brazil	0500	D,I
5.005	R.Nepal, Kathmandu	Nepal	1838	
5.009	R.TV Malagasy	Madagascar	1834	
5.010	AIR Thirupuram	India	1654	
5.015	R.Brazil Tropical	Brazil	0135	D,H
5.025	R.Parakou	Benin	0521	I
5.025	R.Rebeldes, Bauta	Cuba	0519	I
5.025	R.Uganda, Kampala	Uganda	2120	H
5.030	R.Burkina	Burkina Faso	2313	D,E,H,I
5.030	CNR-1, Beijing	China	2146	I
5.040	Jeypora	India	1702	I
5.050	R.Tanzania	Tanzania	0202	I

**21.770** (Eng, It, Ger, Fr to Near East, Africa 0830-1030) rated 45222 at 0850 in Newry; R.Portugal Int, S.Gabriel **21.830** (Port to W.Africa 0700-1655, Sat/Sun) 44444 at 0920 in Truro; R.Prague, Czech Rep **21.745** (Eng, Czech to W.Africa, S.Asia 0900-0957) 55555 at 0925 in Herstmonceux; UAE R.Dubai **21.605** (Ar, Eng to Eur 0600-1630) 34343 at 1036 by **Johan Leidekker** in Amsterdam & 45534 at 1600 by **Vic Prier** in Seaton; R.Pakistan, Islamabad **21.465** (Eng to Eur 1100-1105) 34333 at 1100 in Morden; HCJB Quito, Ecuador **21.455** (Eng to Eur, Australasia [u.s.b.] 1100-1430) 34322 at 1245 in Stalbridge; R.Ext.Espana via Noblejas, Spain **21.570** (Sp to S.America 0800-1700) 54444 at 1430 by **David Hall** in Morpeth; BBC via Cyprus **21.660** (Eng to E.Africa 1400-1700) 35544 at 1520 in Northampton; BBC

via Ascension Is **21.470** (Eng to S.Africa 1300-1900) 35433 at 1539 in E. Bristol.

In the **18MHz (15m)** band R.Denmark via Sveio, Norway **18.950** (Da to N/C.America 1130-1155) was rated 35423 at 1135 in E.Bristol & 44243 at 1138 in Newry; Voice of America (VOA) via Sri Lanka **19.010** (Dari to Afghanistan 1100?-1230?) 44444 at 1205 in Truro; Family R, WYFR via Okeechobee FL,

Listeners:-

- (A) Robert Connolly, Kilkeel.
- (B) Simon Hockenhill, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) Richard Reynolds, Guildford.
- (E) Ernie Strong, Ramsay, Cambs.
- (F) Michael Wasley, while in Kirkwall, Orkney.
- (G) Louisa & Michael Wasley, while at Jarishof, Shetland.
- (H) Louisa & Michael Wasley, while at Eshaness, Shetland.
- (I) Louisa & Michael Wasley, while at Skaw, Shetland.
- (J) Louisa & Michael Wasley, while at Cumiaquoy, Orkney.
- (K) Fred Wilmschurst, Northampton.

### Local Radio Chart

kHz	Station	ILR BBC	e.m.r.p (kW)	Listener	kHz	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	B,E,K	972	Asian Club, Southall	I	1.00	B,C,E,K
585	R.Solway	B	2.00	A	990	R.Devon, E.Devon	B	1.00	A,B,E*
603	C.G.Litt'brme	I	0.10	D,E,K	990	Magic AM, Doncaster	I	0.25	F
630	R.Bedfordshire(3CR)	B	0.20	B,D,E,K	990	Cl.G. Wolverhampton	I	0.09	E,K
630	R.Cornwall	B	2.00	A,D	999	C.Gold GEM Nott'ham	I	0.25	E,K
857	R.Chwyd, Wrexham	B	2.00	A,D	999	Magic 9-99 P'stn	I	0.80	A
857	R.Cornwall	B	0.50	A,B*,D	999	R.Solent	B	1.00	B,C,E*
866	Cl.Gold 666, Exeter	I	0.34	B,D,K	999	Valley R. Aberdare	I	0.300	B
866	R.York	B	0.80	A,E,G,H	1017	Cl.G.WABC, Sh'rsire	I	0.70	A,B,K
729	BBC Essex	B	0.20	D,E,K	1026	R.Cambridgeshire	B	0.50	B,D,E,K
738	Hereford/Worcester	B	0.037	A,B,D,E,K	1026	Downtown R, Belfast	I	1.70	A
756	R.Cumbria, Carlisle	B	1.00	A,E*	1026	R.Jersey	B	1.00	B,D*
756	The Magic 756, Powys	I	0.83	A,B,D,E,K	1035	Mean Country 1035	I	1.00	B,E,K
765	BBC Essex, Chelmsf'd	B	0.50	B,D,E,K	1035	N.Sound 2, Aberdeen	I	0.78	A,G,H,I,J
774	R.Kent, Littlebourne	B	0.70	D,E,K	1107	Moray Fth, Inverness	I	1.50	F,G,H,I,J
774	R.Leeds, Farnley	B	0.50	A,E	1116	R.Derby	B	1.20	A,E,K
774	Cl.Gold 774, Glos	I	0.14	D,K	1116	R.Guernsey	B	0.50	B,D*
792	Cl.Gold 792, Bedford	I	0.27	B,D,E,K	1116	Valley R. Ebbw Vale	I	0.50	B
792	R.Foyle	B	1.00	A	1152	Cap.G. 1152, Birm'ham	I	3.00	B
801	R.Devon, Barnstaple	B	2.00	A,B,D,E	1152	Cl.G.Amber, Norwich	I	0.83	F
828	Cl.Gold 828, Luton	I	0.20	B,D,E,K	1152	LBC 1152, London	I	23.50	E,K
828	Magic 828, Leeds	I	0.12	A	1152	Magic1152, Manch'ter	I	1.50	A
828	Cl.G.828, Bourne'm'th	I	0.27	B	1152	Magic1152, Newcastle	I	1.9	E*
837	R.Cumbria/Furness	B	1.50	A	1161	R.Bedfordshire(3CR)	B	0.10	E,K
837	Asian Net Leicester	B	0.45	A,B,C,D,E,K	1161	Brunel Cl.G. Swindon	I	0.16	A
855	R.Devon	B	1.00	D	1161	Magic 1161, Goxhill	I	0.35	A
855	R.Lancashire	B	1.50	A	1170	Cl.G.Amber, Ipswich	I	0.28	D*
855	R.Norfolk, Postwick	B	1.50	E	1170	Magic 1170, Stockton	I	0.32	A,E
855	Sunshine 855, Ludlow	I	0.15	B,C,K	1170	Capital G. Portsmouth	I	0.50	A,B,C
873	R.Norfolk, W.Lynn	B	0.30	C,D,E,K	1170	Sigs Big Stoke-on-T	I	0.20	E*
936	Brunel CG, W.Wilts	I	0.18	C,D,E*,K	1170	Swansea Snd, Swansea	I	0.58	B
936	Fresh AM, Hawes	I	1.00	E	1242	Capital G. Maidstone	I	0.32	D,E
945	Cl.Gold GEM, Derby	I	0.20	A,E,K	1251	C.G.Amber, Bury StEd	I	0.76	E
945	Capital G. Bexhill	I	0.75	D*,E*	1260	Marcher G. Wrexham	I	0.64	A
954	Cl.Gold 954, H'ford	I	0.16	B,D,E,K	1260	SabrasSnd, Leicester	I	0.29	E,K
954	Cl.Gold 954, Torquay	I	0.32	B,D*	1278	Cl.Gold 1278 W.York	I	0.43	E
963	Asian Sd, E.Lancs	I	0.80	A	1296	Radio XL, Birmingham	I	5.00	A,B,D,E,K
963	Asian Club, Hackney	I	1.00	B,C,E,K	1305	Magic AM, Barnsley	I	0.15	A
					1305	Premier via 7	I	0.50	F,K
					1323	Capital G. Southwick	I	0.50	D*
					1332	Premier, Battersea	I	1.00	E

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

## PORTABLE ANTENNAS

### TRI-SCAN III

Freq: 25-2000 Mhz Length: 900mm  
This Desktop Internal Antenna comes with 3 vertical capacitor loaded coils, mounted on a unique helically wound tri-pod, to give its own ground plane for smooth reception. Complete with 5 mtrs of RG58 coax, terminated with a BNC. (Get the most from your scanner with the Tri-Scan III Desktop and enjoy great performance without the hassle of erecting an external one).

**Our Price £39.95** plus £6.00 p+p.



### SKYSCAN DESKTOP

Freq: 25-2000 Mhz Length: 900mm  
This discone style indoor antenna comes with 4 tuned stainless steel vertical whips, 8 ground plane 12" radials, plus 4 loaded horizontal 3" helical radials. Complete with heavy duty base 5 mtrs RG58 terminated with a BNC. (Don't lose those wanted signals while indoors. Use the Skyscan Desktop at your radio station, on the window seal or even in the loft for increased performance).

**Our Price £49.95** plus £6.00 P+P.



### SWP GLASS MOUNT ANTENNAS

These two superb universal antennas, one for VHF/UHF & one for HF have internal tuned wound coils encased in a fibreglass tube with black covering. Includes two suction cups for easy fitting to any smooth surface, complete with 5mtrs of mini hi-spec coax terminated with a BNC. (With these antennas, take your hobby mobile in the car, at home on the patio or bedroom window. A perfect solution for sometimes awkward antenna installations. Great results - No hassle)

#### SWP2000

Freq: 25-2000 Mhz Length: 515mm.

**Our Price £29.95** PLUS £6.00 P+P.

#### SWPHF30

Freq: 0.05-30 Mhz Length: 770mm.

**Our Price £39.95** PLUS £6.00 P+P.



### MAX-5 ACTIVE

Freq: 25-1800 Mhz Length: 1400mm

This portable active antenna incorporates a easy fold away 300 Ohm receiving element joining to a matching coil, wideband pre-amplifier (9v batt not inc) 4mtrs RG58, terminated in a BNC. (Don't lose performance by not choosing an external antenna! Install in the loft, hang by the window, or even from a tree while out and enjoy upto 14dB Gain with the MAX-5 pre-amplified Active Antenna).

**Our Price £49.95** PLUS £6.00 P+P.



## SHORT-WAVE WIRE ANTENNAS

### M037 SKYWIRE

Freq: 0-40 Mhz Length: 25mtrs

This complete HF wire antenna system comes with 25 mtrs of enamelled copper antenna wire, dog bone insulator, choke balun, & 10mtr RG58 patch lead terminated with a PL259.

**Our Price £39.95** plus £6.00 P+P.



### MWA-10MIDI

Freq: 0-40 Mhz Length: 25mtrs

This complete HF wire antenna system comes with 25 mtrs of high grade flexweave antenna wire, dog bone insulator, di-pole centre choke balun, guy rope, & 10mtr RG58 mil spec patch lead terminated with a PL259.

**Our Price £49.95** plus £6.00 P+P.

(Both these wire antennas have our own ferrite wound baluns that give an extra 2 "S" points greater signal than some similar baluns. No ATU required as perfect 50 Ohm match is achieved over all 40mhz).



### Long Wire Balun

Balun only with S0239 socket and wing nut for wire connection.

**Our Price Just £19.95** plus £2.00 P+P.



## GOING MOBILE

### G-SCAN II MOBILE

Freq. 25-2000 Mhz Length. 620mm  
Dual coil capacitor trapped vertical coils, 3.5" magnetic base with rubber protection, 4mtrs RG58 coax cable, terminated with a BNC. (Don't lose those signals while on the move, the G.Scan II is the answer for continued high performance reception where ever when ever).

**Our Price £24.95** plus £6.00 p+p.



### SKYSCAN MOBILE

Freq: 25-2000 Mhz Length: 650mm  
4 tuned stainless steel vertical radials, 3.5" magnetic base with rubber protection, 4 mtrs RG58 coax terminated with a BNC. (With not just one but four vertical radials, take your scanner in the car & enjoy superior reception with this dedicated antenna).

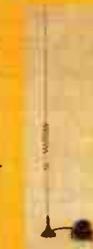
**Our Price £19.95** plus £6.00 p+p.



### MINISCAN MOBILE

Freq TX: 144-146 430-440 Mhz  
Freq RX: 100-1300 Mhz Length: 300mm  
Spring loaded black stainless whip, 1" super strong magnetic mount, 4mtrs of mini hi-spec coax, terminated with a BNC. (Ideal for "low profile" scanning while for those with transceivers with wideband receive, its the perfect choice for dual band TX and continued large scale reception).

**Our price just £14.95** plus £3.00 p+p.



## HANDHELD ANTENNAS

### SUPER GAINER RUBBER DUCKS

Freq: 25-1800 Mhz Length: 400mm

MRW-100 BNC fitting **Our Price £19.95** plus £2.00 P+P

MRW-210 SMA fitting **Our Price £22.95** plus £2.00 P+P

(Going Out? Don't Miss Out! Replace your existing hand-held antenna with a Super Gainer one).



## SOMETHING EXTRA

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#### 8TH EDITION

The most comprehensive frequency list for the UK. It covers thousands of frequencies from 26Mhz to 1.8Ghz.

**Our Price £19.50** PLUS £6.00 P+P.



### MRP-2000 (pre-amplifier)

Freq: 25-2000 Mhz Pwr: 9-15v input (battery not included). Gain: 14dB Complete with joining lead with BNC (For use with any passive antennas ie SuperScan Sticks/Discones and with upto 14dB gain, bring those lost signals to life !!!)

**Our Price £49.95** plus £6.00 P+P

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Weather Satellite  
Pre-amp with massive  
25dB gain! Intro prices  
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# Medium Wave Chart

kHz	Station	Country	Power (kW)	Listener	kHz	Station	Country	Power (kW)	Listener
531	Ain Beida	Algeria	600/300	G*	801	Munchev-Ismaning	Germany	300	G*,N*
531	Akraberg	Faeroe Is.	100	I,J,K,L,M	810	Madrid(SER)	Spain	20	B*
531	RNE5 via ?	Spain	?	C,G*	810	Burghhead(BBCScot)	UK	100	H*,J,K,L,M,N*
531	Beromunster	Switzerland	500	B*,C,D,G,N	810	Westerglen(BBCScot)	UK	100	B*,D,G
540	Wayve-Overijssel(VRI)	Belgium	150/50	B,C*,G*,I*,N	810	Skopje(MacedonianR)	Yugoslavia	1000	B*
540	Sidi Bennour	Morocco	600	G*	819	Batra	Egypt	450	G*
540	Barcelona (DCR)	Spain	50	C*	819	Toulouse	France	50	B*
549	Les Trembles	Algeria	600	G*	819	S. Sebastian(EI)	Spain	5	B*,G*
549	DLF via ?	Germany	?	I*	828	Hannover(NDR)	Germany	100/5	B*
549	Thurnau (DLF)	Germany	200	N*	837	Nancy	France	200	B*,G*
558	Espoo	Finland	50	C*,G*	837	Amchit (R.Libani)	Lebanon	100	G*
558	Valencia(RNE5)	Spain	20	G	837	COPE via ?	Spain	?	G*
567	Tullamore(RTE1)	Eire	500	B,D,G,H*,I*,M,N	846	Rome	Italy	1200	B*,N*
576	Muhlacker(SDR)	Germany	500	G*,I*,N*	855	RNE1 via ?	Spain	?	B*,G*,I*,N*
576	Barcelona(RNE5)	Spain	50	B*,G*	864	Paris	France	300	B,G,I*,N*
585	Paris(FIP)	France	8	B*,G*	873	Frankfurt(AFN)	Germany	150	B*,H*,I*
585	Madrid(RNE1)	Spain	200	B*,N*	873	Zaragoza(SER)	Spain	20	N*
585	Dumfries(BBCScot)	UK	2	D	873	Enniskillen(R.U.I)	UK	1	D
585	Frankfurt(HR)	Germany	1000/400	B*,G*,I*	882	Barcelona	Spain	20	G*
594	Oujda-1	Morocco	100	G*	882	Washford(BBCWales)	UK	100	D,G,H*,N
594	Muga	Portugal	100	B*	891	Algiers	Algeria	600/300	B*,G*,N*
603	Lyon	France	300	B*,G*,I*	891	Hulsberg	Netherlands	20	G*
603	Sevilla(RNE5)	Spain	50	G*	900	Brno(CRo2)	Czech Rep.	25	G*
603	Newcastle(BBC)	UK	2	D,G*,J,K,L,M	900	Milan	Italy	600	B*,N*
612	Athlone(RTE2)	Eire	100	B,D,G*,N	900	COPE via ?	Spain	?	G*,H*
612	RNE1 via ?	Spain	10	G*	909	B'mans Pk(BBC5)	UK	140	G,N
621	Wayve (RTBF)	Belgium	80	B,C*,G*,I*,J,K,M,N	909	Westerglen(BBC5)	UK	50	H*,J,K,L,M
621	RNE1 via ?	Spain	10	G*	918	Domzale	Slovenia	600/100	N*
621	Vigra	Norway	100	H*,J,K,L,M	918	Madrid(R.Int)	Spain	20	G*
630	Tunis-Djedeida	Tunisia	800	B*	927	Wolvertem	Belgium	300	B*,G*,I*,J,N
639	Praha(Liblice)	Czech	1500	G*,K,N*	936	Bremen	Germany	100	I*,J,N*
639	RNE1 via ?	Spain	10	B*,G*,I*	936	RNE5 via ?	Spain	?	G*
648	RNE1 via ?	Spain	10	G*	945	Toulouse	France	300	B*,G*,I*,N*
648	Orfordness(BBC)	UK	500	B*,G*,J,N	954	Brno (CRo2)	Czech Rep.	200	G*
657	Madrid(RNE5)	Spain	20	B*,G*,I*,N*	954	Madrid(CI)	Spain	20	G*,N*
657	Wrexham(BBCWales)	UK	2	B,D,G,H*,N	963	Pori	Finland	600	B*,G*,I*
666	Messkirch(Rohrd(SWF))	Germany	150	I*,N*	963	Victoria (EI)	Spain	10	B*
666	Lisboa	Portugal	135	G*	972	Hamburg(NDR)	Germany	100	B*,G*,I*,N*
675	Logic(Arrow/CL Rock)	Holland	120	B,D,G,I,N	981	Alger	Algeria	600/300	B*,C,G*
675	Rost	Norway	20	I*,J,K,L,M	981	Megara	Greece	200	G*
684	Sevilla(RNE1)	Spain	500	B*,G*,I*,N*	990	Berlin	Germany	100	B*,G*,N*
684	Avalal(Beograd-1)	Yugoslavia	2000	B*	990	R.Bilbao(SER)	Spain	10	B*,G*
693	Burghhead(BBC)	UK	50	H*,J,M	990	Redmoss(BBC)	UK	1	J,K,L,M
693	Droitvich(BBC)	UK	150	G,N	990	Redmoss(NaGaidheal)	UK	1	I
702	TWR via Monte Carlo	Monaco	300	G	999	Madrid(COPE)	Spain	50	B*,G*,N*
702	Sabae-Aiou	Morocco	140	G	1008	Flevo(NOS-5)	Holland	400	G*,N*
702	Presov	Slovakia	200	G*	1017	Rheinsender(SWF)	Germany	600	B*,G*,H*,J*,N*
711	Rennes (R.9leu)	France	300	B,G,N*	1017	RNE5 via ?	Spain	?	G*
711	Laypune	Morocco	600	G*	1035	Lisbon	Portugal	120	B*
720	Langenberg	Germany	200	I*	1044	Dresden(MDR)	Germany	20	G*,N*
720	Lisnagarvey(BBC4)	N.Ireland	10	G,H*,N	1044	Sabae-Aiou	Morocco	300	G*
720	Santa Cruz	Tenerife	20	B*	1044	S. Sebastian(SER)	Spain	10	B*,G*
720	Crystal Palace BBC4	UK	0.75	B	1053	Talk Sport via ?	UK	?	D,G,H*,J,K,L,M,N
729	Cork(RTE1)	Eire	10	B*,G*	1062	Kalundborg	Denmark	250	B*,D,G,H*,J,K,L,N*
729	RNE1 via ?	Spain	?	G*,N*	1062	R.Uno via ?	Italy	?	I*
738	Paris	France	4	G*	1071	Cairo	Egypt	100	G*
738	Barcelona(RNE1)	Spain	500	B*,G*,I*,N*	1071	Bilbao(EI)	Spain	5	B*,N*
747	Flevo(NOS-1)	Holland	400	B,G*,J,K,L,M,N	1071	Talk Sport via ?	UK	?	G*,J,K,L,N
756	Braunschweig(DLF)	Germany	800/200	B*,G*,I*,N*	1080	SER via ?	Spain	?	B*,G*,N*
756	Redruth(BBC R-4)	UK	2	F*	1089	Talk Sport via ?	UK	?	D,G,H*,J,K,L,M,N
765	Sottens	Switzerland	500	B*,J*	1098	Nitra(Jarok)	Slovakia	1500	G*,N*
774	Enniskillen(BBC)	N.Ireland	1	D	1098	RNE5 via ?	Spain	?	B*,G*
774	RNE1 via ?	Spain	?	G*,I*,N*	1107	AFN via ?	Germany	10	B*,H*
774	Plymouth(BBC)	UK	1	G*	1107	RNE5 via ?	Spain	?	B*
783	Leipzig(MDR)	Germany	100	G*,N*	1107	Talk Sport via ?	UK	?	D,G,N
783	Barcelona (CDPE)	Spain	50	B*,G*,I*	1116	Pontevdral(SER)	Spain	5	G*,N*
782	Limoges	France	300	B*,I*,N*	1125	La Louviere	Belgium	20	B*,G*
792	Londonderry(BBC)	UK	1	D	1125	Deanovic	Croatia	100	B*,N*
					1125	RNE5 via ?	Spain	?	G*
					1125	Llandindod,Wells	UK	1	B*,G*
					1134	Zadar(Croatian R)	Croatia	600/1200	B*,G*,N*
					1143	AFN via ?	Germany	1	B*,N*
					1143	Bolshakovo(Mayak)	Russia	150	G*
					1143	COPE via ?	Spain	2	G*,N*
					1179	SER via ?	Spain	?	B*,G*
					1179	Solvestorg	Sweden	600	B*,G*,H*,N
					1188	Kuume	Belgium	5	G*
					1188	Reichenbach(MDR)	Germany	5	G*
					1188	Marcali(VDA/RFE)	Hungary	500	B*,N*
					1197	Munich(VOA)	Germany	300	B*,N*
					1197	Virgin via ?	UK	?	D,G*,N
					1206	Bordeaux	France	100	B*,G*,H*,I*,N*
					1215	Virgin via ?	UK	?	D,G*,H*,J,K,L,M,N
					1224	Lelystad(Othe beat)	Holland	50	B*,G*
					1233	Virgin via ?	UK	?	G*,N
					1242	Marseille	France	150	B*,I*
					1242	Virgin via ?	UK	?	G*,H*,J
					1251	Huisberg	Netherlands	10	G*
					1260	SER via ?	Spain	?	G*
					1260	Guldford (V)	UK	0.5	G*
					1269	Neumunster(DLF)	Germany	600	B*,G*,H*,I,N
					1278	Dublin/Cork(RTE2)	Eire	10	B*,D,G*,N*
					1278	Strasbourg	France	300	B*
					1287	Larjad(SER)	Spain	10	B*,G*,N*
					1296	Valencia(CDPE)	Spain	10	B*,G*,N*
					1296	Orfordness(BBC)	UK	500	G*,N
					1305	RNE5 via ?	Spain	?	G*
					1314	Kvitsoy	Norway	1200	B*,D,G*,H*,J,K,L,M,N
					1323	W'brunn (VOR)	Germany	800/150	A*,B*,N*
					1332	Rome	Italy	300	I*,N*
					1341	Lisnagarvey(BBC)	N.Ireland	100	B*,G*,H*,J,N*
					1341	Tarrasa(SER)	Spain	2	N*
					1359	Madrid(RNE-FS)	Spain	600	B*,G*,N*
					1368	Foxdale(Monx R)	Is of Man	20	B*,D*,H*,I*,N*
					1377	Lille	France	300	B*,C,D,G,H*,N*
					1386	Bolshakovo	Russia	1200	A*,B*,C*,D,H*
					1395	Logic (Biz News)	Netherlands	120/40	B*,J,L,M,N
					1395	Radio 10 FM	Netherlands	?	D,G,I
					1404	Brest	France	20	B*,G*,H*,N*
					1413	RNE5 via ?	Spain	?	G*,N*
					1422	Heusweiler(DLF)	Germany	1200/600	B*,G*,H*,I*,N*
					1431	Wilsdoff (Mega R)	Germany	250/150	G*
					1440	Marnach(RTL)	Luxembourg	1200	C*,G*
					1440	Dammam	Saudi Arabia	1600	B*
					1449	Redmoss(BBC)	UK	2	B*,F*,H*,J,J,M
					1458	Filake	Albania	500	G*
					1467	Monte Carlo(TWR)	Monaco	1000/400	G*,H*,N*
					1476	Wien-Bismberg	Austria	600	B*,N*
					1485	SER via ?	Spain	?	G*,N*
					1494	Clermont-Ferrand	France	20	B*,G*,H*,N*
					1494	Krasny Bor	Russia	1200	B*
					1503	RNE5 via ?	Spain	?	G*
					1512	Wolvertem	Belgium	300	C*,D,E*,G*,N*
					1521	Kusica(Ozafice)	Slovakia	600	N*
					1521	Duba	Saudi Arabia	2000	B*
					1530	Vatican R	Italy	150/450	B*,G*,N*
					1539	Mainflingen(ERF)	Germany	350/700	D,G*,N*
					1557	Nice	France	300	B*
					1575	Genova	Italy	50	B*,G*
					1575	SER via ?	Spain	5	G*,N*
					1584	SER via ?	Spain	2	G*,N*
					1593	?(VDA)	Kuwait	?	B*
					1602	El Dakhia	Egypt	10	G*
					1602	SER via ?	Spain	?	G*
					1602	Vitoria(EI)	Spain	10	N*
					1611	Vatican R	Italy	15	G*

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

### Listeners:-

- (A) Bernard Curtis, Stalbridge.
- (B) Simon Hockenhuil, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) Eddie McKeown, Newry.
- (E) Clare Pinder, Appleby.
- (F) Richard Reynolds, Guildford.
- (G) Ernie Strong, Ramsey, Cambs.
- (H) Michael Wasley, while at Lerwick, Shetland.
- (I) Michael Wasley, while at Kirkwall, Drkney.
- (J) Louisa & Michael Wasley, while at Jarishof, Shetland.
- (K) Louisa & Michael Wasley, while at Eshaness, Shetland.
- (L) Louisa & Michael Wasley, while at Skaw, Shetland.
- (M) Louisa \* Michael Wasley, while at Cumlaquoy, Drkney.
- (N) Fred Wilmshurst, Northampton.

USA 18.980 (Eng to Eur 1600-2200) 44344 at 1755 in Stalbridge; WYFR via Okeechobee FL, USA 18.930 (Ger, It, Eng to Eur, N.Africa 1700?-?) 35544 at 2145 in Northampton.

Reception over long distances in the 17MHz (16m) band was also unreliable. Sometimes R.Australia's broadcast to E/SE. Asia via Shepparton on 17.750 (Eng 0030-0400, 0530-0800, 0830-0900, 0930-1100) reached

HCJB via Kununurra, Australia **15.390** (Eng to India, Indonesia 1230-1700) 43334 at 1300 in Stalbridge & 43343 at 1700 in Dudley; Trans World R. (KTWR) Guam, Pacific **15.330** (Eng to S.Asia 1445-1545) 34333 at 1507 in Amsterdam; Voice of America (VOA) via ? **15.580** (Eng to Africa 1600-2230) 33233 at 1830 in Rugby; Voice of Indonesia, Jakarta **15.150** (Eng to Eur, Africa 2000-2100) 34333 at 2000 in Newry; RCI via Sackville **15.325** (Fr, Eng to Eur, M.East, Africa 1900-2200) 44444 at 2001 in Truro; BBC via Ascension Is **15.400** (Eng to W.Africa 1500-2300) 45423 at 2042 in E.Bristol; DW via Rwanda **15.205** (Eng to W.Africa 2100-2157) 35444 at 2150 in Northampton; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 44333 at 2200 by **Clare Pinder** in Appleby.

The occupants of the **13MHz (22m)** band include Swiss R.International (SRI) via Julich, Germany **13.650** (Fr, Ger, It, Eng to Nr East, Africa 0600-0800), rated 43333 at 0735 in Herstmonceux; Croatian R, Deanovec **13.830** (Cr to Eur) 44434 at 0905 in Stalbridge; Voice International, Australia via Darwin **13.685** (Eng to S/SE.Asia 0800?-1500?) 33333 at 1232 in Truro; R.Prague, Cech Rep **13.580** (Eng, Czech to N.Eur 1300-1357) 25322 at 1305 in E.Bristol; UAE R.Dubai **13.675** (Ar, Eng to Eur 0600-2045) 34343 at 1338 in Newry; Vatican R, Italy **13.765** (Eng to Africa 1530-? Sun) 44444 at 1533 in Amsterdam & 45544 at 1543 in Northampton; BBC via Rampisham, UK **13.745** (Russ to E.Eur 1700-2030) 54555 at 1800 in Stalbridge; China R.Int via Kunming? **13.790** (Eng to M.East, Africa 1900-2000) 43323 at 1900 in Seaton; Voice of Vietnam, Hanoi **13.740** (Eng to Eur 1900-1930) 55434 at 1925 in Ebbw Vale; R.Damascus, Syria **13.610** (Eng to Eur 2005-2100) 25332 at 2005 in Newry; Voice of America (VOA) via Botswana **13.670** (Eng to Africa 1900-2200) 44333 at 2100 in Morden.

R.Australia's broadcast in the **11MHz (25m)** band to E/SE.Asia via Shepparton on **11.660** (Eng 1330-1700) has been reaching the UK. It was rated 22222 at 1340 & 35343 at 1505 in Northampton. Noted from other areas were R.Prague, Czech Rep. **11.600** (Sp to SW.Eur 0730-0757), rated 55555 at 0710 in Herstmonceux; KNLS, Anchor Point, Alaska **11.765** (Eng to E.Asia 0800-0900) 43334 at 0840 in Stalbridge; World Harvest R. (WHRI) via Maine, USA **11.730** (Eng to Africa 0500-1000) 54445 at 0845 in Stalbridge; BBC via Woofferton, UK **12.095** (Eng to Eur 0600-1700) 24222 at 1011 in Newry; R.Finland via Pori **11.755** (Fin to Eur, Russia, W.Africa 0700-?) 44444 at 1146 in Oxted; R.Jordan via Al Karanah **11.690** (Eng to W.Eur 1100-1530) 35533 at 1313 in E.Bristol & 54444 at 1515 in Amsterdam; WWCR Nashville, USA **12.160** (Eng to N.America, Eur 1200-2300?) 33433 at 1402 in Morpeth; Adventist World Radio (AWR) via Agat, Guam **11.560** (Eng to S.Asia 1600-1700) 44333 at 1620 in Morden; R.Japan via Yamata, Japan **11.970** (Eng to Eur 1700-1800) 44444 at 1710 in Rugby; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) SIO 333 at 1838 by **Francis Hearne** in N.Bristol; Israel R, Jerusalem **11.605** (Eng to

Eur, N.America 1900-1930) 55555 at 1900 in Appleby; Voice of the Mediterranean via Russia **12.060** (Eng to Eur, N.Africa 1900-2000) 54343 at 1954 in Ebbw Vale; R.Canada Int (RCI) via UAE Dhabayya **12.015** (Eng to Eur, Africa, M.East 2000-2059) 44323 at 2000 in Seaton; DW via Kigali, Rwanda **11.865** (Eng to W.Africa 2100-2200) 35544 at 2140 in Northampton; R.Japan via Ascension Is **11.855** (Eng to C.Africa 2100-2200) 34233 at 2147 in Newry.

R.Australia's broadcasts in the **9MHz (31m)** band have been received in the UK on three frequencies from Shepparton: **9.475** (Eng to Asia 1330-1858), rated 25522 at 1444 in E.Bristol & 23333 at 1527 in Ebbw Vale; **9.500** (Eng to Asia 1900-2130) 43343 at 1945 in Newry & 43334 at 2010 in Stalbridge; **9.580** (Eng to Vanuatu, New Caladonia, Fiji, Samoa, N.America 0800-2130) SIO 444 at 2017 in N.Bristol.

During the early morning WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) was rated 44444 at 0210 in Morpeth; R.Slovakia Int via Rimavska Sobota **9.440** (Eng to Australasia 0700-0730) 54444 at 0715 in Amsterdam; R.Prague, Czech Rep. **9.880** (Eng to NW.Eur 0700-0727) 54544 at 0715 in Herstmonceux; AWR via Moosbrunn, Austria **9.775** (Eng to Eur 0730-0800) 44444 at 0730 in Amsterdam; Herald Broadcasting via WSHB Cypress Creek, USA **9.860** (Eng to Eur 0800-0900 Sat/Sun) 44233 at 0800 in Seaton; R.Vilnius, Lithuania **9.710** (Eng to W.Eur 0830-0900) 55545 at 0855 in E.Bristol.

Later, R.Netherlands via Bonaire, Ned.Antilles **9.785** (Eng to Asia, Far East, Pacific 0930-1125) was 24111 at 1007 in Newry; R.Polonia, Warsaw **9.525** (Eng to W.Eur 1200-1255) 44443 at 1200 in Morden; Croatian R, Deanovec **9.830** (Cro to Eur) 44444 at 1445 in Oxted; Voice of Russia **9.480** (Eng to N.Eur 1800-2100) 54444 at 1805 in Stalbridge; Voice of Turkey, Ankara **9.785** (Eng to Eur 1830-1930) 43434 at 1844 in Ebbw Vale; China R. Int, Beijing **9.440** (Eng to Africa 1900-2100) 25444 at 1925 in Northampton; Voice of Armenia **9.960** (Eng to Eur 1940-2000) 42444 at 1945 in Rugby; R.Ext. Espana via Noblejas, Spain **9.840** (Eng to Eur 2100-2159) 44333 at 2105 in Appleby; R.Cairo, Egypt **9.990** (Eng to Eur 2115-2245) 44343 at 2149 in Newry; Swiss R. Int (SRI) via Sottens **9.885** (Fr, Ger, It, Eng to S.America 2200-0000) 22222 at 2330 in Truro; R.Netherlands via Bonaire, Ned.Antilles **9.845** (Eng to N.America 2330-0525) SIO 444 at 2336 in N.Bristol.

In the **7MHz (41m)** band R.For Peace Int, Costa Rica **7.445** (Eng to N.America, Eur 2200-0800) was rated 44444 at 0200 in Morpeth; Family R. (WYFR) via Okeechobee FL, USA **7.355** (Eng to Eur 0600-0750) 44444 at 0605 in Morden; WWCR Nashville, USA **7.465** (Eng to E.USA 2200-1400) 35323 at 0841 in Ebbw Vale; Sudwestfunk via Rohrdorf **7.265** (Ger to Eur 24hrs) 55445 at 0930 in Stalbridge; Deutsche Welle (DW) via Wertachtal?, Germany **7.170** (Croat to Eur) 44444 at 1426 in Oxted; R.Polonia (Polish R), Warsaw **7.285** (Eng to Eur 1700-1800) 53433 at 1730 in Herstmonceux; R.Slovakia Int.

**7.345** (Eng to Eur 1830-1900) SIO 444 at 1844 in N.Bristol; R.Netherlands via Madagascar **7.120** (Eng to Africa 1730-2025) 42434 at 1900 in Seaton; R.Thailand, Udonthani **7.155** (Eng to N.Eur 1900-2000) 55555 at 1909 in Amsterdam & 44444 at 1950 in Rugby; Voice of Russia **7.440** (Eng to Eur 1900-2000) 44444 at 2000 in Truro; WBCQ Monticello, USA **7.415** (Eng to N.America 2000-0515, 0515-0630 Sat) 25343 at 2130 in Northampton; R.Bulgaria, Sofia **7.500** (Various, Eng 2100-2200) SIO 444 at 2102 in N.Bristol & 45454 at 2140 in Newry; All India R. (AIR) via Bangalore **7.410** (Hind, Eng to Eur 1745-2230) 44333 at 2200 in Appleby; R.Prague, Cz.Rep **7.345** (Eng to N.America 0000-0027) 35522 at 0006 in E.Bristol.

Some of the many broadcasts for listeners in Europe in the **6MHz (49m)** band come from R.Vlaanderen Int (Belgium) via Germany **5.985** (Eng 0700-0730), rated 55555 at 0720 in Newry; TWR Monaco via Germany **6.045** (Eng 0700-0815) 55555 at 0800 in Morden; R.Netherlands via Julich, Germany **6.045** (Eng 1030-1225) 55544 at 1045 in Herstmonceux; Deutsch Welle (DW) via Julich **6.140** (Eng - News) 54445 at 1410 in Stalbridge; Croatian R, Deanovec **6.165** (Cro 0400?-2300?) 'just audible' at 1446 in Oxted; R.Slovakia Int, Bratislava **5.920** (Eng 1630-1700) 44444 at 1630 in Rugby; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 55555 at 1820 in Seaton; Deutschland R, Berlin **6.005** (Ger 24hrs) 55555 at 1910 in Seaton; R.Sweden Int via Horby **6.065** (Eng 1930-2000) 55534 at 1932 in E.Bristol; R.Canada Int via Skelton, UK **5.995** (Eng 2000-2100) 55555 at 2000 in Appleby; RAI Rome, Italy **6.185** (Eng 2025-2045) 44444 at 2025 in Dudley; R.Canada Int via Horby, Sweden **5.850** (Eng 2000-2130) SIO 444 at 2031 in N.Bristol; R.Finland via Pori **6.120** (Fin, Sw 0500-2300) 44444 at 2057 in Truro; R.Ukraine Int, Kiev **5.905** (Eng 2100-2200) 44444 at 2100 in Appleby; R.Bulgaria, Sofia **5.800** (Eng 2100-2200) SIO 444 at 2109 in N.Bristol; R.Budapest, Hungary **6.025** (Eng 2100-2130) 45444 at 2112 in Northampton.

Some transmissions intended for listeners other areas may also be received here. They include the BBC via Thailand **5.975** (Eng to Asia 1600-1930), noted as 34333 at 1627 in Rugby; R.Netherlands via Bonaire, Ned.Antilles **6.165** (Eng to N.America 2330-0125), rated 34322 at 2346 in Newry; BBC via Antigua, W.Indies **5.975** (Eng to C & S.America 2100-0500) 35533 at 0022 in E.Bristol; R.Havana, Cuba **6.000** (Eng to N.America 0100-0500) 43333 at 0152 in Morpeth; Zimbabwe BC, Gweru **6.045** (Shona/Ndebele 24hrs?) 44444 at 0508 in Morpeth; WEWN Birmingham, USA **5.825** (Eng to N/C.America 0000-1000) 44333 at 0628 in Ebbw Vale; WHRI South Bend, USA **5.745** (Eng to N.America 2000-1000) 43333 at 0840 in Stalbridge.

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

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3rd order IP	+38dBm typical P1dB = + 22dBm
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
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'A first!' TV/video picture & sound! Certainly a gadget for the future - see things you didn't know existed! A wide-band scanner covering 0.5-2.3GHz (AM/FM/WFM) with "TFT" colour display. FOR THE TRUE ENTHUSIAST

OUR PRICE **£299.99**

Soft case for IC-R3.....£17.99

### OPTO CD-100

10MHz-1GHz multiscanner. Unit combines an RF frequency counter and an off-the-air decoder in one unit. Decodes: CTCSS, DCS, LTR & DTMR on a 16 character LCD display. Also features "reaction tune" for AOR/Icom scanners.

RRP £369.95. OUR PRICE **£149.95**

items of interest

### SUPER-GAINER RH-9090 (SMA)

SMA fitting  
 SMA 40cm flexible whip that is ideal as replacement.  
 OUR PRICE **£26.95** P&P £1.50

### SUPER-GAINER RH-9000 (BNC)

BNC 40cm flexible whip for the ultimate in gain. (Rx-25MHz-2GHz).  
 OUR PRICE **£21.95** P&P £1.50

### M-75 SCANNER PRE-AMP

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

OUR PRICE **£79.95** P&P £5.00



### NEW 8th EDITION THE UK SCANNING DIRECTORY

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

OUR PRICE **£19.75** P&P £5.00

### EP-300

A high quality superb 'police style' earpiece that hangs over the ear. (3.5mm straight plug fitted).

OUR PRICE **£9.95** P&P £2.00

scanning antennas

### NEW DX-500 Frequency Range: 30kHz - 550MHz

It's unobtrusive and can be mounted almost anywhere!  
 \* High intercept point, low noise  
 \* Stainless steel construction  
 \* Static discharge protection (when earthed)  
 \* Height: 40cm, Dia: 35mm  
 \* Includes in-line low noise amplifier(240V) + 12m coax (can be extended)  
 \* Connectors supplied - PL-259 termination  
 \* Ideal for modern buildings & covert installation

ONLY **£279** P&P £10.00

SUPERB COMPACT ACTIVE RECEIVING ANTENNA

### AIR-44

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

**£79.95** P&P £11.00

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

AIR-33 (As above) 1m long. Gain 3/6dB. **£49.95** P&P £8.50

### NEW Q-TEK INTREPID 2000

An amazing vertical (glass fibre) colinear antenna. Quality construction with incredible performance. For the serious scanner enthusiast.  
 Freq range: 0.5-2GHz. PL-259 fitting (not supplied). Length 3m. Mast clamps supplied. (Gain up to 9dB is easily obtained). Reports have shown this to be an excellent performer!

ONLY **£89.95** P&P £11.00

### Q-TEK APOLLO 3000

A brilliant new compact indoor antenna that covers 0.1-3GHz and is just 24" when collapsed. Features "horizontal or vertical" adjustable elements. Ideal for table top mounting or by the window. Patch lead with BNC plug fitted. (Frequency range: 0.1-3GHz).

**£59.95** P&P £6.00

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

A high performance wideband discone offering superb performance from 0.2-2000MHz. Transmit range: 6m, 2m, 70cm (power handling 200W). Fitted with low loss 'N' type socket. Supplied with mounting brackets. (N-plug & coax not supplied).

OUR PRICE **£54.95** P&P £11.00

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

### NEW Q-TEK DDC-2500 DOUBLE DISCONE 0-2500MHz

A superb multi-element 'Double Discone' for the real 'scanner buff'. An amazing 16-element antenna that could surprise even the most demanding customer. Supplied with mast clamps (up to 2" mast). 'N' type fitting (plug not supplied). Stainless steel/all'y construction. RX: 0-2500MHz, HT: approx 1.5m (5ft), WT: approx 1kg.

INRTO PRICE **£64.99** RRP: 79.99

combination aids

### SP-3 (PROFESSIONAL)

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

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

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

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

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

### DPX-30 ANTENNA DUPLEXER/COMBINER

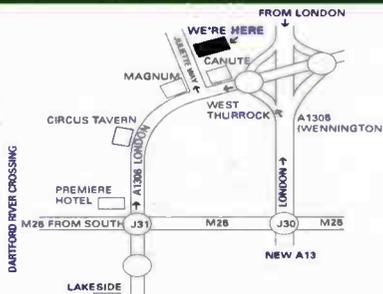
Allows two antennas to be connected to one receiver without interaction. Can be used in reverse

**£54.95** P&P £3.50  
 Ant A (0-30MHz) } To receiver low  
 Ant B (30-2000MHz) } insertion loss

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**EVOKE-1**



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

OUR PRICE **£89.95**  
Car DC lead.....£14.99    Optional spkr.....£29.99  
Evoke 2.....£149.95

**KENWOOD HS-5**



Superb padded professional communications headphones. Designed specifically for SWL. 1/4" jack.

PRICE **£56.99** Del £5.00

**KENWOOD HS-6**



A professional lightweight pair of dedicated short wave listening headphones. 1/4" and 3.5mm jack.

PRICE **£36.99** Del £5.00

DAB and more

**SANGEAN ATS-909**



A superb performance all mode 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 WFM.

**£139.95** (P&P £10)    240V Power Supply £16.95

**SANGEAN ATS-505**



NEW! Wins Dutch "Automobile" award. Excellent small short wave receiver (digital). 0.15-30MHz (AM, SSB, CW, WFM). 88-108MHz FM stereo. Includes carry case.

**£79.95** (P&P £10.00)    240V Power Supply £16.95

**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.

**£159.95**    240V Power Supply...£24.95  
P&P £10    AN-100 active aerial...£64.95

**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 £8.50

portable receivers

desktop receivers

shortwave antennas etc

gadgets

**REALISTIC DX-394**



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

OUR PRICE **£199.95** P&P £10  
**OUR BEST SELLING LOW PRICED RECEIVER**  
HD-1010 optional headphones.....£9.99

**ICOM IC-R75**



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

OUR BEST SELLING HF RECEIVER    OUR PRICE **£625.00**  
Optional DSP audio filter.....£85.00  
Optional extension speaker.....£74.99  
Optional voice synthesiser.....£32.95

**JRC NRD-545 DSP**



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

OUR PRICE **£1299.00** Del £10.00  
NVA-319 Extension speaker    £189.00  
CHE-199 VHF/UHF converter.....£269.00

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

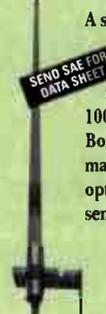


This is a professional wide band receiving antenna with a very high intercept point that ensures a low noise level allowing even the weakest signals to be heard. Constructed of high-impact plastic and aluminium alloy - the amplifier is protected inside a

waterproof stainless steel vessel. The unit is supplied complete with mounting hardware and an indoor controller with PSU (coax not supplied). Freq. 20kHz-54MHz. Gain: +6dB (ref dipole). Intercept points: ≥+75dBm (2nd ord), ≥ +50dBm (3rd ord). (Static protection included). For the true professional.

**£329.95** DEL £15.00

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



A superb quality active antenna with a very high intercept point ideal for weak signal reception without increases in radiated noise. A truly amazing antenna! Freq: 100kHz-30MHz.

Bomb-proof over loading figures, 90cm long, mains PSU + controller supplied (coax optional). Atmospheric-noise compensated sensitivity.

**£169.95** DEL £11.00

**Q-TEK STEALTH SR-60**



Superb, ready assembled wire antenna system. Not only is this end fed for ease of installation, it is also constructed from extremely high quality components. New 'plyweave' PVC coated wire makes this virtually invisible. It comes ready assembled

including a 'noise filter system'. A 10m down lead with PL-259 is also fitted (both antenna & down lead are adjustable in length). Overall length 20mtrs (adjustable down to 6).

OUR PRICE **£69.95** DEL £10.00

**E.M.F. ANTENNA**



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

ONLY **£62.95** P&P £4.00

**Q-TEK SKY-WIRE MkII**

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

ONLY **£32.95** P&P £3.00



**AT-2000 ANTENNA TUNER**



Deluxe SW ATU  
0-30MHz. SO239 fittings.  
ONLY **£89.00**

(Probably the best ATU around) P&P £6.00  
PL-259 to PL-259 patch lead (0.6m).....£5.99  
PL-259 to PL-259 patch lead (4m long).....£9.99  
BNC adaptors.....£3.95  
BNC to PL-259 patch lead.....£9.99

**NOISE REDUCTION**



NES-10-2 NOISE ELIMINATING SPEAKER.  
Fully adaptive noise cancelling - no adjustments necessary. Easy connected via 3.5mm jack lead. (Unit requires 12V supply)

ONLY **£99.95** P&P £4.00

**WA-50 'AMPLIFIER'**



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

OUR PRICE **£99.95** P&P £7.50  
Optional AC adapter.....£16.99

**MLB (R.F. SYSTEMS)**



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

**£42.95** POST £3.00

# HAYDON

## Communications

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All items sold subject to our terms & conditions - available on request



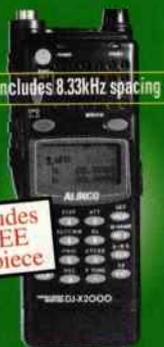
Includes FREE Earpiece

**AOR AR8200MKIII**

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

OUR PRICE **£379.00** Del £10

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



Includes 8.33kHz spacing

**ALINCO DJ-X2000**

Includes FREE Earpiece

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

INCLUDES FREE EP-300 EARPIECE **£419.95** Del £10

Optional case.....£15.00  
 Optional battery box .....£14.99  
 Cigar lead .....£19.99  
 PC interface .....£42.95



Includes FREE Earpiece

**ALINCO DJ-X10**

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

OUR PRICE INCLUDES FREE EP-300 EARPIECE **£269.95** Del £10

Optional case.....£15.00  
 Optional battery box .....£14.99  
 PC interface .....£42.95  
 Cigar power lead .....£19.99

**YUPITERU MVT-7100**

Includes FREE Earpiece



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

OUR PRICE INCLUDES FREE EP-300 EARPIECE **£199.95** Del £10

Soft case for 7100EU/9000 - specify .....£19.99  
 MVT-9000 MkII .....Our price £325.00  
 MVT-7300EU.....Our price £219.00



Includes FREE Earpiece

**ICOM IC-R5**

New pocket hand-held scanner (0.1-1310MHz) AM/FM/WFM. Superb high-speed scanner featuring alpha tag and much more.

OUR PRICE INCLUDES FREE EP-300 EARPIECE **£149.99** Del £10

BATTERIES AND CHARGER INCLUDED

Optional soft case.....£17.99  
 Optional cigar lead .....£19.99

**ALINCO DJ-X3**

Includes FREE Earpiece



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

OUR PRICE INCLUDES FREE EP-300 EARPIECE **£99.95** Del £10

Optional battery pack and drop in charger £39.99

Soft case.....£15.99  
 PC interface .....£42.95



**SANGEAN QSR-1**

Voice activated desktop recorder with quarter speed record. (Sold for more under Roberts name:- C-9950). Superb accessory for the radio enthusiast.

OUR PRICE **£69.95** Del £10.00

SWM, December 2003

# Christmas Gifts at unbelievable prices!



**ICOM  
IC-R8500**

Next generation wideband receiver for the true perfectionist. 0.1-2GHz. (All mode). Includes free PSU.



**£1099**

Del £10.00

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

ICR-8500 "PlusII"....ICR-8500 + SP21 + Voice Synthesiser. OUR PRICE £1195.00



**FAIRHAVEN  
RD-500VK+**

Superb wideband receiver (all mode) with over 50,000 memories capable of holding text. 20kHz-1750MHz. Incl's remote control/PSU/PC lead and software. RRP: £899.00



**£699.99**

Del £10.00



**AOR  
AR-8600 MkII**

Extremely versatile all mode receiver (100kHz-3GHz). Now with improved short wave performance.



**£589**

Del £10.00

Optional power supply .....£19.99



**YAESU  
VR-5000**

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



**£535**

(incl's PSU). Del £10.00

Voice synthesiser .....£49.99

Voice recorder .....£49.99

Optional DSP .....£79.99

VR-5000 +3 (incls DSP + voice synth'r + record unit).....£699.99



**UNIDEN  
UBC-780XLT**

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



**£279.99**

Del £10.00

Software 780XLT.....£34.99



**GRE  
PSR-225**

500 channel. 25-1300MHz. (25-550/760-1300MHz) AM/FM/WFM selectable.



**£209.99**

Del £10.00

# Bandscan

Australia

● **Greg Baker** PO Box 3307, Manuka, Act 2603, Australia  
● **E-mail:** [greg@pcug.org.au](mailto:greg@pcug.org.au)

**A**t the time of writing this, Radio New Zealand International (RNZI) is off the air awaiting spare parts from overseas. The RNZI transmitter failed on Saturday 30 August, due, the station says, to a lightning strike which caused major faults. RNZI says that parts have been ordered.

In the meantime, since 8 September, the station has been leasing four hours a day from Radio Australia to broadcast its breakfast session on 9.580MHz (Sunday 1900-2115, Monday to Thursday 1700-2115 and Friday 1700-2015). The RNZI Internet feed is not affected but then, that's not the idea is it? Radio New Zealand International can be found at [www.rnzi.com](http://www.rnzi.com)

## Minister Goes

After many years as Minister for Communications, Senator **Richard Alston** has signalled his intention to bow out at the next federal election. This and other political considerations have precipitated a cabinet reshuffle. Alston has been replaced by the previous ministry's Attorney-General, **Daryl Williams**.

Alston's term has not been seen as wildly successful by commentators who point to a raft of unfulfilled policies and failed initiatives. His successor, Mr Williams, is reported to know little of telecommunications and may have a steep learning curve ahead of him.

## Paid Advertising

There have been calls from government politicians for paid advertising on the television network of the Australian Broadcasting Corporation (ABC). The idea here seems to be to bolster the funds of the ABC by allowing paid advertisements between programs, as the other national broadcaster, SBS television, has done for some years.

Also in this climate, the outgoing Minister Alston has called for some subscriber funding for the national broadcaster to supplement government funding. Again to save money in the face of what ABC management see as inadequate funding, the ABC has cut weekend regionally-based radio news bulletins in favour of generic bulletins produced nationally.

On a technological note, the ABC has acquired the right to datacast a large range of material including electronic program guides, electronic mail and information services. These will be able to be provided to viewers with digital set-top boxes.

## Different Focus

The Special Broadcasting Service (SBS), set up and operated for many years to service Australia's ethnic communities, has decided on a different focus for its television network. Billed as looking for a 'younger, groovier audience', the changes will mean more Australian drama and fewer documentaries.

The changes have been precipitated by SBS's new head of television, **Shaun Brown**, a New Zealander appointed to the job in January. Mr Brown has been reported as pointing out that an ethnic focus does not service the interests of all Australians. Since his arrival, Shaun Brown has cut 20 (of 400) jobs through redundancy and attrition and diverted A\$60 million (about £25 million) to programming.

The Special Broadcasting Service - [www.sbs.com.au](http://www.sbs.com.au) - attracts less than 4% of the evening audience representing one-quarter the audience of the other national broadcaster the ABC, and around 40% of the number of people who watch pay television. Nonetheless 7.8 million people tune into SBS television every week.

## Radio Australia

To improve its reach, Radio Australia (RA) has negotiated more relays of its programs on local broadcasting networks in the Asia-Pacific area. In Thailand the national English language network is carrying weekly re-broadcasts of RA features; in Indonesia RA now has local relays in East Java and Kalimantan; and in the Solomon Islands, Wantok FM in Honiara is running RA English language programs.

Radio Australia is also negotiating a 24-hour f.m. re-transmission facility in Honiara. In Indonesia, there are now 22 live satellite relays and a total of 37 stations which re-transmit RA's Indonesian language services.

## Domestic SW

The ABC operates three domestic short wave services in the Northern Territory: VL8A in Alice Springs on 4.835MHz during the day and 2.310MHz at night, VL8K in Katherine on 5.025MHz during the day and 2.485MHz at night and VL8T in Tennant Creek on 4.910MHz during the day and 2.325MHz at night.

## Telecommunications

Partially privatised national telecommunications carrier Telstra has signed an agreement to replace old radio

concentrator telephone systems with more advanced technologies. The systems concerned are called the Analogue Radio Concentrator Systems (ARCS) and Digital Radio Concentrator Systems (DRCS). Replacement technologies could include CDMA Wireless Local Loop and Subscriber Wireless Integrated Network Gateway.

## Thai Satellite

Thai company Shin Satellite has announced an A\$69 million (about £29 million) investment in two earth stations, one in Broken Hill, New South Wales and the other in Kalgoorlie in Western Australia, to provide broadband services to regional, rural and remote areas of Australia.

Shin Satellite, which is a quarter owned by the Thai Prime Minister, will launch its *iPSTAR* satellite in the first quarter of 2004 to service not only Australia but also the Asia-Pacific region. Shin Satellite will not offer services directly to customers but allow local telecommunications companies to repackage them for video-on-demand, video conferencing and telephony. The proposed satellite footprint is at [www.thaicom.net/ipstar/footprint.html](http://www.thaicom.net/ipstar/footprint.html)

## Reception Reports

**Martyn Gardiner** from Portsmouth has been listening to Radio Australia (RA) again using his Icom R8500 with a long wire antenna. Over a Friday to Sunday period he pulled in RA on Friday evening at 2100 on 9.500MHz with a good signal, Saturday morning at 0730 on 17.750MHz with a readable signal, again on Saturday morning at around the same time on 15.240MHz with a better signal, Saturday afternoon at 1700 on 9.475MHz with some interference rectified only by listening to a single sideband, on Sunday morning at around 0800 on 15.240MHz with some interference and on 21.725MHz with a much weaker signal, on Sunday afternoon at 1500 on 9.475MHz and on a weaker 11.660MHz. Finally on Sunday evening at 2000 on 9.500MHz with a good signal.

**Michael Beesley** from Romsey in Hampshire has pulled in RA on 15.240MHz at 0730 rated SINPO 54544, 9.475MHz at 1645 rated 55544, 15.415MHz at 0715 rated 32542, 11.660MHz at 1645 rated 32542 and 9.500MHz at 1915 rated 33433. He observes that 15.415MHz suffers from interference, from Eastern Europe he thinks.

As for other short wave broadcasters from this part of the world, Michael has Voice International on 11.680MHz at 1700 rated 31541 and buried under BBC World Service. As I reported above RNZI is off the air, Michael says that he has been unable to hear the temporary RNZI 9.580MHz signal from RA transmitters. Michael runs a Sony shop with an ICF-2001D and an ICF-SW100.

I welcome any news and comments. In particular I am interested in any s.w.l. information on Australian stations heard by SWM readers so I can chase up more details and interesting snippets from this end. My address is **PO Box 3307, Manuka, ACT 2603, Australia**. For personal replies please send two IRCs. Those with an Internet connection can get me at [greg@wordgraphics.com.au](mailto:greg@wordgraphics.com.au)

# Off<sup>the</sup> Record

- **Oscar** *do SWM Editorial Offices*
- **E-mail** *off.the.record@pwwpublishing.ltd.uk*

**H**ello there! Allow me first to introduce myself, my name is Oscar and I was somewhat taken aback to hear that Andy Cadier has decided to give up writing this column after having made such an excellent job of it for almost 13 years. I know that I have certainly enjoyed reading his work during that time and I am sure that you will join with me in thanking him for all that he has done for the cause. We wish him well in all his future endeavours. On learning of his decision to hand over the baton to someone else I decided to put myself forward as a candidate. I am aware that stepping into the shoes and following in the footsteps of someone established and successful is often an unenviable task. Success depends to a large extent on you, the readers, so let me just say at this point that I invite and indeed encourage response, input and feedback from readers. Comments, information and correspondence from you can be incorporated directly into this column or included in the Readers' Letters section of this magazine. Free Radio is about freedom of expression and I do not shy away from a heated debate.

## Onwards

My plans for this column are to continue to report the facts about what is happening in the world of Free Radio and related topics. I also hope to examine intelligently some of the arguments surrounding the activity, asking why people do these things and whether or not their arguments are valid. In addition, please be advised that I have a sense of humour. I have been known to pull people's legs and to see the funny side. I hope this comes across in the material I write and that it makes for a lively and entertaining read. One other point to mention is that there is a difference between facts and gossip, which when reported as such should be taken as things which people are definitely saying, but may or may not be true. The rumours can often be more entertaining than the reality. We know how they spread, but heaven only knows where they came from!

## Short Wave Stations

In the last year or two, a number of the familiar station names have become conspicuous by their absence, there have been periods when it has looked almost as if the whole movement is about to give up the

ghost completely, but then a few old faithful stations soldier on, others re-appear after a break and new stations come along and begin to establish themselves, indicating that people out there still feel the need to express themselves via the radio airwaves. One of the most popular bands for this type of operation is the so-called 48m band, which runs from 6.200 to 6.315MHz or thereabouts (with occasional use a little higher than that). Apart from Laser Hot Hits around 6.219MHz which is 24 hours, seven days-a-week, stations operate for periods of hours or a couple of days per week (usually weekends). Other bands used by this type of broadcaster include the h.f. end of the 41m band around 7.4 or 7.5MHz. Recently some stations have experimented with channels around 9.3MHz and there is occasional use of some even higher frequencies, notably 11.4, 15.0 and 15.8MHz. It should be remembered however, that these higher frequencies often produce a skip zone, meaning that transmissions originating from the UK will not be heard within that country and only become audible further away. Night time operation is sometimes possible during the summer months on 48m, but when this band is closed the usual after-dark band is 76m, which runs from 3.90 to 3.95MHz, though only a few stations seem to be using this band at present.

Mentioning briefly a few names of currently active stations, Radio Pandora are fairly regular again on various frequencies having resolved site problems which kept them off for a while. Radio Geronimo is also frequency agile and tends to make only short broadcasts, but their programmes are well put together and worth listening out for. A new station using the name Radio Underground has been heard on 6.245MHz with programming following a number of weeks of test transmissions. The Xenon Transmitting Company (XTC) makes occasional broadcasts with enjoyable and original programming. Crazy Wave Radio is supposedly a German station, but does carry some English programmes and is usually on continuously over one weekend per month. Regular stations based in Ireland include Jolly Roger Radio which normally uses 6.235 and 6.385MHz, and Ozone, which uses various frequencies and carries some radio anorak programmes. WNKR has recently made a return to regular broadcasting, with 6.285MHz a preferred frequency.

Scotland's Weekend Music Radio continues to occupy 7.5256MHz on a fairly regular basis. Uranium International has been very active of late and has been

receiving good signal reports from listeners. Another recently launched station is Radio 48, usually with long broadcasts on 6.300MHz.

## Paul Johnson

It is with sadness that I have to report the recent death of **Paul Johnson**, who was a regular presenter on the station UK Radio as well as Laser Hot Hits and others. He was clearly a determined individual and dedicated to the cause of bringing pleasure and enjoyment to others via the medium of broadcast radio and he sometimes continued to do so in the face of some adversity. He was an example to us all. We salute him and send condolences to his family and friends.

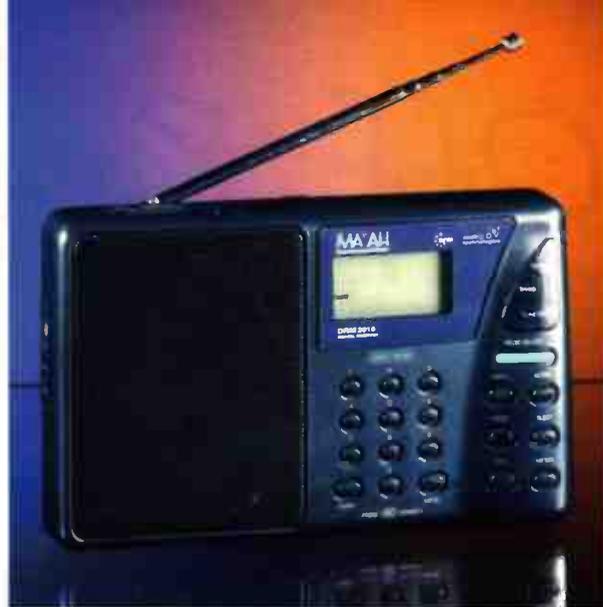
## Medium Wave

In London and the south-east, Radio Kristel will operate on the last Sunday of every month until (and including) October, from 1000 to 1600 on 1179 or possibly 846kHz. Another station Enigma TKR may also return to 846kHz in which case the two stations would coordinate sharing of the frequency. At the beginning of the year Swinging Radio England made some broadcasts on 1476kHz and may at some stage return to that frequency, or to another, perhaps their old 819kHz channel. They have more recently made some broadcasts on short wave only, on their usual 6.276MHz frequency. In the evenings there is often activity on the top end of m.w. between 1602 and 1670kHz, this consists of dozens of Dutch stations and the occasional British one. The Radio Caroline relay continues in the evenings on 1593kHz.

## Radio Jackie

One of the most successful land-based pirates is to return to its traditional territory of South West London as a licensed station. A group of original members of Radio Jackie have purchased the station Thames Radio, which broadcasts on 107.8MHz. The name will be changed and the station re-launched. Some old familiar names and voices have already been heard. The website with audio stream is at [www.thamesradio.com](http://www.thamesradio.com) though this too may change of course. I hope to take a more detailed look at this story and make some comments in the near future.

# World Exclusive! Mayah DRM 2010 Reviewed



**L**awrie Hallett G8VJH gets acquainted with an early example of a stand-alone DRM receiver. Read what Lawrie discovered about one of only five examples of portable Digital Radio Mondiale receivers in the world.

Digital Radio Mondiale (DRM) is the latest digital transmission standard to be developed for broadcasting, formally launched in the summer of 2003 after a mere five years in development, DRM is intended as a replacement technology for analogue a.m. broadcasting in the bands below 30MHz (the long, medium and various short wave bands). The standard has been designed for both domestic and international broadcasting and is virtually a 'drop-in' replacement for analogue transmissions requiring no frequency re-planning. Since the launch the number of regular transmissions has already expanded and additional broadcasters are expected to get involved over the coming months.

In many ways, DRM

phase modulation distorting the digital signal and radiated power levels need to be 7dB down on the maximum analogue a.m. signal level allowed for the location and frequency concerned.

## Chicken and Egg

All the above is fine, but the usual chicken and egg situation exists. Why should broadcasters adopt the new standard if there are no receivers available, and why should anyone buy a DRM receiver if there are no stations to listen to? Once again the DRM consortium seems to have learned from the mistakes made with DAB. Many international broadcasters are already carrying out regular DRM broadcasts and the first domestic receivers intended for purchase by the general public are about to become available.

At the time of writing there were already some 23 DRM equipped transmission sites in regular operation. Whilst the majority of these were high power installations for international broadcasting, this figure also includes some low-power local services operating in Germany and France in particular. Taken together that means that already over 300 hours of DRM transmissions are made every day, mostly in Europe, but including a proportion originating North America or elsewhere in the world.

Here at SWM we've been lucky enough to get our hands on one of only five of the very first pre-production prototypes of a DRM receiver intended for

use by the general public, the Mayah DRM 2010. Various other parties were also involved in the design and manufacture of this design. These organisations include Coding Technologies (well known for their development of the MPEG aacPLUS coding standard used in DRM), AFG Engineering (contributing r.f. expertise) and Himalaya (a long-time manufacturing partner of Mayah, based in China), not forgetting BBC Technology (involved in the d.s.p. development). Lead by Mayah, these organisations have taken the bull by the horns and come up with a user friendly and flexible radio before the major radio manufacturers have got off the starting blocks.

The DRM 2010 I examined was clearly a production prototype, buttons and some connectors were not to the final specification. In addition, the generic external power supply provided was a large switch-mode unit not ideal for use with a receiver due to its habit of emitting spurious signals! According to designers, to minimise such problems, for the production version a smaller unit and internal regulation will be used instead. However, overall, the radio was to all intents and purposes similar to the final version now entering production.



can be seen as a second-generation digital radio broadcasting technology. Clearly the DRM consortium (an international collection of broadcasters, transmitter manufacturers, regulators and the like) learned from the mistakes made by those behind the earlier Eureka-147 DAB

standard, now gradually becoming established as a replacement for analogue f.m. broadcasters. Unlike DAB, DRM remains true to the flexible traditions of broadcast radio whilst taking advantage of the many benefits offered by digital transmission. DRM transmissions are stand-alone, there is no multiplex of stations that needs to be created before transmission and individual stations can tailor their coverage according to their own specific requirements. For broadcasters the only major prerequisites are that the antenna system must be phase linear to avoid problems associated with incidental



Table 1

Service	Frequency MHz	Typical DRM Signal Mode	Location	Power	Time (UTC)
DW Radio (GG)	3.995	AAC SBR (lc stereo) 20.9Kb/s	Wertachtal Germany 48.05N 10.41E	150 (Non-Dir)	1800 - 1900
RTL - Digital Dynamite! (FF)	6.095	AAC SBR (lc stereo) 17.4Kb/s	Junglinster Luxembourg 49.43N 06.15E	35 (Non-Dir)	0800 - 1600
DW Radio (EE)	6.140	AAC SBR (mono) 20.9Kb/s	Juelich Germany 50.57N 06.22E	40 (Non-Dir)	1600 - 1700
DW Radio (GG)	6.180	AAC SBR (lc stereo) 20.9Kb/s	Wertachtal Germany 48.05N 10.41E	150 (Non-Dir)	1400 - 1600
DW Radio (EE)	7.125	AAC SBR (lc stereo) 20.9Kb/s	Wertachtal Germany 48.05N 10.41E	150 (040°)	1600 - 1800
BBC World Service (EE)	7.320	AAC SBR (mono) 20.9Kb/s	Rampisham UK 50.48N 02.38W	33 (062°)	1000 - 1500
DW Radio (EE)	9.655	AAC SBR (lc stereo) 20.9Kb/s	Wertachtal Germany 48.05N 10.41E	150 (270°)	1200 - 1400
DW Radio (EE)	15.440	AAC (mono) 14.4Kb/s	Sines Portugal 37.57N 08.46W	80 (040°)	0900 - 1400
Voice of Russia (GG)	15.780	AAC SBR (lc stereo) 17.4Kb/s	Taldom Russia 56.44N 37.38E	35 (240°)	1500 - 1600

More importantly for testing and evaluation the unit was a fully functional receiver as far as DRM performance was concerned.

### What You Get

The front panel of the radio contains a loudspeaker, liquid crystal display and various control buttons. These include a power button, 12-way keypad (including 'Enter' and 'Clear' keys) for direct entry of frequencies, together with a multi-function band-selection and frequency scanning up-down button. Other controls on the front panel include meter-mode and info buttons, memo and pre-set mode buttons together with 'SC up' and 'SC down' buttons, used to navigate within the service components of a DRM signal. Although there is only a single loudspeaker in the DRM 2010, the unit is capable of resolving stereo both from f.m. and from DRM signals. These can be listened to via the headphones or the stereo line-out connector.

On the sides of the radio are sockets for an external antenna, headphones and the line-out connection. A switch is provided to select DRM, a.m. or f.m. modes, whilst another selects the telescopic or an external antenna. Finally, there is also a control lock switch and a rotary volume control. On the back of the unit there is a connection for a loop antenna, a USB socket and a connector for external power. Finished in a metalised bronze/silver colour, the unit is housed in a fairly standard extruded plastic case approximately 210 x 125 x 60mm in size and weighing in at approximately a mere 650g.

In the production versions of the DRM 2010, the USB port will be implemented for bi-directional communication with a PC. The port will have a dual role, both for receiving internal firmware updates should these become required and for sending data applications transmitted in the DRM signal for use and display via computer.

The DRM 2010 is clearly a European designed radio, coming with extended long wave (150 to 519kHz) reception capability as well as medium wave (520 to 1710kHz) and short wave (coverage between 1.711 and 29.999MHz). Taken together therefore, full coverage is available between 150kHz and 30MHz). Fitted with a telescopic antenna for s.w. and f.m. broadcasts, the prototype was also missing its internal ferrite rod antenna for l.w. and m.w. reception. In addition, whilst v.h.f. Band II tuning appeared to function (between 87.5 and 108MHz), in fact the unit was stone deaf on this band because f.m. mode reception had yet to be implemented in the design! The manufacturers assure us that these issues are resolved in the production unit and that being standard technology they were not the primary concern for the pre-production prototypes, which were intended to ensure that the brand new DRM circuitry was fully tested and functional.

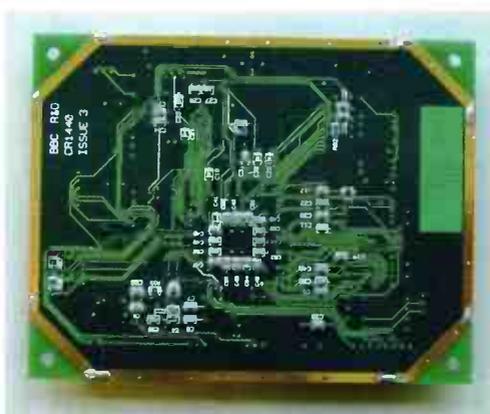
At the moment, the DRM 2010 cannot operate from internal batteries, only from an external supply. The reason for this is not a lack of space but rather the high current consumption of the d.s.p. chipset used. For the DRM 2010, a generic d.s.p. was used giving advantages of cost and ease of programming, but at the expense of greater power consumption. As with all new circuitry, it takes time develop dedicated chipsets, but once they become available, physically smaller and lower consumption designs will follow. The Mayah receiver is noticeably warm to the touch in operation, a clear indication of the power consumption used for DRM reception in these early designs. In fact, the situation with DRM today is exactly the same as it was with early DAB receivers, power hungry beasts as they were!

### Plentiful Info

Unlike double side-band a.m., the DRM standard incorporates many features in addition to audio information. To begin with, the DRM mode used to transmit programme information can be tailored to suit the expected transmission path and type of audio being broadcast. Just as with any other real-world implementation of digital broadcasting, DRM signals incorporate error-correction information. This information can be considered to be additional data transmitted alongside the programme audio and any other associated data. Obviously the amount of data which a DRM signal can carry within a pre-defined channel bandwidth (typically 9 or 10kHz) is limited. Therefore, the greater the amount of error-correction employed, the

less the amount of available data capacity remaining for programme carrying purposes. For example therefore, within the DRM standard, fewer bits of data are used by error-correction in a signal intended to local broadcasting in the medium wave band than are employed in short wave signals intended for long-distance international reception.

Rather than leave mode selection up to the listener, which would generally be pointless, the DRM 2010 automatically detects DRM signal parameters including error correction levels, the modulation scheme and the presence of additional data, etc. Although the DRM standard is now ratified, experiments are still continuing to improve upon particular aspects and to add new features. For example, experiments are currently underway, which will allow international broadcasters to use a single broadcasting frequency to carry multi-lingual programming. Since speech requires a very much lower data-rate than music, it would be possible to broadcast,



say, three languages in three separate data streams and then revert to a single high capacity data stream for any segments of programming that were comprised of music.

### Operation

Using a DRM radio is a somewhat unusual experience for seasoned a.m. listeners. As with DAB receivers, in DRM mode, the audio output of the DRM 2010 is muted until a resolvable signal is obtained. Whilst this avoids subjecting the listener to 'digital mush', this approach does leave only the signal strength meter as a guide to the presence or otherwise of a low-level DRM signal which might be better resolved by alternations to the antenna system used. That said, in the case of the DRM 2010, the receiver is able to resolve DRM text information even if there is insufficient signal to successfully resolve the audio.

The reason for this behaviour is that within the DRM standard very robust error correction is always employed for the delivery of associated data which includes the signal mode used and station ID. The receiver requires much of this data before it can begin to resolve audio correctly. This feature is particularly useful in confirming that a particular frequency is active and that it may be

worthwhile tinkering with the antenna in order to pull in the elusive audio. However, does it create a new DX category? - "Positively identified but not actually heard!"

Manual, automatic and pre-set tuning modes are all provided on the DRM 2010. Band selection is between l.w., m.w. and s.w., but not between individual s.w. bands. Briefly pressing the 'Tune Up' and 'Tune Down' keys increments the tuned frequency 1kHz each time a button is pressed. Holding a key for more than two seconds implements the auto-tuning mode. However, in the evaluation sample, this mode was somewhat unpredictable, missing some very strong signals before stopping on weaker ones.

In manual and auto tuning modes only, frequencies can be stored as pre-sets. Once a frequency has been selected it is simply a matter of pressing 'Memo' (at which point 'Prog' will begin blinking in the l.c.d. screen), entering the required pre-set number and then pressing the 'Enter' key then memorises the frequency. Switching to pre-set mode disables manual and auto-tuning, instead allowing previously stored pre-tuned stations to be selected by either the front panel keyboard or, once again via the "Tune Up" and 'Tune Down' buttons. The DRM 2010 can store up to 87 pre-sets, 29 each for DRM, a.m. and f.m. respectively. Even though the f.m. mode was not functioning in the evaluation unit, pre-set tuning was still available on f.m. frequencies! Helpfully, when cycling through memories, only those with information are accessed avoiding having to hop over empty slots if less than the full compliment of 29 have been filled.

On short wave, where signal levels fluctuate randomly due to ionospheric conditions, when a DRM signal teeters on the edge of receiveability, brief snippets of sound are resolved each time the signal level rises briefly above the required level. Because the audio is otherwise muted, the receiver can be silent for a considerable period before bursting into life for as little as a fraction of a second or for several minutes. Particularly when the audio is only just resolvable, there can be a strange

metallic sounding echo associated with it, on voice this can sound rather like one of those old-fashioned 'voice processors' supposedly designed to aid speech intelligibility. However on consistent signals, this effect is no longer detectable.

### Somewhat Bizarre

On the other hand, listening on headphones to signals from countries as far away from the UK as Germany and Russia and of consistently excellent quality in almost perfect stereo, is an enjoyable if initially somewhat bizarre experience! Although the review sample of the DRM 2010 was only in my possession for a few days, its first use into a long-wire antenna (of somewhat dubious performance characteristics) yielded instant successful results at my location in East Anglia. Initially, I had expected to be able to resolve the signals from nearby Orfordness with ease and began by tuning the unit to 1296kHz. When no DRM signals were resolved I initially suspected a faulty receiver and then remembered the absence of the internal ferrite antenna! However by tuning to other services in the h.f. bands the mistake was soon realised. Checking with an analogue receiver made me also suspect that my location is in fact in a null well off the side of the beam used by VT Merlin when transmitting BBC World Service material on that frequency.

I have compiled **Table 1** to show the signals received in listening tests over a couple of days at a location to the West of Norwich in Norfolk. It should be noted that whilst some of the signals received were much stronger and more consistent, audio was resolved in all cases, although for the DW Radio 3.995MHz transmissions such reception was very unreliable, consisting of only brief snatches of audio within long periods of silence.

### Well Placed

All-in-all, the DRM 2010 represents an excellent first attempt at integrating DRM reception capabilities into a domestic portable receiver. The design is ergonomically sensible and therefore straightforward in operation. Audio quality on both the internal

loudspeaker and via stereo headphones is good and the tuning display easy to use. As this was the first DRM receiver I have used in the privacy of my own home, it was not possible to make performance comparisons in terms of sensitivity. Clearly however, the DRM 2010 is not intended as a professional communications receiver but rather as an everyday general coverage receiver. It

is likely to prove popular with ordinary listeners and enthusiasts alike. Through its much improved audio quality and robustness, DRM broadcasting offers the potential to bring short wave listening to a much wider audience than is the case today. This being so, radios such as the DRM 2010 will be well placed to exploit a new market for receivers which looks likely to evolve as a result.

For up-to-date information about DRM transmission schedules, see the Radio Netherlands International (RNW) web-site 'Media Network' page - 'Current DRM Schedule' at: [www.rnw.nl/realradio/html/drm\\_schedule.html](http://www.rnw.nl/realradio/html/drm_schedule.html)

There is further information about the system on associated RNW pages linked to from the above.

For all those of you interested in acquiring your own Mayah DRM 2010 receiver, keep a close watch on your favourite radio outlet for the launch of the set.



# Roberts Radio RD-3 DAB Portable - Reviewed

**Martin Peters looks at the very latest offering from Roberts Radio, their stylish new battery/mains f.m. and DAB portable radio, the RD-3.**

Is it really a whole year since I waxed lyrical about the then new EVOKE-1 from Pure Digital, the first sub-£100 DAB radio to flood the high street?

The last twelve months has seen an explosion in the take-up of digital radio in the UK. Around half of all portable radios sold now support DAB. Continuing on-air promotion of the system and the availability of an ever-increasing number of affordable models has conspired to make DAB the success it now undoubtedly is.



The burgeoning selection of DAB radios from which to choose includes personal, portable, clock radio, car radio and PC cards. Take your pick - from £80 up.

Only those of you who have been either encased in ice or denied food whilst hanging over the *Thames* in a Perspex box for the last five years will not know what Digital Audio Broadcasting is all about. But just in case there are any cold, hungry readers out there, DAB promises a wide choice of stations at near f.m. quality and a complete absence of background noise. Terrestrial broadcasts in the UK lie between 217.5 and 230MHz, part of the old Band III TV allocation.

Each of the 1.5MHz wide so-called multiplexes can

accommodate up to around ten stations, dependent on the quality - or bitrate - that each is broadcast at. Broadcasters that have crammed too many music channels into their multiplexes have been drawing fire from hi-fi buffs. In truth, a strong, interference-free analogue f.m. channel beats most DAB streams in terms of quality. Meaning that DAB's niche is definitely not the hi-fi market. In-car entertainment systems and portable radios, where audio purity may not be a top priority, is where the future of DAB lies.

Can I remind those of you with a technical bent wishing to know more about DAB's architecture to read **Jon Trowsdale's** excellent explanation in the June 2002 issue of *Short Wave Magazine*.

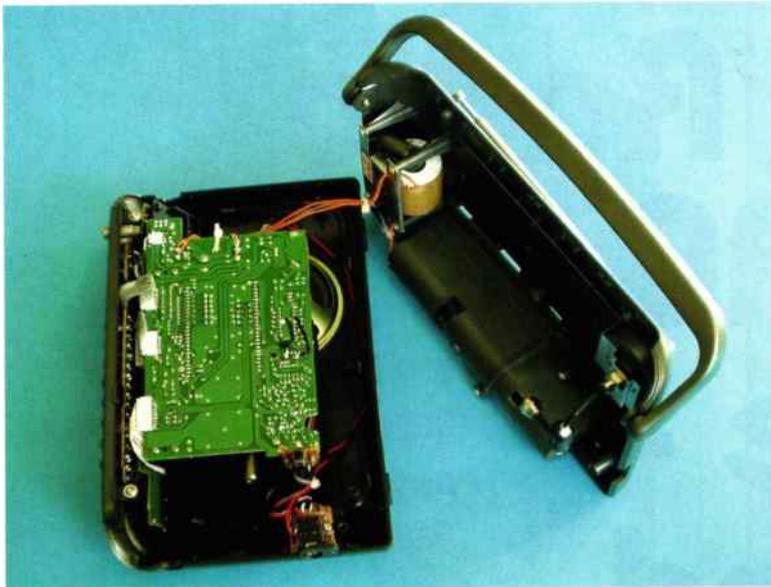
Around 80 percent of the UK is within range of at least three multiplexes: the BBC national ensemble which includes Radios 1 to 7 and World Service and the national commercial multiplex, Digital One, offering Classic FM, Virgin Radio, TalkSPORT and a brace of digital only stations. Depending on your location, you should also be able to receive between one and three local or regional multiplexes, each containing up to ten stations. To discover which digital stations broadcast in your area please go to a web page of DAB-related links I have set up at <http://tinyurl.com/23zi>

## Practical Solution

**Harry Roberts** and **Leslie Bidmead** founded Roberts Radio in 1932. Each week, the London-based workshop hand-built just a few radios of the so-called suitcase design, with the loudspeaker and frame antenna in the lid. It wasn't long before Roberts Radio established a reputation for the superior quality of their products.

The business was given a major boost when initially Harrods, then other leading retailers, were persuaded to sell the radios in their stores.

Roberts Radio now produce vast range of radios that fall into four categories: the Worldband range of analogue and digital portables, some with integral cassette recorder; the Revival range, a brace of differently coloured three band radios styled on the popular R200 design from the 1950s; the Classic range, six different designs, all with that unmistakable Roberts Radio look. Finally, the Lifetime range, which includes clock radios, personal radios and a



contemporary selection of analogue and DAB designs.

Those of you who read my review of the EVOKE-1 may remember that the only real gripes I had about this otherwise splendid radio were that it is not truly portable and that there was no provision for conventional f.m. reception.

Could it be that this offering from Roberts Radio addresses both these shortcomings and in doing so, has come up with a really practical solution? The Roberts Radio RD-3, otherwise known as the *Gemini 3*, promises to do just that.

The RD-3 is a mains or battery-powered radio which receives DAB and f.m. broadcasts. Its one-watt output is fed to a single speaker and stereo reception is available either through the headphone socket or via the 'line out' for connection to an external amplifier.

Perhaps in an effort to attract sales from their existing customer base, Roberts has come up with a DAB radio that resembles, almost exactly, one of their traditional analogue ranges.

The gunmetal grey plastic casing is 160x275x80mm (hwd) and the radio weighs in at 1.3kg. Load in the six C-cells required for portable use and this increases to around 1.7kg.

Despite the plastic housing, the set feels solid enough and its not insignificant weight is somehow reassuring. As to country of manufacture, nowhere on the radio, on the box or in the manual does it give us a clue. When asked, Roberts were able to tell me that the RD-3 was designed and developed in the UK but manufactured "overseas".

The top panel slopes back at around 45° enabling the user to easily use the controls and see the display without the need to hover directly above the radio. Handy, if it's on a shelf or in an enclosure with limited access.

The front-facing metal speaker grille hides a single 92mm driver and hosts the company badge, one of no less than four mentions that Roberts allows itself on the case.

The rear apron (as we say in the trade) sports the telescopic whip, the 3.5mm stereo 'line-out' socket and the mains input socket. The right-hand-side panel is where you'll find the 3.5mm stereo headphone socket.

Back to that all-important top panel, home to the radio's main controls. To its rear is a horizontal row of push buttons. The leftmost one is the power switch. Being separate to the rotary volume control, you can leave the radio pre-set at your preferred audio level each time you switch off. Moving on, there's the 'Auto Tune' button, the FM/DAB band switch and six more buttons for storing and recalling station presets - ten for each band.

To the sloping panel itself. This is fairly symmetrical in design and dominated by two large knobs, sheathed in rubber. (You there at the back - stop sniggering!) One of these controls the volume whilst the other has a click-stop action and provides one of two methods of tuning.

Next to the volume are twin rotary treble and bass controls and on the other side of the centrally disposed liquid crystal dot-matrix display are the up/down tuning buttons. Finally, there are the so-called 'Select' and 'Info' buttons, the function of which will become clear later.

And so to business. Following the supplied instructions, I placed the radio on a flat surface and plugged it into the mains supply. A small red l.e.d. illuminates to let you know that there is mains power to the radio.

After extending the telescopic whip to its full 780mm, a press of the On/Off button brings the radio to life and the back-lit display reminds you, yet again, that this is a Roberts radio.

The set then goes into an 'AutoTune' routine, searching through all the available DAB multiplexes in your area. At my house, 60km or so west of central London, the radio locked into 49 stations from five multiplexes, two of them national, the remainder from London.

When compared to an EVOKE-2 we have in our office, sensitivity was on a par. Reception of marginal signals can be improved on both receivers with the use of an outboard preamplifier or of course, an external antenna. In the case of the RD-3, Roberts certainly don't encourage this. The possibility of connecting an external antenna or preamplifier is not mentioned in the manual. Not only that, the radio's F-type connector is hidden behind a round panel held in position by two screws.

## Alphabetical

The RD-3 places all received stations in alphabetical order - numbers first - with the BBC's 1Xtra heading the list. To scroll through the list of available stations either rotate the tuning knob or use the up/down buttons. Press and hold the up or down buttons to speed-scroll through the list. Then press Select when the name of your desired station is displayed. Alternatively, if you have 'Autoselect' enabled, just wait six or seven seconds and the radio will lock onto your choice.

Personally, I would have preferred the up/down arrows to provide instant access, with the review and select option reserved for the rotary control. Talking of which, the click-stop mechanism on the tuning is quite spongy and not at all positive. There are only 12 clicks per revolution which means you have to rotate the knob for what feels like an awful long way for each increment.

If selecting a station within the multiplex already being received, tuning is completed within a second. If, on the other hand, the receiver has to 'hop' to another multiplex, then the process takes around two seconds.

Stations that fall below the required signal strength return a *Not available* message on the display.

To store your ten favourite stations, just press and hold any of the five preset buttons for a second or so. For memory locations six to ten you must also hold down the '+5' button. There's plenty of room for a complete set of ten preset buttons so I'm not sure why Roberts have implemented it that way?

To recall a station from memory just press the relevant preset button again, along with the +5 key, if necessary.

Once tuned in, repeated presses of the 'Info' button allow for a number of informational modes to be called up on the display: scrolling text, which can be programme information, 'phone number, artist/track name, etc.;

programme type e.g., pop, news...; the name of the multiplex, signal strength and the current date and time. Unfortunately, the display struggles to refresh sufficiently quickly to keep up with the scrolling text, making for a somewhat confusing readout that requires close concentration.

There's a facility to manually tune through each of the DAB multiplexes, when it may be possible to acquire more stations than when using Auto Tune.

Switching to f.m. requires a press of the DAB/FM button and a couple of seconds later, we're in. Watch your ears, though, as the f.m. audio is noticeably louder than its DAB counterpart.

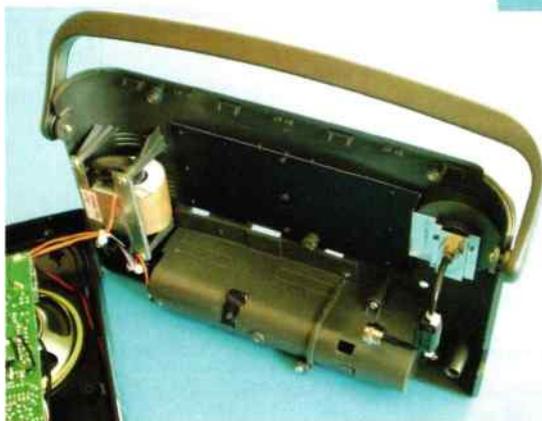
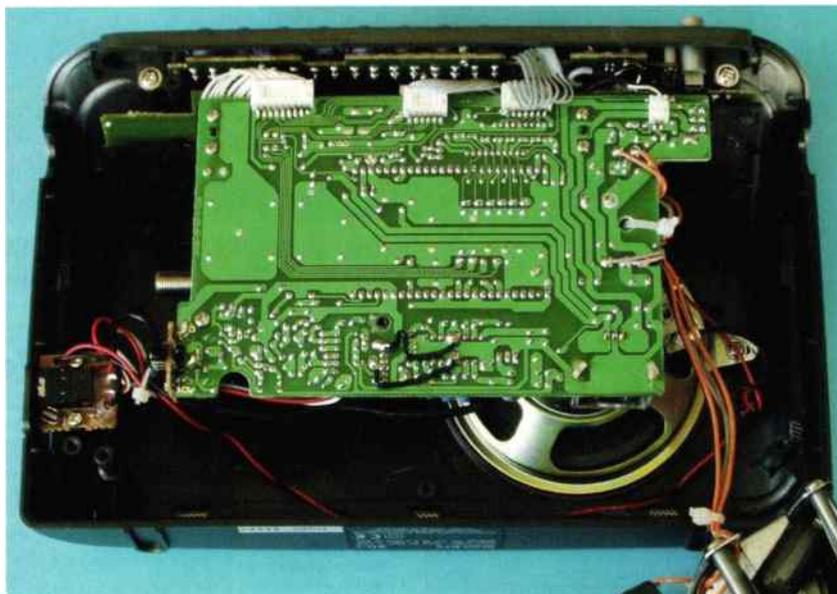
Navigating around f.m. is similar to when receiving DAB. Either the rotary control or the up/down arrows can be used for tuning. I recommend you to press and hold the arrow keys, as using the rotary requires no less than 34 revolutions to tune the band.

The RD-3 comes equipped with RDS (Radio Data System) as standard and can display station name, date and time, along with programme information. Granted, for RDS to function, a reasonably strong, interference-free signal is required. However, this radio would only decode the data from the real 'belters', i.e., the BBC and commercial outlets local to me. Stations from surrounding areas, although perfectly received, did not trigger the RDS decoder. This is not helped by the manual giving the impression that the RDS

antiquated Sony delivers Star FM on 106.6MHz without a problem.

In addition, there are a couple of internally generated carriers, one on around 106.4MHz and a huge one centred on 98.3MHz, which is bound to hack off Radio 1 listeners in Aberystwyth and Aberdeenshire.

It's a shame that the antenna is rear-mounted. This not only increases the overall depth of the radio but also restricts the mobility of the antenna, which may have a



*Perhaps in an effort to attract sales from their existing customer base, Roberts has come up with a DAB radio that resembles, almost exactly, one of their traditional analogue ranges*

displays are a given: "Press the Info button to scroll through the various modes".

The f.m. sensitivity is good, but for stations not strong enough to support stereo reception without hiss, the RD-3 can automatically switch to mono. Alternatively, you can force this manually, if required.

The filters on the radio seem fairly tight. I'm able to hear London's LBC on 97.3MHz without a trace of the much stronger local station on 97MHz. However, the 150W Reading 107 outlet atop the water tower about 1km from my house, does give the RD-3 something to think about, with no reception of adjacent channel stations between 106.5 and 107.5MHz being possible. Meanwhile, my

bearing on where you can locate the set.

The manual, although certainly adequate, fails to welcome the purchaser to the wonderful world of DAB and assumes you already know what it is, which may not be the case. That said, it's not misleading in any way and it's clear and concise. To their credit, Roberts Radio invites users to call their Technical Help line if they experience any difficulties.

I was a little disappointed with the fidelity of the sound from this radio on both DAB and f.m. Despite fully cranking up the treble boost, I found I wanted more. By comparison, my ageing Sony 7600 delivers crisp, highly intelligible speech with plenty of percussion on music tracks. Listening on a fairly respectable pair of headphones, music still

sounded a little dull. In this respect, I made similar comments about the EVOKE-1. Additionally, even with no bass boost, when listening to music, distortion on the loudspeaker was excessive if the volume was advanced above two-thirds.

The Roberts Radio Gemini 3 will certainly find it's way into the kitchens and bedrooms of traditionalists who have, until now, resisted the temptation to buy into DAB, possibly frightened off by the high-tech looks of most of the competition. The RD-3 has an RRP of about £140 and is available from all good radio retailers. I extend grateful thanks to Roberts Radio for the loan of review model.

In 1958, Roberts launched the RT1, their first transistor portable. The key selling point of this model was that, given average use, the battery did not require replacing for around two years. The RD-3's six C-cells, on the other hand, will need replacing after about two weeks. But that's progress, I guess.

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## WATSON HP-200 & HP-100



HP-200

Superb headphones with tailored response for radio comms. Excellent sound proofing, can pull in the weak DX.

- Mono 8 Ohm 200-10,000Hz
- Padded ear pieces
- 3.5mm stereo plug
- 1/4" stereo adaptor

**£22.95 B**



HP-100

Excellent lightweight comm headphones with tailored response for the modern transceiver or receiver.

- 8 Ohms 200-9,000Hz
- Adjustable headband
- 3.5mm stereo plug
- 1/4" stereo adaptor

**£19.95 B**

## EVOKE-1 DAB RECEIVER NEW



The Evoke-1 is a true DAB receiver with full Band III reception of all UK DAB broadcast modes 1-4.

\*Frequency range: Band III (174-240MHz) UK only  
\*6 preset memories \*High visibility LCD with 16x2 char.  
\*Pwr: 12V AC mains pwr adaptor (supplied) \*Size 210x175x110mm

**£99 B**

## EVOKE-2 STEREO DAB/FM RADIO NEW



The Evoke-2 is a battery powered stand-alone DAB and FM radio. \*Frequency range: Band III (174-240MHz) UK only & FM 87.5-108MHz \*6 DAB & 6 FM preset memories \*Up to 55 DAB stations \*High visibility LCD with 16x2 char. \*Pwr: 230V AC-9V DC external or 6x C cell batteries (10hrs approx) \*Size 290x185x100mm

**£159.95 B**

## DR-101 PERSONAL DAB RECEIVER NEW



One of the world's smallest DAB receivers. Enjoy almost CD quality broadcasts from some of the biggest names in broadcasting - BBC 1-7, Virgin, Capital, BBC World Service and many more. \*DAB Band III (174-240MHz) \*FM 87-108MHz \*Large full graphic 4-line display \*Stereo Headphone output \*2x AA Alkaline batteries (6 hrs) \*Size: 69x88x22mm \*Weight: 40g

**£169 B**

## DR-201 PERSONAL DAB + MP3 NEW



The DR-201 is a fully portable all-in-one digital radio, FM radio & MP3 player. \*DAB Band III (174-240MHz) \*FM 87-108MHz \*MP3 player & 64Mb memory built-in \*Large full graphic 4-line display \*Backlight \*USB connector \*Stereo headphone output \*Windows 98/ME/XP compatible \*2x AA alkaline batteries

**£229.95 B**

## GLOBAL AT-2000 RECEIVER ATU



- 100kHz - 30MHz
- SO-239 socket
- Size: 150 x 67 x 146mm
- Weight 300g

**£89.95 B**

Improves any short wave receiver. Lets you hear more! A 'Q' switch adjusts the front-end selectivity to match the band and QRM conditions. Handles end fed wires and coax systems.

## ALINCO DJ-X3

Many extra features make this a top-selling budget scanner.

- 100kHz-1300MHz
- AM, FM, WFM
- 700 Memories / 8.33kHz
- Stereo FM (with headphones)
- Audio Descrambler
- Bug Detector
- 3xAA dry cell battery case

**£109 B**

## AOR AR-8600 MKII



- 530kHz-2040MHz
- FM, AM, SSB, CW
- 1000 memories
- Tuning steps programmable
- 8.33kHz airband spacing
- RS232 PC interface fitted
- Power 10.8-16V DC
- Telescopic antenna
- Optional slot card sockets

**£599 C**

## AOR AR-8200 MKIII

- 100kHz-3000MHz
- WFM, NFM, SFM, WAM, AM, NAM, USB, LSB, CW
- 1000 Memories
- 8.33kHz Channel Step
- Detachable MW Bar antenna
- Versatile Band Scope (10MHz-100kHz)
- Twin Frequency Readout
- Illuminated LCD and Keypad
- Optional slot cards for extended capabilities
- Computer control via RS-232

**£379 B**

## YUPITERU MVT-3300EU



- VHF airband plus lots more inc. emergency services
- 66-88/108-170/300-470/806-1000MHz
- AM & FM
- 200 Memories
- 5 Tuning steps
- Fast scan speed
- Very sensitive
- Requires 4x AA cells (not supplied)
- Includes flexible antenna, earpiece and carry strap

**£129 B**

## YUPITERU MVT-7100

- 530kHz-1650MHz
- LSB, USB, AM, WBFM, NBFM
- 1000 Memory channels
- High Sensitivity
- Illuminated keypad
- High Speed search & scan functions
- Battery save function
- Priority channel
- Individual power/volume and squelch controls
- Free NiCad batts & charger, belt clip, earpiece and telescopic antenna

**£199 B**

Save £50! on Maplin price. (@3/11/03)

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## YUPITERU MVT-7300 COMPACT SIZE SCANNER



- 521kHz - 1320MHz
- NFB, WFM, NAM, WAM, USB, LSB, CW
- 1000 memories
- 500 Pass channels
- 16 tuning steps
- 8.33kHz airband spacing
- 3x AA Ni-Cds
- 12V DC/230V AC mains
- Telescopic Antenna

**£239 B**

## YUPITERU MVT-9000 mk2

- 530kHz - 2039MHz
- NFB, WFM, NAM, WAM, USB, LSB, CW
- 1000 memories
- 500 Pass channels
- 25 tuning steps
- Voice-reversed scrambled decoder
- 4x AA Ni-Cds
- 12V DC/230V AC mains
- Telescopic Antenna

**£369 B**

## UNIDEN-BEARCAT UBC-3000XLT



- 25 - 1300MHz with gaps
- NFM, WFM, AM (Airband)
- 400 memories
- 10 Priority channels
- Twin Turbo scan & Search
- 6V 600mAh Ni-Cd pack + AC charger
- BNC Flexible Antenna
- Leatherette case
- Earphone

**£189 B**

## UNIDEN-BEARCAT UBC-280XLT NEW



- 25 - 956MHz with gaps
- NFM, AM (Airband)
- 200 memories
- 10 Priority channels
- 5/12.5kHz channel steps
- 4.8V 800mAh Ni-Cd power pack
- AC Charger
- BNC Flexible Antenna
- Earphone

**£159 B**

## UNIDEN-BEARCAT UBC-220XLT



- 66 - 956MHz with gaps
- NFM, AM (Airband)
- 200 memories
- 10 band coverage
- 100 Ch/sec scan speed
- Priority channel
- 4.8V 600mAh Ni-Cd int.
- AC Charger
- BNC Flexible Antenna

**£119 B**

## UNIDEN-BEARCAT UBC-120XLT



- 66 - 512MHz with gaps
- NFM, AM (Airband)
- 100 memories
- 10 Priority channels
- 5/12.5kHz channel steps
- Data skip (lockout channels)
- 4.8V DC Int. battery
- BNC Flexible Antenna
- Earphone

**£99 B**

## GRE PSR-282



- 66-88/118-137/137-174/380-512MHz
- Modes AM, FM
- Memories 200 (10x20)
- Search speed 50 steps/sec
- Scan speed 25Ch/sec
- 4x One-touch search banks
- 8.33kHz steps in airband
- Audio 180mW into 8 Ohms int. spkr
- 4x AA (not included) ext. power 9V DC

**£99.95 B**



**GENERAL ENQUIRIES:**  
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**FREEPHONE ORDERLINE:**  
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**UNIDEN-BEARCAT UBC-60XLT-2**

- 66 - 512MHz with gaps
- NFM
- 80 memories
- 1 Priority channel
- 5/12.5kHz channel steps
- Data skip (lockout channels)
- 4x AA cells (not provided)
- BNC Flexible Antenna
- Earphone

**"BUDGET VALUE"**

**£69 B**

**ICOM IC-R5 NEW**

- 150kHz-1310MHz
- AM, FM, WFM
- 1250 Memories
- Name Tagging
- AM Ferrite antenna
- Civil & Military
- Emergency Services
- 2xAA cells (extra)

**£159 B**

**ICOM IC-R3 SCANNER & TELEVISION**

- 495kHz - 2450MHz
- AM, FM, WFM, AM-TV, FM-TV
- TV mode PAL (UK)
- 450 memories
- 50.8mm (2in) TFT colour display
- Simple handscope
- BP-206 Lithium-ion battery
- Telescopic Antenna

**£339.95 B**

**ICOM IC-R10 "ICOM QUALITY SCANNER"**

- 500kHz - 1300MHz
- AM, FM, WFM, SSB, CW
- 1000 memories
- 14 tuning steps
- Real-time bandscope function
- CI-V compatibility (option)
- 4.8V DC Ni-Cds
- Flexible Antenna

**£259 C**

**ICOM IC-R8500 "THE EDITOR'S GOT ONE!"**

- 100kHz - 2000MHz
- USB, LSB, CW, AM, FM, WFM
- 1000 Memories
- 3x Antenna Connectors
- Audio 2.5W (8 Ohms)
- Supply 13.8V DC
- Free PSU included
- Weight 7kg

**£1199 C**

**ICOM IC-PCR1000IS**

- 100kHz - 1300MHz
- USB, LSB, CW, AM, FM, WFM
- Unlimited memories
- Synchronous AM detection
- RS-232 interface D-sub 9-pin
- BNC Antenna connector
- New Icom version 2 software
- Requires PC (Not included)

**£309 B**

**PALSTAR R-30HF NEW**

The R-30HF is a compact, high performance, long, medium & short wave receiver covering the range 100kHz to 30MHz  
\*Modes: AM LSB USB CW  
\*Memories: 100 channels \*Supply: 12V DC  
\*Size: 210x65x195mm  
\*Weight: 1kg

**£449 C**

**WINRADIO G303i NEW**

**HF PC RECEIVER**  
9 kHz to 30 MHz  
See Review in February Short Wave Magazine  
\*Tuning resolution: 1Hz  
\*Modes: AM, AMN, AMS, CW, FM3, FM6, FMN, (ISB & DSB, Pro Demodulator Option only) \*Antenna: 50ohm (SMA) \*Dynamic Range: 95dB \*IP3: +8dBm

**£440 C**

**bhi NEIMI031 NEW**

**NOISE ELIMINATING IN-LINE MODULE**

\* Noise attn 9-35dB \* Noise Attn levels 8 \* Audio output power 2.5W RMS max (8 Ohms) \* Audio connections: Line level in/out (RCA Phono), Audio in/out 3.5mm mono jack \* Line in impedance 10K \* Line out impedance 100 Ohms \* Line in sensitivity 300mV - 2V RMS \* Headphone socket 3.5mm mono jack \* Power 12-24V DC 500mA

**£129.95 B**

**bhi NES10-2 & NES-5 FORMERLY NESCB**

**NES10-2**

\*Speaker with built-in DSP noise filters \*Dip switches for 8 filter settings (NES10-2) \*DSP settings preset, no user adjustment (NES-5) \*Plugs directly into 3.5mm speaker socket \*Handles up to 5 Watts input \*Max 2.5 Watts output \*Requires 12V at 0.4 Amps max \*Use mobile with cigar adaptor

**£99.95 B**

**NES-5**

**£79.95 B**

**ROBERTS R9914**

- 153kHz-30MHz, 87.5-108MHz
- AM, SSB/CW, FM (Stereo)
- 45 Station preset memories
- Stereo through earphones
- Dual time
- Clock/Alarm
- 4 x AA cells (Alkaline)
- 230V AC adaptor

**£99.95 B**

**MFJ-784B DSP FILTER**



**£259.95 B**

The MFJ-784B Tunable DSP filter automatically eliminates all heterodynes, random noise, white noise, impulse noise, static, ignition noise, power line interference, atmospheric noise etc. There are 16 factory pre-set filters to match all the popular modes which can be re-programmed by the user and saved.

**OREGON SCIENTIFIC BAA 898 HG NEW**

The BAA898HG Wireless Weather Station offers more info than ever! Weather, temperature, pressure trends as well as pressure readings, history and max and min readings. Operates with up to 3 remote thermo-hydro sensors, one supplied. \*Wireless freq. 433MHz \*Main unit 195x105x77mm, 4xAA cells \*Remote unit 92x60x20mm, 2xAA cells. Optional Thermo-Hydro Sensor THGR228N

**£79.95 B**

**WS-2300 WEATHER STATION NEW**



This professional wireless weather station is a high quality system that measures the indoor surrounding area and receives weather data from 3 outdoor sensors through 433MHz signal. \*Base receiver station \*3 Outdoor sensors- Thermo-hydro transmitter, Wind sensor, Rain Sensor \*PC program on CD-ROM \*RS-232 serial data transfer \*AC/DC power adaptor

**£199.95 C**

**GARMIN GPS-V DELUXE NEW**



Compact Handheld GPS with detailed street-level maps provided from MapSource City Select CD. Will automatically calculate a route and guide you to your destination with turn-by-turn directions and audible beeps to alert you to approaching turns.  
\*Size: 127x59x41mm  
\*Weight: 255g

**£375 B**

**WATSON FC-130 "MICRO COUNTER"**



- Off-air Frequency Counter
- 10MHz - 3GHz range
- 4 Switched Gate Spreads
- Hold Display Button
- 2 Switched ranges
- Internal ni-cad battery
- Whip Antenna
- AC Charger

**£59.95 B**

**WDP-30 Short Wave Dipole**



**8.5m long!**

**£49.95 B**

This new design from Watson gives you dipole performance across the entire short-wave bands. Unlike random wires, it reduces the background noise and pulls in the signals. And its small size means it will fit most gardens. Absolutely no adjustment required. 10m coax feeder included

**WORLD RADIO & TV HANDBOOK NEW**

The 58th Edition of the most respected source book on international broadcasting. Features more than 680 pages of International Radio Station listings, worldwide TV station contacts & addresses, broadcaster websites and email addresses. A section is devoted to a survey of SW receivers and accessories.

**£19.99 A**

**bhi I042 SWITCH BOX NEW**



No more swapping of wires. Allows up to six pieces of equipment to be connected to one bhi noise eliminating module/spkr or even a standard extension speaker. \* 6x inputs: 3x loaded (8 Ohms spkr level), 6x unloaded (hi/phone/line level), 1x output (to spkr/module) \* Sockets 3.5mm mono Size \*c/w 2x 3.5mm mono - 3.5mm mono leads

**£29.95 A**

**ALINCO DJ-X2000 "FABULOUS FEATURES"**

- 100kHz - 2150MHz
- AM, NFM, SSB, CW
- 2000 memories
- 23 tuning steps
- Channel scope
- Fully programmable
- 4.8V Ni-Cd battery pack
- 8-15V DC ext.
- Telescopic Antenna

**£419 B**

**UNIDEN-BEARCAT UBC-780XLT**

- 25-1300MHz with gaps
- NFM, WFM, AM
- 500 memories
- Analogue Trunk Tracking
- Alphanumeric display
- Automatic Tape recorder option
- Antenna BNC
- 13.8V DC 700mA

**£299 C**

**AOR AR5000A/AR5000A+ NEW**

The new AR5000A now offers a frequency coverage of the entire radio spectrum that is practical to cover. The +3 version offers even more with synchronous AM (USB/LSB/DSB) AFC & Noise Blanker. \*10kHz-3GHz \*AM, FM, USB, LSB, CW \*2000 memories \*45 CH ps/s scan speed \*Audio 1.7W (8 Ohms) \*Supply: 12V DC @ 1A \*217x100x260mm \*3.5kg

**£1599 C**

**£1799 C**

**YAESU VR-5000 "DESKTOP RECEIVER"**

- 100kHz - 2599MHz
- FM, AM, SSB, CW
- 2000 memories
- Large digital display
- Real-time band scope
- DSP Noise & notch filters (Opt)
- Super HF performance
- Automatic Tape recorder option

**£569 C**

**YAESU VR-500**

- 100kHz-1300MHz
- NFM, WFM, AM, USB, LSB, CW
- 1000 Memories
- 100 Skip channels
- Smart search feature
- 8 char. alphanumeric display
- Band scope
- PC programmable

**£199 B**

**YAESU VR-120D**

- 100kHz-1300MHz
- AM, FM, WFM
- Adjustable steps
- Over 600 memories
- Skip channels
- Smart search
- Alphanumeric tags
- Requires 2xAA cells

**£119 B**

**OPTOELECTRONICS SCOUT**

The Scout frequency recorder automatically stores frequencies as it locks onto them \*10MHz-1.4GHz \*Input: 50 Ohm \*Sens: <math>3mV @ 150MHz</math> \*Measurement: 10ms \*Records: 400 freqs \*Display: LCD \*Bargraph: 16 segments \*Supply: Int Ni-Cads \*Battery life: 8hrs \*AC adaptor AC90 \*Size: 94x70x30.5mm \*Weight: 240g

**£379.95 B**

**OPTOELECTRONICS X-SWEEPER NEW**

Top-of-the range product from optoelectronics, a fully featured nearfield receiver that displays nearfield analogue signals in spectrum format. \*30MHz-3GHz \*FM Analogue \*64x128 graphical display with white LED backlight \*20 memory banks, 100 freqs in each \*Sens: 100uV @ 500MHz \*Pwr: 8xAA alkaline or AC adaptor (optional) 12V DC 350mA \*Size: 203x108x22.5mm

**£1699.95 C**

# In The Ed's Shack

**Kevin Nice fits bhi's latest noise reducing module, the NEDSP1061 inside his Icom R8500.**

**A**s regular readers will know I'm very pleased with my bhi noise reducing speaker. It's in constant use in my shack, mainly connected to my flexible Icom R8500. I tend to use the '8500 as the shack workhorse for tuning around and checking my favourite frequencies. It is quite useful to be able to use the NES10 speaker with some of my other radios too. To this end, as I've mentioned previously I've arranged a switching system in conjunction with an audio mixer to cater for most of my requirements. This solution does have its limitations though. One of which is in the case that I pick up the R8500 and take it



● *The volume control ended up not being the mod site.*

portable or to an alternative location. Not something I do lots, but it does happen.

Imagine my delight when I discovered that bhi, who must be the foremost supplier of d.s.p. noise reduction systems these days, came up with an internal module to fit inside radios. The innovating doesn't seem to stop at bhi. They seem to have produced a constant stream of excellent noise reduction products over the last year or so.

Their latest offering, the NEDSP1061 noise reduction module is actually intended as a 'Dealer Fit' option for Yaesu's mini FT-817 transceiver. After discussion with bhi's technical expert it soon became obvious that I could fit one of these tiny modules inside my R8500 and so allowing me d.s.p. noise reduction wherever I choose to use the set.

That was the theory, the practise turned out to be a little more involved than I had anticipated. The FT-817's audio section is pretty straightforward with what can be called a conventional audio section. The chaps at

bhi have configured the NEDSP1061 module to exploit a common feature of the audio section, i.e. the preamplifier section feeds into the power amplifier via the volume control potentiometer via a 100nF or similar capacitor. The method used to tap into the audio path is then to remove this coupling capacitor and use the pre-amp output side to feed the d.s.p. module input. The output is fed back to where the other end of the coupling capacitor was fitted, or in other words the input to the volume control. All pretty straight forward. All that was needed in addition to the audio tapping was to find a d.c. supply between 5 and 15V capable of supplying an additional 45mA, mount the d.s.p. module with a double sided sticky pad and drill the R8500 cabinet with two holes one 3.5 the other 4mm for the control button and indicator i.e.d. Nothing too demanding and well within the capabilities of a keen hobbyist.

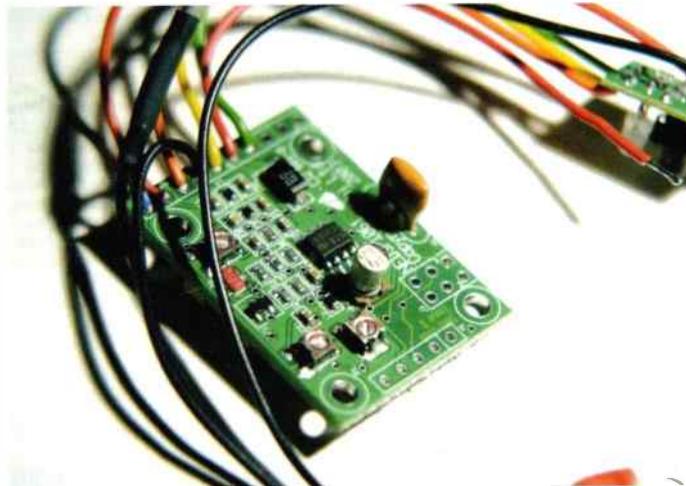
## More Thought

My plan was to replicate this arrangement with the install into my '8500. Easy - or so I thought. Without the aid of a circuit diagram or service manual, I started to strip down my Icom.

The upper and lower case shells were first to go, the pile of M3 screws grew rapidly. Next I removed the front panel assembly which contains the display, keypad and rotary controls. It was the p.c.b. on this module which was the target of my attention and intended modification. Once I was able to see the layout of the p.c.b., studied the layout with a view to working out where I could tap

into the audio. But it turned out not to be as simple as I'd imagined. After a little visual analysis I couldn't find anything like what I was hoping for. There seemed to be no sign of audio around the volume control. Time to switch on the scope and find the DVM. After a little probing, it was indeed clear that there was not audio around the volume control. Instead the radio 'volume control' simply varied a d.c. level. This then, I presumed, was used to control the audio level by more sophisticated means. The penny then dropped.

The R8500's volume level can be controlled via the RS-232 port so there was



● *The NEDSP1061 ready to fit.*

going to be some digital level control involved. Some six hours into investigation I called it a day. The next morning I contacted those very helpful guys at Icom UK's workshop and had a chat. A short while later I was in possession of a FAX of the audio sections circuit diagram.

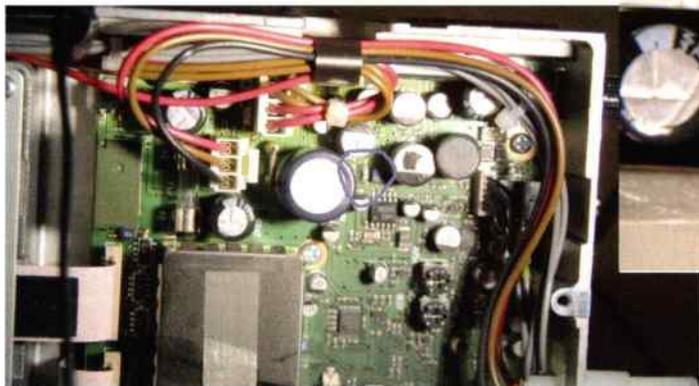


● *Ready to start, the module and the radio.*

After a quick scrutinise, I discovered that there was a suitable coupling capacitor between the D to A converter used to control level and the set's power amplifier module. I located this 220nF on the R8500's main top p.c.b., a surface mount chip type. After replacing the front panel I'd removed unnecessarily it was on with the soldering

iron. The chip capacitor was soon dispensed with. I took care to remove it intact just in case I want to restore the set to its unmodified state.

The next job was to install the screened lead used by the NEDSP1061 for input/output by soldering the prepared end to the pads intended for the 220nF capacitor. This proved to be quite a tricky job, as access was pretty tight amongst the other components. After much manoeuvring and position changing, I had successfully connected both inner



● *The coupling capacitor to be removed.*

conductors and the screen to the R8500's p.c.b. Time to find a supply and do a quick test.

A few minutes later and the board was working. All the control of the NEDSP1061 module is performed with presses of the button. There are four active levels of noise cancellation, the module informs the user of current status by using both the bi-colour l.e.d. and by injecting a 'pip' into the audio path.

With the noise cancelling module in the off position, the l.e.d. is constantly illuminated red. When it is activated the l.e.d. flashes green and the pip sounds in sync with the flashes a sequence between one and four to indicate the level selected. The l.e.d. is then extinguished,

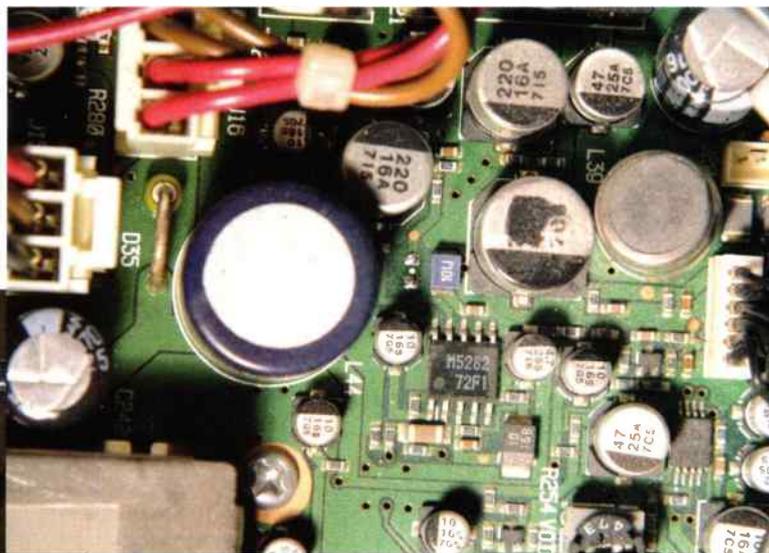
● *The removed coupling capacitor and the label for the control switch and indicator l.e.d.*



presumably to conserve power, handy if running on batteries. The audio tone level is variable, which is good, as the default level was uncomfortable, I reduced the level just beyond the minimum setting so as not to be obtrusive. The bhi board also features level controls for both input and output levels, I found that they were set to optimum positions.

**Once Fitted**

In use I found the NEDSP1061 to be as effective as the other two bhi noise cancelling products I've used. I especially like the single button mode selection and reckon that bhi should consider using this method on their other products as in my



● *Now it's gone.*

opinion it's better than the rotary switch alternative especially as the module remembers the last level selected.

The NEDSP1061 only measure 26 x 37mm and is about 10mm thick at the maximum. The four selectable level of operation perform as follows;

Level	Reduction Noise (dB)	Reduction Tone (dB)
1	11	5
2	13	8
3	19	21
4	35	65

I've yet to finish off the installation, as I've not quite made up my mind exactly where to physically locate the module, but I'm very pleased with the performance. I'm tempted to fit one in my HF-150 now...

The NEDSP1061 is priced at **£89.95** inc VAT and is available from **Waters & Stanton, Martin Lynch and Sons, Radio World** or direct from **bhi** on **0870-240 7258** or via their website **www.bhi-ltd.co.uk** (new on-line shop).

The NEDSP1061 is also available as a basic pcb module without all the wires and switches priced at **£79.95**.

● *The input/output lead in place.*



# B GRADE

## B Grade SPECIALS

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- Mains or Battery (with optional mains adaptor)

- supplied c/w
- SW HANDBOOK
  - CARRYING CASE
  - EXTERNAL WIRE ANTENNA
  - CARRY STRAP

£129.00 ~~£79.00~~ P&P £10

PORSCHE G-2000 Stylish Radio

- FM Stereo, AM/FM/MW/SW
- Clock, alarm, sleep function, world times
- Mains/Battery (optional AC adaptor)
- supplied c/w leather cover & in-ear stereo headphones

a stylish radio designed by F.A. Porsche

£89.95 ~~£74.95~~ P&P £8

ALINCO DJ-X3 Ultra modern Scanning Receiver

- 100kHz-1300MHz AM/FM/WFM
- 700 memory channels
- Bug detector
- Stereo FM (with headphones)
- Size: 56w x 102h x 23d mm
- Supplied c/w: 3 AA dry cell, battery case, carrying strap

with 8.3kHz for air-band

£129.95 ~~£94.95~~ P&P £8

### CABLE DEALS

- per 100 metre drums (ADD P&P £10)
- RG58 C/U Mil spec ..... £38 £25
  - RG213U Mil spec low Loss ..... £76 £65
  - H100 Semi Airt spaced ..... £66 £65
  - Westflex 103 Ultra Low Loss ..... £60 £89
  - 300 Ohm Twin feeder (slotted) ..... £60 £69
  - 450 Ohm Twin feeder (slotted) ..... £60 £79

SPECIAL PRICE!

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

- Pay by three post dated cheques
- No forms to fill in!
- No hidden charges!
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  - Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.
- CHEQUES/SPREAD AVAILABLE ON ITEMS OVER £100 ONLY

## NEW DIGITAL RADIOS

First appeared in these **WIT PRODUCTS** at a very special B Grade price!



EVOKE-1 Digital DAB Radio

- Band III (174-240MHz)
- Fast Autotune
- Scrolling digital text display
- Dynamic range control

£99.95 ~~£79.95~~ P&P £10

PERSTEL DR-101 Personal DAB Radio

- Two Band Coverage: DAB digital Radio Band, FM Radio Band
- Large full graphic 4 line display with backlight Shows programmes and programme info
- Stereo Headphone output
- Audio Output Power: 5mW @ 16 KHz
- C/w 2 x AA size alkaline batteries
- Size: 69 x 88 x 22 mm
- Weight: 40g (without battery)
- Carrying case, User Manual

£169.00 ~~£109.00~~ P&P £8

PERSTEL DR-201 Digital Audio Centre

- DAB Digital Radio
- FM Analogue Radio
- MP3 Audio Player
- Removable 64Mb PC disk
- Supplied c/w: Personal Stereo Headphones, 2 x AA Batteries
- 60 x 84 x 24 mm

£229.00 ~~£139.00~~ P&P £8

BEARCAT UBC 220-XLT

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

£149.95 ~~£99.00~~ P&P £8

MAYCOM FR100

New Dual Civil/Military Airband Radio

- 66-174, 420-470 MHz
- AM/FM/WFM
- 150 Memory ch.
- S meter bargraph
- 3 x AA cells (not supplied)
- Supplied c/w: SMA antenna, belt clip, carrying strap

£99.95 ~~£79.95~~ P&P £8

JIM NF96 Adjustable Notch Filter

- Eliminate interference and breakthrough on your scanning receiver from paging tones, voices, etc. with this fully adjustable Notch filter.
- Notch attenuation -40dB
- -60dB attenuation below 1MHz
- RX range up to 2000MHz

£29.95 P&P £4.50

PRICE MATCH

YAESU VR-5000

Yaesu's Flagship Desktop "Ultra Wideband" Scanning Receiver

- 0.1 to 2600 MHz
- Tons of features!

£699 ~~£599~~ P&P £10 3 CHEQUES OF £203.00  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

YAESU VR-500

Handheld Scanner

- 100 kHz to 1300 MHz
- AM/FM/WFM/SSB/CW
- 1,000 Ch Memories

£199.95 ~~£139.95~~ P&P £8 3 CHEQUES OF £69.31  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

YAESU VR-1200

New D model with:

- NEW! Charge Socket
- NEW! Mains Adaptor
- 0.1 - 1299.995MHz
- AM, FM, Wide FM
- Auto select ch steps
- 12 preset memories
- 89 ch Memory Bank
- 640 ch memory system
- Slot machine game!

£159.00 ~~£119.00~~ P&P £8 3 CHEQUES OF £55.66  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

YUPITERU MVT 7100

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

£249 ~~£229~~ P&P £10 3 CHEQUES OF £79.66  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

YUPITERU MVT 3300

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

SPECIAL OFFER

£169 ~~£129~~ P&P £10 3 CHEQUES OF £46.66  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

AOR AR-8600

All Mode Wideband Base Receiver

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

£699 ~~£599~~ P&P £10 3 CHEQUES OF £203.00  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

### USED EQUIPMENT

ALL SAFETY TESTED & GUARANTEED for 3 MONTHS

SCANNERS	HANDHELD SCANNER + EDH16	375.00
ALINCO DJX-2000	H/W SCANNER C/W ACC & BOOK	159.00
ALINCO DJX-3	HANDHELD SCANNER	89.00
AOR AR5000-3	HI PERFORMANCE BASE SCANNER	1199.00
GRUNDIG SAT-800	SHORTWAVE RECEIVER	325.00
ICOM IC-R2	HANDHELD SCANNER	99.00
MAYCOM FR 100	HANDHELD SCANNER	79.00
STANDARD AX-700E	BASE SCANNING RECEIVER	229.00
YAESU VR-500	HANDHELD SCANNER	149.00
RECEIVERS		
AKO HF3 TARGET	HF RECEIVER	99.00
ICOM IC-R71E	HF RECEIVER	425.00
ICOM IC-R750SP	HF RECEIVER + SOFTWARE	549.00
ICOM IC-R8500	WIDEADAP RECEIVER	849.00
ICOM PCR-1000+UT106	COMPUTER BASED RX + OSP	275.00
JRC NR0345	HF RECEIVER	350.00
KENWOOD R 5000	HF RECEIVER	399.00
SANGAM ATS-909	SHORTWAVE RECEIVER	119.00
SONY ST SE200	FM/AM TUNER	59.00
YAESU FRG-8800V	HF RECEIVER + VHF CONVERTER	325.00

NEW

BEARCAT UBC 180XLT

A stylish new Sports Scanner with 8.83kHz Airband steps

- Frequency: 25 - 87, 108 - 174, 406 - 512, 806 - 960 MHz
- AM/FM
- 100 Memories
- Twin Turbo Scan
- Alpha Numeric display
- Supplied c/w: Mains Adaptor/charger, Nicad re-chargeable batteries, Earphone, Belt clip.

£119 ~~£89~~ P&P £8 3 CHEQUES OF £42.33  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

BEARCAT UBC 780XLT

A MUST HAVE for enthusiasts

- 500 channels
- 25-1300 MHz (with gaps)
- AM, FM, WFM

£349 ~~£249~~ P&P £10 3 CHEQUES OF £119.66  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

BEARCAT UBC 278CLT

Base Scanner with MW/FM Radio & Alarm Clock

- 25-956 MHz (with gaps)
- VHF Radio: 88-108MHz
- 100 Memories
- 20 Radio Presets

£159.95 ~~£119.95~~ P&P £8 3 CHEQUES OF £55.66  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

BEARCAT UBC 3000XLT

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

£199.95 ~~£139.95~~ P&P £10 3 CHEQUES OF £69.98  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

BEARCAT UBC 280XLT

SPORTCAT Twin Turbo Handheld

- Triple conversion RX
- 25-956MHz (with gaps)
- 200 memories
- C/w Antenna, Earphone, Belt Clip, Nicad battery, 240V UK Mains adaptor

£179.95 ~~£139.95~~ P&P £8 3 CHEQUES OF £63.31  
 PAY BY CHEQUES/SPREAD INTEREST FREE!

BEARCAT UBC 60XL2-2

A brand new low cost scanner that covers MARINE, LAND MOBILE and more!

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

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

£69.95 P&P £8

JIM M75

Pre Amp

- 24MHz to 2150 MHz
- Variable gain -10dB to +20dB
- 12V DC or internal Battery
- BNC plug & socket
- Size 95 x 50 x 33mm
- Weight 180g

£79.95 P&P £4.75



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ALL GOODS SHIPPED FOR 24 HR DELIVERY

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

E&OE

## YAESU FRG-100 Shortwave Communications Receiver



- Fully featured radio with Frequency 50 kHz to 30 MHz
- Receives AM/SSB/CW
- 50 Memories
- Programmable on/off
- Twin 12/24 hour clock/Timer
- Memory Scan
- Selectable input Attenuator
- Noise Blanker
- Size 238(W) x 93(H) x 243(D)
- Optional FM Unit - £33
- Supplied with Free 240V mains - 13.8V DC Supply

**FREE MAINS PSU**

**£449** 3 CHEQUES OF £153.00  
**PAY BY CHEQUESREAD** INTEREST FREE!

**SAVE £177**

### ICOM IC-R8500

Communications Receiver

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

**PRICE MATCH**

**£1275** **£1199** 3 CHEQUES OF £403.00  
**PAY BY CHEQUESREAD** INTEREST FREE!

**SAVE £20**

### ICOM IC-R5

- 495 kHz-1309.995MHz
- AM, FM, WFM modes
- PC programmable
- 1250 memory channels
- Dynamic Memory Scan
- CSS & DTCS Decoder
- Auto Squelch

**£170** **£159** 3 CHEQUES OF £56.33  
**PAY BY CHEQUESREAD** INTEREST FREE!

### PALSTAR AA30

Active Antenna and/or Matcher for Receiver use only. A low loss antenna tuner suitable for random long wire, dipoles, Beveridges, Delta loops, inverted V's, Verticals, G5RV and most receiving antennas. Or use as a standalone active antenna.

- Frequency: 100kHz-30MHz

**£69.95** 3 CHEQUES OF £23.32

**SAVE £115**

### ICOM IC-R75

Communications Receiver

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

**PRICE MATCH**

**£744** **£599** 3 CHEQUES OF £203.00  
**PAY BY CHEQUESREAD** INTEREST FREE!

### STEEPLETONE MBR747

Multiband Receiver

Covers LW, MW and

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

**£79.95** 3 CHEQUES OF £26.65



DIGITAL WORLD BAND RADIO WITH RDS

### ROBERTS R861

Worldband Radio

- Covers MW/LW/FM/SW
- SSB/CW reception on SW
- 307 presets
- Clock/alarm facilities
- Supplied with: Dual voltage AC supply, sw antenna, earphone, carrying case

**WE STOCK THE COMPLETE RANGE OF ROBERTS RADIO!**  
**£200** **£179** 3 CHEQUES OF £63.00  
**PAY BY CHEQUESREAD** INTEREST FREE!

## BPL CELESTE MkII WorldSpace Digital Satellite Radio



Crystal clear digital radio - almost any where in the world!

- FM / AM reception
- 10 Preset memories
- Dataport provision
- Stereo Line output socket

**£139** 3 CHEQUES OF £49.66  
**PAY BY CHEQUESREAD** INTEREST FREE!



### ALINCO DJ-X2

Ultimate lightweight scanner

- RX: 522kHz-999.995MHz
- AM WFM NFM
- Selectable scan modes
- 700 memories
- Audio descrambler
- Bug detector
- Selectable int./ex antenna
- Internal or external supply
- Priority channel monitoring

**with 8.33kHz for airband**

**£129.95** 3 CHEQUES OF £46.65  
**PAY BY CHEQUESREAD** INTEREST FREE!



### ALINCO DJ-X10E

Advanced featured scanning RX

- Receives: 100kHz - 2000MHz
- AM, WFM, NFM, SSB, CW
- 1200 memory channels
- Channel scope
- Advanced scanning features
- Battery save facility
- Cloning facilities
- Built-in 24 hour clock
- Switchable attenuator

**£299.95** 3 CHEQUES OF £103.31  
**PAY BY CHEQUESREAD** INTEREST FREE!



### ALINCO DJ-X3

- 100kHz-1300MHz
- AM/FM/WFM
- 700 memory channels
- Steps: 5/6, 5/8, 33/10, 12.5/15, 20/25, 30/50/100kHz
- Bug detector
- Stereo FM (with headphones)
- Size: 56w x 102h x 23d mm
- Supplied c/w: 3 AA dry cell, battery case, carrying strap

**with 8.33kHz for airband**

**£129.95** 3 CHEQUES OF £46.65  
**PAY BY CHEQUESREAD** INTEREST FREE!



### ALINCO DJ-X2000

Intelligent scanning receiver

- Covers 100kHz-2,149.99MHz
- 2000 channel memory
- AM/NFM/WFM/LSB/USB/CW auto mode position
- Flashtone
- Transweeper
- Record up to 160 seconds
- Descrambler • Channel scope
- Bug detector

**£499.00** 3 CHEQUES OF £169.66  
**PAY BY CHEQUESREAD** INTEREST FREE!

## SHORTWAVE RADIO'S BEST KEPT SECRET

... until NOW!

Don't just take our word for it! Check out the user reviews on eHam.net where the Palstar R30 consistently receives the 5 Star Rating! 'Great SWL RX'... 'Best I have used!'... 'Wow-that audio!'... 'Amazing Radio - Exceptional Value!'



### PALSTAR R30 Portable Communications Receiver

The R30 is a compact portable high performance shortwave radio (capable of running from internal batteries or 12V DC) providing excellent strong signal handling, high sensitivity and dynamic range.

- 100kHz - 30MHz AM, SSB, SW
- 20Hz, 500Hz tuning steps, synthesized (low phase noise performance)
- 500kHz up/down
- 45MHz 1st IF, 455 kHz 2nd IF
- RF derived AGC, fast/slow
- 4-pole crystal filter at 45 MHz
- Ceramic filters fitted
- Bandwidth, 4kHz AM and 2.5 kHz SSB
- 6-digit LCD display
- Analog S-Meter
- 100 channel memory

- 5W low distortion full fidelity audio amp
- External soft muting
- Line Audio output
- +18dBm 3rd order intercept
- 455kHz IF output
- Switchable 7 pole input filters
- Power source either: Internal batteries (not included) or 12V DC
- Ultra miniature size 8"(w) x 2.5"(h) x 9"(d)
- Weight: 7 lbs

**£449** 3 CHEQUES OF £153.00  
**PAY BY CHEQUESREAD** INTEREST FREE!



**NEW**

### ROBERTS C9950

Programmable Cassette Recorder

- Dual record speed
- 6 separate timed recordings
- 6 hr recording, C90 cassette
- Voice activated recording, timed voice activated recording, remote switching of other equipment

**£80.00** 3 CHEQUES OF £26.67

## BPL CELESTE MkII WorldSpace Digital Satellite Radio



Crystal clear digital radio - almost any where in the world!

- FM / AM reception
- 10 Preset memories
- Dataport provision
- Stereo Line output socket

**£139** 3 CHEQUES OF £49.66  
**PAY BY CHEQUESREAD** INTEREST FREE!

## SCANMASTER Product sheet 2003

### SCANMASTER B128 AIRBAND BASE SCANNER

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

- 'N' Type connector
- length: 1mtr

**£39.95** £4.75 P&P

### SCANMASTER LP1300 WIDEBAND BEAM ANTENNA

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

### SCANMASTER DESKTOP

A complete desktop antenna covering 25-1300 Mhz, just 36" high with 4 m of cable, fitted BNC plug with a magnetic base.

**£49.95** £4.75 P&P

### SCAN AIRMASTER DEDICATED CIVIL & MILITARY AIRBAND ANTENNA

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

**£59.95**

## POWEREX

RECHARGE UP TO 1000 TIMES!

## MAHA BATTERIES & CHARGERS

### POWEREX SPECIAL OFFER

Set of 8 BATTERIES

	NORMAL PRICE	OUR PRICE
1600mAh x 8	£15.90	£9.95
1700mAh x 8	£21.90	£13.50
1800mAh x 8	£29.90	£18.50
2000mAh x 8	£33.90	£21.00

Please add £1.50 P&P

- High Power Ni-MH 1.2V rechargeable batteries
- Power you scanner from these world beating powerful batteries
- Re-charge up to 1000 TIMES

### MH C401FS

- Rapid Charge 1, 2, 3 or 4 NiMH / NiCD AA/AAA batteries under 100 mins accurately & coolly.
- Select 100 min rapid or 5 hr gentle charge.
- Enhances battery life.
- Four independent charging controls
- Inc: 4xAA 1800mAh NiMH batteries, Car adaptor kit, Battery carrying case, Multi-Voltage adapter

### SPECIAL OFFER! MH-C204F Plus -

- 1 MH-204 Intelligent Charger
- 4 x AA 1800 mAh batteries
- UK AC adaptor
- Car kit

**£49.95** £4.75

**£39.95** £6.50

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- Enormous stocks
- Amazing serv...

We Deliver



how to find us



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World Radio History

# nevada

# Save £s with your fav

On the following pages you'll find some worthy candidates for use as stocking fillers. Of course if the family won't take the hint, you can always treat yourself!

With a good variety of radio gear to choose from there's bound to be something that takes your fancy in our selection.

To avoid disappointment and ensure that you receive your choice in time for Christmas, please don't delay and we'll do our best to get your order shipped in time. Please note that the offer ends 22 December 2003.

Whether you're a seasoned radio enthusiast or a beginner we hope there's something on offer to take your fancy.

## Uniden UBC-780XLTrunk Tracking Scanner (Reviewed Feb 02)

Superb base scanner, used by many as a mobile set. Fantastic performance and stand alone trunk tracking not to be missed.

Frequency Range: 25 - 1300MHz (with gaps)  
 Modes: a.m., n.b.f.m. & w.b.f.m.  
 Channels: 500  
 Scan: 100ch/s  
 Dimensions: 178x61x165mm  
 Weight: 1.33kg  
 Batteries: None 12V d.c.

Normal RRP: £349  
**SWM OFFER PRICE: £299.95**  
 Post & Packing: £9.95



Save  
**£50.00!**

## EP300 Earpiece

'Over ear' ear-piece, suitable for use with most radios. Monitor discretely - for the bargain price of £6.99

Normal RRP: £9.99  
**SWM OFFER PRICE: £6.99**  
 Post & Packing: £2

Save  
**£3.00!**

# SWM C

With the arrival of Christmas imminent, h who try to drop casual hints with family help with the persuasion this year. So, we've go with some great Christmas offers to make this a

## Evoke 1 DAB (Reviewed Dec 02)

The first DAB tabletop set to hit the market, here's a chance to experience DAB for yourself for the bargain price of £89.95

Frequency Range: 217.5 - 230MHz  
 Modes: Eureka 147 (DAB)  
 Dimensions: 210x175x110mm  
 Weight: 1.4kg  
 Power: 12V d.c. via supplied mains p.s.u.

Normal RRP: £99.95  
**SWM OFFER PRICE: £89.95**  
 Post & Packing: £9.95



Save  
**£10.00!**

## Maycom AR-108 (Reviewed Sep 99)

Terrific airband starter scanner with digital display, a great way to enter airband monitoring.

Frequency Range: 108 - 180MHz  
 Modes: a.m. & n.b.f.m.  
 Channels: 198  
 Dimensions: 57x84x25mm  
 Weight: 156g  
 Batteries: 2 x AA

Normal RRP: £69.95  
**SWM OFFER PRICE: £59.95**  
 Post & Packing: £4.50



Save  
**£10.00!**

# Christmas Offers

Here at SWM we've decided that those of you members and loved ones might need a little together with our advertisers and come up special listening celebration.

## Alinco DJ-X2000 + EP300 Earpiece (Reviewed Jul 01)

The top-of-the-range fully featured Alinco hand-held, yours for a bargain price.

Frequency Range: 0.1 - 2149.999950MHz  
 Modes: a.m., c.w., u.s.b./l.s.b., n.b.f.m. & w.b.f.m.  
 Steps: Auto, 50, 100, 200, 500Hz, 1, 2, 5, 6.25, 8.33, 9, 10, 12.5, 15, 20, 25, 30, 50, 100, 125, 150, 200, 250 and 500kHz.  
 Channels: 2000 (50 banks of 40)  
 Dimensions: 57x150x27.5mm  
 Weight: 320g  
 Batteries: 4 x AA



Save  
£100.00!

Normal RRP: £499  
**SWM OFFER PRICE: £399**  
 Post & Packing: £10

## Yupiteru MVT-9000 (Reviewed Feb 97)

This fully featured all-mode hand-held scanner can be yours for the bargain price of £399.95

Frequency Range: 0.53 - 2000MHz  
 Modes: a.m., c.w., u.s.b./l.s.b., n.b.f.m. & w.b.f.m.  
 Steps: Auto, 50, 100, 200, 500Hz, 1, 2, 5, 6.25, 8.33, 9, 10, 12.5, 15, 20, 25, 30, 50, 100, 125, 150, 200, 250 and 500kHz.  
 Channels: 1000  
 Dimensions: 66x155x41mm  
 Weight: 410g  
 Batteries: 4 x AA



Save  
£100.00!

Normal RRP: £399.95  
**SWM OFFER PRICE: £299.95**  
 Post & Packing: £7.00

## MALDOL GDY-30 Wideband Discone Antenna

Frequency Range: Receive 100-1500MHz  
 Transmit 144/430/900/1200MHz  
 Connection: SO-239  
 Power Handling: Rated to 100W (f.m.)  
 Length: 840mm  
 Weight: 260g

Save  
£10.00!

Complete with mast mounting brackets

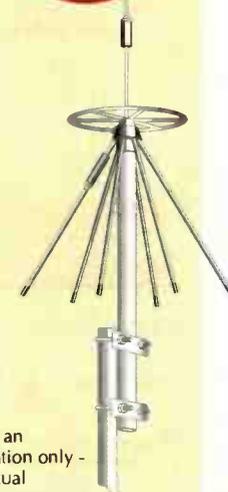
Will accept masts with 25-60mm diameter

Standing at only 840mm high, the new lightweight GDY-30 Discone from MALDOL offers excellent receive performance from 100-1500MHz combined with 100W transmit capabilities on 144/430/900 and 1296MHz.

Complete with mounting hardware, the GDY-30 is an ideal low-visibility, high-performance discone antenna which will accept supporting masts up to 60mm in diameter.

Normal RRP: £49.95  
**SWM OFFER PRICE: £39.95**  
 Post & Packing £9.95

This is an illustration only - the actual antenna may vary slightly.



## Alinco DJ-X3 + Batteries/charger (Reviewed Aug 01)

This mini hand-held scanner is ideal for all listeners. Use it as a starter or second set. Easily fits in the pocket to allow private monitoring anywhere. Complete with rechargeable batteries and charger.

Frequency Range: 0.5 - 1300MHz  
 Modes: a.m., n.b.f.m. & w.b.f.m.  
 Channels: 700  
 Dimensions: 56x102x23mm  
 Weight: 145g  
 Batteries: 3 x AA

Normal RRP: £129.95  
**SWM OFFER PRICE: £99.95**  
 Post & Packing: £10

Save  
£20.00!



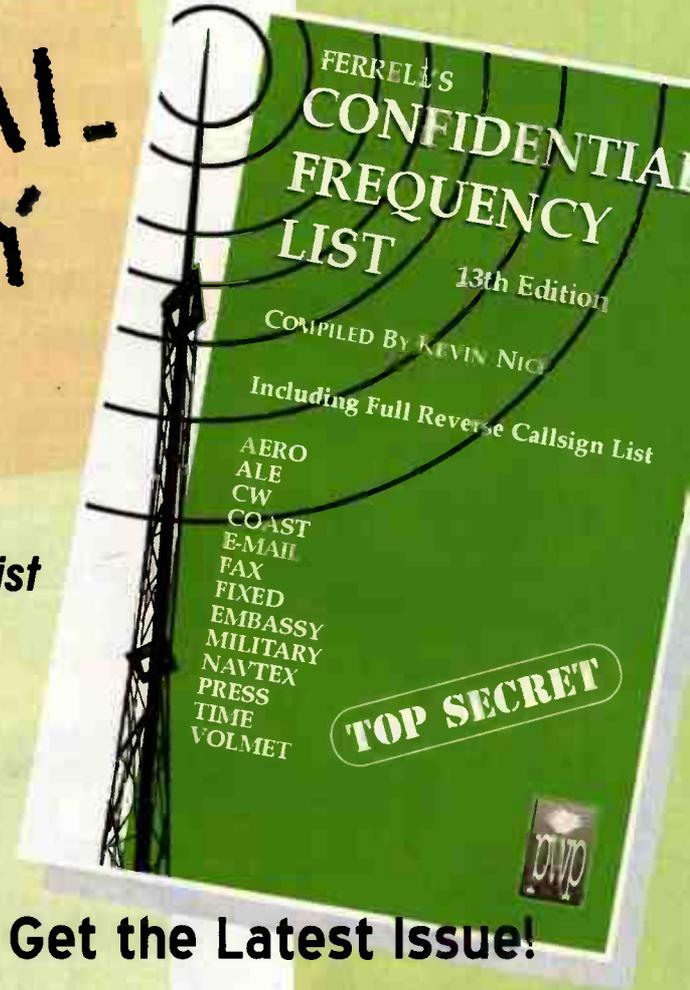


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13th Edition!

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- Massive Updated HF Frequency List
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- High Speed HF E-Mail Services
- Extensive Callsign Listing
- International Call Allocations
- Essential Utility Abbreviations



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made in Sterling. Cash not accepted.

**TELEPHONE ORDERS TAKEN ON 0870 224 7830**  
**FAX ORDERS TAKEN ON 0870 224 7850**

## ICOM IC-R5

This little handy scanner is very simple to operate and is very popular among our commercial customers. The new IC-R5, complete with NiCads & charger.

**ML&S £179.00 WITH FREE NICADS, CHARGER AND PROTECTIVE CASE!**

## ICOM IC-R10

Covering 100kHz to 1300MHz with AM/FM/WFM and SSB. Complete with Nicads, Charger and rubber helical wide band antenna all for only £319.99. Add the Super Searcher (£99.95) and RT-R10 (£109.99) for reaction tuning to nearby transmitters. PC Programmable. Requires PC-R10 at £39.95

**ML&S £319.99 ZERO DEPOSIT! 24 x £16.04**

## ICOM IC-R3E NEW LOW PRICE

The Scanner with TV built-in that picks up a bit more than Coronation Street! Complete with Lithium Ion battery and charger, all ready to go! PC Programmable. Requires PC-R3 at £39.95

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## YAESU VR-120D

Pocket Mini Scanner. 500kHz-1300MHz AM/FM and WFM. Ideal Go Anywhere pocket scanner. 12V DC! Now with NiCads and Charger.

**NEW LOW PRICE ML&S £159.95 SPECIAL OFFER**

## YAESU VR-500

100kHz-1300MHz AM/FM/WFM/LSB/USB/CW. This amazing little scanner is an ideal pocket communications receiver with keypad entry! PC Programmable. Requires ADMS-3 at £39.95

**ML&S £199.95**

## KENWOOD TH-F7E

The Scanner that transmits! Covering 100kHz - 1300MHz AM/FM/WFM plus SSB (100kHz - 470MHz) with Lithium Ion battery and Charger plus Transmit (6 Watts) on 2 metres and 70cms. An ideal scanner for radio amateurs! All this for only £289.00 PC Programmable. Requires PG-4P at £31.95

**ML&S £289 ZERO DEPOSIT! 24 x £14.48**

## AOR AR-8200 MKIII

The best Handheld Scanner available with AM/FM/CW/USB/LSB. Frequency range: 530kHz-3000MHz, PC programmable and controllable (requires PC8200 £85). Complete with high capacity NiCads, Charger, Cigar lighter lead, rubber helical wideband antenna, medium wave plug-in antenna. Add the Super Searcher and RT8200 (£119.99) for reaction tuning to nearby transmitters.

**ML&S PRICE £389 ZERO DEPOSIT - NOTHING TO PAY FOR 6 MONTHS!**

## YUPITERU MVT-7100

This scanner is very old in design and lacks a few features but offers good scanning facilities. Covering 100kHz-1300MHz AM/FM/WFM/USB/LSB. Complete with NiCads, Charger & Telescopic Antenna.

**ML&S £229.95**

## MAYCOM FM-100

Pocket scanner with 8.33kHz steps for the airband. AM/FM & WFM. Basic scanner at a basic price.

**ML&S £99.95**

## MAYCOM AR-108

This little airband scanner sells itself with coverage of the civil airband.

**ML&S £99.95**

## AOR 8600 MKII

**new Mk II version!**



With many of the features of the AR8200 Mk2 this is an exceptional desktop communications receiver with **FREE PSU. PC Programmable** ML&S £599.95 ZERO DEPOSIT! 36 x £21.81

## AOR AR-7030



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

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## AOR 5000



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

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## YAESU VR5000



This amazing desktop scanner is the only scanner to offer true dual receive. Coverage is from kilohertz to gigahertz offering all modes and has optional DSP for enhanced shortwave reception. Complete with **FREE PSU** at only £599.99. PC Programmable.

**ML&S £549 ZERO DEPOSIT! 36 x £19.96**

### Also Available

The New Yaesu VR-5000 plus 3. This unit has the DSP module, Digital Voice Storage Unit and Voice Synthesiser fitted and is available for £729.00.

**FREE PSU!**

## BEARCAT UBC-780XLT



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## BEARCAT UBC-220XLT



66-956MHz (with steps). AM/FM. 200 memories. Turbo scan/search. Data skip facility. 10 priority channels. Memory backup. C/W earphone, belt clip, charger and rubber duck antenna. **ML&S £119.00**

## IDEAL XMAS GIFT



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## garmin e map

Handheld version of the Street Pilot and comes with Data Lead, 16Mb Ram Card and UK Metro Guide on CD Rom.

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## garmin street pilot 3 deluxe

The first portable GPS to talk directions to you. This unit looks similar to the Colour Street Pilot but has the inbuilt ability to calculate your route for you. It will then speak directions to you in a clear female voice. The Street Pilot 3 Deluxe uses a faster processor than previous versions and is much faster at relocating. Supplied with all you need to mount the unit in the car, plus 128Mb memory module, plus European City Street Map CD ROM with keys & you get a **FREE USB Memory Programmer**

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New discone to clip on top of any bnc scanner  
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## mydel

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Will also work on 2M & 70cms TX(50 W)

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## UK Scanning Directory

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

## MIRACLE WHIP

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## FINANCE EXAMPLE

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	PRICE.....	£599.00
	Deposit.....	£00.00
	48 Payments of.....	£17.72
	Total purchase price.....	£850.56

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



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Don't forget that we still have available **SWM** Back Issues for 2003, as well as 2002, 2001, 2000 and 1999, but hurry as stocks are limited. To order Back Issues, either use the Order Form on page 78 of this issue, or call the Credit Card & Order Hotline on (0870) 224 7830. Back Issues for 1999-2002 are available for just £1 inc. P&P, all others are £3.75 inc. P&P.



Earlier this year I mentioned the web page of **Peter Thompson** that allowed you to search for ship details when you knew the ship's callsign. When I first received Peter's E-mail I used the web page successfully several times after hearing a few callsigns being broadcast by Ostend Radio. Shortly after the magazine arrived on readers' doormats I received some E-mails and letters from readers saying that they were having problems when accessing the site. I tried again myself and found no problems and even mentioned this in a later column. The original URL was

[www.pthompson.getfreeinternet.co.uk](http://www.pthompson.getfreeinternet.co.uk)

A recent E-mail from Peter says that he is having other problems with his site and it is now so bad that he cannot even access it himself! Peter has therefore moved the web page to another location and asked me to pass-on the new URL. Peter's website currently resides at

[www.peter.thompson.manufree.net/Shipsearch.htm](http://www.peter.thompson.manufree.net/Shipsearch.htm) to which has been added a link to a Turkish ship search page which is in addition to his original site.

## Concorde Retirement

By the time that you read this it will all be over for the Concorde fleets of Air France and British Airways. The Air France fleet stopped flying during the early summer and were quickly dispersed to various museums and aeronautical collections around France, Europe and the USA. British Airways continued for a while longer, with their final flights taking place on 24 October.

There were some extra flights during October, when Concorde made special goodwill trips to Canada and some cities in the northeastern USA as part of its 'goodbye tour'. On 1 October flight **BAW 097** flew to Toronto where its arrival was shown live on national television. The following day the aircraft then flew onto two cities in the USA before returning home to London using the callsign **BAW 098**. On 8 October flight **BAW 1215** flew to Boston for a similar visit and on the 14th flight **BAW 1223** went to Washington DC (the above details are courtesy of reader **LW**).

The last official commercial flight was on Friday 24 October, but during that week there were daily flights to different provincial cities in the British Isles. These originated in London, went for a supersonic cruise around the Bay of Biscay and onto the other airport.

The callsign for these flights was **BAW 9020C** or '**Speedbird Concorde 9020C**'. Following a few hours on the ground the whole flight was repeated in reverse, including the supersonic flight, using the callsign **BAW9021C**.

The final commercial departure from Heathrow by Concorde was on the evening of 23 October when flight **BAW001** flew to New York. On the final day three different Concorde flights managed to land back at Heathrow airport consecutively, this is the first time that this has been achieved. The three flights were the **BAW002** returning from New York, the **BAW9021C** arriving back from its day-trip to Edinburgh and **BAW9022C** which was returning from a supersonic trip around the Bay of Biscay. The supersonic portions of these flights (both the scheduled London-New York-London flight, as well as the 'tour of Britain' flights) all took place over the North Atlantic and were under the control of Shanwick OACC.

The flight returning from New York was first heard working Gander OACC on **8.879MHz** and then later with Shanwick on **5.649MHz**. Greetings and 'farewell' messages were passed by both Gander and Shanwick OACCs to the Concorde flights on h.f. and I suspect that some of the 'subsonic' commercial flights were also passing messages over v.h.f. I have also seen reports that several messages were passed to the Concorde flights by 'Speedbird London' on h.f. presumably to coordinate their arrival back at London Heathrow Airport.

## CCF Contest

By the time this issue is on sale it will be almost the end of November. The last full weekend in November sees the annual *Winter Wine* h.f. communications contest by the Combined Cadet Forces (CCF). The 24-hour contest will be on 29 and 30 November and starts at either 1400 on the Saturday or possibly 1000. I am not privy to the full details of the contest, but I can only suggest that listeners should be ready for the earlier start-time.

The idea behind the contest is for as many CCF stations to contact as many other CCF stations on as many different CCF frequencies as possible. The scoring system is quite complicated so I won't even try to explain it here.

The frequencies used by the CCF during their contests and regular nets are as follows: 2.273, 2.413, 2.768, 3.848, 4.363, 4.443, 4.918, 4.9205, 4.953, 5.328, 5.343, 6.913

## Goodbye

"All good things must come to end" somebody once said, and now it is my time to announce that this is the final 'SSB Utilities' column compiled by me in *Short Wave Magazine*. Is it really eleven years since I took over from the late **Peter Rouse**? Those of you with long memories may remember that I initially took over from Peter for six months at the start of 1992 during his illness, Peter returned in the middle of 1992, and I took over again 'full time' from the middle of 1993.

Over the years I have covered many different aspects of SSB Utilities, from ships and aeroplanes to land and space; I have answered readers' questions and given advice, given warning of things to listen to and identified signals for readers. The past ten plus years has been very interesting and informative, but I think that the biggest change has not been in the stations themselves but the incredible upsurge of Internet users.

It's now possible to acquire an incredible amount of information quickly and easily, exactly where and when you want it. Many stations have their own web pages and there are groups devoted to every aspect of short wave listening. When I started in 1992 this was all a pipedream.

My involvement with the column has bought me into contact with some very clever and interesting people, a number of people who probably should not have told me all they had and also led to me appearing on TV (my '15 minutes of fame' was actually less than two minutes, and I missed it!). Some of the people who contacted me over the years I would now consider as friends and I look forward to continuing those friendships in the years to come. To those of you who have helped me compile this column in the past eleven years by sending in reports, information, questions and corrections, I salute you.

and 7.708MHz. When the stations move from one frequency to another they refer to the new frequency using a two-letter code and it's quite easy to work out where they have QSYed to with patient listening and scanning of the above frequencies. For the keen listeners among you, the results are broadcast on Christmas Day at 1200 on one of the above CCF frequencies.

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## NEW microwave video receiver

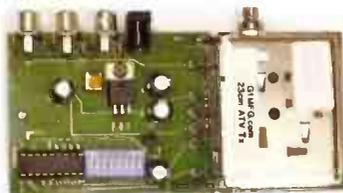
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See below for suitable aerials



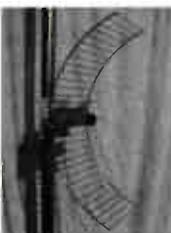
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**23cm** Covers 1240-1367MHz in 500kHz steps, 50mW (nom) power output, sends video & audio, runs from 12V .....£42.50  
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## FM ATV receivers

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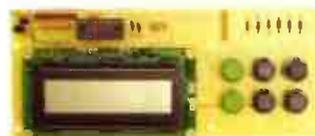


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# WELLBROOK COMMUNICATIONS

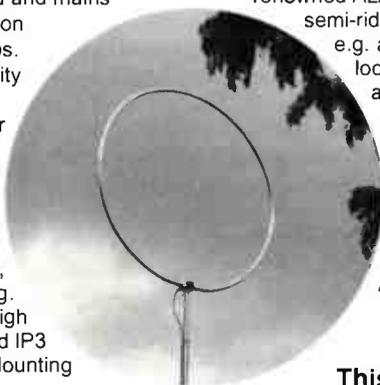
Voted the best Active Antennas for a second year - 2004 Passport to World Band Radio

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£129.95 +£10.00 P&P UK & Eire.  
Add £25.00 for overseas

This is what the experts say.

**John Wilson; Nov 2000 SWM:**

Given the choice between an active whip and an active loop, I would take the loop every time. It is infinitely better than the whip in terms of E-field noise rejection, performs every bit as well if not better than the classic end fed wire, has very useful nulls for rejecting unwanted signals.

**Wellbrook Communications, The Farthings, Beulah, Llanwtyd Wells, Powys LD5 4YD.**

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# Satellite

TV News

● Roger Bunney 35 Grayling Mead, Fishlake, Romsey, Hants SO51 7RU

**B**roadcasters try to prepare for anticipated events all of the time so that they're ready when the event happens. The evening of October 7 saw the *NSS-7*, 21.5°W trans-Atlantic feeder of 'CNN NEWSOURCE' playing out footage of the Pope's life, both stills of his younger days and more recent news compilations of his visits around the World - this material for CNN affiliates for recording in awaiting possible future obituary use. A receiver was idling on the above lease when up popped a caption 'White smoke at the Vatican - stand by' which alerted me to possible retirement or otherwise of the present Pope due to ill health. The 'white smoke' appears from a chimney following a meeting of the Roman Catholic seniors once the decision is made on the Pope's successor. In mid September the Pope was in the final days of a European tour, he touched down in his Alitalia Airbus onto Polish soil at Krakow, this the last stop on the tour. Live OB coverage was transmitted over *Eutelsat W2* @ 16°E - 12.703GHz-H (SR 5632+FEC3/4) via the 'POL 019 SNG KRAKOW' sat truck.

Ident 'CNN NEWSOURCE' feeds over *NSS-7* @ 21.5°W - 11.563GHz-H (SR 6111+FEC 3/4). *NSS-7* carried rather dramatic live pictures late evening on 22 September when massive crowds surrounded the Palestinian HQ of Yasser Arafat, loudly shouting their support for their president and condemning the announcement by the Israelis that they were intend in moving Yasser 'out'. The Israelis are reacting to the seemingly never-ending suicide bomber carnage, though the large crowds obviously dissuaded Yasser's exit that night!

These live pictures were fed over *NSS-7* ex 'REUTERS JERUSALEM' @ 11.659GHz-H (4000+3/4). Curiously the same night a new (?) Belgian video facility appeared at 11.650GHz-H (5632+3/4) signing as 'KRENOTEL BRUSSELS' on colour bars, no video reports were filed and eventually closed down.

Our more mature readers will recall the racing exploits of both Graham Hill and Stirling Moss. *Eutelsat W1*, 10°E played host to an Italian TV report in September showing the Stirling Moss 'Gull wing' car that he used to race years back, Stirling Moss is still involved with cars and has been presenting a powerful new Mercedes to the media. **Roy Carman** (Dorking) found this offering at 11.172GHz-V (6111+3/4) and with a very unusual service ident - 'GCI/F.42/1/6111' and notes that during the video package Moss was seen driving the pretty presenter for a ride in his old racing car! *W1* carried many pictures of rioting crowds 4 October from Rome. Much of the emotion appeared centred around the Palace of Congress where 'Inter-government Conferences' were being held. Many Italian police with batons and body armour were seen charging the crowds, tear gas and cartridges flying though the actual cause of the riot was not apparent. The riot, the conferences, or both were sufficiently important for the media to wheel out at least two satellite trucks for live coverage both outside the venue and inside the halls. 'ITA 113 TELESPAZIO' was feeding 11.007GHz-V (5632+3/4)

whilst 'VIDEOPIU' also provided live pictures indoors via 'ROMA EUROSCENA OB VAN 2' - 11.130GHz-H (5199+7/8), both via *Eutelsat W1*, 10°E.

During the September IBC Amsterdam exhibition *Astra-1*, 19.2°E downlinked HDTV tests at 12.168GHz-V (27500+3/4) running both 1250 and 1900 lines though a computer was necessary to resolve pictures. Both **Hugh Cocks** (Algarve) and **Edmund Spicer** (Littlehampton) reported these tests that consisted mainly of classical music concerts, Hugh was able to display pictures which were superb with no obvious line structure. Edmund's RSD300 receiver played out the audio only.

Just too late for last month's column was the approach and landfall of Hurricane *Isabel* which was later downgraded to a tropical storm. September 18 saw the storm approaching the USA Eastern seaboard from the South and this day 'REP DOMINICANA' were running footage and reports of damage - curiously this was a 2-way report live into Madrid and a mix of Italian, Mexican and Portuguese languages was apparent according to **Alan R** though the Madrid reporter was able to cope. Carried over *Hispasat* 30°E @ 12.096GHz-H (5632+3/4) but in 4:2:2. The storm eventually arrived on mainland USA and several live 'wind blown' reports were filed over the 'CNN NEWSOURCE' lease. The 'usual' pictures of large waves, a pier being battered, a reporter leaning on the wind were sourced from affiliated TV stations across the affected areas. One report utilised a videophone and the quality was awful with smudgy video and a total lack of any detail. Whilst noting the Atlantic feeds such as 'CNN NEWSOURCE' (21.5°W) and Globecast Channels 1-3 (12.5°W), the majority of White House and Department of Defence press meetings will be carried over these circuits - President Bush often conducting his own press conferences.

The output carried over the *AB-1* sat @ 12.5°W is certainly varied. One Friday night a downlink scan was carried out and up popped 11.155GHz-H (2894+3/4). The service ident 'GAY TV BY FORTRESS' was confirmed by the corner logo 'GAY TV' on the actual picture. The Italian language programme comprised very long 'phone-in chats with the presenter, studio interviews and numerous pop music videos. The programme was ongoing at 2220 when discovered and was still running at 0030 - obviously one for night owls. Checking on another Friday night I found the programme again on-air suggesting this is a Friday night regular specialist channel.

Finally, a note from **Stefan Hagedorn** via the Internet...*Telstar-11*, 37.5°W has been downlinking several Russian language TV channels and for those brushing up their Russian for their next Moscow visit check out these frequencies.

ORT International - 12.513GHz; RTR Planeta 12.519GHz; Moskva-Otkrytyj 12.523GHz. All run SR3617 + FEC3/4 and horizontal. RTN is also present at 12.529GHz-hor (3254+3/4). All run MPEG-2 FTA (free-to-air) Occasional news feeds appear - 12.651GHz-H (5632+3/4).



BT TES-43, the Meridian South sat truck on location in Littlehampton (Edmund Spicer).



A hurriedly snatched picture as Yasser Arafat (upper centre) addresses the crowds as they fear that the Israelis will expel Arafat (live via *NSS-7*).



The Nation remembers and mourns - 11 September 2003 (NewSource, *NSS-7*).



Firemen toll a remembrance bell on the Twin Tower site - at the crash time - and remember their lost colleagues (NewSource).



Sports programme RTNC Kinshasha, Congo, (Telecom 2D).



Meridian reporter awaits her cue for on-air, a protest against a proposed TETRA mast (TES-43, Telecom 2D).



CNN's 'NEWSOURCE' caption but with new teleport dish inlay (*NSS-7*).

# DX

## Television

● Keith Hamer & Garry Smith

17 Collingham Gardens, Derby DE22 4FS

As expected, Sporadic-E activity went into rapid decline during September with notably fewer and shorter openings.

Fortunately, high-pressure created enhanced tropospheric conditions for much of the month with reception over a wide arc from France to Scandinavia.

### Sporadic-E Reports

An opening materialised just before midday on September 13 with reception continuing well into the afternoon. Signals identified included Corsica (Canal Plus) on Channels L2 and L4, Spain (TVE-1) Channels E2 and E3 with *Tour de France*, France (Canal Plus) L3, Portugal (RTP-1) E3, Slovenia (SLO-1) E3, Croatia (HRT-1) E4 and Italy (RAI UNO) A.

One welcome visitor during the opening was the elusive Italian private station TELE A+ which operates just below E2. This was identified by **Stephen Michie** (Bristol), **Peter Barber** (Coventry) and **Simon Hockenhull** (Bristol). Peter Barber's log shows reception from the Iberian Peninsula on the 2nd, 3rd, 4, 6, 13 and 28th. The last signal to be seen was TVE-1 E3. Could this be the last sighting of Spain in Band I before switch-off?

Simon has commented on how strong the TVE-1 signals on E2 have been this year, almost up to local levels. Channel E3 has also been strong and clear of local interference this year, suggesting only the Aitana outlet has remained on-air. There is also an E4 outlet still operating but we do not know which one - Guadalcanal closed during the summer.

**Roger Bunney** (Romsey) adds that low-level signals from Madrid (TVE-1 E2) have remained for several hours during the past season. These have been too weak to resolve video but have been steady on a scanner right through until after midnight.

**John Lees** (Cheltenham) reports a satisfying season, despite the absence of exotics. John has positively identified Portugal, Spain, Denmark, Sweden, France, Corsica, Iceland, Latvia, Italy, Switzerland, Germany, Czech Republic, Lithuania, Norway, Belarus and (probably) Austria.

The most unusual/interesting signals were Lithuania for nearly eight hours continuously on June 17 and a whole episode of 'Les Simpson' (*The Simpsons*) in French on L4 from the Ajaccio outlet in Corsica on July 9. The episode that was seen was the one where Mo (the barman character), runs a strip joint. Not that we ever watch the rubbish!

**Lt. Col. Rana Roy** (Northern India) logged Dubai E2 on the 5th and unknown CIS stations on the 15th and 20th on R1 and R2.

### Tropospheric Reception

On September 5 and 6, NRK FM was identified on 91.1 and 91.8MHz by **George Garden** (Edinburgh). At times, TV signals from Norway were struggling to appear on E44. **Peter**

be operating. This was logged by Peter and also by Tom Crane (Hawkwell). On the 21st, Peter observed something very unusual with Dutch signals from Lopik being visible on E4 in Band I only. Conditions were completely flat in Band III and at u.h.f. The E4 signal remained at reasonable strength for about 35 minutes.

Simon has also experienced mini tropospheric lifts, particularly in coastal areas, lasting only a few minutes. Occasionally they occur inland. One opening dating back to 1970 springs to mind when several Dutch u.h.f. stations rose dramatically out of the noise for around 10 minutes before disappearing completely. Those were the good old days with few UK transmitters operating, no Channel Four and with BBC-2 off air for part of the day.

### Bargain Multi-System TV

**Andy Emmerson** (Northampton) has a bargain multi-standard 14in colour TV for sale at £50, in good condition, with PAL B, G, I, SECAM French, etc., NTSC (SCART), etc. Contact Andy directly on (0845)-458 0981 but the TV will need collecting.

Meanwhile, **Dave Philpotts** (in Looe) has acquired a Daewoo GB14C4NT multi-system colour portable for around £80 from his local Sainsbury store. **Lionell Michelland** (France) seeks UK logos from TV programme guides and magazines. Please send any to us and we will pass them on.

### BBC Identification Symbols

**Ian Moody** (Sutton) likes the BBC's summer trailers, especially the two dance sequences called *Salsa* and *Tango*, but wonders if someone at the BBC has developed a foot fetish? Ian wants to know if the focus will soon be on other parts of the anatomy!

**Albert Davis** (Crawley) has taken us to task over our ... continued and bigoted campaign ... against the BBC dance sequences used for their on-screen Identification Symbols. Well, our venom wasn't directed at the dance routines themselves but at the way the BBC has thrown traditional Presentation and Continuity out of the window at Television Centre after the time-honoured BBC Globe Symbol was withdrawn.

The BBC are not the only guilty ones. ITV has discarded traditional local graphics in favour of what we consider ghastly creepy shots of well-known actors and TV personalities before the start of their programmes. Incidentally, graphics remarkably similar to the older UK ones are finding their way onto foreign screens.

Either the UK broadcasters are selling the graphics off second-hand to European services, or European graphic designers are churning out clones for everyone and charging exorbitant prices for them hoping no-one will notice! Well, people do notice. A few years ago at Christmas, a well-known German-based TV channel used an identical station identification sequence which the BBC had paid good money for back in 1990!



Fig. 1: Belarus R2 received by Stephen Michie during a hectic Sporadic-E opening.



Fig. 3: The BBC-1 Christmas Identification Symbol in 1977 featured a rotating Christmas pudding with custard, or was it brandy sauce? There was even a sprig of holly. We believe that the BBC knew how to design on-screen graphics properly in those days!

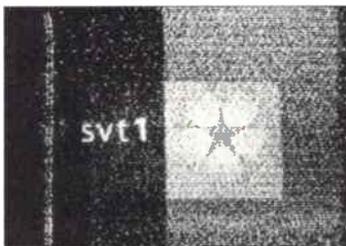


Fig. 2: Swedish identification caption, photographed by Stephen Michie.

**Barclay** (Sunderland) has experienced the best year ever for tropospheric reception since first becoming interested in the hobby back in 1994.

This September reception has been mostly the usual Danish, German (NDR region) and Dutch signals, although he did receive Sweden (SVT-2 E30 and TV-4 E46) on the 13th and ARD/ZDF from the Münster transmitter (WDR) on the 16th. On the 14th, Simon Hockenhull received Luxembourg (RTL+ E7) which is somewhat of a rarity in his neck of the woods.

A SAT-1 (Germany) outlet on E5 appears to

### 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 discs and good-quality video recordings. Our DXTV and Archive TV website can be found at: [www.test-cards.fsnet.co.uk](http://www.test-cards.fsnet.co.uk)

# Amateur

Bands

- **Clive Hardy** SWM, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW
- **E-mail** [clive@pwpublishing.ltd.uk](mailto:clive@pwpublishing.ltd.uk)

**T**here is a potentially very large shadow which could cast itself over the h.f. bands and the pessimists suggest it will have a devastating effect on amateur radio. The Japanese have banned it, but most other countries are

enquiring about it. The worrying thing is that the 'prophets of doom' could be right. There certainly appears to be a real threat.

So, what is this disaster that's lurking just around the corner? The answer is Power Line Transmission (PLT). Some alternative names are Power Line Communication (PLC) and Digital Power Line (DPL). Whatever the name, it's the sending of data signals over electrical lines, which are primarily used to convey power, from the sub-stations right down to the wiring in our homes.

The explosion in Internet use and the demand from many users for lots of data to be passed from place-to-place means that service providers need to construct some mega data highways pretty quickly to handle the traffic. The big attraction of PLT is that it uses a network of highways that is already there. Unfortunately the power line highway might be very wide, but it's extremely bumpy.

To get serious amounts of data down any sort of transmission line means the signals have to have bandwidths of many megahertz. Individual 'channels' may be fairly narrow. Slow, but able to be detected at low levels relative to ambient noise and therefore reliable, (the PSK31 mode is a good example), the requirements of Internet rates of data transmission will mean power lines would need to use many many channels with carrier frequencies expected to be from about 4MHz upwards right across the h.f. bands and beyond.

## Doesn't Leak

Putting all that r.f. into a transmission system is fine if the system doesn't leak, but it's far from fine if there are leaks. The problem with power lines is that they just weren't designed with the transmission of r.f. in mind. The frequency of 50Hz is their domain. The constantly varying loads and electrical noise from washing machines, dimmer switches and everything attached to the lines will play

havoc with their performance as data carriers.

There will be no steady state to allow impedance matching of source and loads to the transmission lines. Losses will be significant. The cables will act as antennas as well as feeders. The r.f. will leak from them

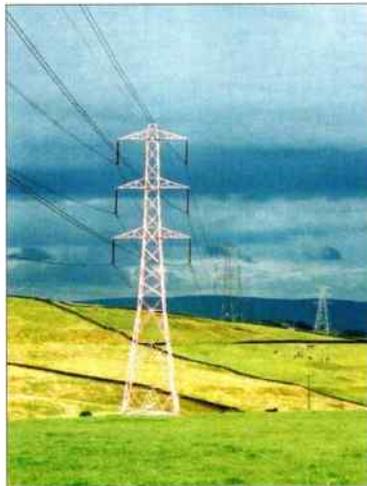
like water from a sieve.

And who can be certain that the signals won't find their way onto the high voltage lines and so into the largest antenna system in the UK, the National Grid?

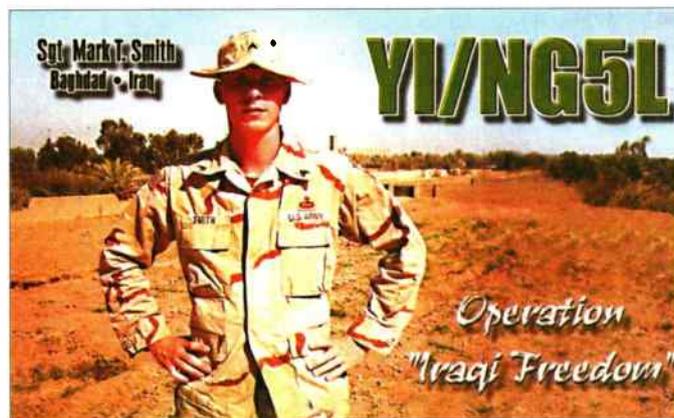
Realising that it's going to be hard work getting the data signals along the lines, the remedy being put forward by the PLT camp to 'crack the nut' of signal losses on the lines is simply to 'hit it with a bigger hammer'. Just shoving more r.f. onto the lines. The bigger the hammer of signal power being put onto the lines, the greater the level of r.f. leakage.

The authorised level of

r.f. emission that is being suggested for PLT is in the same ball park area of the typical broadcast signal which radios in the home environment are expected to receive. If allowed, PLT would ride rough shod across the short wave bands. Add to that some technical disputes over measurement of the



Could data transmissions along power lines mean the end of h.f. operation?



M3UXB received this QSL card from NG5L operating in Iraq.

emissions and a head on collision between PLT and other occupants of the frequencies looks inevitable.

The users most in danger are radio amateurs and listeners, who are often looking

for the weakest of signals from all corners of the globe. Any increase in the noise level on the bands will make it much harder for low level signals to be received. If the increase is great enough then even strong signals, from an amateur standpoint at least, will be lost in the noise.

## Badly Affected

But not only amateur radio activity would be badly effected by increased noise. The maritime agencies, the aeronautical users, the multitude of short wave broadcasters will all suffer. In a recent contribution to European Commission Workshop on Interference Emissions from Powerline Communication Networks the BBC suggested that one solution would be for PLT to avoid frequencies used for broadcasting and (encouragingly for our hobby) amateur radio.

However, the view is also expressed that PLT probably could not operate successfully at all if the levels of interference acceptable to broadcasters were imposed. At the very least a great deal more research needs to be done into alternatives to using the h.f. spectrum for PLT before any decisions are made.

Could it be as bad as some say? Perhaps! No one really knows. It's a new field of endeavour, there are no experts. The danger of interference may be so great that it isn't allowed to happen. It might be that the enthusiasts for PLC convince the authorities that there won't be a problem. There may not be, but all the signs and these are big with lots of them, all point the towards problems. If you listen to the h.f. bands, it's definitely something to worry about. The debate is only going to get hotter and the 'fat lady' hasn't even set off for the theatre yet.

## Ex EOD & GI in QSO

An excellent contact for **Geoff Powell M3UXB** and yes, the call does reflect his work in days past, was **YI/NG5L** in Baghdad, Iraq. The contact with Mark, a US Army sergeant engaged in operation *Iraqi Freedom* took place using s.s.b. on 21MHz, one mid day in early August with an Icom IC-746 and a 40m dipole at the UK end. Although Geoff's the

holder of a full amateur licence since the Morse requirement ended, I bet he keeps that rather nice M3 one as well!

## IOTA News

A couple of new Islands on the Air (IOTA) locations will be active from the December 2 - 8.

**Johan PA3EXX** is off to Cato Island and Marion Reefs in the

Coral Sea Islands, off Australia's north east coast, to operate as **VK4WW1/9**. Johan is to spend the first three days at Cato, take a break on the 5th and then to operate from Marion for the last three.

My thanks go to **425DXNews** for the IOTA information and to **pinkpylon.com** for the power line pylon picture.

# Attn' 123

● **Enigma** 17-21 Chapel Street, Bradford, West Yorkshire BD1 5DQ **Fax:** (01274) 77004  
● **E-mail** enigma@pwpublishing.ltd.uk

**H**aving recently taken you through the ENIGMA Control List, or at least its presently active stations, we'd like to make an important statement regarding its copyright. This has become necessary due to a strange comment which appeared at the beginning of ENIGMA 2000's latest Internet newsletter.

Inexplicably, they 'take issue' with our statement in August 2003 SWM that the ENIGMA Control List is "not copyright". Incredibly, they further imply that it was their own creation! Quite simply, this list and the system of station-naming was created by ENIGMA (that's us) **three years** before the founding of the ENIGMA 2000 group - as our regular Newsletter and Attention 123! of the period will testify.

Before 1997/8 station-naming had become a farce, with voice stations being given names *ad hoc*, often along with rival alternative names and sometimes these bore no relation to their true language, e.g. 'Bulgarian Betty' was actually in the Czech language, nor did she even transmit from Bulgaria! As ENIGMA started logging Morse stations (the vast majority of the total) it soon became clear that continuing with any version of the old station-naming 'system' would prove even more useless and misleading, so we decided to completely reject the old system in favour of a **rational** system, which has proven the test of time. New readers may not be aware that many stations and virtually all the Morse stations, were first brought to public notice by ENIGMA.

This new system soon became established world-wide by non-professional Numbers Station monitors and, we believe, cannot be bettered. It is loosely based on a system for classifying Black Propaganda stations during WWII and no doubt a similar system is still in use by communications intelligence agencies such as GCHQ, for identifying Numbers Stations - all of which inevitably begin as 'unidentified' intercepts.

In the year 2000, the newly-founded Internet-based ENIGMA 2000 group immediately started to use it and still uses it today. In the interests of free research and common sense, we decided long ago that this system and the list should be free of copyright, although of course we always appreciate recognition for what was entirely our creation. Had we imposed copyright, further coordinated and consistent research

into Numbers Stations would have been effectively blocked and ENIGMA would have been 'hoisted by its own pétard'! We therefore have a good reason to be proud of our achievements and are happy to pass on our acquired knowledge to others - without restrictions.

## Variants

While still on the subject of station naming, it may be worth mentioning how difficult this can be. An important distinction lies between variants in format as opposed to other kinds of variants - such as scheduling or habits. Format variants are given letter suffixes starting with A (which simply means that this was the first variant to be discovered), such as G2A or S6E.

Variant suffixes relate to differences in format only, not voice, nor mode, so G2 differs to G2A in that the latter included counts from 1-0 within the call and included one 100-group message block instead of the usual three blocks of 100, 100 and superfluous. Even so, please listen out for this and 50. Its regular schedules were also quite different too, but the suffix relates to format only. Nor are stations which habitually used different musical introductions normally treated as different formats, the only exceptions being E3 and E3A, which are used to describe two unambiguous 'networks' of

essentially the same format, which differ only in their musical interval signals (and their scheduling patterns). We originally allocated E3A as E4, which was incorrect as it certainly didn't warrant a distinct-station status. Of course, two stations using identical formats but different **languages** need to have different **prefixes**, e.g. E7, G7, S7, M12 (i.e. using the language of Morse) all share the same format.

The one station which deserves variant suffixes more than any other, M23, hasn't been given any because multiple formats are so much a habit of this station that our alphabet is probably not long enough to provide all the suffixes that would be needed! Another exception to the 'rule' is the naming of two E17 networks which use exactly the same format as E6, but use a female rather than a male voice. These are given the suffixes Y and Z, even though their formats are the same, but merely to distinguish between two quite different operations whose transmissions share the same format. They each have their own scheduling habits, but the Europe-based E17Z always uses the give-away ID of 274 and nearly always sends exactly 50 groups, whereas E17Y adopts more typical Family I habits and operates from Cuba.

Using a suffix to indicate purely a different schedule, as sometimes happens, is wrong and creates confusion in reports. For example, there's only one M13 format variant: M13A. ENIGMA was never responsible for the so-called M13B, C or D, which are not variants at all, but actually refer to unusual schedules associated with particular schedule numbers, they should really be termed 'M13, Schedule B, C or D' just as we must refer to the different schedules of M1 and M1A as the 025, 197 and 463 schedules. If all this sounds complicated, it is! Efficient monitoring and consistent logging of Numbers Stations requires a high level of dedication and willingness to learn.

## E3 (Lincolnshire Poacher)

We've had reports of this M16 operation transmitting in the mornings before 1100. Any loggings of such transmissions would be very welcome, as it is faintly possible that extra morning schedules have been revived after many years. Frequencies are the same as usual, three in parallel taken from the following: 4.468, 4.730, 5.422, 5.746, 6.485, 6.880, 6.959, 7.337, 7.755, 7.887, 8.464, 9.251, 10.225, 10.426, 11.545, 12.603, 13.375, 14.487, 15.611, 15.682, 16.084, 16.314 and 16.475MHz. Although some of these E3 frequencies appear to be obsolete, the whole list is included here, as experience has taught is that frequencies are sometimes reactivated after long periods of disuse.

M16's closest collaborator is, of course, the CIA and it is interesting that their E5 transmissions seem to have almost died out completely over the last year - none heard since May. Presumably their agents are now using satellite or mobile 'phone text messages wherever practical and appropriate, but in the most sensitive situations there will always be a need for h.f. with its added security. We suspect that M16's E3 and E3A are serving CIA agents and illegal operatives in such situations and that the rather primitive E5 system had become outdated and redundant. However, it's worth listening out for monotonous voice of 'Cynthia' for she may well reappear unexpectedly anywhere between 4 and 25MHz.

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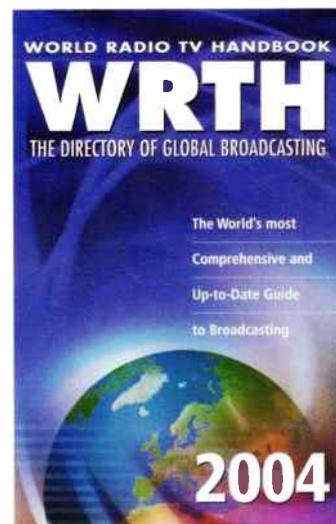
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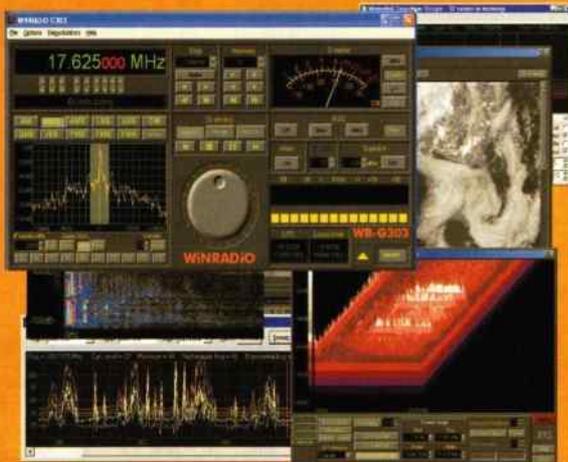


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By D. C. Poole



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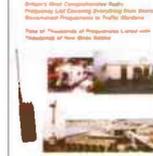
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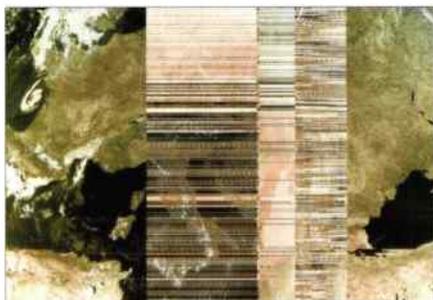
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In mid-September, *NOAA-16* surprised us by showing symptoms of loss of image synchronisation. The evidence was only seen in the high resolution image transmission stream (h.r.p.t.) on 1698.0MHz because the low resolution (a.p.t.) image stream is non-operational.

We have seen this synchronisation anomaly before with older satellites. NOAA's painstaking analysis of the problems resulted in identification of at least part of the cause - insufficient lubrication within the scan motor system.

Analysis showed that at approximately 0700 on 17 September, *NOAA-16*'s AVHRR scan motor current (the motor within the advanced very high resolution radiometer that drives the system to produce scans of the earth) began to act erratically. The current ran rose to 287mA (versus a nominal 230mA) and remained there.

This resulted in a loss of data quality and intense analysis by NOAA satellite engineers. They announced: "Engineers are making every attempt to maintain data quality and are currently reviewing potential actions to



**Fig. 1:** *NOAA-16* image 1223 21 September showing sync fault.



**Fig. 2:** *NOAA-14* image 0834 13 September.

correct the problem". The immediate plan involved disabling automatic re-phasing of the data stream to minimise the loss of data. "Controllers would then enable re-phasing once per 12 hour shift, on the first available contact per shift that time permits".

A few days after the initial observation of the scan motor lubrication problem, on 23 September around 1356, the Satellite Operations Control Centre (SOCC) turned off the TCE24 (the imaging scanner's heater/louwer). This was done in an attempt to heat up the unit and thereby decrease the viscosity (thickness) of the scan motor lubricant. The scan motor then stabilised at a temperature a few degrees higher than previously.

Experience with this problem on earlier satellites suggests that the lubricant can become too cold and thick, thereby reducing lubrication and that heating up the lubricant should produce the reverse effect. This solution was known to have worked on *NOAA-12* about 10 years ago.

Following the switch-off, the performance of the motor improved to 'nominal' and it continues to be carefully monitored. The Satellite Operations Control Centre continue to enable re-phasing about twice a day or as needed. Plans to automate the re-phasing once per day during the orbit around 0430 from September 26 were effected.

After a weekend of slow improvement, the *NOAA-16* AVHRR scan motor current abruptly returned to nominal and remained there. Imagery returned to normal as well. The scan motor temperature reached an equilibrium of 17°C (low) to 19°C (high) and remained stable.

The other WXSAT currently suffering from this type of problem is *NOAA-14*. During September and October however, there have been instances of good imagery being received.

## WXSAT Meeting In Utrecht

Nigel Evans 2EONDE has written about his visit to Utrecht, Holland, to attend a meeting of the Dutch WXSAT group **Werkgroep Kunstmanen**. Nigel and Remote Imaging Group (RIG) magazine Editor **Les Hamilton** have kindly given permission for me to quote some of the article to be published in the December 2003 edition of the *RIG Journal* and I am also grateful to **David Taylor** for supplying the pictures.

Nigel and family set off from Dover to



**Fig. 3:** RIG secretary John Tellick addressing **Werkgroep Kunstmanen** on the latest developments with *MSG-1*. In the right foreground is an HRPT dish antenna with X-Y rotators built by **Werkgroep** member Peter Smits.



**Fig. 4:** Hendrik Jalving with home-brew dish and rotators.

Calais in the early hours of Saturday 13 September, after calculating that the trip could be done by car in one day. With light traffic, they arrived at the school after driving on the motorway from Calais to Utrecht - a distance of some 320km.

Nigel is very keen on the practical side of WXSAT imaging, so he felt at home when he saw home-brew dishes, rotators and antennas everywhere. He noted that members were actually building helix antennas at the meeting using 12mm dia. copper pipe - see **Fig. 6**. Members explained that it was easier to bend coiled pipe rather than straight, though Nigel comments on his difficulty in obtaining 12mm copper pipe.



Fig. 5: Arne van Belle sets up the live MSG-1 reception station.

"The next thing that caught my eye was an antenna rotator, not an expensive commercial model, but a home-built version and at its core, I might have guessed, bicycle parts. The bearing and pedal sprocket of a bicycle had been employed as the main rotator spindles, with the drive arrangement being achieved by hand-made worm drives of bent round-bar steel and small GM motors (such as one would find in the heater fan of a car). Logic boards and a PC interface handled the control. Attached to the rotator was an h.r.p.t. dish spanning over a metre in diameter, again home-brewed, constructed from aluminium bar and mesh".

David Taylor gave a talk on the challenges of MSG-1 and the huge quantity of data available. An MSG reception station was set-up to provide all-day images - see Fig. 5. Ferdinand Valk gave a talk on WXSAT image processing, explaining how he combined images from polar orbiters to generate large images. Nigel decided to visit November's meeting at which he plans to bring copper piping.

My thanks to David Taylor for his photographs and to RIG for letting me preview the article - the full version can be found in the December RIG Journal.

### MSG-1 Tests Continue

Test transmissions from the METEOSAT Second Generation (MSG-1) WXSAT have continued. There have, as expected, been occasional breaks and missing segments from images, but this seems a small price to pay for the almost non-stop transmission of virtually real-time data. EUMETSAT's formal statement on data transmissions announces: "Interruptions to dissemination or image quality degradation will continue to occur as commissioning progresses. The HRV window position will be affected by the on going commissioning tests. SEVIRI gain setting adjustment may be required from time-to-time".



Fig. 7: NOAA-17 3 October 1021 from Kevin Hughes.

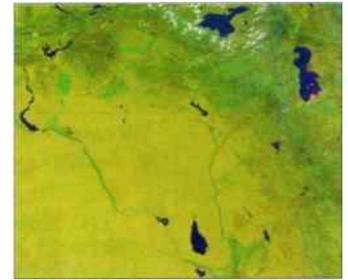


Fig. 8: NOAA-16 h.r.p.t. received in August by Peter Schoen.

Fig. 6: Herman Vijlbrief (centre) assists Rob Hollander (right) during the construction of a QFH antenna.



### MSG-1 Data

Last month's 'WXSAT Special' included a summary of all the picture transmissions currently available, originating from MSG-1 and broadcast on HotBird-6 using EumetCast. Briefly, we are receiving a complete set of images from all 12 channels in the High Rate Information Transmission (HRIT) stream every 15 minutes. The lower rate LRIT stream comprises five of the 12 channels, but at lower resolution.

The foreign satellite data (FSD) stream comprises the three 'standard' channels (visible-light, infra-red and water vapour) from GOES-12 (east), GOES-10 (west) and GOES-9 (GMS). Products from GOES WXSATs generated at the following times are available: 0000, 0300, 0600, 0900, 1200, 1500, 1800 and 2100. All products from each slot should normally be transmitted 80 minutes after generation time and are compressed using a loss-less wavelet scheme.

If you have previously used a WEFAX or PDUS station to receive images from METEOSAT-7, you should now be considering the upgrade required to receive MSG-1 images because both will end in due course.

### MSG-1 Reception Equipment

For those interested in setting up an MSG-1

station to receive the data stream, the following guidelines should help.

- 1) (a) Contact the EUMETSAT User Service to register as a trial participant. This can be done via E-mail to: [ops@eumetsat.de](mailto:ops@eumetsat.de)
- (b) Fill in the registration form that is available on EUMETSAT's website.
- (c) Contact Timestep or EUMETSAT to obtain the *tq* Tellicast client software. They supply this for about 60Euros.
- 2) Buy a reception system for HotBird-6. Timestep offers a complete system: SkyStar II receiver PC card v2.6 £55.95 or alternative SkyStar II USB version receiver £149.00. MTI Blue Label LNB £14.95, 10m CT100 cable (with F-type plugs fitted) £15. Triax 0.88m dish, £45 (size recommended by EUMETSAT). Professional ground stand for Triax £82.25, 0.60m perforated dish £20 and ground stand for perforated dish £18. Contact Timestep on (01803) 833366 or E-mail: [sales@time-step.com](mailto:sales@time-step.com) for prices and delivery.
- 3) Set-up the software using the password and username provided by EUMETSAT and edit the parameters such as PID data. Refer to EUM TD 15 for a description of the process.

- 4) Set-up decoding software - David Taylor's program *MSG Data Manager* is widely used.

These guidelines form a general description of the process. The hardware, the satellite receiving system, has to be set-up. This takes about an hour. Installation of the software takes another hour, but can be considered to be in two stages. First set it up as a television reception system so that you can verify that all is working. However, please don't stop there!

Although you may find the *HotBird* satellite of interest, this process is used to obtain the best signal strength from the satellite before moving on to the real purpose - *MSG-1* data. The process is described in full in the EUMETSAT publication listed above.

John Tellick of RIG tells me that 2 December will be encryption test day, with several hours of encryption. Some users have already been supplied with the EUMETSAT Key Unit (EKU) and will be feeding back results. Others will receive nothing so be pre-warned. Full encryption is planned for March 2004. The key will be supplied by EUMETSAT with the supporting software for 40Euros. My thanks to John for this update.

### GOES Starts LRIT Tests

On 7 October NOAA began full-time share operations of WEFAX (weather facsimile) and Low Rate Information Transmission (LRIT) on the WEFAX transponder of GOES East. Every hour there is 29 minutes of LRIT (between hh:45 and hh:14) and 31 minutes of WEFAX (hh:14 - hh:45). This transition phase will last approximately 12 months, at which time WEFAX will be eliminated from GOES East and LRIT will operate continuously.

### Correspondence

Kevin Hughes' a.p.t. images seem to have improved again following his request to the RadioCommunications Agency about interference to his WXSAT reception. I wonder how his images are 'viewed' by the local superstore that was found to be responsible for rogue transmissions from a security light? Perhaps Kevin might take along some 'before' and 'after' pictures!

Peter Schoen of Helmbrecht improved his h.r.p.t. reception by installing a new outdoor unit with a bigger dish (1.5m) using a stronger mounting of high-grade steel. His reception system is now more sensitive and to prove this, Peter sent me a *NOAA-16* h.r.p.t. close-up of Iraq received just 2° above his horizon! The image was processed with David Taylor's *HRPT-Reader* program.

Charlie, better known in WXSAT circles as LU4DGN, sent several h.r.p.t. images from his home in Argentina. Charlie has been involved in WXSAT monitoring for a long time.

### Beginners' Spot

The exciting activities that have taken place with *MSG-1* (the new *METEOSAT*) have somewhat overshadowed the WXSAT field for several months. A regular look at topics that is of interest to beginners is overdue. This month I am taking a closer look at the

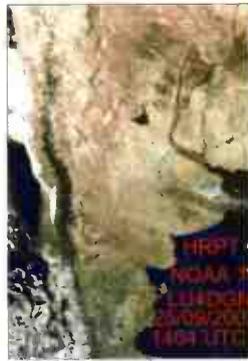


Fig. 9: NOAA-17 2S September 1404 from Charlie.

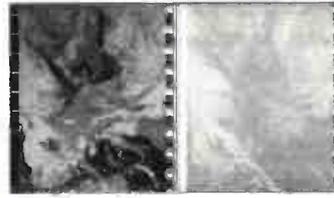


Fig. 10: NOAA 17 a.p.t. image 1019 12 October.

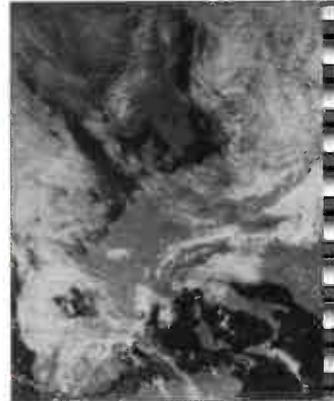


Fig. 11: Visible-light channel (2) close-up of Fig. 10.

technical aspects of a.p.t. images.

Figure 10 shows a typical NOAA a.p.t. image with its two characteristic side-by-side channels. NOAA WXSATs take data from the onboard telescope and radiometer in six spectral bands, though just five of these are normally transmitted. Two of the channels are switchable by the operations staff, depending on mission requirements.

The a.p.t. telemetry stream carries two of the five channels and at significantly lower resolution than the original h.r.p.t. stream (see information summary at the end of the column). The reduced resolution has two benefits. It enables data to be transmitted in a narrower bandwidth in the 137MHz band than otherwise possible and, as a result, keeps the cost of suitable reception equipment to a minimum. Consequently there are thousands of a.p.t. systems around the world.

Each side of each channel carries calibration information. There is a set of grey scales on one side and a set of minute markers on the other. There are 16 individual grey scales of which the first eight comprise a sequence from black to white, called wedges. Every complete image section (called an a.p.t.

frame) includes these eight wedges together with eight other calibration blocks.

The latter eight blocks comprise a zero modulation reference (block-9 relating to the depth of signal modulation), four thermistor temperature points, a patch temperature, a back scan and finally the channel identification wedge (block 16). This last block allows us to identify the channel being decoded. In practice, software extracts and displays this information.

If you count the number of

lines received each minute, you will see that it totals 120. This, in combination with the optical system, gives an a.p.t. resolution of about 4km. The (tick-tock) sound heard from your WXSAT receiver is the 2.4kHz (demodulated signal) extracted from the original radio frequency signal on 137.50 or 137.62MHz (depending on which satellite you monitor).

The receiver should be specifically designed for WXSAT reception because of the unique modulation method used for image encoding. The original image (white clouds, shady land and black sea) is analysed and its albedo (brightness) modulated on to a 2.4kHz sub-carrier. This is the modulation referred to in block 9. An experienced ear can interpret the 'tick-tock' sound heard from NOAA WXSATs, at least to some extent.

### Component Launch Schedule

Finally, we have an update! Following the Shuttle tragedy, a thorough review of safety procedures was held. The new tentative launch dates were recently published by NASA. STS-114 *Atlantis* is to be launched no earlier than 12 September 2004.

### Frequencies

a.p.t.

NOAA-12 and NOAA-15 transmit a.p.t. on 137.50MHz.

NOAA-17 transmit a.p.t. on 137.62MHz.

During overlap periods, NOAA-12's a.p.t. may be switched off.

METEOR 3-5 failed.

h.r.p.t.

NOAA-12 and NOAA-16 transmit h.r.p.t. on 1698.0MHz.

NOAA-14 and NOAA-17 transmit on 1707MHz.

NOAA-15 transmits on 1702.5MHz.

FENGYUN-1C and -1D transmit on 1700.5MHz.

WEFAX-PDUS

METEOSAT-7 (geostationary) transmits WEFAX on 1691 and 1694.5MHz, and Primary Data on 1691.0MHz.

HRIT-LRIT-FSD

MSG-1 data is transmitted by *HotBird-6* located at 13°E, on transponder 129: 11.096GHz.

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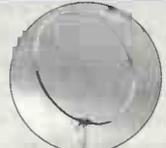
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# Scanning

Scene

● **Dave Roberts** *do SWM Editorial Offices, Broadstone*  
● **E-mail** *scanning@pwpublishing.ltd.uk*

**T**here I was driving along, when a Blue Renault Espace came barrelling past me with a skirl of litter being shed from the windows. It reminded me of a paper chase as the old

MacDonalds cartons bounced off my windscreen! I drove on and it started to rain heavily. On reaching a car park by a small shopping centre, I decided to pull in and there was the blue Espace. From the sticker in the rear window it was apparent that it was a hire car.

As I watched a group of five people emerged from the vehicle. They were talking in very fast Italian. By now it was raining heavily.

My Kenwood TH-F7E was searching the 433MHz band for local amateur repeaters and as the chap from the Renault left his vehicle, he pointed the key fob at it to lock it, I heard a burst of rough sounding data type noise on the Kenwood. Examining the display I could see the display had rested on 433.920MHz. The folk from the Renault eventually wandered off.

As the occupants of the Espace had inundated me with garbage earlier, I decided, as they returned in the pouring rain that it was a good time to put out a **very** lengthy CQ call on 433.920 f.m. And do you know - when the driver pushed the key fob to unlock the Espace it didn't work. I could see him pushing the key fob button and when his wife said something to him he looked pretty cross. I don't know what his reply was but she really started on him after that.

They were getting very wet and I still hadn't got a contact so, I just kept on calling CQ. By this time I noticed that the poor feller and his friends were totally drenched but it hadn't occurred to him that he could get in by using the key!

I realised after about five minutes that no one was going to come back to me on 430MHz so, I ceased transmitting and the very wet group of Italian people dripped into the Espace.

## Imprisoned By RF

A lady in the Birmingham area recently found herself 'imprisoned' in her property due to r.f. interference. Her car wouldn't unlock, in fact the vehicle (a Range Rover) switched into a 'lock down' mode assuming that someone was trying to pinch it by hacking the remote entry system, but there was worse to come.

The poor lady then found that she couldn't undo the remotely operated gates to her house or open the garage door. She was stuck. Fortunately for her, rescue came in the shape of the lads from the local RA office who investigated and released her.

The problem was caused by a video link

system in a bedroom hooked up to a Sky TV digi-box. The set-up was chucking r.f. spikes in frequencies around 20MHz either side of 433MHz. Oh well.

This has happened to me too! (although not to such a serious extent). On one occasion the r.f. generated by a computer in a nearby building 'jammed out' my car alarm and I've



heard cases of vehicles refusing to start near mobile 'phone masts. In Europe 433.920MHz seems to be the frequency that vehicle immobiliser/alarms appear to operate on, so you must be careful using the 70cm amateur frequency when a motorist may be trying to lock or unlock his vehicle.

## Marine Radio For Taxis!

It seems that someone has been selling marine v.h.f. transceivers to taxi companies, which is a sure way of getting the authorities' attention! Recently Coastguard stations in southern England and Wales were receiving comms on their v.h.f. channels that were clearly coming from taxi companies in Birmingham and London. It seems that more than a dozen coastguard stations were picking up the transmissions.

The Welsh coastguards were pretty sure that what they were hearing was from Birmingham as the cabbies had Brummie accents. In Milford Haven they had a change of voice as they were receiving traffic from Paddington, Marylebone and Mayfair. The original news report stated that the problem was thought to have been initiated by freak weather conditions but we know better, don't we?

The problem would have been caused by marine kit being sold to and used by cabbies, the conditions just made them audible elsewhere. These transmissions were monitored on Channel 16 (156.800 f.m.) by several scanner owners in the south of England.

Solent Coastguard referred to the rogue broadcasts and indicated that the authorities had been informed. The RadioCommunications

Agency have now installed a large number of remote monitoring stations throughout the UK that can be commanded remotely to detect any d.f. transmissions so I guess the problem must have been sorted out rapidly as I've heard no more reports of similar occurrences.

## BUSTER Button

In the October 'Scanning Scene' column I passed on a query from a reader who has an MVT-3000 scanner with a mystery button marked BUSTER on the panel. Neither of us know what the button is for but a reply has come in via the SWM readers list indicating that the button allows an extra 60 memories to be entered. Originally this facility was designed to be used to hold cellphone frequencies. I am still trying to find out more about how it all works but it sounds rather interesting.

## TETRA

There I've said it again! As no doubt everyone is aware many UK authorities including the police are due to migrate to this digital communications system within the next two years. If you look at the planning applications listed in local newspapers in Britain a fair few are entered on behalf of Airwave who are applying to erect many more masts to support this system. Seven hundred additional masts are to be commissioned in Scotland alone. The Airwave company obviously want to ensure that as many calls as possible go through their base station transmission equipment so as to

maximise billing of airtime to customers such as the police. etc.

However, the TETRA Airwave radios can be operated 'back-to-back' in what is called Direct Mode, i.e. not via base station equipment. Just to see how good they are in this Direct Mode I got hold of some Simoco (now Sepura) hand-held sets and tried 'em out with my neighbour Geoff.

As I am *hors de combat* at the moment and not too mobile due to a rather heavy 'gentlemen's dining out' night which has left me with a sprained ankle, Geoff went mobile. Recovered audio quality was excellent up to about 3km in rough, slightly hilly terrain. After 2km the signal strength declined dramatically but this made no difference to reception at either end of the contact until the signal dropped right out when the audio became indecipherable and then disappeared. Line-of-sight the range appeared to be commensurate with power and I would expect that the sets would have a 30km range over a sea path. When Geoff disappeared over the other side of a hill, not unsurprisingly, so did the signal.

The main problem that the authorities are going to experience with Direct Mode will be 'digital lag'. This term refers to the delay between speaking into the radio and the audio coming out of the other sets. In the examples tested the lag amounted to 750ms of a second. Not long in real terms but during a firearms incident this could make a world of difference.

In my experience the lag is not nearly as long when operating through the main network (250ms typically). All in all an interesting test of the Direct Mode which was the only circumstance under which we tried out these two Simoco units.

# Propagation

forecasts

- Jacques D'Avignon VE3VJA
- E-mail: Jacques@pwpublishing.ltd.uk

## How to use the Propagation Charts

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

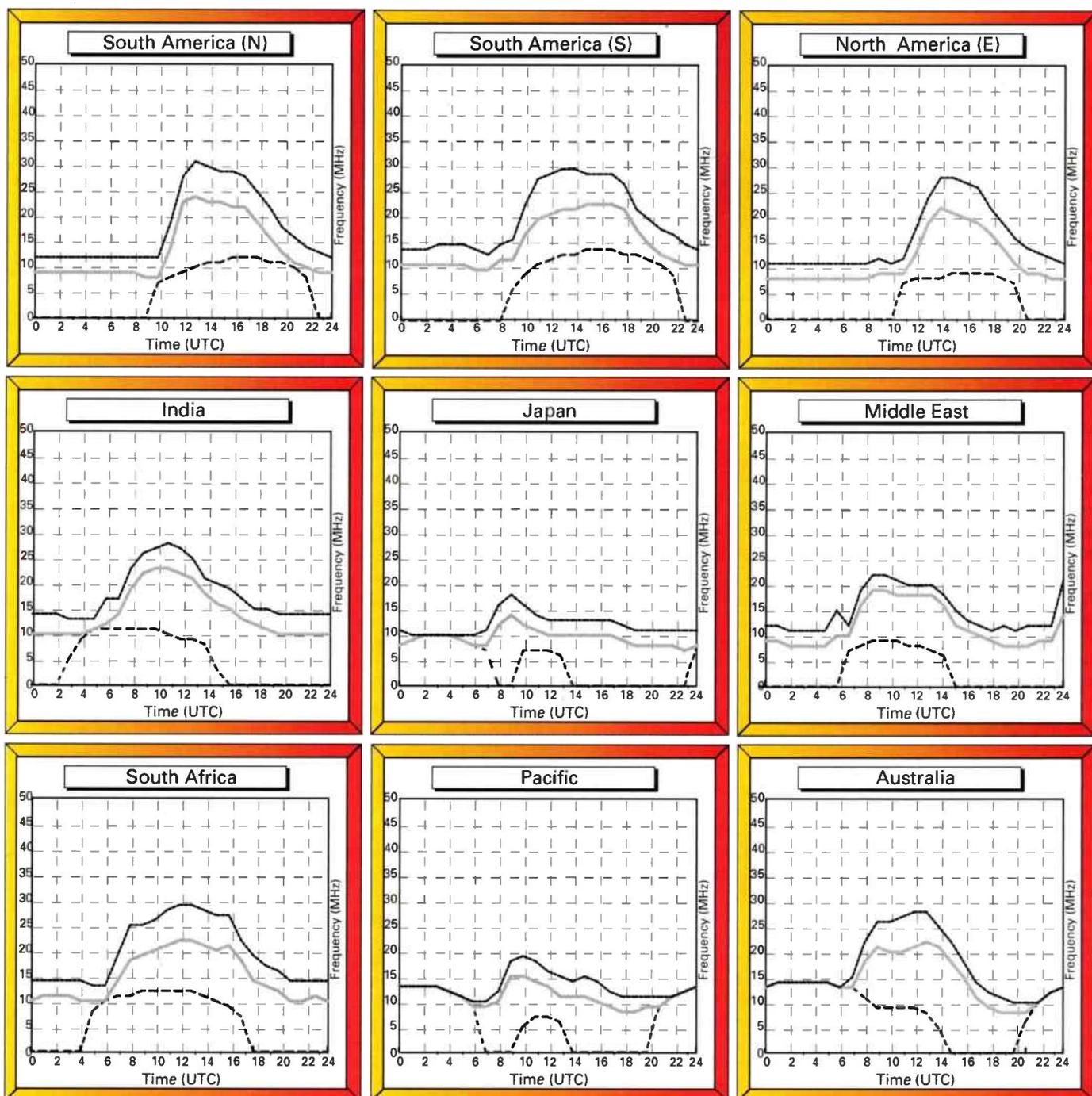
The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50% probability of success for the path and time.

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

Good luck and happy listening.

December 2003  
Circuits to London

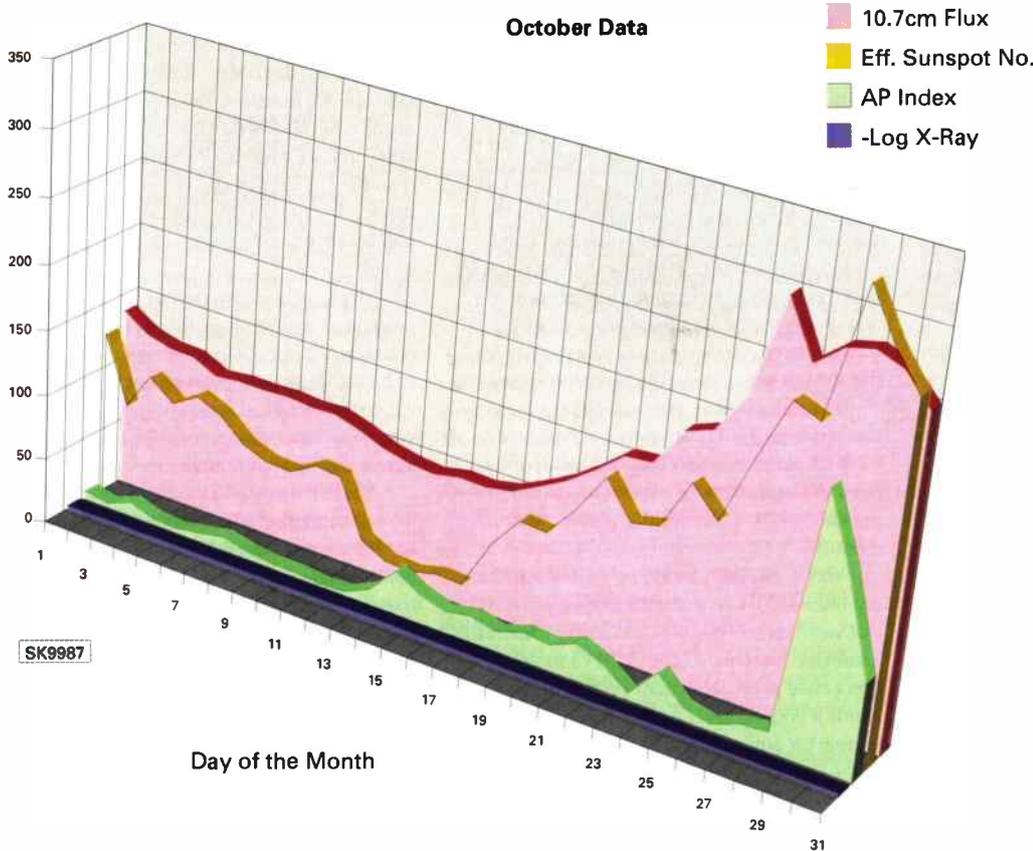
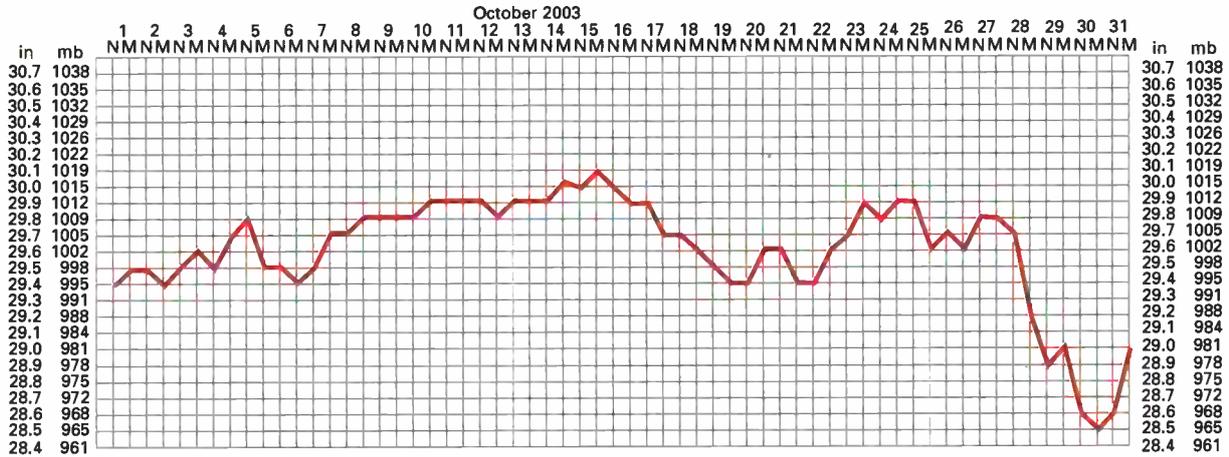


SK9986

# Propagation Extra

● **Kevin Nice** G7TCI M3SWM,  
SWM Editorial Offices, Broadstone  
● **E-mail:** kevin.nice@pwpublishing.ltd.uk

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, October 2003.



## 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.

# Decode

- **Mike Richards G4WNC**, 49 Cloughs Road, Ringwood, Hants BH24 1UU
- **E-mail** [decode@pwpublishing.ltd.uk](mailto:decode@pwpublishing.ltd.uk) **Web site** <http://www.mikespage.btinternet.co.uk>

I've had a letter from a reader asking for help with SYNOP software. Rather than the more common usage of SYNOP for a type of weather data, this enquiry relates to a software package that was sold by ICS Electronics some years ago. The program used to do a very good job of taking off-air coded weather reports and converting them into weather maps for display on a PC.

The reader in question wants to use the program to process the SYNOP data that's readily downloadable from the Internet. The snag here is that SYNOP uses a special file format, so can't read standard files. Does anyone out there know the file format or have any ideas how to crack this one? If you do just drop me a note and I'll pass it on and include details in the column.

## Useful Publication

If like many decoders you like to turn your hand to FAX reception, I've found a really useful publication that's freely available on the web. The US National Weather Service produces a 122 page document listing the world's h.f. FAX stations. The listing is very comprehensive and includes frequencies, call signs and transmission schedules.

As well as transmitted data, there are also full details of their on-line products from images through to SYNOP data files. Here's the direct link to the Acrobat PDF file: [www.nws.noaa.gov/om/marine/rfax.pdf](http://www.nws.noaa.gov/om/marine/rfax.pdf) If you want to take a look around the Weather Service home site, try [www.nws.noaa.gov/om/marine/home.htm](http://www.nws.noaa.gov/om/marine/home.htm)

## SeaTTY

Whilst on one of my regular website hunts I discovered that an old favourite decoding program has recently been upgraded - time to give it a fresh try! *SeaTTY* is a very simple package with a straightforward interface.

However, the underlying decoding engine appears to be pretty robust and has recently been re-written to improve both the FAX and RTTY performance. This seems to have been very effective - I've been receiving Portuguese NAVTEX messages almost error free!

As you can probably guess from the name, *SeaTTY* is primarily designed for use by mariners to receive navigational and weather information. Coincidentally, this is also the type of information that's in greatest demand by utility listeners, so you may find it ideal.

The program is available as shareware with a 30 day free licence, then it's only \$35 to register for the full version. You will find the program on lots of sites across the Internet, but I would recommend using *DXSoft* as that is the home site where you'll find the most up-to-date versions.

The program is distributed as a 1.3MB ZIP file, so should be a simple download for just about any connection type. Once downloaded, just unzip, run the *Install* program and follow the instructions, it couldn't be easier.

*SeaTTY* runs on any standard soundcard, so connection to your receiver is just via a standard 3.5mm jack using the 'line-in' socket. It's well worth avoiding using the 'mic.' input as it's all too easy to overload the soundcard and cause all manner of decoding problems. When you start the programme you should see the main interface (see screen shots) with lots of activity on the displays at the top and bottom of the screen.

These displays are really useful and deliver built-in spectrum analysis tools. The display at the top is a straightforward spectrum analysis showing the received signal. If you tune into a RTTY or NAVTEX signal you should see two clear bumps in the display, these represent the two tones of the RTTY signal.

As well as the spectrum display you should also see either two or maybe four red lines of varying length. The two long red lines show the mark and space frequencies of the decoder and the trick is to align these with the two bumps on the spectrum display. You do this simply by clicking with your mouse midway between the bumps. When you do this the tall red lines will straddle the cursor.

The default setting of *SeaTTY* puts these two red lines 450Hz apart which is right for most h.f. RTTY weather broadcasts. If you need to change this for other stations you just select 85, 170, 450 or 850 from the 'Shift' menu.

You're probably wondering what the short red lines do. These show the last frequencies that were set by you, the user. *SeaTTY* features automatic frequency control (AFC) so you don't have to chase stations up and down the bands if your receiver tends to drift a bit. This is great for anyone operating on a tight budget as the software will help overcome some receiver deficiencies.

One part of *SeaTTY* that's not so easy to understand is the Global and Local AFC controls. Just to the left of the AFC button you

will find two adjustable parameters. These are used to adjust the range of the AFC setting to provide best tracking of the wanted signal. If you have a completely open AFC system there's a risk the decoder will start jumping between adjacent signals rather than just follow the one you're interested in.

The two adjustments in *SeaTTY* allow you to tightly control the behaviour of the AFC. The setting immediately to the left of the AFC button controls what's known as the 'Global AFC'. This is the maximum drift allowable from the start point that you set when you click the mouse. This is the one that stops the AFC jumping to an adjacent station.

The next control is the 'Local AFC' - as the name suggests, this provides much finer control of the AFC. The setting here in Hz controls the local movement of the decoder around the signal peaks.

Whilst it's good to have some movement here, a setting of about 50Hz provides a good compromise. Moving down to the bottom of the main screen you will find an oscilloscope display that's very useful for checking that you do have a signal being fed to the computer. This display can also be used to help set the record level control to the optimum point.

With the display running you just increase the volume to the point where the display stops getting taller, then just back-off a bit so the height just reduces slightly. This gives you the maximum usable input whilst avoiding significant overload.

In between the two tuning displays you will see there are three text windows, each with its own special function. The top window is the live display and shows the data as it's being received. You can also scroll back through this window to scan the log file that shows everything that's been received in the current session. The facility to quickly review an earlier message can be really useful.

The remaining two windows are where the program shows its strength in handling messages. A standard protocol for maritime and many other radio messages is to precede each message with the characters ZCZC and end with NNNN. It's a very simple but effective system for breaking long transmissions into discrete messages.

*SeaTTY* uses these markers, not only to split the messages, but to save them as separate text files in the 'Messages' folder. This separation of the messages is put to very good use in the message windows. If you look at the sample screen shot you will see a date and time listing in the left hand window. This is just an index to all the messages that have been received and operates much like a computer file systems, i.e. you can shrink and expand the entries.

If you select a day, then the resultant message will be displayed in the right-hand message screen. It's a very neat system that seems to work extremely well with all the readable messages neatly tucked away and indexed so

they can be found again. *SeaTTY* does this with all RTTY or NAVTEX messages.

Another useful but unusual control was the squelch. It wasn't unusual in its action just the fact that it's provided within an RTTY/FAX package. The squelch operates in much the same way as that for a conventional v.h.f. receiver/scanner. This facility was particularly useful when I wanted to monitor some local traffic.

By setting the squelch to a fairly high setting the decoder would ignore a weak and only burst into life when a decent signal presented itself. To make the setting easy the top spectrogram included a horizontal threshold line that moved up the display as you increased the squelch threshold. Using this guide, setting the optimum level was dead easy.

FAX reception with *SeaTTY* was just as well thought through with a good simple interface making it very easy to get started. Like all good h.f. FAX programs *SeaTTY* includes automatic picture reception where the software will recognise the start and stop tones so you can leave it running, go down the pub and come home to a full set of charts!

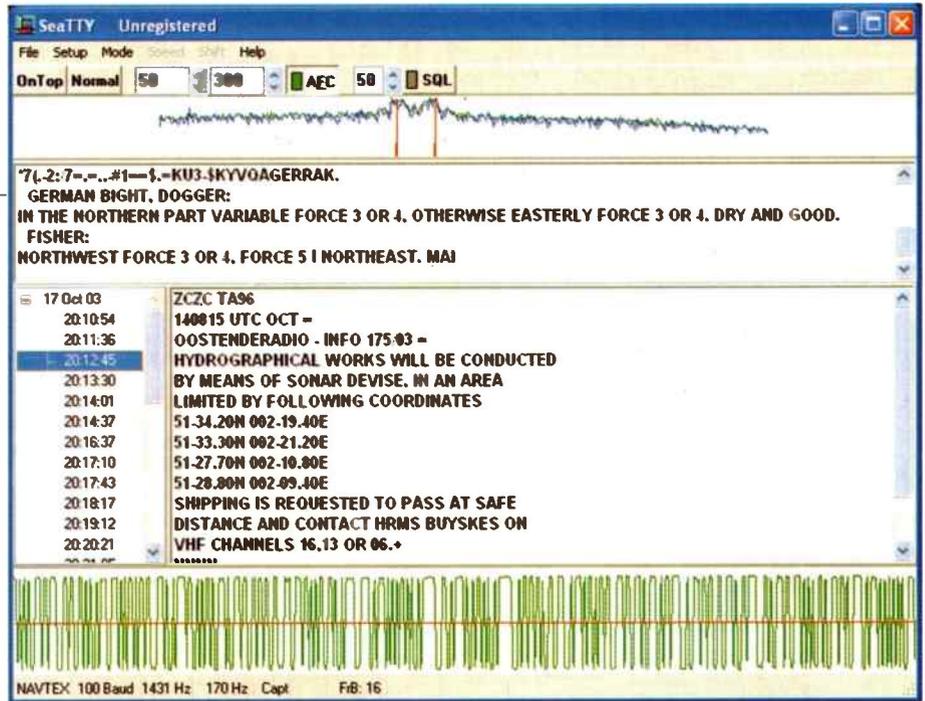
When you select FAX from the 'Mode' menu a new screen opens showing the FAX display area and a new set of controls specifically for FAX reception. The most obvious and familiar of these is the LPM and IOC setting that are readily available and adjustable.

Next is the reception control where you can choose automatic or manual reception. I particularly like the way the edge and magnifier controls worked. For the edge control you just click the control and click on the part of the picture that should be at the edge and you're done - really easy, just the way I like it.

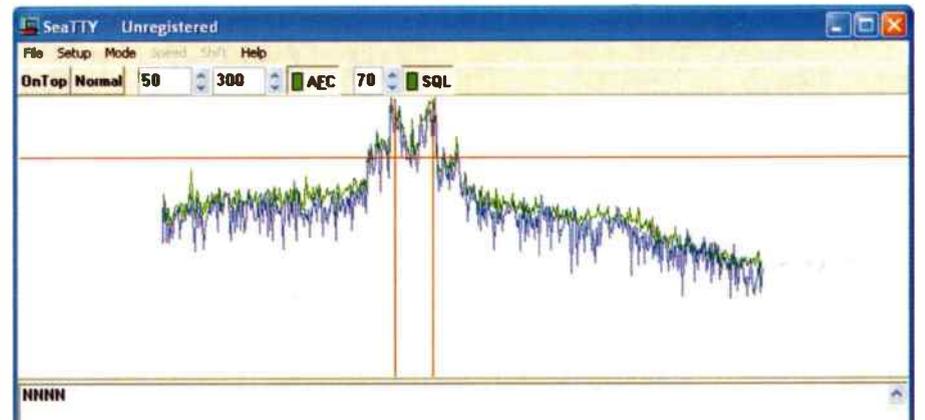
The magnifiers let you quickly zoom-in and out so you could check the image quality. Just to finish off this section the slant correction was a real breeze! Once a picture has been received you can use the slant correction to pull the image back in line. All you have to do is click the slant correction then draw a line with your mouse that follows the slant of the image.

Once complete *SeaTTY* tells you the new clock correction setting, corrects the image and saves the revised setting as the default. As each image is received *SeaTTY* automatically saves the result as a bitmap for recall and display later. The real masterpiece was the way in which the received FAX images were incorporated into the main message window and index in the main part of the program.

To summarise, *SeaTTY* is a surprisingly good decoding program and particularly useful for those with an interest in FAX and NAVTEX messages.



SeaTTY main screen in action.



SeaTTY Spectrum Analyser detail.



US National Weather website for FAX data.

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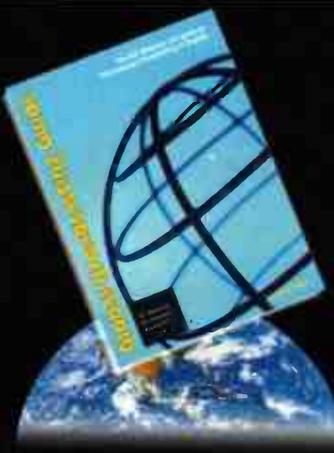
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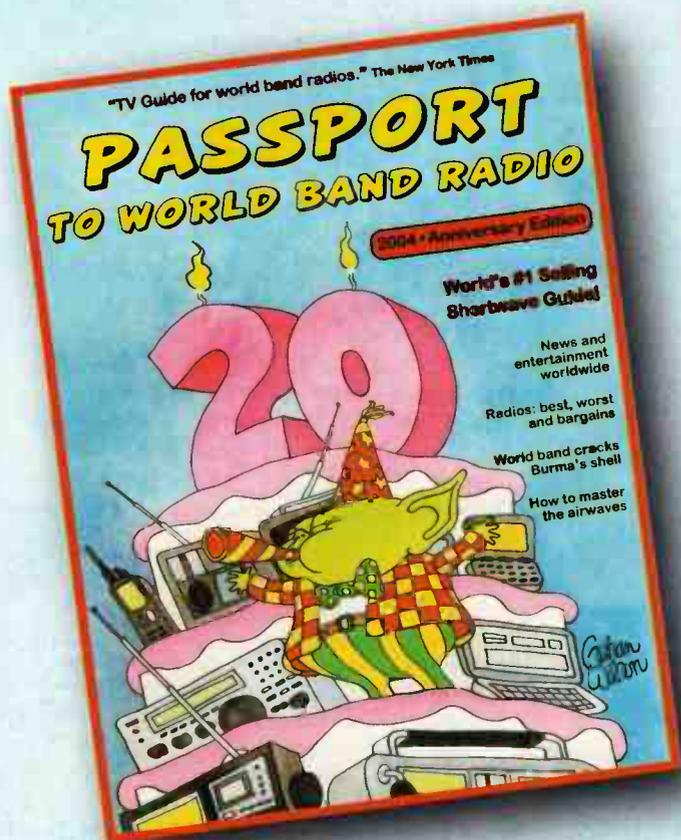
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**T**he more astute amongst you will have noticed that another deadline for the introduction of 8.33kHz spacing in the UK passed us by in October. It is hard to believe that the first proposals from the International Civil Aviation Organisation for the introduction of this spacing into Europe was almost a decade ago back in 1995.

I still get regular correspondence regarding this subject but I did say many months back it would be pointless me speculating further without some firm information. I have no definite dates but here is some of the latest information that is available.

The first sector to receive the new spacing will be London Upper South, as expected, with the West part of the sector being the first to be converted, currently 135.425. The conversion work has been taking place overnight at Swanwick and I understand that the installation of the new equipment, which was expected to take a few days took the best part of four weeks for just one frequency. The latest estimate is that the first of the 8.33kHz channels will be introduced in the first three months of 2004 however, no frequency is known at present.

In answer to the many letters and E-mails and once again to put a few minds at rest it is worth me re-iterating one of the most important points. Whilst it was admirable that several manufacturers brought out radios with selectable 8.33kHz spacing, it wasn't strictly necessary.

These new channels actually use 5kHz spacing and so any radio that can select a tuning step of 5kHz will be able to receive these channels. Problems will only occur if two frequencies are allocated too close together causing breakthrough, but in the perfect world this shouldn't happen, we'll see!

If you are still uncertain, those of you who live in the south or west of the UK could monitor some of the Paris or Brest Control channels to check out your radio. For example, from home I can hear aircraft on 133.480 quite clearly.

## Military Frequencies

A couple of months back when I made the comments about military frequencies being moved out of the 380-400MHz range, I

think I must have been having one of those days. Not only did I list the Wittering radar frequency change twice, but also the answer to my question was staring me in the face, literally!

For some months there has been an on-going battle to site a TETRA mast for the Police Airwave Network on a hill about one kilometre from my home. About a week after I sent off my monthly 'Sky High' copy, the TETRA mast was once more splashed all over the front page of the local paper. Whilst I was reading it the penny dropped and I checked to find out the TETRA frequency allocations, which turned out to be 380-430MHz with 380-400MHz apparently being used by the Police.

So, there was my answer, but I did nevertheless do a check with the Radiocommunications Agency website which states: "380-385 and 390-395MHz - HO/SE/RA (for the public safety services) subject to agreement between the Home Office, Scottish Executive and the DTI". This site lists two 5MHz bands rather than the full 20MHz, but on other commercial equipment sites the full 20MHz is listed as available. Can anyone enlighten me as to whether all or just portions of this 380-400MHz band are to be handed over to TETRA? My thanks go to **Walter** and **Tim** who both E-mailed me to confirm this information.

## Airspace Changes

Following on from the extensive UK airspace changes last March, further changes will have been introduced on the 27 November 2003. These changes are mainly the re-naming of Airways with a few being moved or withdrawn.

Having worked in aviation for many years, just like the UK motorway system you build up a mental picture of the primary airways in your mind. Upper Amber One and Two, running north/south, Upper Green One following the M4 east/west and Upper Red 1 running across the country from Clacton down to Lands End.

I'm afraid that Upper Lima Nine Eight Zero just doesn't have quite the same ring to it. Before you write in, I know they haven't used the colour designators for Airways for some years. It's a substantial number of changes, but nevertheless important that I list them here, so here goes.

## Lower Airspace

A1	renamed	N615	
A2	renamed	N57	
A25	renamed	N864	(1)
A25	renamed	N862	(2/3)
A30	renamed	L15	
B3	renamed	L10	
B4	renamed	N601	
B29	renamed	L179	
B71	renamed	L186	
B317	renamed	M189	
G1	renamed	L9	
R1	renamed	L980	
R77	renamed	M183	
R123	renamed	M185	

Notes: (1) From Dean Cross, (DCS) to Berry Head, (BHD). (2) From Berry Head to SKESO, a point about 72km southeast of BHD. (3) Airway N862 becomes a split route, the existing lower airspace route is between NOKIN, southeast of Wallasey and MADLI which is in mid-Wales.

## Upper Airspace

UA1	renamed	UN615	
UA2	renamed	UN57	
UA25	renamed	UN864	(1)
UA30	renamed	UL15	(2)
UB3	renamed	UL10	
UB4	renamed	UN601	(3)
UB4	renamed	UL613	(4)
UB29	renamed	UL179	
UB71	renamed	UL186	
UB317	renamed	UM189	
UG1	renamed	UL9	
UG11	renamed	UM125	
UN560	renamed	UL18	
UN561	renamed	UL10	
UN571	renamed	UN57	
UR1	renamed	UL980	
UR38	renamed	UN610	
UR77	renamed	UM183	
UR123	renamed	UM185	(5)
UR168	renamed	UM142	(6)

Notes: (1) From Talla (TLA) to Berry Head. UN864 is extended from SALCO to Berry Head, replacing the existing Airways, UN863, UN865 and UA29. UA25 from Berry Head to SKESO is withdrawn. (2) From Biggin Hill, (BIG) to SANDY, UA30 from Biggin Hill to Compton, (CPT) is withdrawn. (3) From Detling, (DET) to Talla, (TLA). (4) From Talla to FINDO. (5) This becomes an extension of UB3 which is also renamed above. (6) This becomes an extension of UA2 which is also renamed above. With UA25 withdrawn, UN862 is now the sole name for the route between Berry Head and SKESO. I trust you will all have memorised this information as I shall be asking questions on it later!

## HF/Selcalls

Ray C E-mails me and says, "I was pleased to see some information in 'Sky High' relating to h.f. listening and Selcalls. Your readers may be interested to know that there is still a large volume of US military traffic crossing the Atlantic in

support of operations in the Gulf and other areas. I listen to 5.616 on most mornings and it will not be long before you hear a REACH or other callsign. I have noted that the C-17s are now regularly using callsigns relating to their serial rather than alpha numeric callsigns. The REACH callsigns appear to use the last digit of the fiscal year plus the last three of the serial, consequently serial C-17A 02-1101 uses the callsign REACH 2101 and 89-1192 uses the callsign REACH 9192. This may be obvious to some of your readers but I thought it was worth pointing out".

Thanks for that Ray, I would also point out that whilst this system does appear to work you should not rely on the callsign of an aircraft to identify a serial, even if it does appear to be blatantly obvious.

Following on from my comments in previous months, I am pleased to say that several people have been in contact regarding KC-135 Selcalls. New information has been passed to me and it appears that new Selcalls are now being regularly identified. Consequently, I hope to present an up-to-date listing in the near future. Also, the problem I mentioned of the same Selcall conflicting on the same h.f. frequency is not as rare as it seemed.

Peter L and Bob C have both E-mailed me to say that not only have there been conflicts between two USAF aircraft, but also between the USAF and US airliners. Bob also points out that in addition to the C-17 fleet being allocated the same Selcall for up to three different aircraft, that is also the policy with both C-141s and C-5s. He says

that on an a US Selcall group one listener reported that the Selcall BFHS was heard three times within a period of four hours on the western Atlantic, three different aircraft were involved, two were C-5As, (66-8307/70-0445) and one a C-5B, (86-0023). That can't make it to easy for the Oceanic controllers!

## Websites

Some research work in recent months has brought to light some interesting websites. Not all are directly related to airband listening but all should hold an interest to those with hobbies in the aviation world. The first can be found at [www.milairman.co.uk](http://www.milairman.co.uk) - this is a very comprehensive site relating to Lakenheath and one F-15s based there. There is extensive information relating to all aspects of aircraft operations, including comprehensive frequency listings including all the discrete frequencies.

The callsign listing is excellent with recent changes noted and dated and there are sound clips of almost all of the callsigns in operational use. There are listings of recent and archive movements, photographs, serial histories, good viewing spots, etc. All in all a very comprehensive and up-to-date site and a real labour of love, if you ever need information about Lakenheath and its F-15s, then this is the site for you. If you read this column milairman, any chance of including some Mildenhall information and movements?

The next site is one for all Airliner, Commuter Liner, Prop Liner and Biz-Jet enthusiasts and can be found at

[www.airlinerlist.com](http://www.airlinerlist.com) This site has dozens of aircraft construction number lists for a wide variety of types all stored in downloadable *Microsoft Excel* spreadsheets. The information is regularly updated with most types having been amended in the previous three weeks.

All the relevant information is included, serial, type, model number, construction number, previous ID, some history, etc. If you are doing some research work this could be a very useful site as it is not just the obvious types that are included, but also some more obscure ones such as the NAMC YS-11, plus there are listings for older aircraft such as the Britannia and the Convair 880. The site states that the spreadsheets hold information on over 40,000 airframes, where do people find the time to update such large projects?

Lastly, is a site that may not appeal to all, but is particularly useful if you want to keep track of the many airliners and other types that are stored at various airfields around the southwest USA, go and have a look at [www.cactuswings.com](http://www.cactuswings.com) This site gives you a guide to the airfields of the area with information useful to enthusiasts, there are photographs and some airline history, but as I said above, it is the stored aircraft listings that are particularly interesting.

There are extensive historical and current stored aircraft listings for airfields such as Marana, Mojave, Litchfield Park, Roswell, Victorville, Mesa, etc., including both civil and military types. You would be surprised to see how many KC-135s have been stored at Mojave at different times over the past three years. Perhaps not of interest to everyone but I think it is a site worth a look.

**This month's picture is part of the very spirited practice display by a Lynx on the Friday before the Yeovilton airshow.**



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 <p><b>GPS-V Deluxe</b> <b>£495.00</b></p> <p>Navigational System. Built in Routable base map. Comes with CD-Rom. Allows upto 19MB of downloads. 500 Waypoints with names &amp; Graphics.</p>	 <p><b>Street Pilot III Deluxe</b> <b>£849.00</b></p> <p>Satellite navigation system. Colour display. Voice navigation &amp; direction. Covers all of Europes roads, streets, lakes etc.</p>	 <p><b>bhi</b> <b>NES10-2</b> <b>£99.00</b></p> <p>Noise eliminating speaker with built in DSP Filters 8 Selectable noise cancelling levels.</p>	 <p><b>bhi</b> <b>NEIM1031</b> <b>£129.00</b></p> <p>Noise eliminating in-line module. DSP Through your own external speaker.</p>

# SWM UK Radio Club Listing

If you want to meet with others with a radio passion, then please use this guide...

## NORTH WEST

### CHESHIRE

**CHESTER & DRS, G3GIZ.** Meets at the Burley Hall, Waverton, Chester. Details from Bob Campbell G4CML. Tel: (01244) 378699.

**HALTON RADIO CLUB, M0BZ.** Meets at the Play Centre, Norton Hill, Windmill Hill, Runcom. Details from Alan Parker 2E1DSF. Tel: (01928) 790228.

**MACCLESFIELD WIRELESS SOCIETY, G4MMS.** Meets at the Pack Horse Bowling Club, Abbey Road, Macclesfield. Details from Mrs Hazel Parrott.

**MID CHESHIRE ARS, G3ZTT.** Meets at the Cotebrook Village Hall, Cotebrook Nr. Tarporley, Cheshire. Details from Niall Reilly G0VOK.

**NORTH CHESHIRE RC, G0BAA.** Meets at the Morley Green Club, Mobblerley Road, Wilmslow, Cheshire. Details from Jill Gounley G0DZJ. Tel: 0161-485 5036.

**RADIO OFFICERS ARS, MOROA.** Details from Mr J. Bell G0CMM.

**UKFM GROUP WESTERN, G83MP.** Meets at the Morley Green Club, Mobblerley Road, Wilmslow, Cheshire. Details from Gordon Adams G3LEQ. Tel: (01565) 652652, FAX: (01565) 634560.

**WARRINGTON & DARS, G0WRS.** Meets at the Grappenhall Community Centre, Bellhouse Lane, Grappenhall, Warrington, Cheshire. Details from John Riley G0RPG. Tel: (01925) 762722.

**WIDNES & RUNCORN ARC, G0FWR.** Meets at the Scout Hut, Castle Road, Halton Castle, Runcorn, Cheshire. Details from Martin Tust G4LUQ. Tel: (01928) 714843.

### CUMBERIA

**CARLISLE & DARS, G4ARS.** Meets at the Morton Community Centre, Wigton Road, Carlisle. Details from Mr J.A. Ennis G3XWA. Tel: (01228) 27463.

**EDEN VALLEY RS, G0ANT.** Meets at the BBC Club, Penrith. Details from John Roze G0VMP. Tel: (01931) 716421.

**FURNESS ARS, G4ARF.** Meets at the Farmers Arms Hotel, Newton-in-Furness. Details from Mr K. Moore M1BWA. Tel: (01229) 465691.

**WHITEHAVEN ARC, M0BEE.** Details from Mr N. Williams M0CRM.

## GREATER MANCHESTER

**BURY RS, G3BRS.** Meets at the Mosses Centre, Cecil Street, Bury, Lancs BL9 0SB. Details from Steve Gilbert G3OAG. Tel: 0161-881 1850.

**DOUGLAS VALLEY ARS, G3BPK.** Meets at the Wigan Sea Cadet HQ, Training Ship Scotia, Brookhouse Terrace, off Warrington Lane, Wigan. Details from Mr D. Snape G4GWG. Tel: (01942) 211397.

**ECLES & DARS, G3GXI.** Meets at the Eccles Liberal Club, Wellington Road, Eccles, Manchester. Details from Chris Harrison G8KRG. Tel: 0161-773 7899.

**THE MANCHESTER WIRELESS SOCIETY, G5MS.** Meets at the Simpson Memorial Community Hall, Moston Lane, Moston, Manchester. Details from Ian M0IPR. Tel: 0161-288 730 or visit [www.g5ms.com](http://www.g5ms.com)

**OLDHAM ARC, G4ORC, G1ORC.** Meets at the Royston Air Training Corps, Park Lane, Royston, Oldham. Details from Michael Crossley M1CVL. Tel: (01706) 367454.

**OLDHAM HILLS ARS, G0JQA.** Meets at the Oldham Community School, Hudsons Walk, Oldham Hill, Rochdale. Details from Carolyn Hope G7WFF. Tel: (01706) 522687.

**ROCHDALE & DARS (RADARS), G0ROC.** Meets at the Barnfield & Fieldhouse, Cricket Club, Barnfield Village. Details from John Cannell G7OAI. Tel: (01706) 376204.

**SOUTH MANCHESTER RAD & COMP CL, G3FVA.** Meets at the Sale Cricket Club, Dawe Road, Sale, Cheshire. Details from Chris Ward G4HON. Tel: 0161-483 5174.

**STOCKPORT RS, G6JG, G8SRS.** Meets at the T.S. Hawkins, Stockport Sea Cadets HQ, Pearmill Ind. Est., Stockport Road, West Howe, Lower Bredbury, Stockport. Details from David Simcock M1ANT. Tel: 0161-456 7832.

**TRAFFORD ARC, G0TRC, G1TRC.** Meets at the Watch House, Cruising Club, Canal Bank, Stretford, Manchester M32 8WE. Details from Roger May G4YLQ. Tel: (01457) 8666575.

**TRAFFORD RADIO GROUP, G0TRG.** Meets at 17th Stratford Scouts HQ, Barton Road, Stretford, Manchester. Details from Jon Mossman G7JKK. Tel: 0161-865 5609.

**WEST MANCHESTER RC, G4MWC.** Meets at the Astley & Tydesley Miners Welfare Club, Meany Road, Astley, Tydesley, Manchester. Details from Jeffrey Moran M0BGU. Tel: (01204) 497694.

**WIGAN & DARC, G0HRW.** Details from Mr D.H. Barkley G0DPI. Tel: (01942) 237162.

## ISLE OF MAN

**ISLE OF MAN ARS, G03FLH.** Meets in the Sea Cadets Hall, Tromode Road, Tromode, Douglas. Details from Dave Walton M0DBX. Tel: (01624) 816308.

## LANCASHIRE

**BURNLEY & DARS, RS87674.** Meets at Barden High School, Barden Lane, Burnley, Lancashire. Details from Bill Scovener G0BQC.

**CENTRAL LANCAS ARC, G0FDX.** Meets at the Priory Club, Broadfield Drive, Leyland, Lancs. Details from Steve Shearing M1ACJ.

**DARFEN ARC, G4US.** Meets at the Danwen Catholic Club, Wellington Fold, Danwen, Lancashire. Details from Len Jackson G0NPJ.

**FISTS OW CLUB, G0IPX.** Details from Mr E. Longden G3ZQS. Tel: (01254) 703948.

**FYLDE ARS, RS53939.** Meets at the A.N.T. Flying Clubhouse, Blackpool Airport. Details from Ken Randall G3RFH. Tel: (01253) 407952.

**MORECAMBE BAY ARS, G4YBS.** Meets at the Trimpell Sports & Social Club, Outmoose Lane, Morecambe, Lancs. Details from Brian Watson G0RDH. Tel: (01524) 424522.

**PRESTON ARS, G3KUE.** Meets at the Lonsdale Club, Fulwood Hall Lane, Fulwood, Preston. Details from Eric Eastwood G1WQJ. Tel: (01772) 686708.

**ROLLS-ROYCE ARC, G3RR.** Meets at the Club Room, Rolls-Royce Sports Ground, Barnoldswick. Details from Mr J.A. York G3KJY.

**ROSSENDALE ARS, G1JRS.** Meets at the Old Fire Station, Burnley Road, Rawtenstall, Rossendale, Lancs BB4 8EW. Details from Ken Slaughter. Tel: (01706) 830306.

**THORNTON CLEVELYS ARS, G4ATH.** Meets at the Frank Townsend Centre, Beach Road, Thornton Clevelys, Lancs. Details from Mr J.E. Duddington G4BPH. Tel: (01253) 853554.

## MERSEYSIDE

**LIVERPOOL & DARS, G3AHD.** Meets at the Churchill Conservative Club, Church Road, Wavertree, Liverpool L15. Details from David G. Parr G8DEY.

**SOUTH WIRRAL CONTEST GROUP, G3CSA.** Details from Mr T.B. Saggerson G4WSE. Tel: 0151-339 0842.

**SOUTHPORT & DARC, G2QA.** Meets at St. Marks Church Hall, Scarsbrick, Lancs. Details from Don Atkins M1BUL.

**WIRRAL & DARC, G4MGR.** Meets at the Irbly Cricket Club, Mill Hill Road, Wirral. Details from Brian Black.

**WIRRAL ARS, G3NWR, M0KLARC.** Meets at the Club Room, Ivy Farm, Arrowe Park Road, Wirral L49 5LW. Details from Alan Upton G3UZU. Tel: 0151-677 3266.

## NORTH EAST

### CLEVELAND

**EAST CLEVELAND ARC, G4CRD.** Meets at the Committee Room of The New, New Marske Institute Club, Gurney Street, Cleveland TS11 6EG. Details from Malcolm Brass G4YMB. Tel: (01287) 638119.

**STOCKTON & DARC, G4X0G.** Meets at the Billingham Community Centre, Billingham, Cleveland. Details from David J. London G0VGB. Tel: (01642) 896395.

### CO DURHAM

**BISHOP AUCKLAND RC, G4TTF.** Meets at the Stanley Village Hall, Rear High Road, Stanley, Crook, Co. Durham. Details from Mark Hill G0GFG. Tel: (01388) 745353.

**DERWENTSIDE ARC, G4PQP.** Meets at the Steel Club, 36 Medomsley Road, Consett, Co. Durham. Details from Mr G. Darby G7GUJ. Tel: 0191-370 2032.

**GREAT LUMLEY AR & ES, G4ELZ.** Meets at the Community Centre, Great Lumley, Chester-le-Street, Co. Durham. Details from Nancy Bone G7UUR. Tel: 0191-477 0036, mobile (07990) 760920.

**PETERLEE RADIO CLUB, G0KVVJ.** Details from Andrew Pennell G0NSK.

### HUMBERSIDE

**EAST YORKSHIRE ARS, G0EGR.** Meets at the Northern Foods Sports & Social Club, Millhouse Woods Lane, Cottingham, E. Yorks. Details from David Taylor G4EBT. Tel: (01482) 876702.

**GOOLE R & ES, G0OLE.** Meets at the West Park Pavilion, Goole, South Humberside.

**GRIMSBY ARS, G3ONK.** Meets at Cromwell Social Club, Cromwell Road, Grimsby, South Humberside. Details from Mr G.J. Smith G4EBK. Tel: (01472) 887720.

**HORNSEA ARS, G4EKT.** Meets at The Mill, Alwick Road, Hornsea, North Humberside. Details from Jeff Southwell G4GY. Tel: (01964) 533331.

**HULL & DARS, G3AMW.** Meets at the SWL Centre, Club Room, Gothland Close, Walton Street, Hull. Details from Mr R. Hutton.

**RAYWOLD PARK SCOUTS ARS, G4CMT.** Details from Mr A.D. Russell M0AXU.

**SCUNTHORPE STEEL ARC, G4FUH.** Details from Alistair Butler M1ECF.

## NORTH YORKSHIRE

### DARLEY ARC, G0FOS.

**HAMBLETON ARS, G0JQA.** Meets at the Mancap Centre, Northallerton, N. Yorks. Details from Ian Brickwood G0JQA. Tel: (01609) 775598.

**QUEEN MARY ARS, G8QM.** Meets at Blazefield, Pateley Bridge, Hamrogate, North Yorks HG3 5DR. Details from Frank Hams G4EY. Tel: (01242) 236715.

**RIPON & DARS, G4SJM.** Meets at The Bunker, rear of Ripon Town Hall, North Yorkshire. Details from Nigel Drumm M1BDZ. Tel: (01423) 884733.

**ROYAL SIGNALS SCARBOROUGH ARC, G0RCS.** Details from Mr A.W.W. Timme G3CWW. Tel: (01484) 842330.

**SCARBOROUGH ARS, G4BP.** Meets at the Scarborough Cricket Club, Pavilion, North Marine Road, Scarborough, North Yorks YO12 2TJ. Details from Mr D.P. Tipper G3JBR. Tel: (01723) 377296.

**SCARBOROUGH SE GRP, G0X00D.** Details from Roy Clayton G4SSH. Tel: (01723) 862924.

**THE VINTAGE & MILITARY ARS, RS183536.** Details from H.A. Aspinall.

**YORK ARS, G3HWW.** Meets at the Guppy's Enterprise Club, 17 Nunbury Lane, York. Details from Keith Cass G3WVO. Tel: (01904) 422084.

**YORK RADIO CLUB (AMATEUR) G4YRC.** Meets at the Bishopthorpe Social Club, Bishopthorpe Main Street, York. Details from Gareth Foster G1DRG. Tel: (01904) 421392.

## NORTHUMBERLAND

**NORTHUMBRIA ARC, G4AAV.** Meets at the Old Telephone Exchange, Cresswell Road, Ellington, Morpeth,

Northumberland. Details from Mr D. Stansfield G0EUV. Tel: (01670) 513026.

## SOUTH YORKSHIRE

**FINNINGLEY ARS, G7HAH.** Details from John Fennell G4HOY. Tel: (01427) 872522.

**MALBY & DARS, G4SKM.** Meets at the Centenary Hall, Clifford Road, Helsby, Rotherham. Details from Keith Johnson G1PQW. Tel: (01709) 798098.

**MEXBOROUGH & DARS, G4BTS.** Meets at the Harrop Hall, Mexborough, South Yorks. Details from Mr R.T. Sheppard G0KSK. Tel: (01709) 586329.

**SHEFFIELD ARC, G0INF.** Details from Mrs Irene Giossop G0SPH. Details from Mrs Irene Giossop G0SPH.

## TYNE & WEAR

**HOUGHTON-LE-SPRING ARC, G3NMD.** Meets at the Dumbrie Royal British Legion, Dumbrie, Fencehouses, Tyne & Wear DH4 6LJ. Details from Foster Anglades G0ARF. Tel: 0191-584 4673.

**SOUTH TYNESIDE ARS, G0XWQ.** Meets at the Boldon Scout Hut, Grey Horse Car Park, Front Street, Boldon. Details from William Wilson M0BWI. Tel: 0191-421 9921.

**TYNEMOUTH ARC G0NMM.** Meets at the Linskill Centre, Linskill Terrace, North Shields, Tyne & Wear. Details from Mr G.N. Thompson G0SNB.

**TYNESIDE ARS, G3ZQM.** Meets at the St Teresa's Club, 200b Heston Road, Newcastle-upon-Tyne NE6 5HP. Details from Mr J. Pickersgill G0DZG. Tel: 0191-265 1718.

## WEST YORKSHIRE

**DENBY DALE & DARS, G4CDD, G8KMK.** Meets at the Pie Hall, Denby Dale, West Yorkshire. Details from Mr J.P. Morley G4F5Q.

**HALIFAX & DARS, G2JUG.** Details from Mr S.P. Ortmeier G4RAW. Tel: (01422) 203062.

**KEIGHLEY ARS, G0KRS.** Meets at the Cricket Club, Ingrow, Keighley, West Yorkshire. Details from Mr I. Townson M1BGY. Tel: (01274) 723951.

**LEEDS & DARS, G4LAD.** Meets at The Radio Shack, Yambury (Horsforth), RUFIC Grounds, Brownberrie Lane, Horsforth, Leeds LS18 5HB. Details from Mr E. Howden G0BU.

**NORTH WAKEFIELD RC, G4NOK.** Meets at the East Ardsley Cricket Club, Nr. Wakefield. Details from Mrs Olga Parker 2E1ASV. Tel: 0113-253 9087.

**OTLEY ARS, G3YNO.** Meets at The RAOB Club, Westgate, Otley, West Yorkshire. Details from Jack Worsnop G0SNV. Tel: (01274) 636197.

**PONTEFRAC & DARC, G3FYQ.** Meets at the Carleton Community Centre, Pontefract, West Yorkshire. Details from Colin Wilkinson G0NQE. Tel: (01977) 677006.

**SPEN VALLEY ARS, G3SVC.** Meets at the Old Bank WMC, Mirfield, West Yorkshire. Details from Mr J.R. Wilde G0FOI. Tel: (01274) 875038.

**WAKEFIELD & DARS, G3WRS.** Meets at the Ossett Community Centre, Prospect Road, Ossett, W. Yorks. Details from Ian Roberts. Tel: (01924) 216502.

**WAKEFIELD RPTP GP, G0KNR.** Details from Mike Chartton G6XZ.

**WHITE ROSE ARS, G3KEP.** Meets at the Moortown RUFIC, Moss Valley, Kings Lane, Leeds LS17 7NT. Details from Mr M. Wilson G7SDW. Tel: 0113-273 9039.

## MELANDS

### BEUFORDSHIRE

**DUNSTABLE DOWNS RC, G4DDC.** Meets at the Chews House, 77 High Street South, Dunstable, Beds LU8 3SF. Details from Phil Seaford G8XTW. Tel: (01525) 384419.

**SHEFFORD & DARS, G3FJE.** Meets at the Church Hall, Amphill, Shefford, Beds. Details from John West. Tel: (01462) 812739.

**ST SWITHUN'S ARC, M0AJV.** Meets at St. Swithun's Church, Rectory Rooms, Sandy, Beds. Details from Kelynn Darton G0WOD. Tel: (01767) 683179.

## CAMBRIDGESHIRE

**CAMBRIDGE & DARC, G2XV.** Meets at the Coleridge Community College, Raedgund Road, Cambridge. Details from Ron Huntman G3KBR. Tel: (01223) 501712.

**DUNFORD ARS, G82WM.** Meets at Building 177, Imperial War Museum, Dunford Airfield, Cambs. Details from Mrs B.I. Pope. Tel: (01279) 656149.

**GTR PETERBOROUGH ARC, G4EHW.** Meets at the 6th Form Building, Strangford College, Farset Road, Fletton, Peterborough. Details from Alan D. Ralph G8XLH.

**HUNTINGDONSHIRE ARS, G0HSR.** Meets at the Medway Centre, Medway Road, Huntingdon. Details from David Leach G7DIU. Tel: (01480) 431333.

**MARCH & DRAS, G3PMH.** Meets at the British Legion Club, Rookwood Road, March, Cambs PE15 8DP. Details from Mr J. Braithwaite G3PWK. Tel: (01353) 698885.

**PETERBOROUGH R & ES, G3DQW.** Details from Mr V. Edwards G8NGZ.

**WESBECH AR & ELEC. CLUB, M5ARC, G4POL, G8NED.** Meets at RAFA Club, Old Market, Wisbech. Details from Alan Bridgeland M0DUQ. [www.werec.org.uk](http://www.werec.org.uk)

## DERBYSHIRE

**BOLSOVER ARS, G4RSB.** Meets at the Blue Bell, High Street, Bolsover, Derbys. Details from Colin Morris G0RXT. Tel: (01246) 822856.

**BUXTON RA, G4SPA.** Meets at the Leewood Hotel, Buxton. Details from Derek Carson G4IHO. Tel: (01298) 25506.

**DERBY & DARS, G2DJ.** Meets at Carlton Road United Reform Church, Carlton Road, Littleover, Derby. Details

from Martin Shardlow G3SZJ. Tel: (01332) 556875.

**EREWASH VALLEY ARG, G0PCX.** Meets at The Strwell Arms Public House (between Horsely Woodhouse and Woodside). Details from Peter Russey M0AQI.

**MOUNT ST. MARY'S ARC, G4MSM.** Meets at the College, Spinikhill, Sheffield. Details from Rev. P. McArdie G0DAG. Tel: (01246) 812230.

**NOTTS & DERBY BORDER ARC, G4MND.** Meets at Marpool United Reform Church, Chapel Street, Marpool, Ilkeston. Details from Graham Bromley G4JTN. Tel: (01773) 834308.

**NUNSFIELD HOUSE ARG, G3EEO.** Meets at the Nunsfield House, Boulton Lane, Alvaston, Derby. Details from William F. Smith G7PJJ.

**STH DERBYS & ASHBY W ARG, G0SRC.** Meets at the Moira Replian Centre, 17 Ashby Road, Moira, Swadincote, Derbyshire DE12 6DJ. Details from Mrs B. Waiely. Tel: (01283) 760822.

**STH NORMANTON, ALFRETON & DARC, G0CPO.** Meets at the New St. Community Centre, New Street, South Normanton, Derbyshire. Details from Peter Gethring M0CJL. Tel: 0115-955 5766.

## GLOUCESTERSHIRE

**CHELTENHAM AR ASSN, G5SK.** Meets at the Presbury Library, Presbury, Cheltenham. Details from Ivan Wilson G4BGW. Tel: (01452) 731956.

**CHELtenham CLUSTER SUPP GP, G87DXC.** Details from Mr A.M. Davies G0HDB. Tel: (01684) 72178.

**GLOUCESTER AR & ES, G4AYM.** Meets at the Churchdown School, Churchdown. Details from Mr A.J. Martin. Tel: (01452) 618930.

**SMITHS INDUSTRIES RS, G4MEN.** Meets at the Sports & Social Club, Evesham Road, Bishops Cleeve, Cheltenham GL52 4SF. Details from A.J. Hooper G1JMF.

**STROUD RS, G4SRS.** Meets at the Minchampton Youth Centre, Nr. Stroud. Details from Mr S.G. Spencer G3ILO.

**WHITE NOISE LISTENING GOWNL.** Details from Adrian Deane G7KOG.

## HEREFORD & WORCESTER

**BROMSGROVE & DARC, G3VGC.** Meets at the Avoncroft ARS Centre, Bromsgrove, Worcs. Details from Mr J.F. Burford G4OAZ.

**BROMSGROVE ARS, G4TU.** Meets at the Likay End WMC, Bromsgrove, Worcs. Details from Barry Taylor G0TGP. Tel: (01217) 542266.

**DROITWICH ARC, G4PVO.** Meets in the Community Hall, Droitwich Spa, Worcs. Details from Hector Wragg M1BUV. Tel: (01905) 794399.

**HEREFORD ARS, G3YVD.** Meets at the Civil Defence HQ, Magistrates Court, Gao Street, Hereford. Details from Tim Bridgland-Taylor G0JWJ. Tel: (01432) 279435.

**WIDDERMINSTER & DARS, G0KRC.** Meets at the Sutton Arms, Sutton Park Road, Kidderminster, Worcs. Details from Mr A.W. Saunders G00ZB. Tel: (01299) 400172.

**\*MALVERN HILLS ARC, G4MHC.** Meets on the second Tuesday of the month at the Town Club, Great Malvern. Details from Mike G3TGD. Tel: (01905) 830752, E-mail: [mike@tallentson.fsnet.co.uk](mailto:mike@tallentson.fsnet.co.uk)

**REDDITCH RC, G4ACZ.** Meets at the WRVS Centre, Ludlow Road, Redditch, Worcs. Details from Mr R.J. Mutton G3EVT. Tel: (01789) 762041.

**VALE OF EVESHAM RAG, G0ERA.** Meets at the BBC Club, High Street, Evesham, Worcs. Details from Mr A.C. Lindsay G4NRD. Tel: (01386) 41508.

## LICESTERSHIRE

**1F ATC, G7MCD.** Details from Sqn. Cmdr. Adnan Utting G1WZQ.

**BEAUMANOR ARC, G3BMR.**

**DEMONTPORT UNIVERSITY, G3SDC.** Open to past & present students. Details from Mr R.G. Titmington. Tel: 0116-257 7059.

**HINKLEY AR & ES, G3VLG.** Meets at the United Services Club, St. Mary's Road, Hinkley. Details from Mr R.A. Bennett G8BFF. Tel: (01455) 846493.

**LICESTER RS, G3JRS.** Meets at Gires Cottage, Groby Road, Leicester LE3 9QJ. Details from Mr S.P. Hay G3HYH. Tel: 0116-224 2598.

**LOUGHBOROUGH & DARC, G3RAL.** Meets at Hind Leys College, Shephed, Loughborough, Leics. Details from Chris Walker G1ETZ. Tel: (01509) 504319.

**MELTON MOWBRAY ARS, G4FOK.** Meets at the St. John Ambulance Hall, Asfordby Hill, Melton Mowbray, Leics. Details from Mr R. Winters G3NWK. Tel: (01664) 63369.

**NATIONAL SPACE CENTRE ARS, M1NSC.** Details from Mr J. Heath G7HIA.

**TAMWORTH ARS, G8TRS.** Details from Mr A.J. Dison G0JHU. Tel: (01827) 830437.

**WELLAND VALLEY ARS, G4WVR.** Meets at The Village Hall, The Green, Great Bowden, Leics. Details from The Secretary.

**RAF WADDINGTON ARC, GORAF.** Meets at Pyewipe Inn, Fossetbank, Saxilby Road, Lincoln. Details from Robert Pickles G3VCA. Tel: (01522) 528708.

**SPALDING & DARS, G4DSP.** Meets at The Old Fire Station, Spalding, Lincs. Details from Raymond Pearson G8ELV. Tel: (01775) 711953. Web: www.sdars.org.uk

**SPILSBY ARS, RS91468.** Details from Cive Ironmonger G6HYF. Tel: (01790) 752712.

## NORTHANTS

**KETTERING & DARS, G5KN.** Meets at The Lilacs Public House, 39 Church Street, Isham, Kettering, Northants NN14 1HD. Details from Fay Barwell G6AKS. Tel: (01536) 390954.

**MID NORTHANTS AR EXP, GOING.** Details from Lionel Parker G5LP.

**NORTHAMPTON RC, G3GWB.** Meets at the British Timken, Social & Athletic Club, Cotswold Avenue, Dunston, Northampton. Details from Norman Miller G0GBZ. Tel: (01327) 349188.

**NORTHAMPTON SCOUT ARG, G6NDS.** Meets at Overstone Scout Activity Centre, Northampton. Details from Ian Rvett G8WPU.

**PARALLEL LINES CG, G4LP.** Details from Mr P.S. Lidsay G4CLA.

## NOTTINGHAMSHIRE

**ARC OF NOTTINGHAM, G3EKW.** Meets at the Haywood Road Community Association, Haywood Road, Mapperley Road, Nottingham NG3 6AD. Details from Ron Hague G4XOU. Tel: 0115-919 9177.

**DUKERIES ARS, G4XTL.** Meets at Ambleside Community Centre, Ambleside, New Olerton, Notts. Details from Colin Foster G7DXC.

**HUCKNALL ROLLS ROYCE ARC, G5RR.** Meets at the Hucknall Rolls Royce Sports & Social Club, Watnall Road, Hucknall, Nottingham. Details from Mr P. Hart G4JSM.

**MANSFIELD ARS, G3GQC.** Meets at the Debdale Park Sports & Recreation Club, Debdale Lane, Mansfield Woodhouse, Notts. Details from David Peat G0RDP. Tel: (01623) 631931.

**NORTH NOTTS DATA GROUP, G0WNN.** Details from Tony Jenkins G8TBF.

**SIEMENS ARC, G8ZK, G8GQ.** Meets at the GPT Sports Ground, Beeston, Nottinghamshire. Details from Chris Archer G4VFK. Tel: 0115-943 3387.

**SOUTH NOTTS ARC, G0OAU.** Meets at the Fairham Community College, Farmborough Road, Clifton, Nottingham NG11 9AE. Details from Gary Bishop G0WUG. Tel: (01509) 672846.

**WORKSOP ARS, G3ROW.** Meets at the Club House, 59-61 West Street, Worksop, Nottingham S80 1JP. Details from Terry Calvert G4GBS. Tel: (01302) 743130.

## SHROPSHIRE

**OSWESTRY & DARC, G4TTO, G1ORA.** Meets at the Sweeney Hall Hotel, Sweeney, Oswestry. Details from Ant Astley G0WJA. Tel: (01691) 860545.

**SALOP ARS, G3SRT, M1AXW.** Meets at the Telepost Club, Railway Lane, Abbey Forgeate, Shrewsbury. Details from John Burnford G0GNT. Tel: (01743) 249943. E-mail: john.burnford@virgin.net

**TELFORD & DARS, G3ZME.** Meets at the Dawley Bank Community Centre, Dawley, Telford, Shropshire. Details from Mr M. Vincent G3UKV. Tel: (01952) 255416.

## STAFFORDSHIRE

**BURTON-ON-TRENT & DARS, G3NFC.** Meets at the Staplehill Institute, Main Street, Staplehill, Burton-on-Trent, Staffs. Details from Mr M.W. Cotton G4HBY.

**CANNOCK CHASE ARS, G8SW.** Meets at the Four Crosses Inn, Watling Street, Hatherton, Cannock. Details from Arnold Matthews G3FW. Tel: (01543) 262495.

**CHAD RC, G4CAR.** Meets at the Swinfen Officer's Club, Swinfen, Lichfield, Staffs. Details from Bernard Jayne G8BF. Tel: (01543) 268569.

**LICHFIELD ARS, G3WAS.** Meets at the Queens Head, Sandford Street, Lichfield. Details from Roger Smethers G3NLY. Tel: (01543) 672762.

**MOORLANDS & DARS, G4NHT, G1MAD.** Meets at the Creta Works, 8lythe Bridge, Stoke-on-Trent, Staffs ST11 9LJ. Details from Mr B.J. Butcher G4HKG. Tel: (01782) 395793.

**NEWCASTLE-U-LYME SCOUT AR COM GR, G7UQG**

**STOKE-ON-TRENT ARS, G3GBU.** Meets at the '45' Club, 92 Lancaster Road, Newcastle-under-Lyme, Staffs. Details from Albert Allen G4DHO. Tel: (01782) 638801.

**SUTTON COLDFIELD RS, G3RSC.** Meets at the Rugby Club, Wainley Road, Sutton Coldfield, West Midlands. Details from Paul G. Turner G7MWD. Tel: 0121-350 4263.

## WARWICKSHIRE

**AVON VALLEY ARA, MORAD.** Details from Mr Peter Bradham G0WJX. Tel: (01905) 724531.

**MID WARWICKSHIRE ARS, G3UDN.** Meets at the St John Ambulance HQ, 61 Emmscote Road, Warwick. Details from Bernard Pittaway. Tel: (01926) 420913.

**RUGBY ATS, G4APD.** Details from Tony Humphres G0OLS. Tel: (01455) 552683.

**STRATFORD-UPON-AVON & DRS, G0SOA.** Meets at the Home Guard Club, Tiddington, Stratford-upon-Avon, Warks. Details from Ron Horsley G0MRH. Tel: (07970) 148204.

## WEST MIDLANDS

**ALDRIDGE & BARR BEACON ARC, G0NEQ.** Meets at the Aldridge Central Hall Community Centre, Middlemore Lane, Aldridge WS9 8AN. Details from Mr C.J. Baker G0NOL. Tel: (01922) 636162.

**COVENTRY ARS, G2ASF.** Meets at the Birley Church Hall, Brinklow Road, Coventry. Details from John Beech G8SEQ. Tel: (01203) 673999.

**DUDLEY ARC, G4DAR.** Meets at the Community Centre, Sedgley, Central Library, St. James Road, Dudley. Details from Tony Lucas G4LVA. Tel: (01384) 277925.

**HILLCREST ARS, G0SPM.** Meets at The College, Silms Lane, Netherton, Dudley, West Midlands. Details from

Stuart Viney. Tel: (01384) 232457.

**KYNOCH R & TVS, G3HPP.** Meets at the Club Workshop, IMI Ltd., Sportsfield, Perry Bar, Birmingham. Details from Mr G. Nicholls. Tel: (01922) 635376.

**MIDLAND ARS, G3MAR.** Meets at Unit 22, 60 Regent Place, Hockley, Birmingham (jewelry quarter). Details from John A. Crane G0LAL. Tel: 0121-628 7632.

**SANDWELL AMATEUR RADIO CLUB, G0CWC.** Meets at Sandwell ARC, Broadway, Oldbury, Walsley, West Midlands B65 9DP. Details from Stuart Collins M0BTD. Tel: 0121-561 4663.

**SIERRA HOTEL ARCG, G0OBS.** Details from Warwick M. Hall G4WMM.

**SOLIHULL ARS, G3GEI.** Meets at The Shirley Centre, 274 Stratford Road, Shirley, Solihull, West Midlands. Details from Paul Gaskin G8AYY. Tel: 0121-783 2996.

**SOUTH BIRMINGHAM RS, G3OHM.** Meets at Hampstead House, Fairfax Road, West Heath, Birmingham. Details from The SBRS Secretary.

**STOURBRIDGE & DRS, G6OI, G6SRS.** Meets at the Old Swinford Hospital/School, Stourbridge, West Midlands. Details from Tom Edwards.

**WEST BROMMICH CENTRAL RC, G4WBC.** Meets at The Sandwell Public House, High Street, West Bromwich, West Midlands. Details from Ian Letch G0PAI. Tel: 0121-561 2884.

**WEST MIDLANDS POLICE ARC, G0COP, G1WMP.** Details from Steven Jones G6LRL.

**WILLENHALL & DARS, G4ETW.** Meets at The Liberal Club, Villiers Street, Willenhall, West Midlands. Details from Dave 8 Broadway. Tel: (01902) 411252.

**WOLVERHAMPTON ARS, G8TA.** Meets at the Electricity Board Sports Club, St. Marks Road, Chapel Ash, Wolverhampton. Details from Mrs J. Smith. Tel: (01902) 751936.

**WORDSLEY RC, G4WFA.** Meets at the Brick Maker's Arms, Mount Pleasant, Brierley Hill, West Midlands. Details from Andy Evans G1PKZ.

## LONDON & CENTRAL

### BERKSHIRE

**ARBORFIELD ARC, G3IHH.** Details from Mrs E.W. Harding 2E1AUQ.

**BRACKNELL AEC, G4BRA.** Meets at the Coopers Hill Community Centre, Bagshot Road, Bracknell, Berks. Details from John Ellerton G3NCN.

**BURNHAM BEECHES RC, G3WR.** Meets at the Farmham Common Village Hall, Victoria Road, Farmham Common, Bucks. Details from Mrs Eileen Chislett G6EL. Tel: (01628) 625720.

**MAIDENHEAD & DARC, G3WQX.** Meets at the Red Cross Hall, The Crescent, Maidenhead, Berkshire. Details from Neil Savin G0SVN. Tel: (01628) 626210.

**NEWBUURY & DARS, G5XV.** Meets at the Rugby Club, Monk's Lane, Newbury, Details from Mark Slade M0CUK. Tel: (01488) 638985.

**READING ARC, G3JLT.** Meets at the Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. Details from Marnoch Standen G0JMS. Tel: 0118-972 3504.

### BUCKINGHAMSHIRE

**AYLESBURY VALE RS, G4VRS.** Meets at the Hanwick Village Hall, Aylesbury, Bucks. Details from Mr L.I. Cropley G0DFC.

**CHESHAM & DARS, G3MDG, G1MDG.** Meets at the White Hill Centre, Chesham, Bucks. Details from Mr T.J. Thirwell G0VFW. Tel: (01442) 832169.

**CHILTERN ARC, G3CAR.** Details from Roy Page G4YAN. Tel: (01494) 534216.

**MILTON KEYNES ARS, G3MIU.** Meets at Blethney Park Museum (The Green Room, B Block Annex), Witton Avenue, Blethney, Milton Keynes. Details from Mrs J. Battersby M1EPL (Secretary) on (01908) 565636 or Frank Collins M0RPM (Chairman) on (01234) 713148.

**MILTON KEYNES SCOUT ARS, G0SMK.** Meets at The Quaries, M.K. Scout Campsite, Cosgrove, Details from Mr P.A. Drichard G0RYZ. Tel: (01908) 648186.

### GREATER LONDON

**ADDISCOMBE ARC, G4ALE.** Meets at the Lion Inn, Pawnsons Road, Croydon, Details from Mr Q.G. Collier G3WRR. Tel: 0208-653 6948.

**BARKING R & ES, G3XBF.** Meets at the Parkside Community Centre. Details from Bill Chewer G0QK. Tel: (01708) 474443.

**BROMLEY & DARS, RS89030.** Meets at the Victory Social Club, Kechill Gardens, Hayes, Bromley. Details from Alan G. Messenger G0TLK.

**CLIFTON ARS, G3GHN.** Meets at the Kidbrooke House, Community Centre, 90 Mycenae Road, London SE3 7SE. Details from Mr J. Veaney G78KH.

**CRYSTAL PALACE & DRC, G3VCP.** Meets at the All Saints Church, Parish Rooms, Beulah Hill, London. Details from Bob Burns G30OU. Tel: (01737) 552170.

**DARENTH VALLEY RADIO, G0KDV.** Meets at the Crockenhill Village Hall, Swanley, Kent. Details from Mr K.W. Halls G8VJG. Tel: (01322) 663022.

**ECHFORD ARS, G3UES.** Meets at The Community Centre, St. Martin's Court, Kingston Crescent, Ashford, Middlesex. Details from Robin Hewes G3TDR. Tel: (01784) 456513.

**EDGWARE & DRS, G3ASR.** Meets at the Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware, Middlesex. Details from Stephen Slater G0PQB. Tel: 0208-953 2164.

**HAVERING & DARS, G4HRC.** Meets at the Fairfaytes Arts Centre, 51 Billet Lane, Hornchurch, Essex.

**RS OF HARROW, G3EFX.** Meets at the Harrow Arts Centre, Uxbridge Road, Hatch End, Middlesex. Details from Mr C. Fiel G4AUF. Tel: (01895) 621310.

**SILVERTHORNE RC, G3SRA, G2HR, G8CSA.** Meets at the Chingford Adult Education and Community Centre, Friday Hill House, Silmans Lane, Chingford, London E4 6JH. Details from Dave Christy G0KHC. Tel: 0208-504 2831.

**MITCHAM & DISTRICT ARS.** Meets at the ATC Hut, Commonswee West, Mitcham, Surrey CR4 4H8. Details from Mr M. Knott G0WCR.

**SOUTHGATE RC, G3SFG.** Meets at the Winchmore Hill Cricket Club, Firs Lane, London N21 3ER. Details from Mr D.F. Berry G4DFB.

**ST. DUNSTONS COLLEGE ARS, G4SCD.** Details from Sam Kennard G4OHX. Tel: 0181-690 1274.

**SURREY RADIO CONTACT CLUB, G3SRC.** Meets at the T.S. Terra Nova, 34 The Walkitons, Croydon, Surrey. Details from Maurice Fagg G4DDY. Tel: 0208-669 1480.

**WEST LONDON ARS, RS95599.** Details from Robin Clay G0VJI.

**WHITTON ARC, G0MIN.** Meets at the Whitton Community Centre, Percy Road, Whitton, Details from Ian Clabon G0OFN. Tel: 0208-894 9131.

### HERTFORDSHIRE

**BISHOPS STORTFORD ARS, G5ZG.** Meets at the Royal British Legion Club, Windhill, Bishop's Stortford, Herts. Details from Tony Judge G0PQF. Tel: (01279) 506933.

**DACORUM ARTS, G7RHH, G0MWH.** Meets at the Guide Meeting Rooms (next to the Royal British Legion), Queensway, Hemel Hempstead. Details from Ian Hamerton G0TDC. Tel: (01442) 211925.

**HODDESDON RADIO CLUB, G0TSH.** Meets at the Rye Park Conservative Club, Rye Road, Hoddesdon, Herts. Details from Don Platt G3JNE. Tel: 0208-292 3678.

**MIMRAM CONTEST GP, M0ABC.** Details from Alan Holdsworth G80U. Tel: (01707) 392950.

**RADIO SCOUTING TEAM, G8ZRT.** Meets at Tolmers Scout Camp, Tolmers Road, Cuffley, Herts EN6 4JS. Details from Mill Lvens G2CKB. Tel: (01992) 558493.

**STEVENAGE & DARS, G3SAD.** Meets at the Stevenage Day Centre, Chells Way, Stevenage, Herts SG2 0LT. Details from Peter Bell 2E1ORU. Tel: (01462) 674505.

**VERULAM ARC, G3VBR, G8VER.** Meets at the RAF Association HQ, New Kent Road, St. Albans, Herts. Details from Walter Crane G3PMF. Tel: (01923) 262180.

**WELWYN & HATFIELD ARC, G3WGC.** Meets at the Royal Naval Association, Black Fan Road, Welwyn Garden City, Herts. Details from Dean Jackson G7PKF. Tel: (07973) 560649.

### SURREY

**BENTLEY ARC, G0VZS.** Details from Derek Gilbert G0NFA.

**CATERHAM RG, G0SCR.** Details from Mr P.N. Lewis G4APL.

**COULSDON AMATEUR TRANS. SOC., G4FJR.** Meets at St. Swithuns Church Hall, Grovelands Road, Purley, Surrey. Details from Andy Briers G0KZT. Tel: (01737) 552139.

**DORKING & DRS, G3CZU, G7DOR.** Details from John Greenwell G3AEZ. Tel: (01306) 631236.

**FARNBOROUGH & DRS, G4FRS.** Meets at The Community Centre, Meudon Avenue, Farnborough, Hants. Details from Mr M. Hearsey G8ATK. Tel: (01252) 715765.

**GUILDFORD & DRS, G6GS.** Meets at the Guildford Model Engineers HQ, Stoke Park, Guildford, Surrey. Details from Stella Whitcomb G0SWE.

**KINGSTON & DARS, G3KIN.** Details from Mrs Mary Ashdown G0BQV.

**REIGATE ATS, G5LK, G7RAT.** Details from Mr A.C. Embling G1LNT. Tel: (01883) 344723.

**SUTTON & CHEAM RS, G2XP, G7SAC.** Meets at the Sutton United Football Club, Borough Sports Ground, Gander Green Lane, Sutton, Surrey. Details from John Puttock G0BWW. Tel: 0208-644 9545.

**THAMES VALLEY ARTS, G3TVS.** Meets at the Thames Ditton Library, Watts Road, Gigg's Hill, Thames Ditton, Surrey. Details from Cdr. J. Pegler G3ENI. Tel: (01483) 284279.

**WIMBLEDON & DARS, G3WMM.** Meets at St. Andrews Church Hall, Herbert Road, Wimbledon, London. Details from Mr Reg Blackwell M1EEK. Tel: 0208-696 9857.

### SOUTH & SOUTH EAST

#### EAST SUSSEX

**BRIGHTON & DRS, G4GQR.** Meets at the Roast Beef Bar, Brighton Racecourse, Elm Grove, Brighton. Details from Mr P.J. Fellingham.

**CROMBROUGH DARS, G0CRW.** Meets at the Plough & Hares, Walsley Road, Jarvis Brook. Details from Mrs M. Clark. Tel: (01892) 663666.

**EAST SUSSEX AMATEUR TV GROUP, RS178475 vms G3GVV.** Details from Keith Ellis G8HGM. Tel: (01323) 720220.

**SOUTHDOWN ARS, G3WQF.** Details from Jim Harris G4DRV. Tel: (01323) 728479.

**THE QRZ ARG OF SUSSEX, G83VX.** Meets at the Coach Station, Wartling Road, Eastbourne. Details from Stuart Constable M0CWH. Tel: (01435) 863020.

### HAMPSHIRE

**ANDOVER RAC, G0ARC.** Meets at the Village Hall, Wildern, Andover, Hants. Details from Mr R.S. Coleman G0WDO.

**BASINGSTOKE ARC, G3TCR, G8JYN.** Meets at the GEMS Social Club, Lister Road, Basingstoke, Hants. Details from Bob Brown M0CJJ.

**FAREHAM & DARC, G3VEF.** Meets at the Portchester Community Centre, Westlands Grove, Portchester, Hants. Details from Andrew Sinclair G0AMS. Tel: (01329) 235397.

**HIGHFIELD PARK RC, G4WD.** Meets at Highfield Park RC, National Air Traffic Service, Highfield Park, Heckfield, Hants RG27 0LD. Tel: (01734) 225019.

**HORNEADON & DARC, G4FBS.** Meets at Lovedean Village Hall, Lovedean Lane, Lovedean, Hants. Details from Stuart Swan G0FYX. Tel: (01705) 472846.

**ITCHEN VALLEY ARC, G0VVR.** Meets at the Scout Hut, Brickfield Lane, Chandlers Ford, Eastleigh, Hants. Details from Sheila Williams G0VNI. Tel: 023 8081 3827.

**SONY BROADCAST ARC, G4SZC.** Accredited C&G RAE centre. Meets at Sony Sports & Social Club, Priestley Road, Basingstoke. Details from Stephen Harding G4JGS. Tel: (01256) 55011.

**SOUTH HAMPSHIRE INT. TELE SOC., G3DIT.** Meets at G3JZ's QTH, space is limited. Details from Rev. T.R. Mortimer G3JZV. Tel: (02392) 649254.

**SUBMARINE ARC, G3BZU.** Meets at HMS Collingwood, Newgate Lane, Fareham, Hants PO14 1AS. Details from Mr W.S. Blyth G0PPH. Tel: (01329) 232386.

**THREE COUNTIES ARC, G4WVR.** Meets at the Bramshott Parish Inst. & Club, Headley Road, Uphoff, Hants. Details from Damian Kamm G7RFV. Tel: (01428) 724456.

**WATERSIDE ARS, G4JYN.** Meets at the Applemore Scout HQ, Applemore, Hythe, Southampton. Details from Tony Horton G0LKG. Tel: (01703) 841794.

### ISLE OF WIGHT

**BRICKFIELDS ARS, G0BAR.** Meets at Brickfields Horse Country Centre, Newnham Road, Binstead, Isle of Wight. Details from Mr Pebody.

**ISLE OF WIGHT RS, G3SKY.** Meets at The Old Cafe, Whitecliff Bay, Holiday Park, Bembridge. Details from Alan Reeves G4ZTQ. Tel: (01983) 294309.

### OXFORDSHIRE

**BANBURY ARS, G0BRA.** Meets at St. John's Church Social Club, South Bar, Banbury, Oxon. Details from Mr R.S. Marsden G1YSY. Tel/FAX: (01295) 253509.

**HARWELL ARS, G3PIA.** Meets at the Social Club, Harwell Laboratory, Didcot, Oxon. Tel: (01235) 223250.

**OXFORD & DARS, G5LTO.** Meets at the Grove House Club, Grove Street, Summertown, Oxford. Details from Mr D. Walker G3BLS. Tel: (01865) 247311.

**VALE OF WHITE HORSE ARS, G5RPF, G4WWH, G8VWH.** Meets at The Fox, Stevenston. Details from Ian White G3SEK. Tel: (01235) 531559.

### WEST SUSSEX

**CHICHESTER ARC, G2NMM.** Meets at the St. Pancras Hall, Chichester. Details from Graham Swann G0WSD.

**CRAWLEY ARC, G3WSC.** Meets at the Tilgate Forest Rec. Centre, Hut 18, Tilgate Forest, Crawley, West Sussex. Details from Mr J.S. Spence G0PFI.

**HORSHAM ARC, G4HRS.** Meets at the Guide Hall, Denne Road, Horsham, West Sussex. Details from Alistair Watt G3ZBU. Tel: (01403) 253432.

**MID SUSSEX ARS, G3ZMS.** Meets at Marie Place, Leylands Road, Burgess Hill, West Sussex. Details from Mr C. Childs 2E1DCP. Tel: (01444) 244689.

**T.S. VINDICATRIX ASN, G0WVB.** Details from Don Still G000C.

**WORTHING & DARC, G3WOR.** Meets at the Lancing Parish Hall, South Street, Lancing, West Sussex.

**WORTHING & DISTRICT VIDEO RG, G83VR.** Details from the Treasurer. Tel: (01903) 211919 (w).

### WILTSHIRE

**CHIPPENHAM & DARS, G3VRE.** Meets at the Sea Cadez HQ, Chippenhams, Details from Jon Ainge G4LGG. Tel: (01249) 462610.

**SWINDON & DARC, G3FEC.** Meets at the Eastcott Community Centre, Savenake St., Swindon. Details from Den Forrest M0ACM.

**TROWBRIDGE & DARC, G2BQY.** Meets at the Southwick Village Hall, Southwick, Trowbridge, Wils. Details from Ian Carter G0GRJ. Tel: (01225) 864698.

### SOUTH WEST & CHANNEL ISLANDS

#### AVON

**BRISTOL ARC, G3TAD.** Meets at the Lodgeside Club, Lodge Road, Kingswood, Bristol. Details from Dave Brendey G7BYN.

**GORDANO ARC, G6GRG.** Meets at The Ship, Redcliffe Bay, Portishead, Avon. Details from Mr R.T. White G8SPC. Tel: (01275) 874001.

**NORTH BRISTOL ARC, G4GCT.** Meets at the Self Help Enterprise, 7 Braemar Close, Northville, Bristol. Details from David Coxon G0GHM. Tel: (01275) 790448.

**SEVERNISLE TV GROUP, G83ZZ.** Meets at NBARC, Fitton, Bristol. Details from Paul Stevenson G8YMM. Tel: 0117-965 5386.

**SHIREHAMPTON ARC, G4AHG.** Meets at the TS Enterprise Sea Cadez Unit, Station Road, Shirehampton. Details from Mr R.G. Ford G4GTD. Tel: 0117-985 6253

**AXE VALE ARC, G4CA, G7AXE.** Meets at the George Hotel, Axminster, Devon. Details from Pat Cross G0GHH. Tel: (01297) 33756.

**DARTMOOR RADIO CLUB, G1RCD, G0ORC.** Meets at the Yeverton War Memorial Village Hall, Meavy Lane, Yeverton, Devon. Details from Ron Middleton G7LLG. Tel: (01822) 852586.

**EXETER ARS, G4ARE.** Meets at the Moose Centre, Spinning Path Lane, Blackboy Road, Exeter. Details from Ray Donno G3YBK.

**EXMOUTH ARC, G0XRC.** Meets at The Scout Hut, Marpool Hill, Exmouth.

**NORMAN LOCKYER OBSERVATORY ARG, G0A0C.** Meets at the Norman Lockyer Observatory, Salcombe Hill, Sidmouth. Details from Ron Hanson G0NCC. Tel: (01395) 515349.

**NTE (PAIGNTON) ARS, G0OSH.** Meets at Paignton Community College, Upper School, Waterleaf Road, Paignton. Details from Rod Maude G0SHM. Tel: (01803) 521066.

**SOUTH DEVON ARC, G4SSD.** Meets at the Hillhead, Kingswear, Devon. Details from John May G0CDB. Tel: (01803) 522995.

**TORBAY ARS, G3NJA.** Meets at the Highweek Family & Social Club, Highweek, Newton Abbot, Devon. Details from John Olway G3RMA. Tel: (01803) 556425.

**UNIVERSITY OF PLYMOUTH ARS, G0UOP.** Details from Alan Santillo G0XAW.

## DORSET

**BLACKMORE VALE ARS, G4RBY.** Meets at Shaftesbury Club for Young People, Coppice Street, Shaftesbury. Dorset SP7 8PF. Details from Mr A. Marnott G0GFL. Tel: (01258) 860741.

**BOURNEMOUTH RS, G2BRS.** Meets at the Kinson Community Centre, Kinson, Bournemouth, Dorset. Details from Chris R. Ellis M3AG6. Broken Ridge, Fir Tree Close, St. Leonards, Ringwood, Hants BH24 2QW. Tel: (01202) 893126.

**CHRISTCHURCH ARS, G0MUO.** Meets at the Siemens Pressy Sports & Social Club, Grange Road, Somerford, Christchurch, Dorset. Details from Mr K.P. Harris G7WSN. Tel: (01202) 484892.

**FLIGHT REFUELLING ARS, G4RRF.** Meets at the Flight Refuelling Social Club, Merley, Wimborne, Dorset. Details from Martin Axon 2E10FZ. Tel: (01202) 693334.

**POOLE RS, G4PRS.** Meets at the Bournemouth & Poole CFE, Constitution Hill Site, Poole, Dorset. Details from Phil Mayer G0KKL. Tel: (01202) 709093.

**PORTLAND ARC, G0VOP/G7VQP.** Meets at Clifton Hotel, Grove Road, Portland. Details from Kerry Morris G1LWK. Tel: (01305) 788591.

**SOUTH DORSET RS, G3SDS.** Meets at the Church Hall, Chickereil, Weymouth, Dorset. Details from John Rose M0BQ0. Tel: (01305) 832057.

**SWANAGE & PURBECK ARC, M0BLJ.** Meets at Kings Arms, Langton Matravers, Dorset. Details from Peter Wakefield M1WCH/M3WCH. Tel: (01929) 424413.

**WESSEX AMATEUR WIRELESS CLUB, G1WAW.** Details from Ken Powell G1NCG. Tel: (01202) 549376.

## JERSEY

**JERSEY ARS, G3DVC.** Meets at the German Signal Station, Rue Baal, La Moye, St. Brelade. Details from Mrs Anne Mourant M0BJU. Tel: (01534) 734948.

## SOMERSET

**PRESTON COMMUNITY SCHOOL ARC, G0PCS.** Details from Craig Douglas G0H0J. Tel: (01935) 71131.

**TAUNTON & DARS, G3XWZ.** Meets at The Memorial Hall, Trull, Taunton. Details from David Rosewam M0CFF.

**WEST SOMERSET ARC, G0DWW.** Meets at the West Somerset Community College, Minehead, Somerset. Details from Alan Elliott G7RSU. Tel: (01643) 707207.

**WINCANTON ARC, G0WRA.** Meets at King Arthur's School, West Hill, Wincanton. Details from Mr G.A. Fingernut G0ENW. Tel: (01963) 370506.

**YEOVIL & DARC, G3CMH, G8YED.** Meets at the British Red Cross HQ, 72 Grove Avenue, Yeovil, Somerset. Details from George Davis G3ICD. Tel: (01935) 425669.

## ESSEX

**BRAINTREE & DISTRICT AMATEUR RADIO SOCIETY, G3XG.** Meets at the Brantree Hockey Club, Church Street, Bocking, Brantree. Details from John M5AJB. Tel: (01787) 460947.

**CHELMSFORD ARS, G0MWT.** Meets at the Marconi Social Club, Beehive Lane, Chelmsford, Essex. Details from David Bradley M0BQC. Tel: (01245) 602838. E-mail: cars@g0mwt.org.uk

**CLACTON RADIO CLUB, G3CRC.** Details from Mr D. Fitzpatrick M0CHL.

**COLCHESTER ARS, G3VCO.** Meets at the Colchester Institute, Sheepen Road, Colchester. Details from Frank R. Howe G3FIJ. Tel: (01206) 851189.

**DENGIE HUNDRED ARS, G0UTT, G7SDH.** Meets at the Henry Samuel Hall, Maryland, Essex. Details from Mrs Christine Wade. Tel: (01621) 772986.

**HARLOW & DARS, G6UT.** Meets at the Mark Hall Barn, First Avenue, Harlow, Essex. Details from Len Brackstone G7UUF. Tel: (01279) 832700. FAX: (01279) 864973.

**HARWICH ARS, G0GRH.** Meets at the Park Pavilion, Barrack Lane, Harwich. Details from Eugene Kraft G4FTP.

**LOUGHTON & EPPING FOREST ARS, G4ONP.** Details from Marc Litchman G0T0C. Tel: 0208-502 1645/(07803) 023501.

**SOUTH ESSEX ARS, G4RSE.** Meets at the Paddocks, Long Road, Canvey Island, Essex. Details from Mrs Betty Maynard G6LUJ. Tel: (01268) 695474.

**SOUTHWEND & DRC, G5QK.** Meets at the Alexandra Yacht Club, Clifton Parade, Southend-on-Sea, Essex. Details from Alan Radley G0T1M. Tel: (01268) 741229.

**STANFORD-LE-HOPE & DARC, G4SLH.** Meets at the St Joseph Parish Rooms, Scrutton Road, Stanford-le-Hope, Essex. Details from Ken Thompson G4PAD. Tel: (01375) 671238.

**VANGE ARS, G3YCW.** Meets at the Barnstable Community Centre, Basildon, Essex. Details from Mrs D. Thompson. Tel: (01268) 552606.

## KENT

**BREDHURST RX & TX SOC., G0BRC.** Meets at Rock Avenue Working Mens Club, Rock Avenue, Gillingham, Kent. Details from Mr T.M. Wheeler G7MIM.

**CRAY VALLEY RS, G3RCV, G1RCV.** Meets at the Progress Hall, Admiral Seymour Road, Etham, London SE9. Details from Richard Perzyna G8ITB. Tel: (01689) 602948.

**DOVER RADIO CLUB, G3YMD.** Meets at the Dover Grammar School for Boys, Astor Avenue, Dover. Jim Cairns M1BKI. Tel: (01304) 852773.

**EAST KENT RADIO SOCIETY, G0EKR.** Meets at St. Bartholomew's Church Hall, Herne Bay. Details from Paul Nicholson G3VJF. Tel: (01227) 743070, FAX: (01227) 742288.

**HASTINGS ELEC. & RC, G6HH, G1HHH, G6LL.** Meets at West Hill Community Centre, Croft Road, Hastings, East Sussex. Details from Mr J. Boothroyd G0MTJ. Tel: (01233) 732656.

**HILDESTONE ARS, G0HRS.** Meets at Hilderstone A.E.C., Broadstairs, Kent. Details from Mr G. Shaw M0AQA.

**HOME COUNTIES ATV GRP, G6HCT.** Meets at the Binfield Club, Binfield (near M4/J10). Details from Mr A. Brooker G4WZ.

**MAIDSTONE YMCA ARS, G3TRF.** Meets at YMCA Sports Centre, Melrose Close, Maidstone, Kent. Details from Colin Wilson G0VAR. Tel: (01622) 736636.

**MEDWAY ARS, G5MMW, G8MMA.** Meets at Tunbury Hall, Catkin Close, Tunbury Avenue, Walderdale, Chatham. Details from Mr J. Hale G3FTH.

**NORTH KENT RS, G4CW.** Meets at The Pop-in-Parlour, Graham Road, Beesley Heath, Kent. Details from Mr A.V. Fribbens G6MLQ. Tel: (01474) 365694.

**SWALE ARX, G4SRC, G6SRC.** Meets at the Ivy Leaf Club, Dover Street, Sittingbourne, Kent. Details from Gordon Powell M0AKA. Tel: (01795) 665559.

**\*THE MORSE CLUB, G0XOXE.** Meets at The Five Wents Memorial Hall, Swanley/Hextable Road. Details from Ken M3CZA. Tel: 0208-306 3544.

**WEST KENT ARS, G3WKS.** Meets at the St. Marks School Hall, Tunbridge Wells, Kent. Details from Malcolm Sheppard G4FWG. Tel: (01892) 652272.

## NORFOLK

**ANGLIA TELEVISION ARS, G0TKV.** Meets at Anglia TV, Norwich NR1 3JG. Details from Jim Bacon G3YLA. Tel: (01603) 615151.

**GREAT YARMOUTH RS, G3YRC.** Meets at the Bradwell Community Centre, Bradwell, Great Yarmouth, Norfolk. Details from Mr A.D. Bestford G3NHU.

**GRESHAM'S SCHOOL ARC, G3XPX.** Details from Rev. R.N. Myerscough G3PXO.

**KINGS LYNN ARC, G3XYZ.** Details from Derek Franklin G0MQL.

**NORFOLK ARS, G4ARN.** Meets at Norwich Aviation Centre, Norwich Airport. Details from John Wadman G0VZD. Tel: (01953) 604769.

**NORTH NORFOLK ARC, G82MC.** Details from Tony Smith G4FAI. E-mail: g4ai@connecttree.co.uk

## SUFFOLK

**BURY ST. EDMUNDS ARS, G2TO.** Meets at the Culford School Culford, Bury St. Edmunds, Suffolk. Details from George Woods G3LPT.

**FELIXSTOWE & DARS, G4ZFR.** Meets at the Orwell Park School, Nacton, Near Ipswich. Details from Paul Whiting G4YQC. Tel: (01473) 642595.

**FRAMLINGHAM COLLEGE ARC, M0CBB.** Tel: (01728) 727232.

**IPSWICH RADIO CLUB, G4IRC.** Meets at the Golden Hind, Nacton Road (3rd Wednesdays at the Hollies, BUCKLEHAM STRAIGHT ROAD), Ipswich. Details from Keith Gaunt G7CIY. Tel: (01394) 420226.

**LEISTON ARC, G0TUQ.** Meets at Leiston Town Athletic Assn., Victory Road, Leiston, Suffolk. Details from Sam Lydiate G4FD. Tel: (01728) 832999.

**LOWESTOFT DRG, G3JRM.** Meets at The George Barrow Hotel, Oulton Road, Lowestoft. Details from Phil Holden G0JSG. Tel: (01502) 585448.

**MARTLESHAM RS, G4MRS.** Meets at the BT Laboratories, Martlesham Heath, Ipswich, Suffolk. Details from Darren Hatcher. Tel: (01473) 644475.

**SUDBURY & DRA, G0SMI, G7SRA.** Meets at the Old School, Wells Hall Road, Great Comard, Sudbury, Suffolk. Details from Bryan Pantou G1TWY.

**SUFFOLK OATA GROUP, G8TMM.** Details from Peter Pryke G8HUE. Tel: (01473) 631313.

## NORTH WALES

### CLWYD

**CONWAY VALLEY ARC, GW5TM.** Meets at the Studio, Penrhos Road, Colwyn Bay, Clwyd. Details from Mr R.W. Evans GW6PMC. Tel: (01745) 855068.

**HALKYN & DARS, GW3HRG.** Details from Mr D. Austin GW1XHG.

**NORTH WALES RS, GW0NWR.** Meets at the Old YMCA, Queen's Drive, Colwyn Bay, Clwyd. Details from Ted Shipton GW0DSJ. Tel: (01745) 336939.

**WREXHAM ARS, GW4WXM.** Meets at the Community Centre, Maesgwyn Road, Wrexham. Details from Mr P. Moran GW0WER.

### GWYNNEDD

**MERION ARS, GW4LZP.** Meets at the Royal Ship Hotel, Dolgellau, Gwynedd. Details from Genave Chavasse G4URJ. Tel: (01341) 421028.

**PORTHMADOC & DARS, GW0MVI.** Meets at The Yacht Club, The Harbour, Porthmadoc, Gwynedd. Details from Mr G. Cadwaladr MW1DFN.

**THE DRAGON ARC, GW4TTA.** Meets at the Ebenezer

Church Hall, Lon Foel Graig, Llanfaipwl, Isle of Anglesey. Details from Stewart Rolfe GW0EFT. Tel: (01248) 362229.

## POWYS

**POWYS ARC, GW4HVN.** Meets at the ATC HQ, Park Lane, Newtown, Powys. Details from Mrs Jean Brown ZW1CEZ. Tel: (01686) 640814.

## SOUTH WALES

### DYFED

**ABERPORTH YMCA, GW4SZV.** Meets at the Hut B17, The Airfield, Aberporth. Details from Mr G. Carruther GW4HGJ. Tel: (01239) 811205.

**ABERSYSTWYTH & DARS, GWOARA.** Meets at the Scout Hut, Plasrugg Avenue, Aberystwyth. Details from John Woodward GW6IDK. Tel: (01970) 890657.

**CARMARTHEN ARS, GW4YCT.** Meets at The Aelwyd Care Home, Carmarthenshire County Council, Tregynm Row, Llangunor, Carmarthen SA31 3BS. Details from Mr W.D. Hughes GW4ZXL. Tel: (01267) 231359.

**CLEDDAU ARS, GWSOYG.** Details from Trevor Perry GW4XKQ. Tel: (01646) 600725.

**LLANELLI ARS, GWOEQZ.** Meets in the Furnace Community Hall, Furnace Square, Llanelli. Details from Roy Jones GW0KJZK. Tel: (01554) 820207.

**PEMBROKESHORE RS, GWOJEE.** Meets at Furzy Park Community Centre, Furzy Park, Haverfordwest, Pembrokeshire. Details from Ian M. Jones MW0CAC. Tel: (01437) 763028.

### GWENT

**ABERGAVENNY RS, GW4GFL.** Meets at the Hill Residential College, Pen-y-Pound, Abergavenny, Gwent. Details from Glyn Hughes GW0DQY. Tel: (01633) 483186.

**BLACKWOOD & DARS, GW6GW.** Meets at the Daldale Comprehensive School, Okadale, Blackwood, Gwent. Details from John Evans GW8ITJ. Tel: (01495) 225178.

**EBBW VALE COLLEGE RS, GWOIWI.** Meets at the Gwent Tertiary College, Ebbw Vale Campus, College Road, Ebbw Vale, Gwent. Details from Mr T. Hayden GW0HCN. Tel: (01495) 305192.

**NEWPORT ARS, GW4EZW.** Meets at the Brynglas Community Centre, Brynglas Road, Newport, Gwent. Details from Paul Nicholls.

**PONTYPOOL ARS, GW3RNH.** Meets at the Settlement, Rockhill Road, Pontypool, Gwent. Details from Graham Smith GW0OLZ.

### MID-GLAMORGAN

**BRIDGENO & DARC, GW4LNP.** Meets at the Club Brynmenyn, Brynmenyn, Bridgend, Details from Alun Hulmes. Tel: (01656) 721574.

**HOOVER (MERTHYR) ARC, GW3ROB.** Meets at the Hoover Sports Pavilion, Hoover Ltd., Pentrebach, Merthyr Tydfil, Mid Glamorgan. Details Robert Cummings GW0RVG.

**MID GLAMORGAN ARC, MW0CNA.** Meets at Aberkenfig Sports & Social Club. Details from Mervyn Carey GW4YSE. Tel: (01656) 734668.

### SOUTH GLAMORGAN

**BARRY ARS, GW3VKL.** Meets at Sully Sports & Leisure Club, South Road, Sully, S. Glamorgan. Details from Richard Morthmore GW4BVJ. Tel: (01446) 738756.

**HIGHFIELDS ARC, GW4LFO.** Meets at the Highfields Physically Handicapped Centre, Allensbank Road, Cardiff. Tel: (01222) 561542.

### WEST GLAMORGAN

**PORT TALBOT (BS PLO) ARS, GW3EOP.** Meets at the British Steel P.L.C Sports & Social Club, Margam, Port Talbot, West Glamorgan. Details from Mr J. Chinnock MW0AGE.

**SWANSEA ARS, GW4CC.** Meets at the Applied Sciences Building, Swansea University. Details from David Williams GW4BNJ. Tel: (01792) 519046.

## SCOTLAND WEST & WESTERN ISLES

### CENTRAL REGION

**FALKIRK & DARS, GMOFRC.** Details from Scott Waterall G0MKBV.

**STIRLING & DARS, G6NXX.** Meets at Bandeath Industrial Estate, Throsk, Nr. Stirling. Details from John Shery G0M0AZC. Tel: (01324) 824709.

### DUMFRIES & GALLOWAY

**WIGTOWNSHIRE ARC, G4MRIV.** Meets at the Aird Unit, Stranraer Academy, Stranraer, (entrance from Cairnpot Road). Details from Neil Macdonald G4MLQS.

### STRATHCLYDE

**AYR ARC, GMOAYR.** Meets at the Tidal Leisure Centre, Ayr. Details from Peter Sturgeon M0DBQP.

**CENTRAL SCOTLAND FM GROUP, RS38728.** Details from Thomas Stalker GM77ZU. Tel: (01698) 816793.

**DALRY ARC, MMOAQE.** Meets at The Turf, In Dalry Court, Hill Street, Dalry. Details from Alex McKeeman MMOABM. Tel: (01294) 823295.

**DUNOON & DARS, GMOOCD.** Meets at the Edward Street Community Centre, Edward Street, Dunoon. Details from A.B. Horton G0M0BLU. Tel: (01369) 840217.

**HELENSBURGH ARC, G4MHEL.** Details from G. Capstick G0T0AF. Tel: (01366) 759222.

**INVERCLYDE ARC, GMOGNK.** Meets at the Cardwell Bar, Cardwell Road, Gourrock, Strathclyde. Details from Andrew Givens G3YOR. Tel: (01475) 638226.

**HILMARNOCK & LOUDOUN ARC, G4M0DX.** Meets at the Hurford Community Centre, Cessnock Road, Hurford. Details from Steve Campbell G4M0SS. Tel: (01560) 483800.

**LARGS & DARS, GMOVVG.** Details from Mr J. Clough G0M0DD. Tel: (01475) 568584.

**LORN ARS, G4MOLRA.** Details from T. Otsen GMOEQW. Tel: (01866) 2580.

**MID LANARK ARS, G4M3PK.** Meets at the Newarthill Community Ed. Cent., High Street, Newarthill,

Motherwell, Lanarkshire ML1 5GU. Details from John Neary G4M0XFK. Tel: (01698) 822860.

**MILTON OF CAMPSIE ARS, G4M0MC.** Meets at The Red Cross Hall, Kirkintilloch. Details from John MacKenzie G4M0HJU. Tel: (01360) 312954.

**PAISLEY ARC, G4M0PYM.** Meets at the Paisley YMCA Hall, 5 New Street, Paisley PA1 1XU. Details from John Quigley G4M0TQA. Tel: 0141-889 6860.

**SCOTTISH DIGITAL COMMS. GRP, G4M7YSR.** Details from Stuart Clark G4M1BE. Tel: (01698) 884803.

**WEST OF SCOTLAND ARS, G4SAGG.** Meets at the Multi Cultural Centre, 21 Rose Street, Glasgow. Details from Hon. Sec.

## SCOTLAND EAST & HIGHLANDS BORDERS

**BORDERS ARS, G4M0BRS.** Meets at the St. John Ambulance Hall, Berwick-upon-Tweed. Details from A.M. McCreadie G4M0BPT. Tel: (018907) 50492.

**GALASHIELS & DARS, G4M4YEQ.** Meets at the Focus Centre, Galashiels. Details from Jim Keddie G4M7LUU.

**KELSO ARS, G4M4KHS.** Meets at the Abbey Row Community Centre, Kelso. Details from Margaret Chairmers G4M0ALX. Tel: (01573) 226372.

### FIFE

**GLENROTHES & DARC, G4M4GRC.** Meets at the Football Pavilion, Station Road, Thornton, Fife. Details from Alexander Adam G4M0FV0. Tel: (01592) 874374.

### GRAMPIAN

**ABERDEEN ARS, G4M3BSQ.** Meets at the Red Cross HQ, 22 Queens Road, Aberdeen. Details from Robert Duncan. Tel: (01224) 896142.

**BANFF & DARC, G4M0PYC.** Meets at the Princess Royal Park Football Ground, Conference Room (Deveronvale F.C.), Banff. Details from Steve Roberts G4M4HWS. Tel: (01888) 551377.

**MORAY FIRTH ARS, G4M3TKV.** Meets at the Grant Arms Hotel, Fochabers. Details from Geoff Crowley G4M7SJC. Tel: (01542) 862818.

### HIGHLAND REGION

**FORT WILLIAM ARC, G4M0FWR.** Details from R. Johnston G4M1YGV. Tel: (01397) 703046.

**INVERNESS ARC, G4M4TFF.** Meets at The Emergency Operations Centre, Inverness (except July and August). Details from R.F. Goodall G4M0GGZ. Tel: (01463) 811701.

### LOTHIAN

**COCKENZIE & PORT SETON ARC, RS177035.** Meets at the Thorne Inn, Lounge Bar, Old Cokerzie High Street, Cockenzie, E. Lothian. Details from Mr Bob Glasgow G4M4UYZ. Tel: (01875) 811723.

**LOTHIANS RS, G4M3HAM.** Meets at the Orwell Lodge Hotel, Polwarth Terrace, Edinburgh EH11 1NH. Details from Thomas G. Main, Sec.

### ORKNEY

**ORKNEY ARC, RS181749.** Details from Mrs Terry Penna. Tel: (01856) 741233.

### SHETLAND ISLANDS

**LERWICK ARC, G4M3ZET.** Meets at the Islesburgh Community Centre, John Herald Street, Lerwick, Shetland. Details from Ian C. Millar G4M7RDK. Tel: (01950) 460306.

### TAYSIDE REGION

**DUNDEE ARC, G4M4AAF.** Meets at the Dundee College, Graham Street Annex, Dundee. Details from John R. Nicholson G4M0MFE. Tel: (01382) 858700.

**PERTH & DARC, G4M4EAF.** Meets at the Perth Sports & Social Club, 18 Leonard Street, Perth. Details from Ron Harkess G4M3THI. Tel: (01738) 643435.

**STRATHMORE & DARC, G4M3GBZ.** Meets at 2231 Sqdn ATC, 1 Lochside Road, Forfar. Details from Graham Scattergood M4M0BSX. Tel: (01307) 468824.

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### CO. ANTRIM

**ANTRIM & DARS.** Meets at the Clotworthy Arts Centre in the Castle Grounds in Antrim. Details from David Hutchinson G4FUM or visit www.g4nsiw.co.uk

**BALLYMENA RC, G13FFF.** Meets at 70 Nursery Road, Gracehill, Ballymena, Co. Antrim. Details from Jeffery Clark G4HCN. Tel: (01266) 659769.

**CARR**

# International Radio Clubs

## AMSAT-UK (G0AUK)

Information from Jim Heck G3WGM, Badgers, Letton Close, Blandford, Dorset BH11 7SS. E-mail: [g3wgm@amsat.org](mailto:g3wgm@amsat.org) or visit [www.uk.amsat.org](http://www.uk.amsat.org)

## British Amateur Radio Teledata Group (BARTG - G4ATG, GB2ATG)

Contact Membership Secretary Andrew Thomas G8GNI, M5AEX, Dame School House, 103 High Street, Stony Stratford, Buckinghamshire MK11 1AT, E-mail: [members@bartg.demon.co.uk](mailto:members@bartg.demon.co.uk) or visit [www.bartg.demon.co.uk](http://www.bartg.demon.co.uk)

## British Amateur Television Club (BATC - RS38114)

Enquiries to Dave Lawton G0ANO, 'Grenehurst', Pinewood Road, High Wymcombe, Bucks HP12 4DD. Tel: (01494) 528899. E-mail: [memsec@batc.org.uk](mailto:memsec@batc.org.uk) or visit [www.batc.org.uk](http://www.batc.org.uk)

## British DX Club (BDXC-UK)

Enquiries to Club Secretary Colin Wright, 126 Bargery Road, London SE6 2LR. E-mail: [secretary@bdxc.org.uk](mailto:secretary@bdxc.org.uk) or visit [www.bdxc.org.uk](http://www.bdxc.org.uk)

## Danish Shortwave Club

Information from Treasurer Bent Nielsen, Egekrogen 14, DK-3500 Vaerloese, Denmark or visit [www.dswci.org](http://www.dswci.org)

## International Listeners' Association (RS88763)

Details from Trevor Morgan GW4OXB, 1 Jersey Street, Hafod, Swansea SA1 2HF. E-mail: [gw4oxb@ntf.com](mailto:gw4oxb@ntf.com)

## International Short Wave League (ISWL - G4BJC)



Information from Honorary Secretary John Raynes, G16436/G0BWG, 267 Pelham Road, Immingham, Lincs DN40 1JU. E-mail: [iswl@ntworld.com](mailto:iswl@ntworld.com) or visit [www.iswl.org.uk](http://www.iswl.org.uk)

## Military Wireless Amateur Radio Society (G0PTZ)

Further details from John Taylor-Cram, 7 Hart Plain Avenue, Cowplain, Waterlooville, Hampshire PO8 8RP. Tel: 0239-225 0463.

## Radio Amateurs Invalid and Blind Club (RAIBC - G4IBC, GBOIBC, GB1IBC)

Enquiries to Honorary Treasurer/Membership Secretary Mrs Shelagh Chambers, 78 Durlay Avenue, Pinner, Middlesex HA5 1JH. Tel: 0208-868 2516.

## Radio Amateur Old Timers' Association

Enquiries to Membership Secretary Ted Rule, G3FEW, 15 Norwich Road, Lenwade, Norwich NR9 5SH. Tel: (01603) 872309, E-mail: [edit@raota.fsnet.co.uk](mailto:edit@raota.fsnet.co.uk) or visit [www.raota.supanet.com/](http://www.raota.supanet.com/)

## Remote Imaging Group (RS88803)

Further details from the Membership Secretary John Din, 59 Woodend Road, Coalpit Heath, Bristol BS36 2LH. FAX: (01454) 887880. E-mail: [membership@rig.org.uk](mailto:membership@rig.org.uk)

## Royal Air Force Amateur Radio Society (RAFARS - G8FC, G8RAF)

Details from the Administrator, HQ RAFARS, RAF Cosford, Wolverhampton WV7 3EX. Tel: (01902) 372722, E-mail: [administrator@rafars.org](mailto:administrator@rafars.org)

## Royal Navy Amateur Radio Society (RNARS - GB3RN, G3CRS, G1BZU)

Enquiries to Secretary Philip Manning G1LKJ/M3LKJ, 1 Waverley Gardens, Ash Vale, Surrey GU12 5JP. Tel: (01252) 334929, E-mail: [g1lkj@amsat.org](mailto:g1lkj@amsat.org) or visit [www.rnars.org.uk](http://www.rnars.org.uk)



## Royal Signals Amateur Radio Society (RSARS - G4RS)

More information from General Secretary, HQ RSARS, Cole Block, Blandford Camp, Dorset DT1 8RH. Tel: (01258) 482814, E-mail: [gensec@rsars.org.uk](mailto:gensec@rsars.org.uk) or visit [www.rsars.org.uk](http://www.rsars.org.uk)



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Details from c/o C. Rooms, 59 Moat Lane, Luton LU3 1UU. E-mail: [contact@mwcircle.org](mailto:contact@mwcircle.org)

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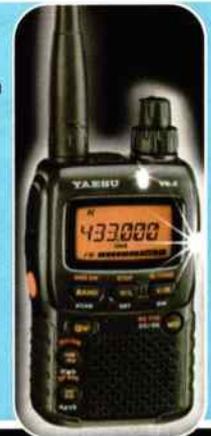
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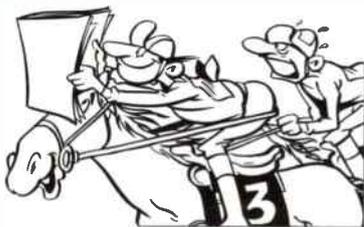
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# Maritime

## Beacons

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

**D**uring July, August and September the propagation conditions at night in the l.w. maritime radiobeacon band varied from poor to fair and rarely good but that was not unexpected during the summer months.

It proved to be a very disappointing quarter for **Fred Wilmshurst** in Northampton. He found the band extremely noisy and even with the use of notch and c.w. filtering very little was heard. The only beacon he received with any regularity at night was Myggenaes on the Faeroe Is, which transmits its ident (MY) on **337.0kHz**.

When the conditions were such that it was inaudible, he was unable to hear any other beacons. When the conditions improved the idents from two more beacons on the Faeroe Is became audible - (AB) at Arkraberg on **381.0** and (NL) at Nolso on **404.0kHz**. However, Fred could find no trace of the beacon (OZN) on **372kHz**, which is located on the southern most tip of Greenland at Prinz Christian Sund, he used to hear it regularly. From a southerly direction Fred picked up at night the idents from three beacons along the north coast of Spain - (MA) from Cabo Machichaco on **284.5**, (MY) from Cabo Mayor on **289.5**, also (BA) from Estaca de Bares on **292.5** but he could find no trace of those along the south coast of Spain.

Over in Co.Down **Robert Connolly** (Kilkeel) searched the band on a regular basis mainly at night. The beacons at Mahon, Minorca (MH) on **293.5** and Cala Figuera, Majorca (FI) on **294.0**, also several along the coastline of Spain were received at night. Those at Cabo Mayor (MY) **289.5** and Estaca Bares (BA) **292.5** were heard during daylight - see chart. He says "It was interesting to note that for a few nights aero beacons from Morocco were coming in here quite well but there was no sign of any of the listed marine beacons".

From much further south he often heard the beacon at La Entallada, Canaries (NA) on **283.5kHz**, so he is wondering if the transmitter power of (NA) has been increased. The other Canaries beacon at La Isleta (LT) on **300.0kHz** is still a rare catch for him.

From a northerly direction Robert received at night the idents from the three beacons on the Faeroe Is - (MY) on **337.0**, (AB) on **381.0** and (NL) on **404.0**. He also heard the ident (OZN) from Prinz Christian Sund, S.Greenland on **372.0**.

In his report Robert mentioned that

"Norway retained one marine beacon (KA) at Skrova Lt on **299.5** when the rest of the Norwegian marine beacons were closed a few years ago. This was mainly due to the fact that it was classed as an aeromarine beacon, i.e. it was certified for use by both aircraft and ships. Recent information I have obtained regarding Norway indicates that a new marine only beacon has been established. The details are **292.0kHz** (MT), Kapp Martin Lt, Bellsund. Position 774313N, 0135637E".

He continued "When I was researching the marine beacons for my publication, the information I had was that this beacon was still active and is therefore listed in my booklet. However, it looks as if it had been discontinued and has been re-instated again. According to the details I already had, it had a range of 50nm. It does seem curious that that it has appeared on the Norwegian Aeronautical Information Service website as a new beacon. Maybe, knowing how long it takes aviation authorities to amend details of marine NDBs on their database, they have only just discovered its existence!".

The publication to which Robert referred is of course his popular and inexpensive beacon guide. The latest (8th) edition extends to about 60 pages and details almost 3000 aero and maritime radiobeacons! It is available in printed format and it can also be obtained as a pdf file for use with *Acrobat Reader* or as an *Excel Workbook*. If you would like an information sheet about his guide please send an s.a.e. with your request to Robert via me at the above address.

## Long Wave Maritime Radiobeacon Chart

<b>kHz</b>	<b>C/S</b>	<b>Station Name</b>	<b>Location</b>	<b>DXer</b>
<b>284.5</b>	<b>MA</b>	<b>Cabo Machichaco</b>	<b>NE.Spain</b>	<b>A*,B*</b>
<b>288.0</b>	<b>OR</b>	<b>Punta de Llobregat</b>	<b>S.Spain</b>	<b>A*</b>
<b>289.5</b>	<b>MY</b>	<b>Cabo Mayor</b>	<b>Spain</b>	<b>A,B*</b>
<b>292.5</b>	<b>BA</b>	<b>Punta Estaca Bares</b>	<b>N.Spain</b>	<b>A,B*</b>
<b>293.5</b>	<b>MH</b>	<b>Mahon, Minorca</b>	<b>Balearic Is</b>	<b>A*</b>
<b>294.0</b>	<b>FI</b>	<b>Cala Figuera</b>	<b>Majorca</b>	<b>A*</b>
<b>295.5</b>	<b>PS</b>	<b>Cabo Penas Lt</b>	<b>N.Spain</b>	<b>A*</b>
<b>296.5</b>	<b>FI</b>	<b>Cabo Finisterre Lt</b>	<b>NW.Spain</b>	<b>A*</b>
<b>300.5</b>	<b>VI</b>	<b>Cabo Villano Lt</b>	<b>N.Spain</b>	<b>A*</b>
<b>301.5</b>	<b>PA</b>	<b>Cabo de Palos Lt</b>	<b>S.Spain</b>	<b>A*</b>
<b>305.0</b>	<b>KA</b>	<b>Klaipeda Rear Lt</b>	<b>Lithuania</b>	<b>A*</b>
<b>312.5</b>	<b>BK</b>	<b>Baltiysk</b>	<b>Balt.Russia</b>	<b>A*</b>
<b>312.5</b>	<b>BT</b>	<b>Mys Taran Lt</b>	<b>Balt.Russia</b>	<b>A*</b>
<b>314.0</b>	<b>SN</b>	<b>Cabo San Sebastian</b>	<b>S.Spain</b>	<b>A*</b>
<b>337.0</b>	<b>MY</b>	<b>Myggenaes</b>	<b>Faeroe Is</b>	<b>A*,B*</b>
<b>372.0</b>	<b>OZN</b>	<b>Prins Chris's Sund</b>	<b>Greenland</b>	<b>A*</b>
<b>381.0</b>	<b>AB</b>	<b>Akraberg</b>	<b>Faeroe Is</b>	<b>A*,B*</b>
<b>404.0</b>	<b>NL</b>	<b>Nolso</b>	<b>Faeroe Is</b>	<b>A*,B*</b>

### Note:

Entries marked \* were logged during darkness.

All other entries were logged during daylight or at dawn/dusk.

### DXers:-

(A) Robert Connolly, Kilkeel.

(B) Fred Wilmshurst, Northampton.

## APPENDIX - List of equipment used:-

Robert Connolly, Kilkeel: JRC NRD-525 + Timewave DSP9+ filter and Datong AD-370 active antenna.

Fred Wilmshurst, Northampton: Icom IC-R70 + Global AT-1000 a.t.u. plus random wire antenna in loft.



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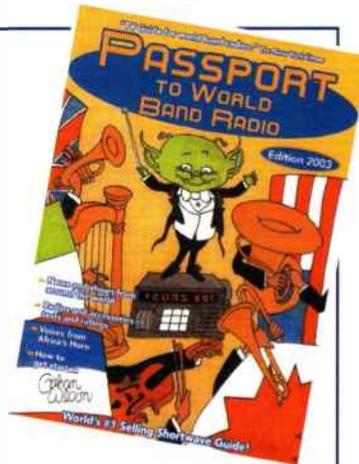
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# AOR DIRECT

Special discounted prices on short wave loop aerials until 31 January 2004

If you have been considering the purchase of the LA350 or WL500 loop aerials, now is the time to act - **a perfect gift for Christmas.**



**LA350:** The LA350 is a compact active loop aerial specifically designed to provide good reception when away from the main monitoring location or when large external aerials are not practical. Compact, but achieving high performance, featuring an internal high-gain amplifier (13.5dB) and excellent overall strong signal handling (high IP<sup>3</sup> +30dBm). Very compact being constructed of metal loops and providing a quality finish, still the LA350 remains only half the diameter of other well known loop aerials. Supplied with two loops, 3.0 - 9.0 & 9.0 - 30MHz.

*Reviewed by John Wilson in the UK Short Wave Magazine November 2002:*  
... My own view is that the LA350 is an impressive performer and will prove to be popular with enthusiasts who need a high performance antenna that will sit right on top of the receiver and still be as good or better than a traditional wire antenna strung down the garden - and of course the LA350 will reject local interference which would drown i.f. signals from the wire antenna...

**Usual price £199.00, special price £179.00 carriage £5.00**

- 350L Optional element 0.2 - 0.54 MHz for LA350, ~~£49.00~~ **£44.00**
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Carriage on optional elements £2.50 if ordered separately

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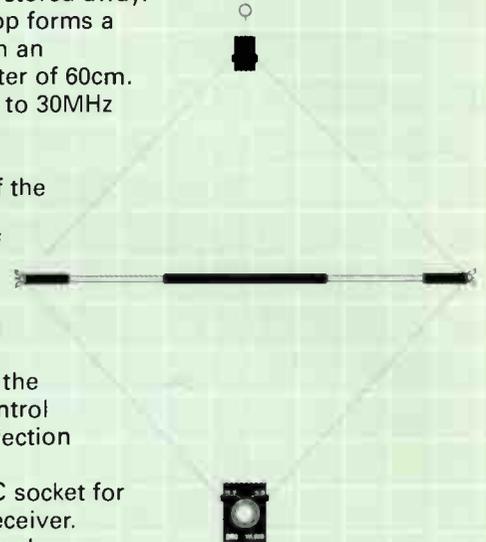
**WL500:** Following on from the success of the LA350 loop aerial (see above), the WL500 provides a **solution to those operators who need a good compact aerial for travelling around.** The loop is constructed of flexible cable braced by a centre pole which splits in to two sections so that it can be easily stored away.

When setup, the loop forms a diamond shape with an approximate diameter of 60cm.

The loop covers 3.5 to 30MHz with a range switch mounted at the termination point of the loop (switching at 10MHz). A length of screened cable is supplied which is terminated in PHONO plugs to connect the loop to the control box.

The control unit provides preselection and amplification terminated in a BNC socket for connection to the receiver.

Excellent strong signal characteristics are achieved, typically 16dB gain with an IP<sup>3</sup> of +14.5dBm. The control unit can be powered from an internal 9V PP3 battery (current consumption is around 16mA), alternatively external 12V DC may be used. While the WL500 will operate below 3.5MHz, performance on the lower bands can be enhanced by the addition of the **optional 500LM bar element.** The bar has a selector switch for LW or MW operation and connects to the control box in place of the short wave loop.



*Reviewed by John Wilson in the UK Short Wave Magazine April 2003:*

... the performance of the WL500 on the h.f. bands is absolutely excellent and AOR are to be congratulated on a very well thought out and carefully executed design. I thoroughly recommend the WL500 system, and for anyone who simply cannot get any kind of antenna outside their house, the WL500 will fill the need perfectly. As an antenna system for the travelling listener, the WL500 could not be more perfect, and with a typical portable receiver having an external antenna jack will provide excellent reception of even weak h.f. transmissions...

**Usual price £149.00, special price £134.00 carriage £5.00**

- 500LM Optional LW/MW element ~~£49.00~~ **£44.00**  
Carriage on 500LM £5.00 if ordered separately

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