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The SHORT WAVE Magazine

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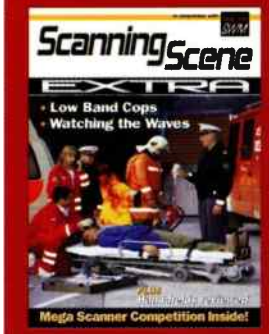
features



This month we present a **FREE** 32 page *Scanning Scene Extra* magazine filled with essential reading. Including a chance to win one of seven hand-held scanners. We have a total of £1500 worth of radios for you to win - see page 16 of *SSE*. See also our two page scanner selection chart to compare features at a glance.

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

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regular columns

BROADCAST

11 Bandscan Europe 12 LM&S

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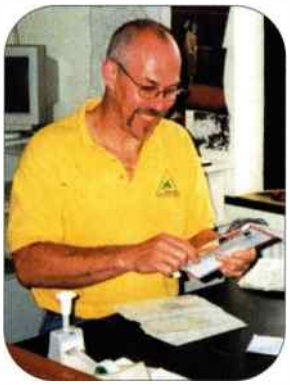
ed's comments



The observant will have noticed that I now hold a new amateur callsign - M3SWM. I recently took my Morse Appreciation at CARS, one of the local amateur radio clubs. It is clear that the Foundation Licence initiative is having significant success, both with 'B' licensees like myself and those who are starting from scratch. There are a significant number of SWM-Reader list members that now have M3 callsigns. SSL inform me that they are processing 100 applications per day - 3650 a year! Quite a shot in the arm for the radio hobby. I look forward to meeting those of you licenced to operate h.f. on air soon.

High Accuracy Navigation

As a heavy user of GPS (the US Military based satellite navigation network) I was very interested to see a DTI press release recently regarding the Government funding of some £86 million, a quarter of the total, for the Galileo programme which is being run by the European Space Agency. Galileo is Europe's future global positioning and navigation system, which will offer long-term improvements in air and traffic management and reductions in pollution.

The Galileo programme is likely to create around 1000 new high technology jobs in the UK. As well as benefiting the UK's major satellite manufacturing companies, many of the job and investment opportunities created will be in the smaller supply companies, and leading edge R&D facilities.

Galileo will deliver real-time positioning and will offer users accuracy to within one metre, which is unprecedented for a publicly available system.

Galileo will be Europe's leading global navigation system, providing a highly accurate, guaranteed global positioning service under civilian control. It will be inter-operable with the American GPS global satellite navigation systems.

Hopefully then, current GPS receivers will operate with the Galileo system and bring the enhanced positional accuracy to present users. I for one will find that tremendously useful.

vy 73 Kevin

COMING NEXT MONTH IN *SWM* AUGUST 2002

★ FREE AIRBAND DATA CARD No. 2 *MilAir Data*

- **★ Sky High Special with Peter Bond**
- **★ John Wilson reviews the RA3791**
- **★ DRM Revealed - Part 2**
- **★ What Does It All Mean?** *Our guide to abbreviations and acronyms*
- **and much more...**

*contents subject to change

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

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

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

QSL

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

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

Dear Sir

As one who prefers to listen to radio more than just DXing, I have taken the big leap into the world of DAB. I have been a DAB user/listener now for over a year. I have to say that it is absolutely great, despite many of the comments from people in this magazine, many of whom I suspect have never listened to or used it. Also, I managed to buy a Psion Wavefinder for £38 and the Videologic DRX-601E for a mere £225. From this, you can see that DAB is becoming ever more affordable. I will also have a DAB stereo in the car soon, probably by the time you read this.

I am fortunate that I live in an area in which we are well served with multiplexes. We have the BBC, Digital One, Switch Digital and Score Glasgow reaching us with great ease and we also get great DAB reception from the Score Edinburgh multiplex. This compares well to the f.m. reception that is available in the area and I suspect that in the months to come, I will also be able to receive the Dundee multiplex.

Although I can pick up all of the available multiplexes quite well with a wire in the house, I do have a roof antenna, which is a figure-of-eight dipole for Band III. Compared to my 5-element Band II beam, the Band III antenna is tiny. When I tell people that I now have two antennas on the roof, one for f.m. (which can be seen from afar) and one for DAB, the first thing they usually say is, "Where's the other one". I then have to point it out to them, sometimes with the aid of binoculars, whilst standing at the bottom of the garden!!

Now that is what I call progress. So far, things seem quite positive. Not least because in the past I had to go to great efforts to hear some stations. Many of the stations from London that I wanted to listen to, with which I had some success - but only when the conditions were good, are now available on my local multiplex all the time - and I don't have fading reception like I used to in the old days.

So where does this leave those of us who still like to do a bit of DXing? Well, a few weeks ago I tried to pick up the mulitplex from Ayrshire, which was recently switched on. I already get reasonably good m.w. reception from there and a little f.m. (with a bit of effort) on a cheap 'tranny'. However, when I tried to pick up the DAB signal, I got nothing! I am just a little bit surprised by this, but I am not too concerned. After all, the Band III antenna is designed for that band (220-235MHz), not DAB. Therefore I would expect considerable drop-off below 220MHz and it just so happens that the Ayrshire multiplex is transmitting around 218MHz. Also, it is a tiny antenna - not exactly suitable for DX.

So, already things are becoming a bit more apparent regarding DAB. The signal does not travel as well as analogue f.m. and a.m., therefore picking up DAB DX could be a bit more challenging.

Also, a couple of months ago I experimented with my 5-element beam, which is fixed to a rotator. With the antenna pointing towards Newcastle (I already get great f.m. reception from there), I was able to pick up a reasonably good signal for the Tyneside multiplex and I was also occasionally able to pick up the Teeside multiplex. I must also point out that the tuner had to be rebooted, requiring a search of Band III again.

So, DAB does have DX potential. Even though DAB is transmitted with vertical polarity, it seems that over great distances (I'm over 160km from Newcastle), the signal's polarity changes to become horizontal, making this ideal for DXing.

Now, as one who listens to radio more than DXing, I think the future of broadcast radio is great. With DAB and digital satellite, as well as re-broadcasting on the Internet, many of the stations that I used to listen to on f.m. and a.m., often with bad reception, can now be heard in crystal clear quality with no fading, making the act of listening much more enjoyable.

As for DXing, I don't believe that digital transmissions are likely to bring to an end this fascinating hobby. I believe that it is just going to change - and it may bring a new generation of DXers into the hobby as well, I have already introduced a couple of new friends into this (expect a couple of more subscriptions soon!) because of DAB.

Also, analogue will be around for quite some yet, so those of the older generations amongst us will still be able to enjoy it. When DAB and DRM become a major broadcasting type, the people of my generation and younger (I'm 29 years old), will have grasped this quite well.

My next point might sound a bit cruel, but I am trying to do it with good meaning. The current practice of picking up long distance analogue transmissions, which is done mostly by older people, will probably pass away with them, as they all go to the great big radio shack in the sky, by which time, analogue signals will probably be few and far between.

Meanwhile for me, this is a very interesting and exciting time. Like my friends, I am absolutely fascinated by DAB and I await the development of DRM, as well as the opening of the K & L bands plus the likelihood of picking up data transmissions on these bands too.

Arthur Grainger
Scotland

There is little question that the shape of our hobby is due to change sometime in the future. The differences between DAB and analogue broadcasting and the suitability for DXing is essentially a bandwidth issue. Plus to successfully resolve a digitally encoded signal, you must be able to resolve pretty much all of the data stream(s) whereas it is possible for humans to fill in the missing information with analogue methods. In due course I'm sure there will be suitable equipment available to the hobbyist. **- Ed.**

Dear Sir

I have recently read the review by Alan Gardener of the Video Scanner that monitors in the 2.4GHz band. I have commented on the use of this band before, July 2001. "This is the same frequency as used by the domestic microwave oven..."

I notice that many new items are being put into use without anybody taking notice of the safety problems involved. Will it take a serious health related problem to make those who promote the use of this band to take note of the possible, if not certain, problems they are going to cause many people. Who was it who allowed this band to be used anyway? Do they not know just how dangerous the radiation is from these sources? After all, it is the length of time we are exposed as well as the field strength that matters.

If mobile 'phones pose a small risk, the 2.4GHz devices are infinitely more likely to cause permanent damage over time. Do you want your eyes fried slowly, or your self to become sterile? The more intensively they are used, the greater the overall risk. I would strongly object to being anywhere near any device operating at this frequency! **Read** the safety notice in any microwave manual....concerning leakage. **All** use of this frequency should be banned, other than the correct use to heat food in a closed metal cabinet!

Ian Johnson, West Midlands

The power densities of most 2.4GHz equipment that is becoming more common, such as WLAN hardware and video senders/cameras is very low indeed, mainly less than 50mW across 10MHz. I personally question the degrees of the use of this kind of equipment. I have no worries about using these devices, in fact, I use both regularly. **- Ed.**

Dear Sir

I write regarding the so-called Luxembourg Effect featured in the May edition of *SWM* under the heading of 'Ionospheric Modification'. In the 1960s, students of the late Andrew Bogie, Principal of Radiocommunications at Leith Nautical College, were told that this effect was unnoticed until the introduction of the single-conversion, low i.f. supersonic heterodyne receiver. The cheaper modern receiver still suffers from cross-modulation and image interference. Armed with its i.f. and local oscillator frequencies, a few simple calculations will indicate the real location of this phenomenon. Keep up the good work at *SWM*.

Rab Thomson
Scotland

Dear Sir

Having been an avid reader of *SWM* for about 18 months now (since I bought my Yupiteru MVT-7100), I have picked up quite a lot of knowledge, although I see myself as still being a beginner.

Although your magazine is great, I feel there is something missing. There are possibly many readers, like me, who only have hand-held receivers and would like to know how to get the best out of them and what we could do with them, e.g. what antennas to use, what we need to do as not to overpower the circuits and using things such as POCSAG or ACARS decoders.

Is there anything set out for future issues of *SWM* to look at things like this, as I for one would find it invaluable. Don't worry, I won't be cancelling my subscription if you are not!

Jason Bowler
Leicestershire

Jason, what you ask is in hand. **- Ed.**

Communiqué

News and Products

Icom Promotion

Icom (UK) Ltd. have just appointed a new Marketing Manager. The position goes to **Ian Lockyer** who has been promoted within the company and is tasked with promoting the company's wide portfolio of communications technology products. Ian has worked for Icom for three and a half years. Well done Ian!

Ice Challenge

Over a year ago, the I-Track vehicle management system was launched as an effective GPS/radio communication solution allowing any organisation to manage its vehicle fleet efficiently and effectively. However, no-one at Icom realised that, nine months later, the system would be given its toughest test. Steve Brooks and Graham Stratford formed the British Ice Challenge Expedition to drive 56 miles over land from America to Russia. Using one of the most futuristic craft, Snowbird 6, they covered 24 miles only to be prevented from completing their mission by political bureaucracy. In the end they had to content themselves with 'putting their toe' over the Russian border.

The story started for Icom just one month before the expedition was about to leave. Steve Mulka, Engineering Manager of Phoenix Data Radio approached Icom's Marketing Manager Ian Lockyer about the possibility of supplying communication equipment that would stand up to freezing conditions and operate effectively and continuously for the duration of the expedition. GPS tracking would also be required, as safety for such a dangerous expedition was a vital factor. In addition, accurate tracking of Snowbird 6 by I-Track's GPS unit would be vital because of the potential political problems the expedition could encounter. I-Track seemed the perfect answer because it incorporates GPS tracking, text and status messages all in one easy to use package.

The expedition set off from across the frozen Bering Strait from Cape Prince of Wales in Alaska back on 5th April 2002. Project Manager and co-pilot Graham Stratford had originally planned to complete the entire route from Nome, Alaska to Provodanya in about eight days. However, after only 22 miles, at the international dateline, Russian authorities refused permission for the team to go any further. They threatened to arrest the pair and take them off in Russian M18 army helicopters. The expedition looked to be in jeopardy until the explorers realised that they could still reach the Russian land mass of Big Diomedes and prove it is possible to drive from America to Russia.

April 7th 2002 was the day that the ice challenger expedition came to a triumphant end as Snowbird crossed the international dateline and drove into the record books as well as into forbidden territory. Snowbird 6 had become the first land based vehicle to cross the treacherous 24 miles of floating ice and open water that make up the Bering Strait from Wales, Alaska to the Russian land mass of the Big Diomedes.

Equipment used by the expedition was based on the I-Track Vehicle Management System. An I-Track IC-F1610 v.h.f. mobile transceiver was mounted in Snowbird 6 and another at base control. A v.h.f. hand-held was used on a safety helicopter. A repeater station powered by a petrol generator set 1930ft up a mountain allowed wider area communications coverage.

Graham Stratford commented "the entire crossing took 50 hours and for that time the Icom equipment gave us crystal clear, continuous communication. Icom and Phoenix Data were given only two and a half weeks to set up the communications and they achieved this with outstanding results".

Icom (UK) Ltd. can be reached at **Sea Street, Herne Bay, Kent CT6 8LD, Tel: (01227) 741741, FAX: (01227) 741742** or visit **www.icomuk.co.uk**

AOR Additions

AOR have several new models for release. The new models were recently displayed at the Dayton USA Hamvention during May. First up is the AR8600 wide band receiver, which has been extensively enhanced and is now known as the AR8600 Mark2. Already recognised as a versatile receiver as it can be powered from 12V d.c. or from an optional internal battery pack, the r.f. performance has been further boosted, especially on the short wave bands.

The upper frequency range has been extended to 3.0GHz with an enhancement to short wave performance by the addition of further bandpass filters and revision to i.f. filters. Mini-Circuits RMS1/RMS2 mixers have been employed with active SPM antenna switching devices (not diode-switching) abundantly employed throughout the signal path.

The AR8600 Mark2 provides remarkable short wave performance, making other similar wide band competitors mediocre by comparison. When the AR8600 Mark2 arrived in the UK, short wave listeners were amazed at how the AR8600 Mark2 sounds so much like a

dedicated short wave receiver with pleasant audio on s.s.b. and good c.w. tone with Radio Japan rolling in on a simple telescopic whip, much less like the usual expectations of a scanning receiver! Other enhancements include a lamp dimmer and squelch operated lamp.

Also displayed at Dayton was the AR-ONE receiver providing continuous coverage from 10kHz to 3.3GHz in 1Hz steps. The r.f. performance is exceptional with an IP^3 better than 0dBm over the v.h.f./u.h.f. bands all the way to 2.3GHz, yet retaining good sensitivity and wide selection of filter bandwidths. The surprise is the compact size, only around 20% larger than the AR8600 with an alternative version of AR-ONE providing a remote front panel. First stock is not expected in the UK for several months, full details will be released soon. In the meantime, start saving as the AR-ONE is aimed toward the commercial and government operator with the price likely to be over £3000

A new 'software defined radio' (SDR) ARD5000 is being developed by AOR Japan and an early version was displayed at Dayton. Connection is to the 10.7MHz i.f. output of the AR5000 so that d.s.p. demodulation of data modes can be achieved, potentially features such as trunking can also be supported. Production is still some way off.

Other news includes DRM (see page 15). It looks like the DRM consortium will be releasing PC decoding/demodulation software before the end of 2002 for a relatively small licence fee, this will be a simplified version of the Fraunhofer software which accompanies DRM commercial sales of the AR7030. AOR UK has produced a small number of DRM modification PCBs for the AR7030, prices and details are available from the AOR DRM page **http://www.aoruk.com/drm.htm**

More information from **AOR UK Ltd., 4E East Mill, Bridgefoot, Belper, Derbyshire DE56 2UA, Tel: (01773) 880788, FAX: (01773) 880780**, E-mail: **info@aoruk.com** or visit **www.aoruk.com**

Communiqué

News and Products

Next Meeting Of RIRG

The **Reading International Radio Group** has been meeting regularly since 1975 and concentrates on the broadcast side of the hobby on medium wave, short wave and f.m. The next meeting is on **Saturday 20th July** from 1430 to 1630 in the Abbey Room, Reading Central Library, Kings Road and includes a competition to win a copy of *Who's Who in British Radio 2002* signed by editors Dawn and Paul Rusling. For more information E-mail **Mike Barraclough** at **mikewb@dircon.co.uk** or telephone **(01462) 643899.**

Summer Edition Out Now!

The Summer 2002 edition of ***Broadcasts in English*** is now available from the British DX Club. Compiled by Alan Pennington, this edition includes all currently known international broadcasts in English on short wave and medium wave for the Summer A-02 schedule period. It is in time order throughout and covers all target areas, also, transmitter sites are listed where known. A comprehensive guide to DX and Medium Programmes is also included plus full schedules for WorldSpace and World Radio Network's Euromax channel.

Copies are available from the UK at £2, five IRCs or four US dollars. Any cheques/postal orders should be made payable to the British DX Club - payments in dollars or Euros are only accepted in cash. Please write to: **British DX Club, 126 Bargery Road, Catford, London SE6 2LR**, visit **www.bdxc.org.uk** or E-mail: **secretary@bdxc.org.uk**

Wooden You Like One?

Dubbed as the antithesis of today's ever more complex products, the Tivoli Audio Model One radio has been the source of the *SWM* Editor's entertainment listening for the past month. Designed by Henry Kloss, an American with an audio industry reputation the size of a small planet, this tabletop radio certainly has attitude. The sound quality certainly belies its heritage. Kevin says he was most impressed with the set's performance. With a physical appearance which quite obviously differs from most modern broadcast radios, this mains powered set most obviously differs due to the tuning method and the lack of digital display.

The sensation of tuning the set with a dial that is reminiscent of an HRO main control is somehow satisfying by itself. The l.e.d. tuning indicator also takes you back to 1950 'magic eye' techniques. The Model One is a strange kind of Modern retro radio that's fun to use. Those who like their radios to match the environment that they operate in, will be pleased to know that this Tivoli Audio receiver is

available in four colour schemes, Hunter Maple, Classic Walnut, Colbalt Cherry and Silver White. Our favourite is Classic Walnut.

The m.w./f.m. table-top radio features a long throw, heavy duty 75mm speaker which drives a ported enclosure to provide the exceptional audio performance. Weighing 2.3kg, the set measures 114 x 212 x 133mm (h x w x d). Although mains powered, the set also has a socket for 12V external supply. Tuning is accomplished via a 5:1 reduction tuning dial. For more information contact: **W&S PLC, 22 Main Road, Hockley, Essex SS5 4QS, Tel: (01702) 206835.**

New English Service

World Radio Network has inaugurated a new English service can be received in South America via satellite. Launched on May 27th 2002, this service sees WRN completing the global coverage for its English radio networks. WRN's South American service joins the broadcaster's other English networks to North America, Europe, Africa and the Middle East and Asia Pacific.

WRN in South America is available on the *Telstar 12* satellite at 15°W, with a Ku-band footprint that covers all of South and Central America. The network features many of the popular programmes enjoyed by thousands of WRN listeners around the world, including Newsline from Radio Netherlands, Pacific Beat from Radio Australia and Dateline from Channel Africa. Visit **www.wrn.org** for more information.

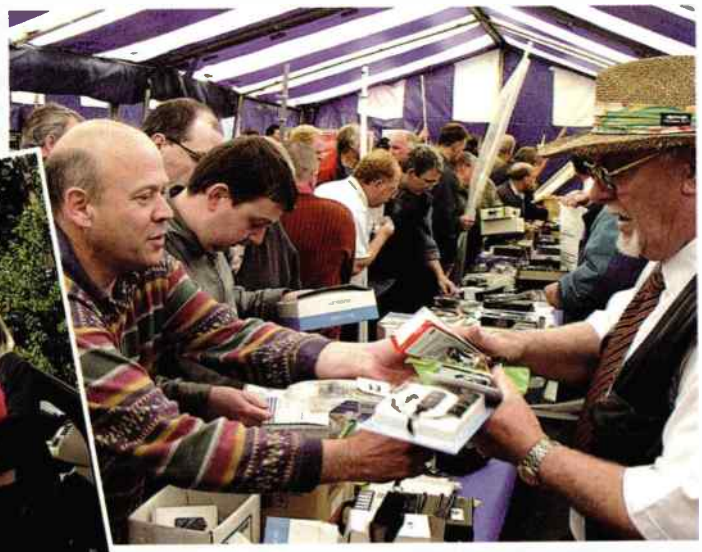
Rally & Car Boot Sale

The **Kings Lynn Amateur Radio Club** are holding their 13th Great Eastern Radio Rally and Car Boot Sale at Fosters Sports & Social Club, Ferry Road, Clenwarton, nr Kings Lynn on 18th August from 1000 till 1500. Talk-in on G6AKC on 145.550MHz. There will be catering, a licensed bar (sorry no dogs). Contact **George G6AKC** on **0771-987 4128** evenings or E-mail: **george@g6akc.freeserve.co.uk**

Best Open Day Ever!

Back on Sunday 26th May 2002, **Waters & Stanton PLC** held their 12th Annual Open Day, which was their best yet - with an attendance of over 400 visitors, supported by representatives from Icom, Yaesu and Kenwood. As usual, the carpark was covered by a marquee to accommodate the visitors, which also included Robert Snary G4OBE doing Morse assessments for the Foundation Licence.

Also attending were the Essex Repeater Group and Kent ATV Group. Out front, as usual, was the children's bouncy castle and also the Essex area St. John's Ambulance emergency vehicle and caravan, which is being sponsored by Waters & Stanton. The Essex Radio Black Thunder vehicle also called in to give live reports during the day.

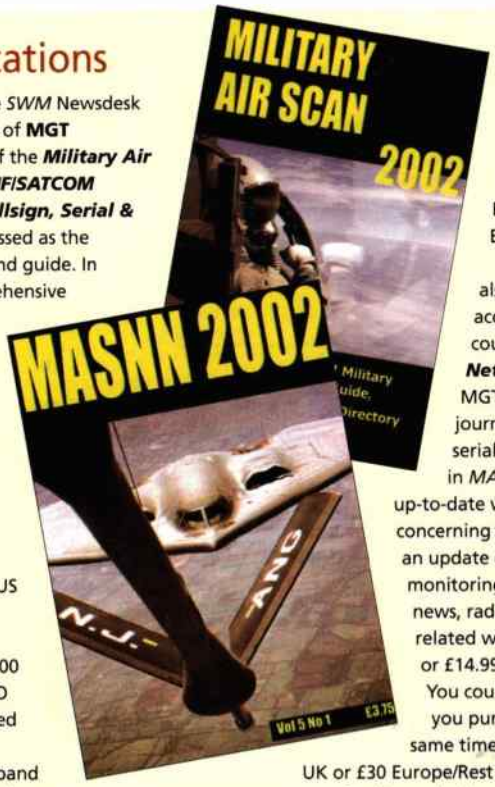


A considerable amount of food and drink was consumed by the very enthusiastic visitors to give Waters & Stanton their best sales day ever. An enjoyable day was had by one and all.

Garex Back

SWM are pleased to announce the re-emergence of **Garex Electronics**. One of the oldest-established (1963) UK Amateur radio companies, Garex is now back in private ownership and in the process of revitalisation. On offer is the traditional product range of v.h.f./u.h.f. accessories, p.m.r. equipment, spares and antennas. They will also be stocking G1MFG ATV products. Contact Garex at **PO Box 52, Exeter EX4 5FD** or visit their new web site at **www.garex.co.uk** or alternatively, you can meet the team at the various rallies in the south and west and south wales throughout the season.

2002 Publications



Recently landed on the *SWM* Newsdesk from **Mark Thirkettle** of **MGT Publishing** is a copy of the ***Military Air Scan 2002 HF/VHF/UHF/SATCOM Frequency Guide, Callsign, Serial & Selcall Directory*** - classed as the ultimate military airband guide. In addition to the comprehensive frequency coverage which encompasses airfield ground services right the way through the radio spectrum to satellites (now totalling in excess of 6000 frequencies), also detailed are Military Aviation Callsigns, UK/US Serials/Markings and Military/Government Selcall codes, over 13,000 four letter airfield ICAO codes, plus milair related aviation websites!

This is the first airband guide to include all of these under one cover and will appeal, not only to listeners, but aviation spotters as well. The extensive codeword section has been updated, there are detailed maps and a wealth of information to assist newcomers. The book has increased dramatically in size and now runs to 348 pages and for the first time is now wire spiral bound. Priced at £15.99 UK, £17.99 Europe/Rest of World.

The above directory is also the only UK guide with access to a regular update, courtesy of ***Military Air Scan Network News*** *(MASNN)* - MGT Publishing's quarterly journal. All frequency, callsign, serial and selcall updates appear in *MASNN*, so monitors are always up-to-date with the latest news concerning the hobby. *MASNN* is not just an update either, all aspects of military monitoring are covered including logs, news, radio reviews and aviation/radio related websites. Priced at £12.99 UK or £14.99 Europe/Rest of the World. You could make a saving of £2.98 if you purchase both guides at the same time, making the total price £26 UK or £30 Europe/Rest of World.

Sterling only cheques or International Money Coupons payable to **MGT Publishing, PO Box 564, Norwich NR7 8DD**. For those with Internet access, please visit **www.militaryairscan.com** for more details and online credit card ordering.

rallies

June 29: The Reddish Rally will take place at the usual venue, which is St. Mary's Parish Hall, South Reddish, Stockport. The hall is situated in St. Mary's Drive, junction of Broadstone Hall Road South/Reddish Road. Doors open at 1100 and there will be refreshments and a talk-in on S22. Admission is £1. Further details from **John G4ILA** on **0161-477 6702**.

July 7: The York Radio Club are holding their rally at the new stand in York Racecourse at 1030. Plenty of free parking. Details from **yorkrally@btopenworld.com** or **www.john.g4fuo@btinternet.co.uk/rally.htm**

July 13: The Cornish Radio Amateur Club are holding their Radio & Computer Rally at Penair School, Truro. There will be trade stands, a Bring & Buy, Morse tests, free car park, catering and a talk-in. Doors open from 1030. More information from Rally Co-ordinator **Ken G0FIC** at **ken@jtarry.freeserve.co.uk** or from **John G4LJY** at **g4ljy@hotmail.com**

July 28: The Leeds & DARS are holding their twice yearly traditional outdoor rally and car boot sale at the Yarnbury Rugby Club, Brownberrie Lane, Horsforth, Leeds. More information from **J.A. Mortimer M0JAM** on **(01943) 874650**.

July 28: Rugby Amateur Transmitting Society Annual Rally will take place at the B.P Truckstop on the A5 miles north from M1 junction 18. More information from **Peter Wells** on **(01455) 552449** or E-mail: **rally@rugby-ats.co.uk** on **(02870) 351335** or **Jim GI4ORI** on **(02870) 352393**.

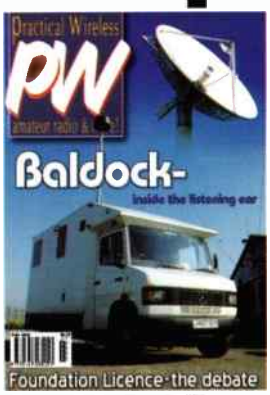
Sportcat Winner

We've now drawn the winner of the UBC280XLT Sportcat competition, which appeared in the April 2002 *SWM*. Congratulations to regular *SWM* reader **David J. Morris**, of Lytchett Matravers, Dorset, who is pictured here receiving his prize from Editor Kevin Nice G7TZC/M3SWM. This prize was kindly donated by **Nevada** of **Unit 1, Fitzherbert Spur, Farlington, Portsmouth.**

M3SWM Goes To Editor

After a half an hour in the convivial company of some of the members of the Christchurch Amateur Radio Society, Kevin Nice (*SWM* Editor) had successfully completed the Morse Appreciation session with examiner John Goodall G0SKR. That was a few Saturday mornings ago, now Kevin is the proud holder of M3SWM. He reports that he is busy organising a suitable antenna to enable operation of h.f. It's quite likely that as you read this he will already be on-air. Kevin is looking forward to working many stations on h.f. and says anyone who has contemplated taking the Morse Appreciation, really shouldn't delay.

Practical Wireless



Look out for the August issue of *PW* - on sale 11th July 2002 - where you will find a review of the Yaesu FT-736 along with Ken Hunt M0BPC's account of the International Lighthouse Weekend and more readers' handy hints and useful tips from Tex Swann G1TEX/M3NGS plus much more. Place your order today!

■ Martin Peters, c/o *SWM* EDITORIAL OFFICES, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW.
■ E-MAIL: martin.peters@pwpublishing.ltd.uk

Bandscan Europe

The top story, sending shock waves throughout the European broadcasting industry, has to be the collapse of ITV Digital and its Spanish equivalent, Quiero TV. I'll spare you all the grizzly details as I'm sure you've read them elsewhere, but at the time of writing, several organisations have expressed an interest in tendering for the digital terrestrial platform after ITV Digital returned its licences to the Independent Television Commission following the administrators' failure to sell the stricken broadcaster as a going concern.

Whoever takes over, it's likely that the channels on offer will include the main analogue broadcasts and a clutch of free-to-air, digital only offerings. Interested parties (including one joint venture involving Carlton - again?) had until the end of May to submit a formal bid with the winner being announced on June 12th.

Spain's two-year experiment with digital terrestrial television has also flopped and its operator, Quiero TV, is up for sale. Quiero's shareholders, including our very own Carlton Television, injected around £180 million to keep the company afloat until a buyer is found. Quiero TV had signed up only 130,000 subscribers since its launch in 2000 - a mere fraction of the 2.7 million who have signed up to satellite.

Despite these spectacular crashes, the European Broadcasting Union (EBU), in a recently published report, predicts a bright future for digital terrestrial TV. It claims that the failures of ITV Digital and Quiero point to weaknesses in the business models adopted by both, rather than lack of faith in the technology. It reports that almost all European countries will have launched Digital Terrestrial Television by 2005.

As for the hardware, prices are reaching mass adoption level thereby becoming more attractive to the consumer. In addition, a number of countries plan to launch their DTT services soon. Finland, France, Sweden, Holland, Portugal, Norway and Denmark all hope to have their DTT infrastructure in place either this year or next.

Access Radio

Back home, and the Radio Authority has breathed life into its new baby - access radio - with the granting of 15 licences to community-based stations around the UK. Eleven of these not-for-profit, neighbourhood broadcasters have taken to the air over the last couple of months with the remainder expected on air soon.

Most services are being licensed for one year as part of an experiment to explore how this new tier of radio might benefit social and educational opportunities of stations' listeners. If you reside in the UK, you're likely to be within range of one of these stations so why not take a listen and see for yourself, if these broadcasters offer anything new.

I know that one of these stations is offering access to the airwaves by allowing listeners to send an SMS text message on their mobile 'phone. The message is then read out, on-air, by a computer with the ability to convert text to speech. I hope there is a human (or some clever filtering) somewhere in the chain or I can see this particular station retaining its licence no longer than a day.

Here in Reading, New City FM fought off the competition to walk away with the small-scale licence for the town. Tests should start soon on 106.9MHz, but the operators may have to think of a alternative name as Reading was, yet again, turned down for city status in March. Staying in the town, Reading's Technical College now runs a long term RSL with April's launch of Blast 1386 on, you've guessed it, 1386kHz.

Broadcasts In English

The Summer 2002 edition of *Broadcasts in English* is now available from the British DX Club. The fine booklet includes details of all known current international broadcasts in English on short wave and medium wave for the Summer 2002 period. It is presented in time order throughout and includes transmitter sites, where known.

A comprehensive guide to DX and Media Programmes is also provided along with complete schedules for WorldSpace and World Radio Network's Euromax channel. Get yours by sending two pounds to the **British DX Club, 126 Bargery Road, Catford, London SE6 2LR**. More details at the BDXC website **www.bdxc.org.uk**

On The Move

Over to Prague, where arrangements are in hand to relocate the headquarters of US-backed Radio Free Europe and Radio Liberty from the centre of the city. RFE/RL moved to Prague from Munich in 1995 and is currently located in the former Federal Assembly building. Since September 11th the organisation is considered a terrorist target and the Czech authorities have been keen to move them out of town.

RFE staffers have been reluctant to make the move, unable or unwilling to make the daily trip out of town, but the station has been persuaded by the Czech authorities that relocate to a less densely populated part of town would be in the interests of the community. An invitation from the mayor of Budapest, to move there, has been turned down.

Scandinavian Weekend Radio, the region's first and only private short wave station, continues with its once a month broadcasts. Depending on the prevailing propagation, SWR can be found on 5.980, 5.990, 6.170, 11.690 or 11.720MHz. Transmissions are generally 24 hours in length and go out on the first Saturday of each month from their studio and transmitter site in Virrat, western Finland.

The next few programmes are scheduled for July 6th, August 3rd and September 7th. With a maximum power of 100W from a home-made transmitter, the station engineers, all enthusiasts, welcome reception reports, either via their website at **www.swradio.net** or to their mailing address: **SWR/Reports, P.O Box 35, FIN-40321 JKL, Finland**. Be sure to include two IRCs (or $2 US or two euros) if you require a printed QSL card in return.

Labour Of Love

Another labour of love, this time unlicensed, is Radio Naranja, a new Spanish pirate, that planned to launch with an inaugarul transmission on May 26th. The station hopes to broadcast every Sunday at 0800UTC for 30 minutes only on 25.625MHz with a mix of news, music and brief items of interest to DXers. Reception reports will be verified with QSL cards and can be E-mailed to **radionaranja@hotmail.com**

One other snippet. The World Radio Network (WRN) has decided to sell airtime to commercial advertisers. With a weekly reach of around 90,000 listeners via the Sky Digital platform, the ABC1 audience are seen as an attractive market for a number of advertisers.

And finally, a Thai DJ is threatening to sue the country's prime minister because his weekly speeches disrupt her programmes. All radio stations in Thailand have to air the PM's lectures since he came to power last year. Advertisers are upset and the DJ says she'll start legal proceedings against Mr Thaksin if necessary, as four of her five sponsors have already threatened to withdraw financial support from her show. Nothing whatever to do with Europe, but I thought you might enjoy the story.

Have a great summer.

UK Access Radio Stations.

Service Area	Station Name	MHz
Stoke on Trent	Cross Rhythms Radio	101.8
Havant	Angel Community Radio	101.1
Bradford	Bradford Community Broadcasting	96.7
Belfast	Northern Visions Radio	100.6
Leicester	Takeover Radio	103.2
Nottingham	Radio Fiza	97.1
Pontypridd	GTFM	106.9
Glasgow	Awaz FM	107.2
Southbank, London	Resonance FM	104.4
G. Manchester	Wythenshawe FM	104.4
Southall	Desi Radio	1.602

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

LM&S

The peak period of the holiday season has now arrived and many listeners will be leaving home for their chosen holiday location, which may be in the UK or overseas. Exploring a new location and the surrounding area can be a most enjoyable experience, especially if the weather is good. Much pleasure can also be derived from returning to a favourite location and renewing holiday friendships.

Searching the broadcast bands may also prove to be rewarding, so when packing your bags be sure to include a small battery-powered portable radio, some spare batteries, which may be expensive or hard to come by in some places; also a pair of earphones so that you can listen without upsetting other people.

If you are going abroad do bear in mind that the international broadcasters refer to the times of their short wave transmissions in Universal Time Co-ordinated (UTC), which is applicable anywhere in the world. To avoid confusion with local times it is a good idea, before leaving the UK, to set a watch or clock to display UTC, which is equal to Greenwich Mean Time (GMT) but one hour behind British Summer Time (BST). The times quoted in 'LM&S' are also in UTC, so you may find it worthwhile to take a copy of the latest *SWM* with you!

When you return home could you please send the details of your reception to me for inclusion in 'LM&S', so that other listeners can share your experiences.

Long Wave Reports

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

A two week holiday in the Lleyn Peninsula, Gwynedd N.Wales was enjoyed by **Michael Wasley** between the end of March and early April. He stayed in a fairly isolated house near Morfa Nefyn and says "It was interesting to note how little noise there was on the radio there". Between 2300 & 2330UTC on March 26 he searched this band with his Grundig Yacht Boy 400 portable and logged eleven stations, including the Rikisutvarpid (RUV) outlets at Gufuskalar, W.Iceland (300kW) on **189kHz** and Eidar, E.Iceland (100kW) on **207kHz**, which rated SINPO 34343 and 21322. The most potent signals came from Droitwich (BBC R-4) on **198** and Clarkestown, Eire (Team Talk) on **252**, both of which rated 55555. A close runner up was Saarlouis, Germany (2000kW) on **183**, which he logged as 45555.

Late at night on April 10th **Simon Hockenhull** (E.Bristol) found the conditions to be above average. During his search of the band he picked up a broadcast from RUV in Reykjavik, Iceland via Gufuskalar on **189kHz**; also via Eidar on **207kHz**. The transmissions rated 25442 and 23432 respectively at 2348UTC. During the early evening of the 13th he heard Sasnovy, Belarus on **279kHz**.

The 500kW outlet at Sasnovy, Belarus on **279** was heard on the 24th by **Sheila Hughes** in Morden. Ballad type songs, sung by a man and a woman, were announced by a young lady. Sheila rated the transmission 44333 at 2110. A broadcast under DLF via Donebach on **153kHz** was heard by Sheila on the 28th - it peaked 22222 at 2210UTC and came from Bod, Romania.

Enhanced conditions were observed during the evening of the 30th by **Fred Pallant** (Storrington) and seventeen stations were logged between 2010 & 2023UTC - see chart. Amongst the broadcasts heard was a commentary in Italian on a football match, which came from Radiotelevisione Italiana (RAI) via their 10kW outlet at Caltanissetta on **189kHz**. The carrier was just strong enough to lift the S meter needle of his Trio R-2000 receiver.

Listeners:-

(A) Simon Hockenhull, E.Bristol.
(B) Sheila Hughes, Morden.
(C) Eddie McKeown, Newry.
(D) George Millmore, Wootton, IoW.
(E) Fred Pallant, Storrington.
(F) Ernie Strong, Ramsey, Cambs.
(G) Michael Wasley, while at Morfa Nefyn, Gwynedd.
(H) Fred Wilmshurst, Northampton.

Long Wave Chart

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

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

Medium Wave Reports

The sky waves from some of the many m.w. stations in the Middle East, N.Africa, Europe and Scandinavia were received after dark by listeners in the UK. Quite extensive logs were compiled by **Simon Hockenhull**; **George Millmore** (Wootton, IoW); **Ernie Strong** (Ramsey, Cambs); also **Fred Wilmshurst** (Northampton) - see chart. However, the increasing hours of daylight discouraged some listeners from late night DXing.

Whilst in Glasgow **Clare Pinder** used her Sony 2001 portable to listen to a 'question and answers' programme broadcast by China Radio via Luxembourg on 1440 (Eng to Eur 2000-2100); also to R.Sweden on 1179 (Eng to Eur 2130-2200), with 'an explanation of the space programme'. Clare logged the transmissions as SINPO 55555 and 55444 respectively.

A broadcast from the Faeroe Is on **531kHz** attracted the attention of Michael Wasley while staying in Morfa Nefyn. He says "After Beromunster went off the air I spent some time listening to the Faeroes output, which was some sort of 'phone-in with music (requests I think). Probably best described as different rather than riveting, but with the signal peaking 44454 it seemed a shame not to stay with them until they went off the air!"

During one afternoon Michael drove to Uwchmynydd, which is near the end of the Lleyn peninsula with a wide expanse of sea. He used the car radio to search the band and compiled an interesting list which included a number of distant local radio stations - see both m.w. charts.

The search for distant local radio stations was also enjoyed by several other listeners - see chart.

Short Wave Reports

The only known broadcaster now taking advantage of the propagation conditions in the **25MHz (11m)** band is Radio France International (RFI) on **25.820** (Fr, Eng to E/C.Africa 0830-1300). Because their transmissions are beamed away from the UK the reception of them here is dependent upon back scatter and other unreliable modes. The SINPO ratings quoted in the latest reports from listeners in the UK were 35422 at 0900 in E.Bristol; 23222 at 0900 by **Vic Prior** in Colyton; 45434 at 0950 by **Bernard Curtis** in Stalbridge; 22222 at 0955 by **Thomas Williams** in Truro; 35132 at 1030 by **Eddie McKeown** in Newry; 33233 at 1110 by **Robert Hughes** in Liverpool; 44444 at 1200 in Morden; 35433 at 1255 in Northampton.

In contrast, quite a few broadcasters are using the **21MHz (13m)** band to reach listeners in selected target areas. When the propagation conditions are favourable their transmissions may also reach the UK.

During the early morning R.Australia's broadcast to Pacific areas via Shepparton on **21.725** (Eng 0200-0900) can usually be received quite well in the UK. It was rated 34333 at 0805 in Morden. From 0900 they broadcast to Asia via Shepparton on **21.820** (Eng 0900-1400), rated 34232 at 1020 in Newry.

Also mentioned in the reports from listeners in the UK were BSKSA Riyadh, Saudi Arabia **21.505** (Ar to N.Africa 0600-1500), rated 44434 at 0730 in Colyton; R.Pakistan, Islamabad **21.465** (Ur, Eng to Eur 0700?-1100) 44433 at 0733 by **Rhoderick Illman** in Oxted; Swiss R.Int via Sottens **21.750** (Fr, Ger, It, Eng to Near East, Africa 0600-0800) 43333 at 0745 by **Stan Evans** in Herstmonceux; R.France Int via Allouis **21.620** (Fr to Africa 0900-1300) 32233 at 1040 in Liverpool; BSKSA Riyadh, Saudi Arabia **21.705** (Ar to W.Eur 0600-1500) 44444 at 1050 by **Peter Pollard** in Rugby; R.Austria Int via Julich? **21.780** (Eng to ? 1130-1200?) 45544 at 1133 in Northampton; R.Sweden, Stockholm **21.530** (Eng to Asia, Far East 1230-1300) 44444 at 1247 by **Vera Brindley** in Woodhall Spa; HCJB Quito, Ecuador **21.455** (Eng [u.s.b.]) 44444 at 1405 by **David Hall** in Morpeth; Channel Africa via Meyerton, S.Africa **21.725** (Eng to W.Africa 1300-1455, Sat/Sun) 44333 at 1410 in Truro; R.Nederlands via Bonaire, Ned.Antilles **21.590** (Eng to C/W.Africa 1830-2025) 35433 at 1835 in E.Bristol; BBC via Ascension Is **21.470** (Eng to S.Africa 1300-1900) 44434 at 1850 in Stalbridge.

Noted in the **18MHz (15m)** band were R.Sweden **18.960** (Eng to N.America 1130-1200), rated 44433 at 1130 in Morden; R.Denmark via Sveio, Norway **18.950** (Da to N.America 1330-1355) 54554 at 1330 by **Bill Griffith** in W.London; R.Sweden **18.960** (Eng to N.America 1230-1300, 1330-1400, 1430-1500) 44222 at 1333 in Newry & 44433 at 1335 in Herstmonceux; Family R, WYFR via Okeechobee FL, USA **18.980** (Eng to Eur, Africa 1600-2200) 35343 at 2035 in Northampton; Christian Science Herald via WSHB Cypress Creek **18.910** (Fr, Eng to E/S.Africa 1600-2200?) 33323 at 1925 in Stalbridge & 22222 at 2152 in Truro.

Some of the transmissions in the **17MHz (16m)** band travel long distances and they may reach the UK. Mentioned in the reports were R.New Zealand Int on **17.675** (Eng to Pacific areas 2050-0500), rated 25422 at 0030 in E.Bristol; R.Australia via Shepparton **17.750** (Eng to Asia 0000-0500, 0600-1100) 35444 at 0745 in Northampton; BBC via Singapore **17.760** (Eng to SE.Asia 0500?-1030?) 24333 at 0844 in Oxted.

Also received in the UK were Israel R, Jerusalem **17.545** (Eng [News] to Eur, N.America 1030-?), rated 55444 at 1030 in Glasgow; R.Finland via Pori **17.670** (Eng to N.America 1230-1300, Mon-Sat) 44444 at 1252 in Woodhall Spa; R.Romania Int **17.805** (Fr to Eur 1500-1600) 44233 at 1550 in Rugby; BBC via Ascension Is **17.830** (Eng to Africa 0700-2100) 23222 at 1720 in Colyton; Channel Africa via Meyerton **17.870** (Eng to W.Africa 1800-1830) 34333 at 1800 in Newry: Swiss R.Int (SRI) via Julich, Germany **17.580** (It, Ar, Eng, Ger, Fr to Nr East, Africa 1830-2130) 32232 at 1840 in Liverpool; BBC via Ascension Is **17.885** (Hausa to W.Africa 1930-2000) 34343 at 1946 in Storrington; HCJB Quito, Ecuador **17.660** (Eng to Eur 2000-2200) 34434 at 2000 by **Gerald Guest** in Dudley & 44433 at 2120 in Herstmonceux; R.Canada Int (RCI) via Sackville **17.870** (Eng to Eur 2000-?) 44434 at 2010 in Stalbridge; Family R. (WYFR) via Okeechobee, USA **17.725** (Eng to S.America 2000-2200) 44333 at 2110 in Morden; Voz Cristiana, Chile **17.680** (Sp to S.America 1200?-0000?) 33333 at 2130 in Truro; VOA via Greenville **17.895** (Eng to Africa 2000-2200) 34434 at 2156 in Morfa Nefyn, Gwynedd; World Harvest R. (WHRI) via Maine, USA **17.650** (Eng to Eur, M.East, Africa 1600-2300?) 44444 at 2245 in Morpeth.

Despite the favourable conditions at higher frequencies the **15MHz (19m)** band is still regarded as the hub of activity by some listeners. Good reception over long distances has been noted in the UK. R.New Zealand's early morning broadcast to Pacific areas on **15.340** (Eng 0500-0800) was rated 44343 at 0510 in Morpeth. Much later, their transmission on **15.160** (Eng to Pacific areas 1850-2050) was 32222 at 1850 in Truro.

R.Australia has been received in the UK on two frequencies from Shepparton: **15.415** (Eng to E/SE.Asia 0600-0900), rated 32222 at 0740 in Liverpool; **15.240** (Eng to Pacific, E.Asia 0000-1000), rated 44444 at 0810 in Morden.

Other broadcasters using this band include R.Finland via Pori **15.135** (Eng to Eur, N.America 0630-0700 Mon-Sat), noted as 55555 at 0635 in Herstmonceux; KTWR Guam, Pacific **15.330** (Eng to Asia 0815-0930) 24433 at 0827 in Oxted; WWCR Nashville, USA **15.825** (Eng to N.America, Eur 1100-2200) 34343 at 1355 in Stalbridge; Israel R, Jerusalem **15.615** (Eng to Eur, N.America 1600-1630) 44444 at 1620 in Woodhall Spa; Voice of Greece, Athens **15.630** (Gr to Eur 1700-?) 44444 at 1720 in Colyton; RCI via Sackville **15.325** (Eng to Eur, M.East, Africa 2000-2200) 34433 at 2000 in Dudley & 55444 at 2115 in Glasgow; VOA via ? **15.410** (Eng [News] to Africa 1800-?) 34333 at 2000 in Storrington; China R.Int via ? **15.110** (Eng to Eur 2000-2100) 33333 at 2015 in Truro; BBC via Ascension Is **15.400** (Eng to Africa) 45422 at 2049 in E.Bristol; Voice of Russia **15.455** (Eng) 45544 at 2040 in Northampton; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 55354 at 2200 in Newry: R.Romania Int **15.105** (Eng to N.America? 2300-0000) 34333 at 2334 in Morfa Nefyn.

Good reception from some areas has also been evident in the **13MHz (22m)** band. R.Ext,Espana (REE) **13.720** (Sp to Eur 0800?-1800) was 44444 at 0835 in Morden; R.Austria Int via Moosbrunn **13.730** (Eng to Eur, M.East 1130-1200) 44444 at 1130 in Dudley; Croatian R, Zargreb **13.830** (Cr to Eur) 35443 at 1157 in E.Bristol; AIR via Bangalore? **13.710** (Eng to Asia 1330-1500) 23222 at 1335 in Newry; UAE R.Dubai **13.675** (Eng to Eur, Africa 1330-1350) 43433 at 1345 in Herstmonceux; Vatican R, Italy **13.765** (Eng to Africa 1550-1610) 44333 at 1603 in Oxted; VOA via Morocco **13.635** (Special Eng News to M.East 1900-2000) 33333 at 1940 in Rugby; Swiss R.Int via Sottens **13.645** (It, Ar, Eng, Ger, Fr to M.East, Africa 1830-2130) 43333 at 2000 in Truro; R.Damascus, Syria **13.610** (Eng to Eur 2005-2105) 55544 at 2030 in Northampton; Voice of Vietnam, Hanoi **13.740** (Eng, Fr to Eur 2030-2130) 54444 at 2035 in Liverpool; R.Australia via Darwin **13.620** (Eng to SE.Asia 2200*-0000 [* often starts late]) 55444 at 2200 in Glasgow; RCI via Sackville?

Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
531	Ain Beida	Algeria	600/300	A*,F*
531	Torshavn	Faeroe Is.	100	G*
531	Berg	Germany	20	C*
531	RNE5 via ?	Spain	?	C,F*
531	Beromunster	Switzerland	500	A,C*,F,G*
540	Wavre	Belgium	150/50	A,C,F,I*
540	Sidi Bennour	Morocco	600	F*
549	Les Trembles	Algeria	600	A*,C*,F*
549	Sasnovy	Belarus	1000	F*
549	Nordkirchen (DLF)	Germany	100	F
549	Thurnau (DLF)	Germany	200	C*,I*
558	Espoo	Finland	50	C*,F*
558	RNE5 via ?	Spain	?	C*,F*,G*
558	Cima di Dentro	Switzerland	300	B*
567	Tullamore(RTE1)	Eire	500	A,C,F,G*,H,I
567	RNE5 via ?	Spain	?	C*
576	Muhlacker(SDR)	Germany	500	A*,C*,F,I*
576	Barcelona(RNE5)	Spain	50	A*,C*,F*
585	Drf Wien	Austria	600	C*
585	Paris(FIP)	France	8	A,C,F
585	Madrid(RNE1)	Spain	200	A*,C*,F*,G*,I*
585	Dumfries(BBCScot)	UK	2	H
594	Frankfurt(HR)	Germany	1000/400	C*,F,I*
594	Dujda-1	Morocco	100	C*,F*
594	Muge	Portugal	100	F*
603	Lyon	France	300	C,F*
603	Sevilla(RNE5)	Spain	50	C*,F*,G*
603	Sousse	Tunisia	10	C*
603	Newcastle(BBC)	UK	2	H
612	Athlone(RTE2)	Eire	100	A,C,F,G*,H,I*
612	RNE1 via ?	Spain	10	C*,F*
621	Wavre	Belgium	80	C,F,I*
621	Batra	Egypt	2000	F*
621	RNE1 via ?	Spain	10	F*
621	Barcelona(DCR)	Spain	50	C*
630	Vigra	Norway	100	F*,G*
630	Tunis-Djedeida	Tunisia	600	C*
639	Praha(Liblice)	Czech	1500	A,G*,I*
639	RNE1 via ?	Spain	?	A,G*,I*
648	RNE1 via ?	Spain	10	F*,G*
648	Drfordness(BBC)	UK	500	A,B*,C,F,I
657	Firenze	Italy	100	F*
657	Madrid(RNE5)	Spain	20	C*,F*,I*
657	Wrexham(BBCWales)	UK	2	A,F,H,I
666	MesskirchRohrd(SWF)	Germany	150	F*,G*,I*
666	Lisboa	Portugal	135	C*,F*
675	R10 FM	Holland	120	A,C,F,G*,H,I
675	Rost	Norway	20	G*
684	Sevilla(RNE1)	Spain	500	A,C*,F*,G*
693	Droitwich(BBC)	UK	150	C,F,G*,H,I
702	TWR via Monte Carlo	Monaco	300	C*,F*
702	Presov	Slovakia.	200	F*
711	Rennes 1	France	300	A,C,F*,G*,H,I
711	Murcia(CDPE)	Spain	5	F*
720	Langenberg	Germany	200	F*
720	Lisnagarvey(BBC4)	N.Ireland	10	A,G*
720	Crystal Palace BBC4	UK	0.75	A,C,F,H,I
729	Cork(RTE1)	Eire	10	C,F*,H
729	RNE1 via ?	Spain	?	B,C*,F*,I*
738	Paris	France	4	C,F*
738	Barcelona(RNE1)	Spain	500	A,C*,I*
747	Flevo(NDS-1)	Holland	400	A,C,F,G*,H,I*
756	Braunschweig(DLF)	Germany	800/200	F*,I*
756	Bilbao(EI)	Spain	5	C*,F*
756	Redruth(BBC)	UK	2	C
765	Sottens	Switzerland	500	A,B*,C*,G*
774	Enniskillen(BBC)	N.Ireland	1	H
774	RNE1 via ?	Spain	?	B,C*,F*,G*,I*
783	Leipzig(MDR)	Germany	100	A,G*
783	Miramar(R.Porto)	Portugal	100	C*
783	Dammam	Saudi Arabia	100	C*
792	Limoges	France	300	A,C,G*
792	Sevilla(SER)	Spain	20	C*
801	Munchen-Ismaning	Germany	300	C*
801	RNE1 via ?	Spain	?	C*,F*
810	Volgograd	Russia	150	C*
810	Madrid(SER)	Spain	20	F*
810	Westerglen(BBCScot)	UK	100	A,F,G*,H,I*
819	Batra	Egypt	450	A*,C*
819	S.Sebastian(EI)	Spain	5	A,F*
828	Heinenoord(CI Rock)	Holland	20	A
837	Nancy	France	200	C
837	CDPE via ?	Spain	?	C*
855	RNE1 via ?	Spain	?	C*,F*,G*,I*
864	Santah	Egypt	500	C*
864	Paris	France	300	C,F,G*,I*
873	Frankfurt(AFN)	Germany	150	C*,G*
873	Zaragoza(SER)	Spain	20	C*
882	CDPE via ?	Spain	?	B*,C*
882	Washford(BBCWales)	UK	100	B*,C,F,G*,H,I
891	Algiers	Algeria	600/300	A*,C*,F
891	Hulsberg	Netherlands	20	C*,F
900	Brno(CRo2)	Czech Rep	25	C*
900	Milan	Italy	600	A*
900	CDPE via ?	Spain	?	F
909	B'mans Pk(BBC5)	UK	140	C,F,G*,H,I
918	Domzale	Slovenia	600/100	I*
918	Madrid(R.Int)	Spain	20	F
927	Wolvertem	Belgium	300	C,F,G*,H,I
936	Bremen	Germany	100	F
936	Venezia	Italy	20	C*
936	RNE5 via ?	Spain	?	F*
945	Toulouse	France	300	C*,F
954	Brno (CRo2)	Czech Rep.	200	C*,F*
954	Madrid(CI)	Spain	20	C*,F,I*
963	Pori	Finland	600	A,C*,F*
972	Hamburg(NDR)	Germany	100	C*,F*,G*
981	Alger	Algeria	600/300	C*
990	Berlin	Germany	100	C*
990	Tywyn(BBC)	UK	1	G*,H
999	Madrid(CDPE)	Spain	50	F*,I*
1008	Flevo(NDS-5)	Holland	400	C,F,I
1017	Rheinsender(SWF)	Germany	600	C*,G*,I*
1017	RNE5 via ?	Spain	?	F*
1026	SER via ?	Spain	?	C*
1035	Milan	Italy	50	F*
1044	Sebaa-Aioun	Morocco	300	A*,C*,F*
1044	S.Sebastian(SER)	Spain	10	F*
1053	Talk Sport via ?	UK	?	C,F,G*,H,I
1062	Kalundborg	Denmark	250	A,C*,F,G*,I*
1062	R.Uno via ?	Italy	?	F*
1071	Bilbao(EI)	Spain	5	F*
1071	Talk Sport via ?	UK	?	F,G*,I
1080	SER via ?	Spain	?	C*
1089	Talk Sport via ?	UK	?	C,F,G*,H,I
1098	Nitra(Jarok)	Slovakia	1500	A*,C*,I
1107	AFN via ?	Germany	10	A*
1107	Talk Sport via ?	UK	?	C,F,H,I
1125	La Louviere	Belgium	20	C*
1125	RNE5 via ?	Spain	?	C*
1125	Llandrindod Wells	UK	1	F,H
1134	Zadar(Croatian R)	Croatia	600/1200	A*,C*,I*
1134	CDPE via ?	Spain	2	C*
1143	AFN via ?	Germany	1	A*,C*
1143	CDPE via ?	Spain	2	C*
1152	RNE5 via ?	Spain	10	C*
1179	SER via ?	Spain	?	C*
1179	Solvesborg	Sweden	600	A,C*,D*,G*,I*
1188	Kuurne	Belgium	5	C,F
1188	Marcali(VDA/RFE)	Hungary	500	A*,I*
1197	Munich(VDA)	Germany	300	A,G*,I*
1197	Virgin via ?	UK	?	C,F,G*,H,I
1206	Bordeaux	France	100	A,C*,F,G*,I*
1215	Virgin via ?	UK	?	C,F,G*,H,I
1224	Lelystad	Holland	50	C*,F
1224	CDPE via ?	Spain	?	F
1233	Nitra	Slovakia	40	A
1233	Virgin via ?	UK	?	F,G*,I
1242	Marseille	France	150	A
1242	Virgin via ?	UK	?	F,G*
1260	SER via ?	Spain	?	B*,C*
1269	Neumunster(DLF)	Germany	600	C*,F*,G*,I*
1269	CDPE via ?	Spain	?	F*
1278	Dublin/Cork(RTE2)	Eire	10	A,C*,F,G*,H,I*
1287	RFE via ?	Czech Rep.	?	C*,I
1287	Lerida(SER)	Spain	10	C*,I*
1296	Valencia(CDPE)	Spain	10	C*,F*,I*
1296	Drfordness(BBC)	UK	500	F
1305	RNE5 via ?	Spain	?	C*
1314	Kvitsoy	Norway	1200	A,C*,F,G*,H,I*
1323	W'brunn (VDR)	Germany	800/150	F,G*,I
1332	Rome	Italy	300	C*,F*
1341	Lisnagarvey(BBC)	N.Ireland	100	A,F,G*,H,I*
1341	Tarrasa(SER)	Spain	2	C*,F
1359	Madrid(RNE-FS)	Spain	600	F*,I*
1368	Foxdale(Manx R)	Is of Man	20	A,C*,F*,G*,H,I*
1377	Lille	France	300	A,C,F*,G*,I*
1386	Bolshakovo	Russia	1200	A,B*,C*,I
1395	Fllake	Albania	1000	F*
1395	Lopic	Netherlands	120/40	C*,F
1404	Brest	France	20	C*,F,G*,I*
1413	RNE5 via ?	Spain	?	C*,F
1422	Heusweiler(DLF)	Germany	1200/600	C*,F,G*,I*
1440	Marnach(RTL)	Luxembourg	1200	A,C,D*,F,I*
1449	Squinzano (RAI)	Italy	50	C*
1449	Redmoss(BBC)	UK	2	A*,G*
1458	Fllake	Albania	500	C*
1467	Monte Carlo(TWR)	Monaco	1000/400	C*,F,G*,I*
1476	Wien-Bisamberg	Austria	600	A,C*,I*
1485	SER via ?	Spain	?	C*,F
1494	Clermont-Ferrand	France	20	A,C*,F,I*
1503	RNE5 via ?	Spain	?	F*
1512	Wolvertem	Belgium	300	A,C,F,G*,I
1521	Kosice(Cizatice)	Slovakia	600	C*,F*,I*
1530	Vatican R	Italy	150/450	A,B*,C*,I
1539	Mainflingen(ERF)	Germany	350(700)	A,F,I
1539	SER via ?	Spain	?	I*
1548	?(VDA)	Kuwait	600	F*
1557	Nice	France	300	A
1575	Genova	Italy	50	A,C*,I*
1575	SER via ?	Spain	5	F
1584	SER via ?	Spain	2	C*,F*
1602	Al Dakhla	Egypt	10	F*
1602	SER via ?	Spain	?	F
1602	Vitoria(EI)	Spain	10	C*,F*,I*
1611	Vatican R	Italy	15	A,I

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

Listeners:-

(A) Simon Hockenhull, E.Bristol.
(B) Sheila Hughes, Morden.
(C) George Millmore, Wootton IoW.
(D) Clare Pinder, while in Appleby.
(E) Clare Pinder, while in Glasgow.
(F) Ernie Strong, Ramsey, Cambs.
(G) Michael Wasley, while at Morfa Nefyn, Gwynedd.
(H) Michael Wasley, while at Uwchmynydd, Gwynedd.
(I) Fred Wilmshurst, Northampton.

13.670 (Eng to N/C.America) 55545 at 2326 in Morfa Nefyn; All India R. (AIR) via ? **13.605** (Eng to Far East 2245-0045) 44333 at 2335 in Stalbridge.

In the **11MHz (25m)** band R.New Zealand's broadcast to Pacific areas on **11.675** (Eng 0800-1100) was rated 33333 at 0850 in Truro. It is followed by a special programme to NZ forces in Bougainville, the Solomon Is and E.Timor on **11.675** (Eng 1100-1300), noted as 33222 at 1200 in Truro.

R.Australia has been reaching the UK in this band on three frequencies from Shepparton: **11.650** (Eng to New Guinea, Solomon Is, N.America 1100-1700) was rated 33433 at 1205 in Norpeth; **11.660** (Eng to Asia 1430-1700) 43243 at 1637 in Newry; **11.880** (Eng to Pacific, N.America 1700-2200) 42432 at 2016 in Newry.

Also received during the morning were

DXers:-

(A) Jim Rdwards, Wigan.
(B) Stan Evans, Herstmonceux.
(C) Bill Griffith, W.London.
(D) David Hall, Morpeth.
(E) Simon Hockenhull, E.Bristol.
(F) Robert Hughes, Liverpool.
(G) Eddie McKeown, Newry.
(H) Fred Pallant, Storrington.
(I) Clare Pinder, while in Appleby.
(J) Clare Pinder, while in Glasgow.
(K) Vic Prier, Colyton.

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer
3.230	SABC Meyerton	S.Africa	2010	A
3.255	BBC via Meyerton	S.Africa	1912	A,F,G
3.270	Namibian BC,Windhoek	Namibia	2105	A,G
3.279	La Voz del Napo	Ecuador	0230	A
3.300	R.Cultural	Guatemala	0325	A,D
3.315	AIR Bhopal	India	0245	D
3.316	SLBS Goderich	Sierra Leone	1959	A,H
3.320	SABC (RSG) Meyerton	S.Africa	1904	H
3.365	GBC R-2	Ghana	2019	A,H,K
3.915	BBC via Kranji	Singapore	2100	A,E,G,K
3.955	R.Korea via Skelton	England	2100	B,E,G,I,K
3.955	R.Taipei via Skelton	England	1800	B,C,E,F,G,I
3.975	R.Budapest	Hungary	2100	B,E,G,J,K
3.985	Nexus, Milan	Italy	1900	E,G
3.995	DW via Julich?	Germany	2136	G
4.005	Vatican R.	Italy	2137	E,F,G,K
4.460	CPBS 1, Beijing	China	2125	A
4.750	Hulun Buir-Mo	China	2335	A
4.760	AIR Port Blair	India	0119	A,G
4.765	R.Rural, Santarem	Brazil	0240	D
4.770	FRCN Kaduna	Nigeria	2010	A,H
4.783	RTM Bamako	Mali	2010	H
4.790	Azad Kashmir R.	Pakistan	0008	G
4.800	CPBS 2 Beijing	China	2100	A,C
4.800	AIR Hyderabad	India	0140	A
4.805	R.Nac.Amazonas	Brazil	0105	A,D
4.815	R.Difusora, Londrina	Brazil	0110	A
4.820	R.Botswana, Gaberone	Botswana	1842	H
4.820	Xizang, Lhasa	China	2010	A,G
4.820	La Voz Evangelica	Honduras	0245	A,D
4.825	R.Cancao Nova	Brazil	2355	A
4.830	R.Tachira	Venezuela	0120	A
4.832	R.Litoral, La Ceiba	Honduras	0250	A,D
4.835	R.Tezulutlan, Coban	Guatemala	0300	D
4.835	RTM Bamako	Mali	1928	F,G,H,K
4.840	AIR Bombay	India	0125	A
4.845	R.Cultura Dndas,Trop	Brazil	0215	A
4.845	DRTM Nouakchott	Mauritania	1928	G,H,K
4.860	AIR Delhi	India	1927	A,H,K
4.885	R.Clube do Para	Brazil	2350	A,G
4.885	KBC East Sce Nairobi	Kenya	1846	H
4.890	RFI Paris	via Gabon	0359	G
4.895	Pakistan BC	Pakistan	1659	H
4.905	CPBS 1, Beijing	China	0010	A
4.905	R. La Droya	Peru	0355	A
4.910	AIR Jaipur	India	0130	A,H
4.915	R.Anhanguera	Brazil	0110	A,D
4.915	R.Difusora, Macapa	Brazil	0305	D
4.915	GBC-1, Accra	Ghana	1925	A,H
4.915	KBC Cent Sce Nairobi	Kenya	1846	H
4.915	R.Cora de Peru, Lima	Peru	0355	A
4.920	R.Quito, Quito	Ecuador	0530	A
4.920	AIR Chennai	India	0035	A,G,H
4.925	R.S.Miguel,Riberalta	Bolivia	0150	A
4.925	R.Difusora, Taubate	Brazil	2230	G
4.930	AIR Shimla	India	1908	G,H,K
4.935	KBC Gen Sce Nairobi	Kenya	1506	H
4.940	AIR Guwahati	India	0155	A
4.945	R.Difusora	Brazil	0115	A
4.950	AIR Srinagar	India	0135	A
4.950	VOA via Sao Tome	Sao Tome	2000	A,C,G,H,K
4.955	R.Cultura, Campos	Brazil	2355	A
4.960	VOA via Sao Tome	Sao Tome	0401	G
4.965	Christian Voice	Zambia	1848	A,H
4.975	R.Uganda, Kampala	Uganda	2013	A,D,G,H
4.980	Ecos del Torbes	Venezuela	0312	A,C,D,G
4.985	R.Brazil Central	Brazil	2335	A,G
5.009	R.TV Malagasy	Madagascar	2000	H
5.010	R.Garoua	Cameroon	0113	G
5.010	Guangxi 2, Nanning	China	2225	A
5.010	R.Misones Int.	Honduras	0315	A
5.010	AIR Thiru'puram	India	0140	A
5.025	R.Rebelde, Habana	Cuba	0352	A,D
5.025	R.Uganda, Kampala	Uganda	1911	A,G,H
5.030	RTM Kuching	Sarawak	2120	A,K
5.035	R.Aparecida	Brazil	0005	A
5.035	R.Bangui	C.Africa	1926	H
5.050	R.Tanzania	Tanzania	2027	A,G,H
5.100	R.Liberia, Totota	Liberia	2026	H

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	A,C,D,G
603	C.G,Litt'brne	I	0.10	A,C,D,G
630	R.Bedfordshire(3CR)	B	0.20	A,B,C,D,G
630	R.Cornwall	B	2.00	C,E,F
657	R.Clwyd	B	2.00	C,D,G
657	R.Cornwall	B	0.50	C,E,F
666	Cl.Gold 666, Exeter	I	0.34	A,C,D,G
666	R.York	B	0.80	D
729	BBC Essex	B	0.20	B*,C,D,G
738	Hereford/Worcester	B	0.037	A,C,F,D,G
756	R.Cumbria	B	1.00	E
756	The Magic 756,Powys	I	0.63	C,D,F,G
765	BBC Essex	B	0.50	A,B*,C,D,G
774	R.Kent	B	0.70	B,C,D,G
774	Cl.Gold 774, Glos	I	0.14	C,D,F,G
792	Cl.Gold 792,Bedford	I	0.27	C,D,G
801	R.Devon	B	2.00	A,C,D,E*,F
828	Cl.Gold 828, Luton	I	0.20	D,G
828	Cl.G 828 Bournem'th	I	0.27	C
837	R.Cumbria/Furness	B	1.50	E,F
837	Asian Netwk Leics	B	0.45	B,C,D,G
855	R.Devon	B	1.00	C
855	R.Norfolk, Postwick	B	1.50	D
855	Sunshine 855,Ludlow	I	0.15	A,F,G
873	R.Norfolk, W.Lynn	B	0.30	C,D,G
936	Brunel CG, W.Wilts	I	0.18	C,D,G
936	Fresh AM, Hawes	I	1.00	F
945	Cl.Gold GEM, Derby	I	0.20	D,G
945	Capital G, Bexhill	I	0.75	C
954	Cl.Gold 954 via ?	I	?	D
954	Cl.Gold 954,Torquay	I	0.32	C
954	Cl.Gold 954, H'ford	I	0.16	A,F,G
963	Liberty R, Hackney	I	1.00	C,D,G
972	Liberty R, Southall	I	1.00	A,C,D,G
990	R.Devon, E.Devon	B	1.00	A,C
990	Magic AM,Doncaster	I	0.25	D
990	Cl.G, Wolverhampton	I	0.09	D,G
999	C.Gold GEM Nott'ham	I	0.25	D,G
999	R.Solent	B	1.00	C
1017	Cl.G,WABC,Shr'shire	I	0.70	A,D,F,G
1026	R.Cambridgeshire	B	0.50	B,D,G
1026	Downtown R, Belfast	I	1.70	E*,F
1026	R.Jersey	B	1.00	A,C
1035	RTL C'try(Ritz)1035	I	1.00	C,D,G
1116	R.Derby	B	1.20	D,G
1116	R.Guernsey	B	0.50	C
1116	Valley R, Ebbw Vale	I	0.50	A,F
1152	Cl.G Amber, Norwich	I	0.83	A,D
1152	LBC 1152 AM	I	23.50	C,D,G
1152	Cl.G, Birmingham	I	3.00	A,G
1161	R.Bedfordshire(3CR)	B	0.10	D,G
1161	Southern Counties R	B	1.00	C
1161	Tay AM, Dundee	I	1.40	E*
1170	Cl.G Amber, Ipswich	I	0.28	A,D
1170	Capital G,Portsm'th	I	0.50	C
1170	Swansea Snd,Swansea	I	0.58	A,F
1170	1170AM,High Wycombe	I	0.25	G
1242	Capital G,Maidstone	I	0.32	C
1251	C.G Amber,Bury StEd	I	0.76	A,D
1260	Brunel CG, Bristol	I	1.60	C
1260	SabrasSnd,Leicester	I	0.29	D,G
1278	Cl.Gold 1278 W.York	I	0.43	D
1296	Radio XL,Birmingham	I	5.00	A,C,D,E*,F,G
1305	Premier via ?	I	0.50	C,D,G
1305	Touch AM, Newport	I	0.20	C
1323	Capital G,Southwick	I	0.50	C
1323	SomersetSnd,Bristol	B	0.63	A,D,F
1332	Cl.Gold 1332,Pt'bo	I	0.60	D,G
1332	Wiltshire Sound	B	0.30	C
1359	Breeze, Chelmsford	I	0.28	D
1359	Cl.Gold 1359, C'try	I	0.27	D,G
1359	R.Solent,Bournem'th	B	0.85	C
1368	R.Lincolnshire	B	2.00	D,G
1368	Southern Counties R	B	0.50	C
1368	Wiltshire Sound	B	0.10	C
1413	R.Gloucester via ?	B	?	D,F,G
1413	Premier via ?	I	0.50	C,D,E*
1413	Fresh AM, Skipton	I	0.10	D
1431	Breeze,Southend	I	0.35	D
1431	Cl.Gold, Reading	I	0.14	C,G
1449	Asian Netwk,Peterbro	B	0.15	D,G
1458	R.Cumbria	B	0.50	E,F
1458	R.Devon	B	2.00	C
1458	Sunrise, London	I	50.00	C,D,G
1458	Asian Netwk Langley	B	5.00	D,G
1485	Cl.Gold, Newbury	I	1.00	A,G
1485	R.Humberside (Hull)	B	1.00	D
1485	R.Merseyside	B	1.20	A,C,F
1485	Southern Counties R	B	1.00	C
1503	R.Stoke-on-Trent	B	1.00	A,D,F,G
1521	Breeze, Reigate	I	0.64	B,C,D,G
1530	R.Essex, Southend	B	0.15	B*,D
1530	Cl.Gold Worcester	I	0.52	A,B*,G
1548	R.Bristol	B	5.00	C,F
1548	Capital G, London	I	97.50	C,D
1557	R.Lancashire	B	0.25	F
1557	Cl.Gold 1557,N.hant	I	0.76	D,G
1557	Capital G, So'ton	I	0.50	C
1566	CountySnd,Guildford	I	0.50	A,B,C,D,E*
1584	London Turkish R	I	0.20	D
1584	R.Nottingham	B	1.00	D,G
1584	R.Shropshire	B	0.50	A
1584	Tay, Perth	I	0.21	E*
1602	R.Kent	B	0.25	A,C,D,G

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

HCJB Quito, Ecuador **11.680** (Eng to Eur 0600-0800), rated 55534 at 0630 in Herstmonceux; R.Prague, Czech Rep **11.600** (Eng to Eur 0700-0727) 44333 at 0700 in Morden; Voz Cristiana, Chile **11.745** (Sp to S.America ?-1000?) 34433 at 0729 in Oxted; World Harvest R. (WHRI) via Maine, USA **11.730** (Eng to Africa?) 33333 at 0750 in Stalbridge; R.Japan via Woofferton, UK **11.710** (Jap to Eur 0800-1000) 32232 at 0915 in Liverpool.

Much later, R.France Int via ? **11.615** (Eng to Africa 1600-1730) was 44444 at 1626 in Woodhall Spa; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1300-1730) 45544 at 1627 in Northampton; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 44434 at 1800 in Colyton; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1900-1930) was rated 55555 at 1900 by Clare Pinder in Appleby; Voice of Russia **12.070** (Eng) was 45433 at 1905 in E.Bristol; Deutsche Welle (DW), Germany **11.965** (Eng [News] to Africa? 1900-1945) 44444 at 1920 in Rugby; R.Romania Int **11.740** (Eng to N.America? 2300-0000?) 43333 at 2310 in Morfa Nefyn; All India R. (AIR) via Delhi **11.830** (Eng 0125-0355) 44444 at 0350 in W.London.

R.Australia's broadcasts in the **9MHz (31m)** band have been received in the UK on the following frequencies from Shepparton: **9.710** (Eng to New Guinea, Pacific areas 0800-0900), rated 24422 at 0816 in Oxted; **9.475** (Eng to Asia 1100-1400, 1530-1900) 25444 at 1630 in Northampton & 31232 at 1720 in Colyton; **9.500** (Eng to Asia, Eur 1900-2130) 22222 at 2015 in Truro.

Also mentioned in the reports were WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs), rated 44444 at 0800 in Woodhall Spa; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 54544 at 0950 in Herstmonceux; R.Nederlands via Wertachtal, Germany **9.860** (Eng to Eur 1030-1225) 55545 at 1120 in E.Bristol; R.Polonia (Polish R, Warsaw) **9.525** (Eng to Eur 1200-1300) 34333 at 1230 in Morden; BBC via Oman **9.510** (Eng to Asia 1700-1830) 34343 at 1700 in Storrington; R.Bulgaria, Sofia **9.400** (Eng to Eur) 44444 at 1915 in Rugby; R.Vlaanderen, Belgium **9.925** (Ger, Fr, Eng, Dut to Eur 1800-2100) 45344 at 1930 in Newry; DW via ? **9.765** (Eng to Asia, Pacific 2100-2145) SIO 333 at 2131 by **Francis Hearne** in N.Bristol; R.Cairo, Egypt **9.990** (Eng to Eur 2115-2145) 44444 at 2145 in Northampton; WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) 31333 at 2155 in W.London; WWCR Nashville, USA **9.475** (Eng to Eur, Africa 2100?-2300?) 43334 at 2240 in Stalbridge; WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) 31333 at 2155 in W.London; DW via ? **9.815** (Eng to SE.Asia 2300-2345) 44444 at 2305 in Morfa Nefyn; Swiss R.Int via Sottens **9.885** (Fr, Ger, It, Eng to S.America 2200-0000) 55555 at 2310 in Liverpool; WBCQ Monticello, Maine USA **9.335** (Eng to N.America 2100?-1100?) 33433 at 0144 in Morpeth.

Quite a few of the broadcasts in the **7MHz (41m)** band are intended for listeners in Europe. Those noted came from Family R. (WYFR) via Okeechobee FL, USA **7.355** (Eng 0600-0800), rated 44444 at 0640 in Newry; Croatian R, Zargreb **7.365** (Cr 0500?-1000?, also to N.Africa) 24231 at 0712 in Oxted; Sudwestfunk via Rohrdorf **7.265** (Ger 24hrs) 34444 at 1220 in Northampton; R.Slovakia Int. **7.345** (Eng 1630-1700) 45544 at 1648 in Northampton; R.Norway Int. **7.490** (Norw 1700-1730, also to N.Africa) 45544 at 1720 in Colyton; R.Thailand, Udon Thani **7.155** (Eng 1900-2000) 33233 at 1905 in Rugby; R.Budapest, Hungary **7.130** (Eng 1900-1930) 44444 at 1900 in Morden; Voice of Russia **7.440** (Eng - News 1930) 33333 at 1930 in Truro; RCI via Skelton, UK **7.235** (Eng 2100-2130) 54554 at 2120 in Herstmonceux; R.Tirana, Albania **7.130** (Eng 2130-?) SIO 333 at 2147 in N.Bristol.

Some are beamed to areas outside Europe, but may be received here when conditions permit. They include R.Nederlands via Madagascar **7.120** (Eng to Africa 1730-2025), rated 42422 at 1852 in E.Bristol; Lingshi, China **7.550** (Chin) 43334 at 2201 in W.London; WBCQ Monticello, USA **7.415** (Eng to N.America 2100-1100) 32223 at 2350 in Stalbridge; KTBN via Salt Lake City, USA **7.510** (Eng to N.America 0000-1600) 33333 at 0140 in Morpeth.

The **6MHz (49m)** band carries many more broadcasts for listeners in Europe. Some originate from R.Japan via Skelton, UK **5.975** (Eng 0500-0600), rated 55555 at 0525 in Herstmonceux; R.Vlaanderen Int via Julich, Germany **5.985** (Eng 0700-0730) 54444 at 0700 in Appleby; TWR Monaco via Germany? **6.045** (Eng 0655-0800) 24332 at 0702 in Oxted; Deutsch Welle (DW) via Julich **6.140** (Eng Service) 33323 at 1000 in Dudley; Sudwestrundfunk, Germany **6.030** (Ger) 24443 at 1150 in Northampton; R.Slovakia Int. **6.055** (Eng 1630-1700) 44444 at 1633 in Woodhall Spa; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 44434 at 1725 in Colyton; R.Budapest, Hungary **6.025** (Eng 1900-1930) 45444 at 1900 in Northampton; R.Sweden, Stockholm **6.065** (Eng 1930-2000) SIO 444 at 1932 in N.Bristol; Sri Lanka BC via Skelton, UK **6.010** (Eng 1900-2000 Sun) 43422 at 1945 in E.Bristol; RAI Rome **5.970** (Eng 1935-1955) 45544 at 1950 in E.Bristol; Vatican R, Italy **5.890** (Various, Eng 1950-2010) 44444 at 1958 in Rugby; R.Canada Int via Sweden? **5.850** (Eng/Fr) 55354 at 2003 in Newry; R.Ukraine Int **5.905** (Eng 2100-2200) 44444 at 2100 in Morden; R.Austria Int, via Moosbrunn **6.155** (Various) SIO 444 at 2134 in N.Bristol.

Some intended for other areas may also be received here. Mentioned in the reports were VOA via Sao Tome **6.035** (Eng to W.Africa 2000-2300), rated 44434 at 2219 in Morfa Nefyn; BBC via Antigua, W.Indies **5.975** (Eng to Caribbean, C/S.America 2100-0600) 44434 at 2340 in Stalbridge; American Forces Network (AFN) via Puerto Rico **6.458** (Eng [u.s.b.]) 44344 at 0525 in Morpeth.

Listeners:-
- (A) Simon Hockenhull, E.Bristol.
- (B) Sheila Hughes, Morden.
- (C) George Millmore, Wootton, IoW.
- (D) Ernie Strong, Ramsey, Cambs.
- (E) Michael Wasley, while at Morfa Nefyn, Gwynedd.
- (F) Michael Wasley, while at Uwchmynydd, Gwynedd.
- (G) Fred Wilmshurst, Northampton.

LIST OF EQUIPMENT USED -
LM&S for $May, #June, *July 2002.

- $ Adam Birchenall, Coalville, Leics: Grundig Yacht Boy 400.
- $ # * Vera Brindley, Woodhall Spa: Roberts R867 or Sangean ATS-803A + r.w.
- $ Michael Casey, Manchester: Roberts RC828 + table-top loop.
- $ # * Bernard Curtis, Stalbridge: Realistic DX400 + rod or r.w. in loft.
- # * Jim Edwards, Wigan: JRC NRD-535 or Drake R8E + 60m N/S wire tached to guttering on a block of flats.
- $ # * Stan Evans, Herstmonceux: Kenwood R-2000 + Balun + 11m wire in loft.
- $ * Bill Griffith, W.London: JRC NRD-535 + 25m wire.
- $ # * Gerald Guest, Dudley: Roberts RC818 + r.w.
- $ # * David Hall, Morpeth: AOR AR7030 + Global AT-2000 + 13m wire.
- $ # * Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
- $ # * Simon Hockenhull, E.Bristol: Battery powered Roberts R876 or ush TR130 + built-in antennas or AKD HF3 + 10m wire.
- * Robert Hughes, Liverpool: AOR AR7030 + 15m indoor wire or rake R8E + RF Systems MTA on roof.
- $ # * Sheila Hughes, Morden: Sony ICF-7600DS + home-built loop or anasonic DR48 + 16m inverted L.
- $ # * Rhoderick Illman, Oxted: Kenwood R-5000 + r.w. or AN-1, Sony F-7600DS.
- $ # * Eddie McKeown, Newry: Grundig Yacht Boy 400 or Sangean ATS-818.
- # Philip Miller Tate, Walton-on-Thames: High performance home uilt crystal set + 40m random wire. Roberts R809 portable for equency checks.
- $ # * George Millmore, Wootton, IoW: Racal RA17L + v.l.f. converter + loop or Sangean ATS-803A + loop.
- $ # * Fred Pallant, Storrington: Trio R-2000 + Howes CTU8 a.t.u. + r.w.
- $ # John Parry, Larnaca, Cyprus: Realistic DX-394 or Yaesu FT-767 or Realistic DX-400 + r.w.
- $ # * Clair Pinder, Appleby: JRC NRD-525 + a.t.u. + r.w.
- * Clare Pinder, while in Glasgow:
- $ # * Peter Pollard, Rugby: Sony ICF-2001D + r.w.
- $ # * Vic Prier, Colyton: Redifon R551N + a.t.u. + r.w. or loop in loft.
- $ # Richard Reynolds, Guildford: Sangean ATS-803A + a.t.u. + 10m 'T' loft or another Sangean ATS-803A + 60m Helix or a loop.
- $ # Harry Richards, Barton-upon-Humber: Grundig Satellit 700 + D270 or r.w. or Grundig Yacht Boy 400 or Matsui MR4099.
- $ # * Ernie Strong, Ramsey (Cambs): AKD HF3 or Yaesu FRG-8800 + a.t.u. + 30m wire.
- $ Michael Wasley, while in Settle, N.Yorks: Grundig Yacht Boy 400.
- # Michael Wasley, during a steamer trip off Norway: Grundig Yacht Boy 400.
- * Michael Wasley, while at Morfa Nefyn, Gwynedd: Grundig Yacht Boy 400.
- * Michael Wasley, while parked at Uwchmynydd, Gwynedd: Valve car radio.
- $ # * Thomas Williams, Truro: Grundig Yacht Boy 400 or Gundig Yacht Boy 206 or Sharp 5454 + r.w.
- $ # * Fred Wilmshurst, Northampton: Icom IC-R70 + Global AT-1000 + w. in loft.

DRM Revealed part 1

An exposé from Don Messer of IBB and Peter Jackson of Merlin Communications International Ltd. Together they bring us an in-depth presentation of the technical progress of a Standardised Digital Radio Broadcasting System that the authors say will revolutionise the current a.m. broadcasting bands.

The DRM™ (Digital Radio Mondiale™) international consortium was set up in March 1998 in order to design a new digital broadcasting system capable of providing a significant improvement in audio quality and transmission reliability in the a.m. broadcasting bands below 30MHz - in other words, the short wave, medium wave and long wave bands.

The initial 20 DRM member organisations have now grown to more than 70, and the DRM system has now achieved recommended status within the ITU(R) and standardisation within European Telecommunications Standards Institute. During the past twelve months additional work has been carried out to further test and prove the system and the required hardware.

The clarity of DRM's near-f.m. quality sound offers a dramatic improvement over current analogue a.m. broadcasts. The static, interference and fading that have hampered short wave, medium wave and long wave transmissions for decades will be history. DRM is set to breathe new life into broadcast radio by integrating audio with data and text displayed on DRM receivers. DRM is the world's only non-proprietary, digital a.m. system that has the ability to use existing frequencies and bandwidth across the globe.

Universal Standardisation

During September 2001, the DRM system specification was published by the European Telecommunications Standards Institute (ETSI) under the reference *TS 101 980 v1.1.1 (2002-09)*. This document, of some 158 pages, provides a comprehensive description of the DRM system and its operation. The specification is now a public document and is available for free download from the ETSI web site at **www.etsi.org** - you will need to use DRM as your search target - the specification is in Adobe PDF format. This ETSI document has now been made available to the IEC and as of March 8 2002 this document became an IEC publicly available specification (PAS ref. 62272-1) and was introduced into the IEC/ITU joint rapporteur group on 13 March. As a consequence, it is anticipated that the DRM specification will become an international standard by the end of 2002 or early in 2003. As a further aid to standardisation, work is also proceeding on a second ETSI Technical Standard, TS 101 968, which will cover in a comprehensive manner the way in which data applications can be carried using the DRM system. This is expected to become a published document by the end of 2002.

Compatibility Testing

As an adjunct to the standardisation process, work has been carried out by a number of DRM Members, which have implemented encoding platforms. This has involved the compatibility testing of the implementations to ensure that the standard is clear, sufficient and unambiguous.

BBC Research and Development, who had previously worked on compatibility testing for DVB-T receiver implementations, were responsible for setting up the required sequences and making the comparisons. Seven different test cases were defined; for each case the parameters of the DRM signal were specified together with the input data streams. The comparisons showed that, within the rounding margins of the hardware used for each of the implementations, there were no discrepancies. With the exception of the need for a few minor alterations to clarify the text, this demonstrated that the published DRM specification is sufficiently clear and unambiguous for a designer to produce a working encoder.

Several DRM member organisations compared their implementations. They were:

- BBC R&D
- Deutsche Telekom AG (T-Systems)
- France Telecom R&D (DRM member TéléDiffusion de France)
- Fraunhofer IIS-A
- Harris Corporation/HCJB
- Thales Broadcast & Multimedia

For the purposes of comparison the above were classified as implementations A to F (but not necessarily in the above order) and the results of the comparison are shown in **Table 1**.

The seven parameter sets were designed to cover the following modes of operation:-

- Robustness mode (A, B, C and D)
- Spectral occupancy (9 and 10kHz)
- Interleaver depth (0.4s and 2.0s)
- Main Service Channel (MSC) constellation (16-QAM, 64-QAM)
- MSC code rate (0.5, 0.6, 0.71, 0.78 for 64-QAM, 0.62 for 16-QAM)
- Service Description Channel (SDC) constellation (4-QAM, 16-QAM)
- Equal Error Protection (EEP) / Unequal Error Protection (UEP)

Table 1: Implementation Comparison.

Implementation	Max. Error (dB)	RMS Error (dB)	Comments
A	-64.0	-72.9	
B	-70.6	-78.0	Case 1 only
C	-66.0	-81.0	
D	-61.5	-69.8	
E	-65.4	-75.4	Case 1 only
F	-	-	Reference

Note that in the case of organisation B and E only the first of the seven cases has currently been tested. System implementation F was arbitrarily designated as the reference system.

Long Term Field Testing

As part of the process of ongoing proving of the DRM system a series of long term

DRM Revealed

The mobile test vehicle equipped with the necessary calibrated antenna.

tests were started in December 2001 and will continue on a regular basis through most of 2002. At present two short wave stations, Bonaire and Rampisham, are involved but this is expected to increase to three or four during the course of the year. The parameters of these stations are given in **Table 2**.

The short wave testing stations' transmission schedule is shown in **Table 3** and the parameters chosen for the transmissions can be found in **Table 4**.

Reception is currently taking place at three sites (Bockhacken in Germany, Hilversum in the Netherlands and London in the UK) using five receivers of three different designs (Thales Broadcast & Multimedia, Fraunhofer IIS-A, BBC) altogether. All these receivers are still in the process of refinement and therefore they do not exhibit identical performance characteristics. This explains why different reception results can often be observed on different types of receiver at the same site.

The receivers automatically produce an output log file in a standard format, which is E-mailed on a daily basis to the analysis centre, which for these tests is at BBC R&D in London. An analysis is run on each transmission slot. The slot quality is measured as the percentage of data blocks that showed an accumulated dropout length of less than one second with respect to the total number of received data blocks with digital audio content.

For this purpose, a reception slot is considered to have started one minute after the first uncorrupted digital audio frame was received, and to have stopped one minute before the last uncorrupted digital audio frame was received. To enable a comparison of the overall quality of the different transmission slots the following criteria, listed in **Table 5**, are used to categorise them.

Based on this categorisation a typical analysis looks like that below in **Table 6**, which based on the reception data from transmissions on 5.875MHz from Rampisham in the UK between 1200 and 1500 between the dates of 17 Decemeber 2001 and the 18 February 2002. It should be noted that London is in reality too close to the transmission site for good propagation and that the sites in the Netherlands and in Germany are better positioned.

Simulcast Testing

An important part of the original requirement, which was agreed soon after the formation of the DRM consortium, was the need to incorporate in the standard a number of so called 'simulcast' modes which could aid the introduction of the DRM system where either spectrum or transmission facilities was limited. These modes envisaged the insertion of the DRM signal close to the existing analogue transmission either in the same or the adjacent transmission channel. It was intended that this would allow, in some cases, the use of the existing transmitter and antenna, considerably reducing the additional capital investment needed to introduce the DRM signal. At the same time it would allow existing listeners to be served with continuing analogue transmissions until a high enough proportion had invested in the digital receivers for the analogue service to be discontinued.

For this reason there are a number of possible simulcast modes available for use in the published DRM specification. To test the suitability of these modes and to determine the optimum ratio between the power levels of the analogue and digital signals to be used, a series of laboratory and field tests was started at the end of

Table 2: Station Location Details.

Name	Short	Coordinates	Carrier Power (kW)	DRM power (kW)	Antenna	Azimuth
Bonaire	BON	12°10N 68°15W	25	10	CHRS 4/4/1	50°
Rampisham	RMP	50°50N 02°40W	125	50	HRS 4/2/0.5	80°

Table 3: Broadcast Schedule.

Start (UTC)	Stop (UTC)	Origin	Days	Frequency (MHz)
0800	0900	Bonaire	Monday to Sunday	11.970
0900	1000	Bonaire	Monday to Sunday	12.035
1000	1100	Bonaire	Monday to Sunday	15.420
1200	1500	Rampisham	Monday to Friday	5.875
1500	1600	Rampisham	Monday to Friday	7.320

Table 4: Transmission Parameters

Transmission site	Audio coding	Robustness Mode	Constellation MSC	Constellation SDC	Code rate	Interleaver	Bitrate bits/s
Bonaire	AAC	B	16-QAM	4-QAM	EEP/0.5	long	11560
Rampisham	AAC+SBR	B	64-QAM	4-QAM	EEP/0.6	long	20880

2001. These tests are being carried out by France Telecom R&D organisation.

The tests began in the laboratory by first choosing a selection of seven AM receivers[1] (six portables and one automobile receiver) which covered the typical range of quality and price of receivers currently used or available for sale in the market today- between 50 and 500 Euros. These receivers were then tested to establish their performance parameters for analogue signals and then used to measure the audio signal-to-noise ratio (SNR) obtained from the analogue signal when the injection level of the digital signal was varied. This test was performed on six of the seven receivers using five different simulcast modes and variants (out of a total of the 10 different simulcast modes described in the DRM specification). However, three of the receivers had the facility to switch between narrow and wideband mode and so this produced a set of nine curves for the six receivers.

In order to illustrate the variation in SNR that was obtained, an example is shown in **Fig. 1.1**, which was obtained during the tests using Mode 5a (5kHz digital signal plus 4kHz analogue vestigial sideband analogue signal, occupying a total of approximately 10kHz of spectrum). It can be seen that the receivers divide into two groups in terms of their performance with the Grundig 208 and the Blaupunkt auto receiver, the two curves on the right, requiring the analogue signal to be significantly greater than the digital signal for satisfactory performance. In the case of the other receivers the digital signal could be at a higher level than the analogue signal. An analogue audio SNR of 17dB was found to correspond with a quality of 2.5 on the 'five-steps scale' of the ITU-R 562 Rec.

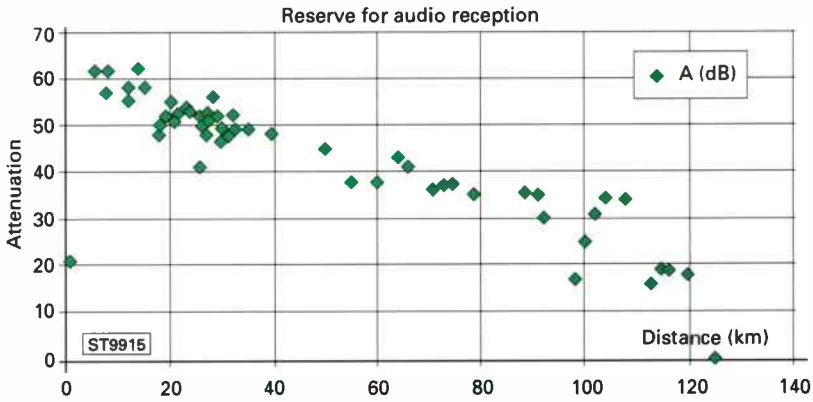


Fig. 1.1

Table 5: Quality Criterea.

Slot Quality (%)	Illustration
100	No dropout longer than 1 second was registered.
99	On average, accumulated dropout length measured for each datablock exceeds 1 second once every 100 minutes.
95	Total dropout length of more than 1s observed every 20 minutes
90	Total dropout length of more than 1s observed every 10 minutes
80	Total dropout length of more than 1s observed every 5 minutes
50	Total dropout length of more than 1s observed every 2 minutes
0	Total dropout length of more than 1s observed every minute

Table 6: Reception Analysis.

RMP 1200-1500 5.875MHz

Day	Date	DW1 Germany	BBC3 London	BBC1	BBC2	RNW2 Netherlands	Likely reason for Q<90%
Mon	17/12/01						
Tue	18/12/01						
Wed	19/12/01			97%			
Fri	21/12/01			94%			
Tue	08/1/02			95%			
Thu	10/1/02			91%	83%		Unknown
Fri	11/1/02			93%	88%		Unknown
Mon	14/1/02			92%	91%		
Tue	15/1/02						
Wed	16/1/02			80%	73%	100%	RX Performance
Thu	17/1/02				95%	97%	
Fri	18/1/02					98%	
Mon	21/1/02					96%	
Tue	22/1/02					98%	
Wed	23/1/02					92%	
Thu	24/1/02					64%	Unknown
Fri	25/1/02			96%	94%	92%	
Tue	29/1/02			98%	90%	98%	
Mon	04/2/02	100%			92%	100%	
Tue	05/2/02						
Wed	06/2/02						
Thu	07/2/02	82%			87%	83%	DW1:Low SNR
Wed	13/2/02	100%	100%		86%	97%	RX performance
Thu	14/2/02	100%	96%	93%		100%	
Fri	15/2/02		99%	98%	92%	96%	
Mon	18/2/02		98%	98%			

Single Frequency Network and Mobile Testing

Testing has also been done, and is continuing, on the single frequency network and mobile reception properties of the DRM system. This is taking place in both Germany and the United Kingdom.

Germany

DRM gave radio listeners the chance to hear its digital a.m. system live via mobile reception at *IFA 2001*, Germany's largest consumer electronics show. More than 100 people sampled DRM during listening tours in a presentation van. Tour participants heard six radio stations broadcasting live via DRM, five of them on medium wave (including single frequency network) and one of them on short wave. Tour equipment came from DRM members and supporters - Deutsche Telekom AG provided the network and vehicle, and coordinated transmissions; Telefunken SenderSysteme Berlin provided transmitters; Fraunhofer IIS-A provided receivers; and Radiostroy RTV provided antennas.

Continued on page 22

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DRM Revealed *Continued from page 17*

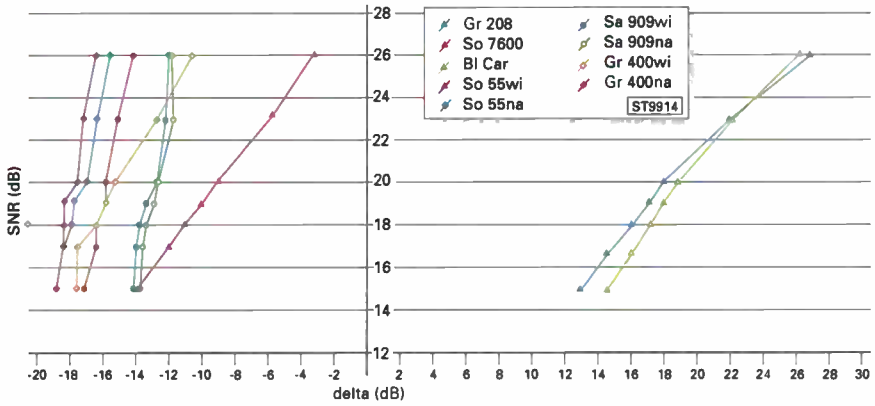
Altogether there were four transmitters on different frequencies[2] and three transmitters forming a single frequency network[3] covering the Berlin area. The mobile reception demonstrations showed excellent reception from all of the services within their coverage area. In particular the station at Burg, in Sachsen/Anhalt, provided mobile reception at a distance of around 100km from the transmitter.

Another Telefunken transmitter has been up and running since IFA, sending out DeutschlandRadio programming at 855kHz medium wave, in and around Berlin. This transmitter is running in the DRM mode with a DRM power of 2.5kW.

In a separate test a 1kW transmitter was installed at Putbus on Rügen Island off the northern coast of Germany. This transmitter operated at a frequency of 729kHz. The graph, **Fig. 1.2**, shows the margin in dB above threshold for satisfactory audio decoding at different distances from this transmitter as the mobile measuring unit was driven away from it in a southbound direction along the *Bundesstrasse* 96 road towards Berlin. It can be seen that an adequate margin of 18dB was achieved for this test up to 120km from the transmitter.

The inside of the mobile measuring lab. A FhG receiver with its associated DRM demodulation performed by the portable PC on the left of the picture. Below the FhG receiver is the BC R&D set.

Fig 1.2



To be continued **SWM**

Johan's War

After playing a vital communications role in the Dutch war-time resistance effort as a child, Johan Koops then battled to gain resident status here in the UK. Read on for the fascinating story, including how Johan enlisted the help of King George VI and Queen Elizabeth the Queen Mother.

Hidden by shrubbery at the edge of a field on the outskirts of Amsterdam, a young boy waited with anticipation for the sound of aircraft returning from night-time raids over Germany. It was 1942. As the drone from the engines pierced the silence, Johan peered into the darkness looking for a parcel of radio components that had been dropped onto the field.

The parts collected, Johan took them home to construct a radio receiver. Johan Koops listened to news bulletins broadcast from Droitwich, then made hand written copies of the news. Hiding them in his socks, fearful that German patrols were on the streets, he went out late into the night to deliver the latest information to the Dutch Resistance Movement.

Horror Unfolds

Johan was ten years old when the Germans invaded Holland. At 0430 on May 10th 1940 airborne troops, led by Waffen-SS units, landed near Rotterdam, The Hague and Leyden. Within days, troops were marching into Amsterdam.

Unaware of the horror unfolding before them, the Dutch citizens stood in silence as the German army marched into the capital. Dutch activists resisted for about seven days. Goering then delivered an ultimatum. "Surrender, or Amsterdam and The Hague will suffer the same fate as Rotterdam", which had already been bombed and destroyed on May 14th, killing more than 1000 people. Within two days, organised resistance throughout the country had ceased.

The German authorities then turned their attention to the Dutch Jews. They were forced to wear yellow stars labelled with black lettering, JEW. Signs were put in public areas, PROHIBITED TO JEWS. Frightened to go out, they were prisoners in their own homes.

General Strike

One Sunday in February 1941, Dutch citizens were ordered to stay indoors all day and warned they risked being shot if they did not comply. Defying the orders, Johan went to the main square in Amsterdam where he was horrified to see Jews being rounded up and herded onto trams. Young mothers with babies in their arms were throwing themselves out of third and fourth floor windows of the flats where they lived, prepared to commit suicide rather than be taken prisoner.

The first major round up of Jews prompted a general strike. The Germans quickly and ferociously suppressed it. Out of 140,000 Dutch Jews, 104,000 were arrested by the Germans, deported and killed.

The Commandant in charge of Amsterdam, demanded that all radios must be handed over to the authorities, anyone ignoring the order would be shot. For months afterwards, the Germans raided homes and farmhouses. Anyone caught with a radio was taken outside and shot. Afterwards their homes were destroyed.

Radio Hidden

Despite this, Johan kept his radio hidden under the floorboards. The electricity was then cut, creating further hardship for the Dutch citizens. Throughout the long winter nights, working by candlelight, fearful of being caught and shot, Johan built a radio receiver. He then constructed an antenna that could not be seen by the Gestapo. Drilling a small hole in an outside drainpipe, he inserted a long

Johan pictured with a copy of The Flying Dutchman Newspaper, containing the surrender document of 4th May 1945. Top right of page.

Johan's War

Johan with the original radio and headphones. Used during occupation. Phillips 297A 1936

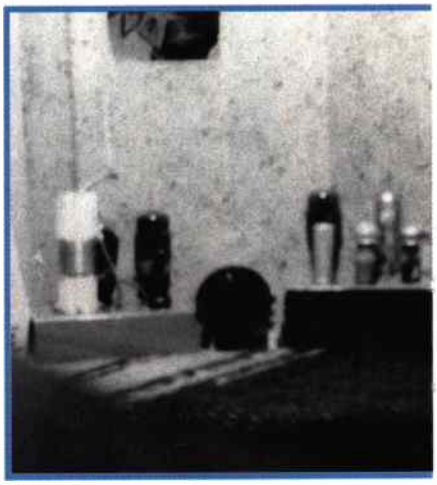
length of thin wire inside it.

Listening for the Droitwich station, Johan was overcome with emotion when he heard a voice calling, 'This is Radio Oranje'. Speeches of support for the Dutch Nation by Queen Wilhelmina, Prince Bernhardt and Winston Churchill, were vital for morale, as was the news and information broadcast by civilian announcers, Louis De Jony, Johan Verhoeven and singer Jet je Paeri.

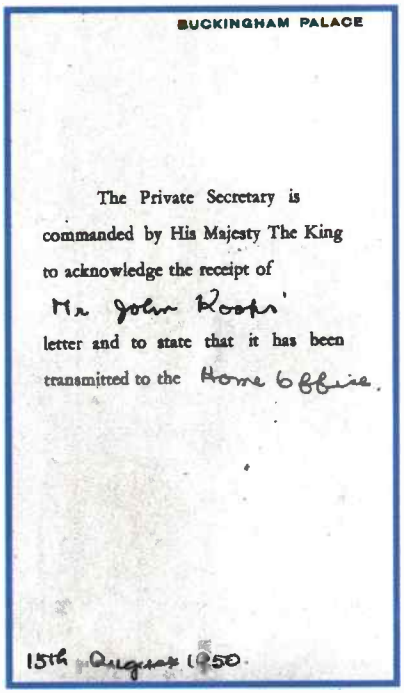
Movement Reformed

As the situation deteriorated, the Dutch Resistance Movement was reformed. Johan supplied news bulletins and radio equipment for surveillance. Throughout the occupation, the Resistance Movement lost 5,500 members, killed on active service, or executed in captivity.

Wetering Square was full of people when the Gestapo closed off the exits. Johan tried to escape, but he was grabbed and thrown back. The night before, Dutch Resistance activists had overpowered a German patrol, taking their uniforms, then dressed as Germans they went to a prison where other Resistance fighters were being held and released them. Incensed by their action, the Commandant ordered that other resistance prisoners be brought into the square and shot.



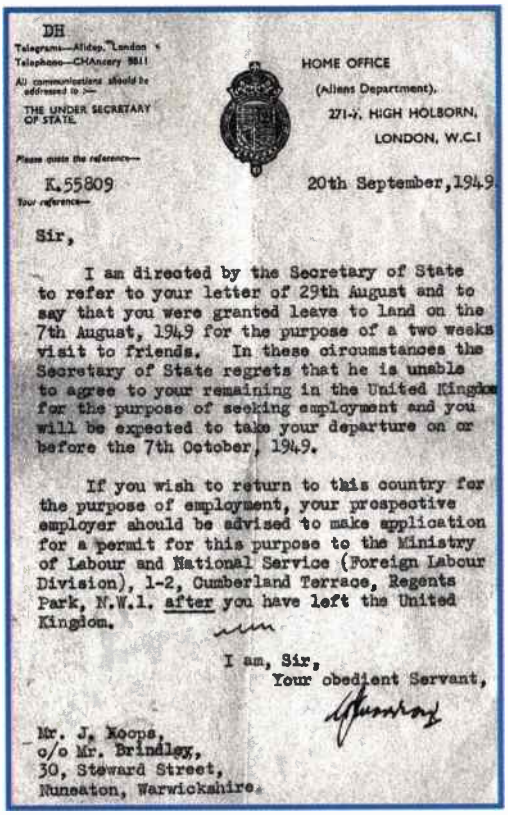
Letter from Buckingham Palace.



BUCKINGHAM PALACE

The Private Secretary is commanded by His Majesty The King to acknowledge the receipt of Mr John Koops' letter and to state that it has been transmitted to the Home Office.

15th August 1950.



DH

Telegrams—Alldep, London
Telephone—CHAncery 8811

All communications should be addressed to:—
THE UNDER SECRETARY OF STATE.

HOME OFFICE
(Aliens Department),
271-7, HIGH HOLBORN,
LONDON, W.C.1

Please quote the reference—
K.55809
Your reference—

20th September, 1949

Sir,

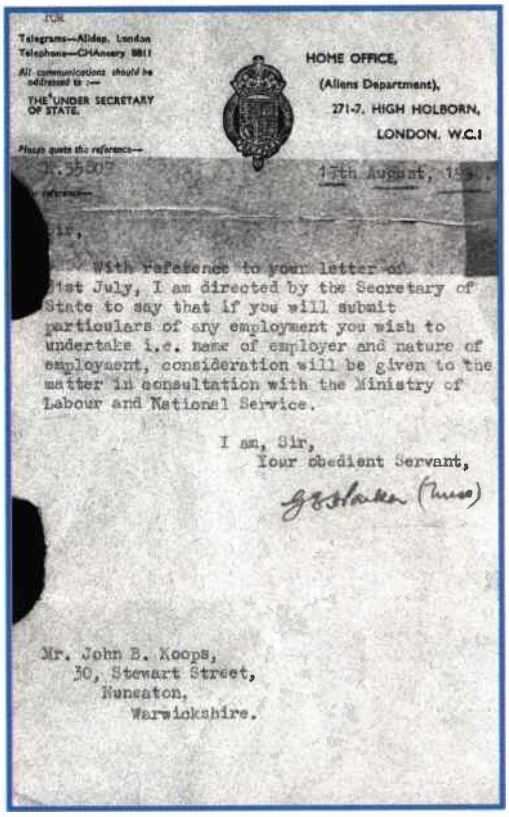
I am directed by the Secretary of State to refer to your letter of 29th August and to say that you were granted leave to land on the 7th August, 1949 for the purpose of a two weeks visit to friends. In these circumstances the Secretary of State regrets that he is unable to agree to your remaining in the United Kingdom for the purpose of seeking employment and you will be expected to take your departure on or before the 7th October, 1949.

If you wish to return to this country for the purpose of employment, your prospective employer should be advised to make application for a permit for this purpose to the Ministry of Labour and National Service (Foreign Labour Division), 1-2, Cumberland Terrace, Regents Park, N.W.1. after you have left the United Kingdom.

I am, Sir,
Your obedient Servant,

Mr. J. Koops,
c/o Mr. Brindley,
30, Steward Street,
Nuneaton, Warwickshire.

Refusal letter from Home Office.



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THE UNDER SECRETARY OF STATE.

HOME OFFICE,
(Aliens Department),
271-7, HIGH HOLBORN,
LONDON, W.C.1

Please quote the reference—
K.55809
Your reference—

17th August, 19[illegible]

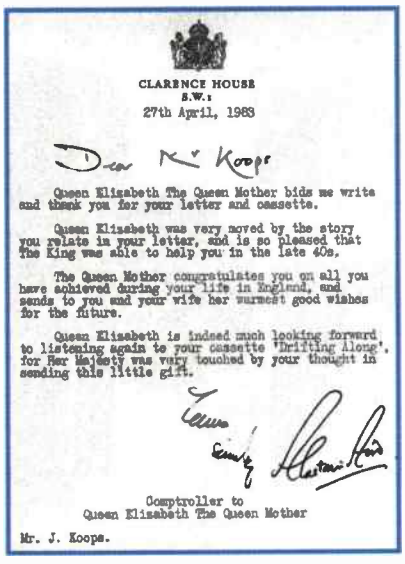
Sir,

With reference to your letter of 31st July, I am directed by the Secretary of State to say that if you will submit particulars of any employment you wish to undertake i.e. name of employer and nature of employment, consideration will be given to the matter in consultation with the Ministry of Labour and National Service.

I am, Sir,
Your obedient Servant,

Mr. John B. Koops,
30, Stewart Street,
Nuneaton,
Warwickshire.

2nd letter from the Home Office.



CLARENCE HOUSE
S.W.1
27th April, 1983

Dear Mr Koops

Queen Elizabeth The Queen Mother bids me write and thank you for your letter and cassette.

Queen Elizabeth was very moved by the story you relate in your letter, and is so pleased that The King was able to help you in the late 40s.

The Queen Mother congratulates you on all you have achieved during your life in England, and sends to you and your wife her warmest good wishes for the future.

Queen Elizabeth is indeed much looking forward to listening again to your cassette 'Drifting Along', for Her Majesty was very touched by your thought in sending this little gift.

Yours sincerely,

Comptroller to
Queen Elizabeth The Queen Mother

Mr. J. Koops.

Letter from Clarence House.

Johan's letter to the Queen Mother.

Radio equipment made by Johan during the war.

Witness

Johan was forced to witness 15 members of the Resistance, including a young boy, his own age being executed. After a second salvo the boy remained standing, he shouted out, "Mother, oh Mother, where are you". Another burst of gunfire, and he was dead.

The bodies were left for days afterwards as a reminder to those contemplating acts of defiance. Anyone not employed in essential work, was sent to a labour camp, many did not return. 410,000 Dutch citizens were assigned to labour camps in Germany.

One afternoon the Koops family were shocked when a German patrol, ten strong and armed, forced their way into the flat. The Officer in charge told them that the Gestapo had received an anonymous telephone call with information that gold bars and radio receivers were being kept on the premises.

Johan was at school. When he arrived home, a member of the Gestapo pushed a gun to Johan's throat, ordering him into the flat with the rest of his family. They were forced at gun point, to stand with their hands on their heads facing the wall while floorboards were ripped up, and the walls

64 Winchester Avenue,
Weddington,
Nuneaton,
Warwickshire. CV10

6th April, 1983.

To: Her Majesty,
Queen Elizabeth The Queen Mother,
Clarence House,
London.

Your Majesty,

In the Summer of 1948 I met 'the girl of my dreams', in my home town of Amsterdam, Holland. Rita was on holiday from England with a party, including the Minister, from Nuneaton Gospel Church, and I must admit that it was indeed, love at first sight. When she returned to England, we wrote to each other at least once every day.

In the Summer of 1949, I came to Nuneaton for a holiday and we spent a very happy time together. Bu the time went by very quickly and the moment of parting was soon upon us again. However, the following Christmas, Rita visited Amsterdam and we became engaged to be married. The following Summer, I returned to Nuneaton for a holiday and this time I hoped to obtain permission to remain in the United Kingdom so that Rita and I could build our lives together. However, this was far more difficult to do than I had expected. I wrote several letters to the Home Secretary and explained my situation, but to no avail. Each time, I received a reply saying I could not remain here, and in the final letter I was informed that if I had not left the Country before October 1950, I would be extradited. This news upset us a great deal and as a last resort, I took it upon myself to write a lengthy letter to your late husband, explaining the whole situation. I remember the letter was full of spelling mistakes, but I was desperate and asked if he could intervene at the 'eleventh hour'. I posted the letter and kept it a secret from everyone. I well remember the post-office clerk giving me some strange looks! However, to my great surprise and delight, a letter arrived from Buckingham Palace 10 days later. The people where I was living at the time said, "who from the Palace would write to Johan Koops?". I opened the letter with trembling hands. It was a letter from His Majesty's Private Secretary, to say that my letter was receiving attention. I felt this was very hopeful news. Ten days later, I received a letter from the Home Secretary, to say I had been granted permission to remain in the United Kingdom, although this would be reviewed every 12 months. Rita and I were overjoyed with this news. Here was the opportunity we wanted to make a new life together, never to be parted again.

I took a job as a radio and television engineer and experienced the birth of television here in the Midlands. Rita and I worked very hard, and in March 1953, we were married at Nuneaton Full Gospel Church. After nearly five years of marriage, during which time I learned more about England by visiting places of interest and beauty, our first child, a son was born, in December 1957. In 1960 we had saved enough money to buy the bungalow of our dreams, and two years later, our daughter was born. We were now very grateful parents of two lovely, healthy children.

In 1972, I took up Electronic Organ studies, and we bought our first Organ. The following year, I changed my occupation and was employed in the organ sales department of a local music store. Rita was a tremendous help to me during these early years, as she was able to read music and so teach me. With great patience, she has since transcribed over 500 songs for me to play. In 1973, we joined our local Organ Society and I became more and more involved until eventually, I became Secretary to the Society. In 1976, we started to present Organ Concerts for Charity, at our local Civic Hall. The artists were all members of the Society and with the proceeds from these Concerts, a Charity Fund was started. Since the Fund began, the Society has provided equipment for local Hospitals, the St. John's Ambulance, and Mencap. Also, donations have been made to the Heart Foundation and Coventry Hospital's Scanner Appeal, as well as to other Charities.

Last October, I celebrated 10 years of Organ playing by releasing a cassette called 'Drifting Along'. Rita and I would be most grateful if you will accept the enclosed cassette as a token of our respect, and gratitude to your late husband.

We have recently celebrated our 30th Wedding Anniversary, and are still very happy together. Thinking back to those days in 1950, I would do it all again if I had to. Without the help of His Majesty King George VI, our lives could well have been so different.

Ma'am, we do wish you God's richest blessings and good health always.

Yours most sincerely,

Mr. & Mrs. Johan Koops.

DEALERS PANELS

Johan's War

hammered with rifle butts as they checked for hidden compartments.

Johan's father was arrested and taken away for questioning. Hours later and looking very ill he returned. There were no gold bars, however, three radio receivers lay under the next floorboard, the Germans did not lift.

After the war, a Dutch German sympathiser was arrested and charged with conspiracy against Johan's family. He spent thirty months at a reform camp.

Reduced Rations

The winter of 1944-45 was critical. Schools closed because there were no books or paper. Food rations were reduced even further. Each person received only enough food for one week, consisting of three potatoes, watered down milk and half a loaf of bread made from brown beans. Some people resorted to eating sugar beet and tulip bulbs. Johan trekked for miles looking for food. Once he returned home with only a lettuce.

Things were so bad, Johan's father came home one day with a dead cat and that lasted for three weeks. The only consolation was that the Germans were also starving as the Allied Forces cut the supply lines between Germany and the troops in Holland. The Germans resorted to shooting pigeons and sea gulls to survive. Starvation caused the deaths of 15,000 people.

Operation Manna

After refusing requests for food to be distributed, the Germans finally agreed. "Operation Manna" started on April 26th 1945. Provisions were dropped over Amsterdam. People poured out onto the streets waving flags and singing. The response from the Gestapo was swift and without mercy. Opening fire on the crowd killing women and children. Hundreds of citizens died. Eventually the food was distributed. Johan recalls "The Beautiful Meal", consisting of white bread and peanut butter.

A news bulletin broadcast from London on May 3rd 1945 claimed the Germans had surrendered. Johan had heard the news himself. Many other people had heard the broadcast, they came out onto the streets during the curfew. The Germans reacted swiftly and decisively, opening fire indiscriminately into the crowd. Johan turned and ran for his young life, a man running alongside him was hit in the stomach, he fell, dying.

Diving into the gutter, Johan lay as bullets ricocheted around him. During a lull in the shooting, he got up and ran into a block of flats and headed for the roof. He ran across several other blocks until he reached the safety of his own home. Minute's later Germans appeared and placed a machine gun on the roof Johan had just crossed.

Confirmation Of Surrender

Confirmation that Germany had now surrendered came in a statement broadcast on Radio Oranje on May 4th 1945. Dutch citizens were advised to stay indoors in order not to antagonise the situation. Refusing to heed the advice, people slowly and nervously came out, gathering momentum until thousands filled the streets of Amsterdam. Resistance soldiers took control, gradually rounding up the German troops. Under the terms of surrender, Resistance fighters did not have the power to disarm their foe, but they were able to imprison them at the German Club in Dam Square.

The Liberation of Holland was now imminent. Thousands had waited many hours on the outskirts of Amsterdam for the arrival of Canadian Liberation troops. Waving flags and banners people clambered onto tanks, Johan among the first. They were carried into Amsterdam. A shimmering sea of red, white and blue stretched for a seemingly endless distance. People sang, cheered, cried and fell to their knees.

Opened Fire

As the convoy entered Dam Square, the scenes became too much for the Germans, they opened fire through the windows of the German club. Many people were crushed to death as they ran in panic. Others were shot where they stood. The Canadians could not return fire under the terms of the Geneva Convention, however they supplied weapons to the Resistance, who then stormed the building forcing the Germans to throw out their weapons. Finally peace reigned. Freedom had come. The future was theirs.

By the summer of 1949 Johan had met the girl of his dreams. Rita Brindley, a young girl from Nuneaton was touring with a church music group in Amsterdam. It was love at first sight. The couple exchanged letters every day. In August 1949 Johan came to England intending to stay, find employment, marry Rita and raise a family.

Johan wrote to the Home Secretary, James Chuter Ede MP, for a permit to seek employment in this country. The application was refused. Further appeals by Johan were rejected. Finally he was instructed to leave by 10th October 1949 or face being arrested and extradited.

Johan returned to Amsterdam where he remained. In the summer of 1950 He wrote to King George V1, explaining the situation and that he wanted to return to England and marry the girl of his dreams. Buckingham Palace replied on 15th August 1950, stating that the details had been sent to the Home Office. On the 17th August 1950 the Home Office wrote to Johan stating that after a change of heart he could return to England to pursue employment.

In The End

Johan Koops returned to England and married Rita in 1953. They live at Nuneaton in Warwickshire. They have a son and daughter. As an accomplished organist, Johan compiled a tape of his works called, 'Drifting Along'. In 1983 he sent a copy of the tape together with a letter to The Queen Mother, explaining how the Late King, had helped with his quest to live in England. The Queen Mother was very moved by Johan's story and touched at the thought in sending the tape. In the late 1960s Johan applied to the Home Office to become a British Citizen, he has not yet received a reply.

Johan became an amateur radio operator in the 1980s 'G0VZO'. Each day he talks with other radio amateurs on the 'Barometric Net', which he formed in 1995. Despite Johan's childhood years being ravaged by war, his dulcet tones across the ether at the end of the radio net echo a wonderful philosophy. "Remember keep smiling".

SWM

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WATSON

• W-801MkII Regular Gainer

Just 21cm long with BNC fitting, it covers 25 - 1900MHz. You'll get smoother reception with improved matching to your scanner, which means better signals. It's flexible as well, so you won't break it. £12.95 A

• W-881 Super Gainer

Watson have engineered this flexible antenna to give you wide gain over the range 25-1900MHz. Optimised matching brings in those weak signals and the BNC fitting matches most popular scanners. £19.95 A

• Don't forget - - - we also have the WSM-1900 Mobile Gainer, for your car with magnetic base and 2.75m coax cable terminated with BNC plug. £22.95 A

Uniden-Bearcat UBC-220XLT

£119
Plus £6.00 Carr.

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

STEEPLETONE MBR-7 MULTIBAND RADIO

SPECIAL OFFER

£49.95
Plus £6.00 Carr.

• Receives MW/LW/SW1/SW2/FM/AIR-MB-FM • Direction Finder • Telescopic Antenna • Tuning Control with Fine Tuning • Volume + Tone Controls • Signal Strength/Battery Meter • AFC Switch • PA Facility with External Mic Socket • Line-in Socket for use with CD or Cassette Player • Earphone Socket • Cloth Carrying Strap • Facia Protection Bars • Powered by Mains or Batteries (Not supplied)

VR-120D RECEIVER

NEW MODEL

£159
Plus £6.00 Carr.

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

YUPITERU MVT-7100EX

100kHz - 1.65GHz

Probably the best value for money, it has stood the test of time and is very sensitive. Offers
• USB, LSB, CW, AM, FM, WFM,
• 1,000 memories
• 500 Pass channels
• 12 Tuning steps
• Fast scan speed
• Rechargeable batteries, AC charger and telescopic antenna.

£229
Plus £6.00 Carr.

UBC-3000XLT

£169
Plus £9.00 Carr.

• 25MHz to 1.3GHz
• 400 Ch/20 Banks
• 10 Priority Channels
• Automatic store
• Twin Turbo Scan & Search
• Scan rate: 100 ch per sec
• Data skip feature
• Selectable Attenuator
• Modes: AM, WFM, NFM
• LCD with back light
• Ext spkr jack 3.5mm
• Ext earphone jack 2.5mm
• Rechargeable battery (5hrs)
• Power requirements 6.5V DC
• Size 68 x a88 x 38mm
• Weight 368g

AOR AR-8600

ADR's exciting new scanner.
• 500kHz - 2040MHz
• 1000 Memories
• 37ch sec scan
• RS232 PC interface fitted
• 10.7MHz IF for SDU5500
• Accepts up to 5 slot-in cards
• Detachable MW bar aerial
• FM AM SSB CW
• 2000 pass frequencies
• 8.33kHz airband steps

£649
Plus £9.00 Carr.

Fairhaven RD500VX Radio Database Receiver

£749
Plus £6.00 Carr.

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

Yupiteru MVT-7300

£259
Plus £6.00 Carr.

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

NOW WITH NICADS & CHARGER

BEARCAT UBC - 9000XLT BASE STATION

£269
Plus £9.00 Carr.

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

AOR-7030 RECEIVER

0kHz - 32MHz

£749
Plus £9.00 Carr.

Needing little introduction, this receiver has become a classic of design. Features USB, LSB, CW, AM, FM, • 100 Memories • Dual VFOs • Resolution to 10Hz • Clock and Timer • Variable Bandwidth • Wide Dynamic Range • Seamless Tuning using Single Loop DDS • Clear LCD Readout • Infrared Remote Controller • AC Power Supply.

AR-7030+ £879 C

YAESU VR-5000

£599
Plus £9.00 Carr.

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

YAESU VR-500

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

£199
Plus £6.00 Carr.

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WDP-30 SHORT WAVE DIPOLE

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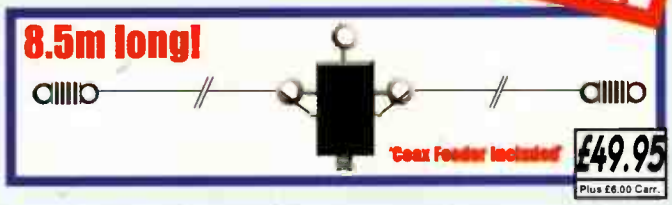


- True Dipole Performance
- Receive Only
- 1MHz - 30MHz
- 10m Long approx.
- Low noise design.
- Matching Module
- 50 Ohm Input
- SO-239 socket
- 10m Coax

This new design from Watson gives you dipole performance across the entire short-wave bands. Unlike radom 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.

STREET PILOT III

NEW FROM GARMIN

IT TALKS TO YOU

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

GARMIN GPS-V

WITH WAAS for even greater accuracy

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

IC-R75 RECEIVER
30kHz - 60MHz

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

BAR-888U RADIO CONTROLLED WEATHER CENTRE

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

GLOBAL AT-2000 ANTENNA TUNER

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

ICOM IC-R8500
"EDITORS CHOICE"

The IC-R8500 has a wide frequency range continuously from 0.1 to 2000MHz. It's ideal for the radio amateur or shortwave listener.

The IC-R8500's all mode capabilty allows reception of a variety of different modes, from the world over. SSB (USB, LSB), CW AM, FM and WFM are included, along with several 'speciality' modes, CW narrow', AM wide, AM narrow and FM narrow are available (Requires optional FL-52A)

ICOM IC-R10E
500KHZ - 1300MHZ

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

CAPTURE THAT FREQUENCY!
HUNTER 10MHz - 3GHz
Hunts down Frequencies

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

SPY CATCHERS

OPTOELECTRONICS
DS-1000 DIGITAL COUNTER

SPRING PREMOTION SAVE £100

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

AOR-8200 SERIES 2
500KHZ - 2040MHZ

This wide range scanner is fitted with a data port for computer control. Features include
- USB, LSB, CW, FM, WFM
- Programmable steps
- 1000 memories in 20 banks
- Alphanumeric display
- Built-in AM antenna
- 8.33kHz steps for air band
- Rechargeable ni-ceds, AC charger and helical antenna.

PCR-1000 10kHz - 1300MHz
COMPUTER CONTROLLED RECEIVER

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

NEARFIELD MONITORS

Zoom into any FM transmission between 30MHz and 900MHz and monitor the audio. It takes a fraction of a second. The WR-5001 comprises a complete receiver with auto tuning, skip button, squelch adjustment and built-in speaker. The WR-5002 is similar, but adds an auto-hold control and a bargraph signal meter. It also adds a CI-V port for reaction tuning Icom and AOR receivers fitted with this feature. These monitor receivers are designed for nearfiled use and the range is from a faw hundred metres to around 1km, depending on frequency and power of the transmitter
WR-5001 £99.95 WR-5002 £159.95

R-861 PORTABLE
SW WITH RDS

- 153kHz-29.999MHz, 87.5 - 108MHz
- AM, SSB (USB/LSB), FM (FM Stereo)
- AM wide/narrow filter • Tone control
- AM RF Gain control • Stereo through earphones
- 307 memories - 261 SW, 18 MW, 18 FM 9 LW plus priority station
- RDS (Radio Data System) Station name, Auto time set • 3 individual alarm timers
- 110/230V auto-switching AC adaptor

SANYO WS-1000 WORLD SPACE DIGITAL RECEIVER

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

ICOM IC-R2
500kHz - 1309MHz

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

WATSON WMM-3 MkII

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

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

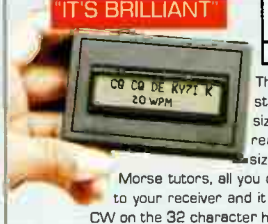
£69.95
Plus £6.00 Carr.

YUPITERU MVT-9000EU MK2
100kHz - 1.99GHz

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

MFJ-461
MORSE CODE READER

"IT'S BRILLIANT"



The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays CW on the 32 character high contrast LCD. It has automatic speed tracking, a serial port - if you wish to connect to a computer to display the text on a bigger screen. It can also be connected to your receiver's audio if required. Truly pocket sized at 57 x 82.5 x 25.5mm and 156g.

HITACHI KH-WS1 WORLD SPACE DIGITAL RECEIVER

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

OPTOELECTRONICS

XPLORER Test Receiver

THE UNIQUE XPLORER

This device will lock onto an active frequency within its range in less than a second. Not only will it lock onto the frequency, it has the capability of storing the channel in one of its 500 memories and also demodulating any FM signal and passing it to the built-in speaker. It also has the capability of displaying virtually any subaudible tone, including CTCSS, DTMF, DCS, LTR Trunking etc.

£799

Digital Scout

WORLD'S 1ST DIGITAL DECODER

- Frequency range: 60MHz - 2.6GHz
- Resolution 1Hz/250.000 or 100Hz / 250.0000
- Sensitivity: <3mV
- 1,000 memories 65,000 hits per memory
- Captures Digital & Analogue signals
- Calibrated field strength measurements
- Display: 2x16 alphanumeric LCD (with backlight)
- Signal strength displayed in dBm and bargraph
- Filter mode (frequency locks & holds on display)
- Memory saved to PC via optional Optolinx
- Built-in vibrator & Beeper
- CI-V for Reaction Tune (requires lead)
- Supply: Battery (6 hours), ext. 9V DC, 150mA
- Size:89.8 x 76.2 x 38.1mm
- Weight: 340g

£529

SCOUT Frequency Decoder

1000'S IN USE ROUND THE WORLD

World Famous Frequency Counter and Frequency Finder 10MHz-1.4GHz Digital Filter and auto capture to record transmissions automatically. Records and serves up tozzz 40 unique frequencies. Reaction tunes via CI-V socket with compatible receivers like AR-8000, AR-8200, AR-8400 series 2 and IC-R10

£369

CUB Mini Counter

The CUB Mini Counter incorporating both digital filter and auto capture is ideal for radio amateurs and service engineers for off-air frequency checking. Supplied with Ni-Cads, AC Charger and aerial. To operate simply hold the counter in the vicinity of a local transmitter or handheld.

- 1MHz - 2.8GHz
- Input: 50 Ohms
- Gatetimes: 8 selectable
- Timebase: 10MHz
- Display: 8 digit LCD
- Ext: 9-12V DC 100mA

£125

OPTOTRAKKER Decoder

SPECIAL OFFER

The Optotrakker is a communications decoder that when interfaced to a computer and Trakkstar software, turns a number of receivers into trunk tracking receivers. It can also interface to virtually any receiver for the decoding of CTCSS, DCS, LTR, Motorola Talk Group ID's and DTMF. When used with the supplied Trakstar software and compatible receiver, the Optotrakker allows for scanning of multiple systems on any frequency band simultaneously. The Optotrakker is an ideal solution for converting conventional receivers into computer control receivers with trunk tracking capabilities.

~~£299~~ **£199**

R-11 Test Receiver

The R11 Nearfield FM Test Receiver is capable of sweeping 30MHz to 2GHz in less than one second. Once locked it will demodulate the FM signal and permit it to be monitored through the internal speaker. Can be used with the Scout with an optional Reaction Tune cable. TA100S telescopic whip included.

- Freq: 30MHz-2GHz
- Sensitivity: -40dBm
- Modulation: FM
- Autolocking
- Dev. Ind: <100kHz
- Socket: BNC
- Supply: Int Ni-Cadpack 7.2V 600mAH
- Dataport: CI-V
- Case: metal
- Size: 140x75x35mm
- Weight: 400kg

SPECIAL OFFER **£249**

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And Now For Something Completely Different

Trans-Oceanic Tansportables from Zenith and a look-a-like from Sony are the centre of John Wilson's attention this month. A delightful change that John clearly enjoyed.

I mentioned some time ago that I had been landed with a Zenith Trans-Oceanic portable to repair, thanks to an injudicious mention at a charity lunch that I had an interest in such things. The lady who wanted her radio 'looked at' clearly remembered hearing the news of President Kennedy's assassination on it when she lived abroad, so it had nostalgia (of a somewhat macabre flavour) dripping all over it. Having met a chap called Dr. Harold Cones in America when I was a guest speaker at a short wave Convention, I knew that he was the acknowledged expert on the history of the Zenith Radio Corporation, so I obtained a

copy of his book on the subject written together with John Bryant, another leading American authority on short wave listening, and settled down to learn more. It proved to be quite interesting, but you would need to read the book yourself in order to learn the whole story. I remember the occasional Trans-Oceanic passing through the showroom at Lowe Electronics and always thought that they sounded 'nice' but a bit out of our normal line of amateur radio equipment, although they were always snapped up within a few days by people who appreciated what they were. By good fortune, I later acquired a Zenith Royal

1000D which was the first solid state Trans-Oceanic, and by even more good fortune, a Sony radio which to my eyes looked very much like a copy of the Zenith style. Together they make an interesting story which I thought I should tell the readers of *Short Wave Magazine*,

www.nevada.co.uk

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LATEST MODEL

FAIRHAVEN RD-500VX

SAVE £150!

Latest database (over 20,000 frequencies)
Freq: 20kHz to 1.7GHz

~~£899~~ £749 P&P £10 | 3 CHEQUES OF £253

PAY BY CHEQUESPREAD INTEREST FREE

SPECIAL PURCHASE

AKD TARGET HF3M COMMUNICATIONS RECEIVER

Connect this Radio to your PC and receive Weatherfax pictures with the *FREE* Disc and PC interface cable supplied *(9 Pin serial)*

- Covers 30Khz - 30MHz
- Modes USB AM LSB
- Tunes in 1 KHz steps with clarity control for SSB
- Signal Strength Meter

PACKAGE ALSO INCLUDES FREE:

- 12 Volt Mains POWER SUPPLY
- Long Wire ANTENNA
- GUIDE to Shortwave Listening

SPECIAL PRICE FOR COMPLETE PACKAGE

£149 PLUS £10 P&P

ORIGINALLY £209.95!

GRUNDIG YB400

HIGH PERFORMANCE PORTABLE SW RADIO

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

Supplied complete with:

- SW HANDBOOK
- CARRYING CASE
- EXTERNAL WIRE ANTENNA
- CARRY STRAP

£99 P&P £10 | 3 CHEQUES OF £36.33

PAY BY CHEQUESPREAD INTEREST FREE

ICOM SCANNERS

ICOM R3

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

REVOLUTIONARY NEW HANDHELD

£449 P&P £10

3 CHEQUES OF £153.00

PAY BY CHEQUESPREAD INTEREST FREE

ICOM IC-R2

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

~~£159~~ £139 P&P £10 | 3 CHEQUES OF £49.66

PAY BY CHEQUESPREAD INTEREST FREE

PRICE MATCH

ICOM PCR 1000

COMPUTER RADIO SYSTEM

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

LATEST VERSION with UPGRADED SOFTWARE SUITABLE FOR WINDOWS XP

PCR OPTION DSP UNIT UT 106 £82 £2.75 p&p

£389 P&P £10 | 3 CHEQUES OF £133.00

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MAYCOM AR108

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

Mains Charger £8.95 £2.75 p&p

£69.95 P&P £7.50

AOR

PRICE MATCH

SHIPPED TODAY!

AOR AR 5000

- 10kHz-2.6GHz
- Modes AM, FM, USB, LSB,CW
- 1000 memories
- 45 channel/sec scan
- 20 search banks
- DTMF decoder
- RS232 port
- N type & SD239 sockets
- Audio 1.7W (8Ω)
- 12V DC @ 1A

£1599 P&P £10 | 3 CHEQUES OF ~~£536.33~~

PAY BY CHEQUESPREAD INTEREST FREE

AOR AR 5000+3

Feature loaded version with synchronous AM, AFC and Noise Blanker

~~£1799~~ £1700 P&P £10 | 3 CHEQUES OF ~~£570~~

PAY BY CHEQUESPREAD INTEREST FREE

AR 8200 MKII

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

~~£439~~ £399 P&P £10

3 CHEQUES OF £136.33

SPECIAL

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MAHA MH-C204

3 hour intelligent Charger for 4 AA/AAA cells

Rapid charge 2 or 4 AA/AA NiCD/NiMH batteries safely

- 2 independent charging banks • Rejuvenate and restore dead batteries • Supplied with UK AC adaptor

MAHA MH-C204 plus

- 1 MH-204 *plus:*
- 4xAA 1600mAH batts
- UK AC adaptor
- Car kit

£39.95 P&P £6.50

for use in the CAR or at HOME!

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YUPITERU

YUPITERU MVT 7100

- 530kHz-1650MHz • 1000 memories
- AM/FM/WFM/SSB/CW
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~~£240~~ £229 P&P £10

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YUPITERU MVT 3300

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

~~£159~~ £149 P&P £10

3 CHEQUES OF £53.00

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YUPITERU MVT 7300

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

~~£280~~ £259 P&P £10

3 CHEQUES OF £89.66

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YUPITERU MVT9000EU

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

OP90 SOFT CASE £26.95 £2.75 p&p

£369 P&P £10

3 CHEQUES OF £126.33

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DIGITAL WORLD BAND RADIO WITH RDS

ROBERTS R861

- Covers MW/LW/FM/SW
- SSB/CW recep on SW
- 307 presets
- Clock/alarm facilities

Supplied with dual voltage AC supply, sw antenna, earphone, carrying case

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ROBERTS RADIOS

ROBERTS R9914

DIGITAL WORLD RADIO

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

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

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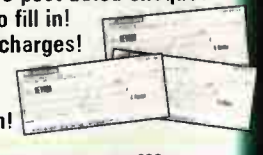
- Write 3 cheques dated in consecutive months starting with today's date.
- Write your telephone number, cheque card number and expiry date on the back of each cheque.
- Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.

- Pay by three post dated cheques
- No forms to fill in!
- No hidden charges!
- No hassle!
- No catch!
- No problem!



CHEQUESPREAD prices quoted include postage & packing CHEQUESPREAD minimum order: £99

ALL GOODS SHIPPED FOR 24 HR DELIVERY P&P £10 (UK Mainland) unless otherwise stated E&OE

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YAESU FRG-100
This receiver provides solid coverage from 50kHz to 30MHz with all mode reception of AM, SSB and CW.

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PRICE MATCH
IN STOCK!

ICOM IC-R8500
This receiver is eve[illegible]ing we hoped it would be, covering [illegible]kHz - 2GHz and lots of features including computer control.

~~£1349~~ £1299 P&P £10 | 3 CHEQUES OF ~~£436.33~~
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PRICE MATCH

ICOM IC-R75
IN STOCK!
- 0.03 -60MHz
- Twin PBT built-in
- PC control capability
- Synchronous AM detection

£699 | 3 CHEQUES OF ~~£236.33~~
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OPTIONAL PSU AVAILABLE

AOR AR-8600
IN STOCK!
All mode wideband base RX
- 530kHz-2040MHz
- 8.33kHz airband steps
- Optional slot cards

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a stylish radio designed by F.A. Porsche

PORSCHE G-2000
- FM Stereo, AM/FM/MW 13 SW bands, 2.3MHz-26.1MHz • 20 station presets
- Clock, alarm, sleep function, world times
- C/w leather cover & in-ear stereo headphones
- Mains/Battery (OPTIONAL AC ADAPTOR)

£89.95 P&P £10

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WORLDSPACE

Hitachi WS1
WORLDSPACE DIGITAL SATELLITE RADIO
- Receive over 40 channels of fade free digital programs direct from satellite - from almost anywhere in the world! Plus FM/MW/SW
- SW1: 2.3 - 7.3MHz, SW2: 9.5 - 26.1MHz

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NEW! WS2000

WORLDSPACE

small but DYNAMIC! Keep tuned to news, music entertainment and information virtually anywhere and anytime.
- 10 presets and last station memory
- LC-display for station, category/features
- Headphone jack/stereo line out connectors
- External jack for multimedia & data service
- Easy-to-aim antenna detachable WorldSpace antenna
- Battery or mains operation
- AC/DC adaptor include

£129 P&P £10 | 3 CHEQUES OF ~~£46.33~~
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WORLDSPACE

Sanyo WS1000
WORLDSPACE DIGITAL SATELLITE RADIO

A stylish satellite radio for home or portable use. listen on the internal speaker or connect it to your hifi via phono line out or digital output connectors. Removeable flip up satellite dish is supplied c/w 5 metres extension cable.
- Stereo headphone socket
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- Mains or battery operation *(Mains adaptor included)*
- Remote control
- Multi-media port

£149 P&P £10 | 3 CHEQUES OF ~~£53.00~~
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- YAESU
- KENWOOD

Maycom AR108 £45
Yaesu VR120 £85
Yupiteru MVT7100 £159

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

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

SUPPLIED COMPLETE WITH:
• UK Mains Adaptor, • Telescopic antenna, • Mobile antenna, • Car Cigar adaptor, • Mounting bracket

NEW!

£159.00
3 CHEQUES OF £56.33 P&P £10
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UBC 278CLT
Base Scanner with MW/FM Radio and Alarm Clock
- Frequency: 25 to 956 MHz *(with gaps)*
- VHF Radio: 88 to 108 MHz
- 100 Memories
- 20 Radio Presets
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- Fully Programmable
- Channel Lockout
- Priority Channel
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UBC 9000XLT
- 25-1300 MHz *(with gaps)*
- 500 memory channels
- Selectable Attenuator
- Selectable Delay
- Selectable Mode AM/WFM/NFM
- Auto Store/Freq Transfer
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- TURBO SCAN
- TURBO SEARCH
- VFO Control
- Programmable Search

UBC 60XLT-2
A brand new low cost scanner that covers MARINE, LAND MOBILE and more!
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- 80 memories
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- Priority Channel
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- Scan Delay

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Bearcat Scanners

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SPORTCAT Twin Turbo Handheld
- Triple conversion RX
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- CTCSS/DCS Tone Search
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- Turbo search
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- Supplied c/w Antenna, Earphone, Belt Clip, Nicad battery, 240V UK Mains adaptor

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UBC 3000XLT
- 25-550, 760-1300 MHz
- AM/FM/WFM
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- TURBO SCAN
- TURBO SEARCH
- Automatic Freq Storage
- Selectable Attenuator
- Automatic Freq Sorting
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- Channel Count Key
- Supplied c/w earphone, case, belt clip, charger, rubber duck antenna

£199.95 P&P £10
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UBC 220XLT
- 66 - 956 MHz *(with gaps)*
- AM/FM
- 200 memories
- TURBO SCAN 100 Ch/Second
- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Memory Backup
- Supplied c/w earphone, belt clip, charger and rubber duck antenna

£149.95 P&P £10
3 CHEQUES OF £53.31
PAY BY CHEQUESPREAD INTEREST FREE

UBC 120XLT
- 66 - 512 MHz *(with gaps)*
- AM/FM/WFM
- 100 memory channels
- TURBO SCAN 100 Channel/Second
- TURBO SEARCH
- Data Skip facility
- 10 Priority Channels
- Programmable Search

£129.95 P&P £10
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USED EQUIPMENT
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All safety tested & guaranteed for 3 months

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AOR AR-8600	BASE SCANNER + PSU	549
BEARCAT UBC 280XLT	HANDHELD SCANNER	149
BEARCAT UBC-780XLT	TRUNK TRACKING SCANNER	275
MAYCOM AR-108	HANDHELD RECEIVER	55
REALISTIC PRO 2026	MOBILE SCANNING RX	99
YUPITERU MVT9000	HANDHELD SCANNER	275
ICOM IC-R7000+REMOTE	WIDEBAND RECEIVER	495
ICOM R75	HF RECEIVER	499
ICOM PCR 1000	COMPUTER BASED RX	249
LOWE HF225 EUROPA	HF RECEIVER	399
LOWE HF225 + ACCS	HF RECEIVER+CASE, FM, KPAD	329
PANASONIC RF-B55	PORTABLE RECEIVER	65
ROBERTS 827	SHORTWAVE RECEIVER	89
SANGEAN ATS818	SHORTWAVE RECEIVER	69
SONY CF-950S	SHORTWAVE RECEIVER	69
YAESU VR-5000DSP	WIDEBAND RECEIVER+DSP	529

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NIMH HIGH POWER RECHARGABLE BATTERIES

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

ADD £2.75 P&P TO ALL ABOVE PRICES

GRUNDIG SATELIT 800
- 100-30,000kHz (0.1-30MHz) for AM Broadcast and Shortwave
- 87-108MHz for FM Broadcast
- 118-137MHz for Aircraft Band
- AM, USB, LSB modes (0.1-30MHz)
- AM mode only for 118-137MHz
- WFM mode only for 87-108MHz
- Three built-in bandwidths for SW

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

~~£599~~ £549 | 3 CHEQUES OF £186.33
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NEVADA OPEN DAY...SAT 6 JULY....9:30AM - 3:00PM
COME & PICK UP A BARGAIN!

DELTA MasterCard SWITCH VISA

because it would make a welcome change from the procession of ex-professional Racal receivers of recent issues, and also because these high end portables really do make first class short wave broadcast receivers, even today.

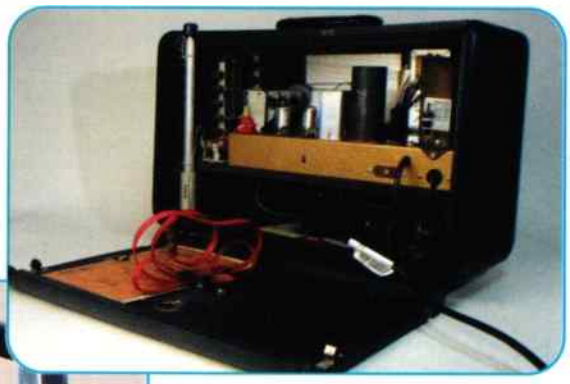
The Changeover Model

The radio I had to repair turned out to be a model known as the G500, referred to in Harold Cones' book as 'the changeover model'. The previous Trans-Oceanic was the model 8G005Y which had been in production since the end of WW2 and which used 'loctal' based valves which were becoming obsolescent, so a new chassis was introduced which used the newer B7G based valves of the 1T4, 1S4 series. The cabinet design of the 8G005Y was continued, and in fact this style of cabinet influenced not only Zenith but other manufacturers for many years. The G500 was introduced in late 1949 and was replaced by the H500 at the end of 1951. Compared to production figures from the professional market, the 'short run' G500 notched up a total of 90,000 units, rather less than the 131,000 units of the 8G005 but substantial nonetheless. However, despite these large production quantities, both receivers are quite hard to locate today and are well established as 'collectors' items', both receivers being categorised as 'rare' in the Cones book. The H500 by contrast added up to almost quarter of a million units produced between 1951 and 1954. The Trans-Oceanic history actually goes back to just before WW2 and the receivers even saw military service during the Korean War as the R-520/URR, a special version of the H500.

Single Superhet

So much for the brief introduction: The G500 is a single superhet receiver featuring a tuned r.f. amplifier stage, which has always been an unusual feature in mass-market portable radios. This gave the G500 good sensitivity and front-end selectivity, whilst double tuned i.f. transformers around a single high gain i.f. amplifier provided the 'back-end' performance. The mixer was a typical design of the times using a 1L6 valve containing mixer and oscillator functions in the same envelope. The a.g.c. and first audio stages are combined in a 1S5, with a 3V4 providing the audio power amplification to drive a decent size loudspeaker which being mounted in a substantial wooden cabinet sounds very comfortable. Four slide switches below the tuning dial are labelled 'Treble', 'Bass', 'Voice' and 'Alto' and control passive audio filtering in a negative feedback loop from a separate winding on the output transformer to tailor the response to suit the needs of different programme material. Using these in practice convinces me that this radio was designed by people who took the trouble to listen to the results and not rely on exotic performance specifications. The Trans-Oceanic was a real listener's radio in every sense of the term.

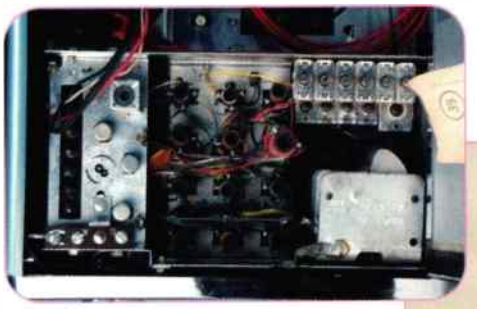
Antenna input arrangements were designed to be as comprehensive as possible so as to cater for listening in any part of the world, even when mobile. For broadcast medium wave reception a loop antenna is built into the top of the cabinet, sandwiched horizontally between the top two wooden panels. This enables reception under normal conditions, but in weak signal areas, Zenith provided their 'Wave Magnet' loop antenna, which normally lived in the lift up front cover of the radio. This could be removed and connected in place of the built in loop antenna by using a length of twin feeder stowed in the rear of the set, and two rubber suckers were also provided so that the 'Wave Magnet' could be stuck on to a window. Illustrations in Zenith advertising show the 'Wave Magnet' in use stuck to the window of a train! For short wave reception, Zenith provided a 1.5m long telescopic whip which they christened the 'Waverod' and which retracted fully into the cabinet. I wouldn't like to hazard a guess at the difficulty of replacing this antenna if it got bent or damaged because it has the largest diameter base section of any whip I have ever seen (apart from those on the front wings of Army Land Rovers), but it certainly is well made - like the rest of the radio. There were also screw terminals for connection of an external wire antenna should this be required, so overall the Trans-Oceanic really was a go-anywhere radio.



Go-anywhere

The 'go-anywhere' feature extended to the power supply arrangements. Normally intended to be used as a battery powered

receiver, the G500 also included facilities for mains power, and this could be 117V a.c. or d.c. For higher voltages, such as 230V in Europe there was a '220V adapter' which plugged into the chassis of the radio, but on investigation I realised that these arrangements for mains power were absolutely lethal, one side of the a.c. input being connected directly to the chassis of the receiver and hence under fault conditions to the 'Waverod' antenna and every exposed metal surface. The mains connector is the familiar two flat pin American type and therefore has no indication of which pin is connected to the chassis. I informed the lucky owner (lucky, because she had escaped electrocution) that under no circumstances could she ever use this radio as a mains powered device and proceeded to put together a power supply which would give double insulation between the a.c. input and the receiver itself, incorporating also a proper regulated d.c. supply for the valve filaments because these valves are not easy to find as replacements and there's no sense in doing what Zenith did which is to rectification of the mains without a transformer and the mains connected directly to the chassis of the radio – and that's in 2002! Needless to say, the Zenith battery packs were discontinued many moons ago.



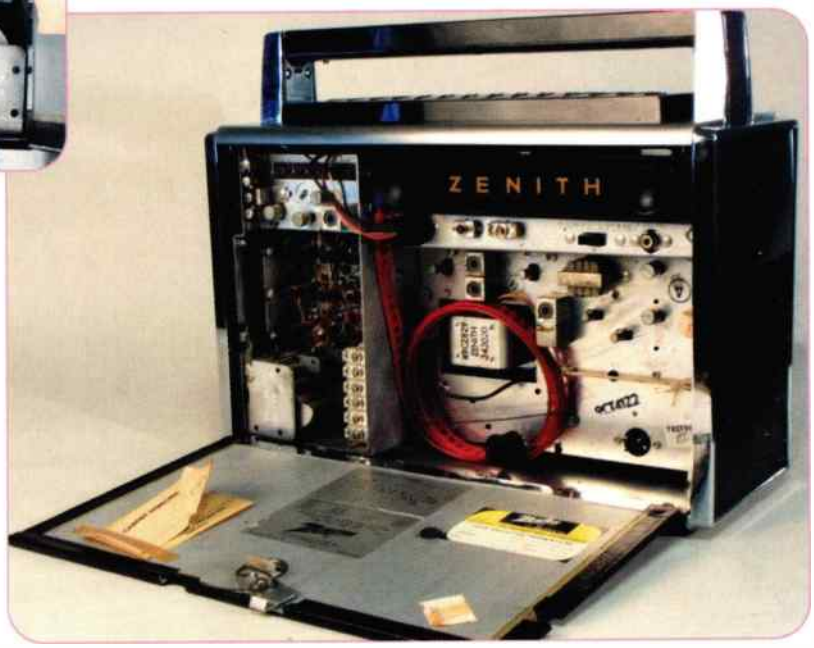
The user feature which made the Trans-Oceanic such a success as a short wave radio was the decision taken by the founder of Zenith to cover only the major short wave broadcast bands and to spread them over as long a tuning scale as possible. The G500 covers 6 to 6.2MHz (41 metres), 9.45 to 9.75MHz (31 metres), 11.5 to 12.1MHz (25 metres), 14.9 to 15.5MHz (19 metres), and 17.5 to 18.1MHz (16 metres), as well as the 535 to 1620kHz of the medium wave. Alignment of the r.f. section is quite tricky, but the results when tuning around are excellent, each station seemingly well separated from the next, helped by good i.f. selectivity, and I have to say that for a 1950s radio the G500 is very relaxing and brings back a real enjoyment of short wave broadcast listening as it used to be. No wonder the Trans-Oceanics were such a success then, and worthy radios even today. Given the chance, I would like to own this repaired Zenith, but I don't imagine it will be available to me - too much of that previously mentioned nostalgia for the rightful owner.

trust to the voltage drop across a series resistor directly from rectified mains! Awesome confidence, which I did not share, although I was horrified to find the circuit of a recommended h.t. supply on a Zenith dedicated enthusiasts web site which used half wave

Royal 1000-D

However: The Royal 1000-D is owned by me, and I'm pleased to have it in my collection since it represents Zenith's first foray into solid state receivers at a time when semiconductor manufacturers all used their own distinctively shaped metal cans to hide their new germanium wonders inside. I don't have the faintest idea who made the transistors for the Royal 1000-D since they carry only Zenith in-house part numbers, but I'll hazard a guess at GE from the shape of the cans. As in their previous receivers, Zenith used a fully tuned r.f. stage ahead of the first mixer to give gain and front-end selectivity, and these were the days when 455kHz i.f. amplifiers had to be capacitively neutralised to keep them stable - shades of r.f. p.a. stages. Zenith also used some curious double capacitors for decoupling both collector and emitter of each stage. It has to be said that the Zenith designers did everything properly, with no corner cutting in component count, although the four stage audio tone control of the G500 series (called the 'Radiorgan' in Zenith advertising) had been taken out and replaced by a single tone control.

The Royal 1000 covered a greater tuning range than the G500 receivers, the bands being: 540-1600kHz, 2-4MHz, 4-9MHz, 9.4-10.1MHz, 11.4-12.3MHz, 14.6-15.8MHz, 17.1-18.5MHz, and 20.7-22.5MHz. The 'D' model also covered the 150-400kHz range, this being an optional extra at a cost of $25, and this was intended to provide weather information for intrepid yachtsmen and other upper crust owners of this expensive radio. The front cover of the Royal-1000D handbook carries a photograph of the radio sitting on a table alongside a Leica camera; you would have to be dim not to get the message. The band coverage carried on the Zenith tradition of providing easy to tune bandspread across the busiest short wave broadcast segments, together with a more general coverage span between 2 and 9MHz. Rather surprisingly for its period (the 1960s) and intended international use, Zenith did not provide a b.f.o. for c.w. reception.



Externally the Royal 1000-D follows the same styling as the earlier Zenith receivers, with a drop-down front lid to cover the front panel. Housed in this lid are a world map, a time zone calculator, and a dinky little mini-logbook for noting your favourite stations. Thanks to the good bandspread design it is actually possible to return to a station frequency quite easily and accurately. The band change switch is placed on the

come and see us at the

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ARA 100 HDX	£349
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TEN-TEC RX-340

TOP OF THE RANGE Professional DSP HF Communications Receiver *the* ***Ten-Tec RX-340 £3995*** *call for a* ***SPECIAL FINANCE DEAL***

MYDEL

MiniMag Scanning Antenna available with BNC fitting **£32.95**
SMA fitting **£34.95**
Will also work on 2M & 70cms TX (50 W)
Magnetic Long Wire Balun **£19.95**
Skywire Antenna Kit **only £39.95**

UK Scanning Directory

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

FINANCE EXAMPLE

YAESU VR5000

APR 0%	19.9%
PRICE	£599.00
Deposit	£00.00
48 Payments of	£17.72
Total purchase price	£850.56

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

Full written details are available on request. Finance is subject to status. £10 p&p on all major items. E&OE

MAYCOM FR100

Pocket scanner with 8.33khz steps for the airband. AM/FM & WFM Basic scanner at a basic price only ***£99.00.***

ML&S £99.95

YAESU VR120D

Pocket Mini Scanner 500kHz-1300MHz AM/FM and WFM.

Ideal ***Go Anywhere*** pocket scanner

Now with 12V DC!

ML&S £159.95
SPECIAL OFFER

AOR AR8200 MK II

The best Handheld Scanner available with AM/FM/CW/WFM /USB/LSB. Frequency range: 530kHz-2040MHz PC programmable and controllable (requires PC8200 ***£85***).Complete with high capacity NiCads, Charger, Cigar lighter lead, rubber helical wideband antenna, medium wave plug-in antenna. Add the ***Super Searcher*** and ***RT8200 (£119.99)*** for reaction tuning to nearby transmitters

ML&S £439
ZERO DEPOSIT!
36 * £15.96

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 all for ***£229.00.***

ML&S £199.95

KENWOOD THF7E

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 * £14.48

YAESU VR500

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

BEARCAT UBC 780XLT

This is our fastest selling scanner for a long time - we just cannot get them in fast enough! Covering 25-510MHz and 800-1300MHz AM/FM - plus it is the only CE approved desktop to offer the Trunk Tracker facility. Complete with DC lead, FREE PSU and Whip Antenna - a steal at only -

ML&S £329
ZERO DEPOSIT!
36 * £11.60

YAESU VR-5000

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 £599
ZERO DEPOSIT!
48 * £17.72

MAYCOM AR108

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

ML&S £69.95

ICOM ICR2E

This little handy scanner is very simple to operate and is very popular among our commercial customers

PC Programmable Requires PC-R2 at £39.95

ML&S £159

ICOM ICR8500

Icom's Flagship Communications receiver covering 100kHz-2000MHz AM/FM/WFM/SSB & CW. SW performance is as good as many short wave only receivers but the VHF/UHF performance is where this radio comes into its own. Complete with **Free PSU** and **Control software** *(Not suitable for XP or Macs)*

PC Controllable

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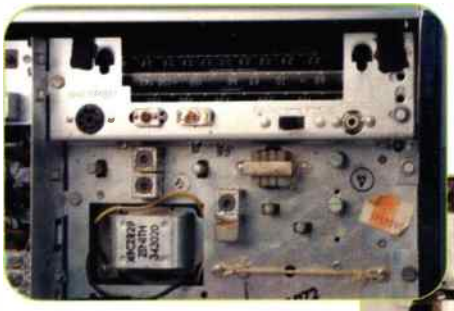
right hand side of the cabinet, and this drives a horizontal drum with the nine band tuning scales mounted as separate displays. At first use one imagines that the band change knob is driving a coil turret, but in fact there is a conventional coil pack and only the tuning scales revolve. The 'Wave Magnet' antenna system is still provided, with the built-in loop on top of the cabinet underneath the carrying handle, and the detachable loop housed in the rear of the enclosure together with its length of 300Ω ribbon feeder. The 'Waverod' telescopic whip is actually hidden in the carrying handle, and the photograph shows how this is erected and extended. Harold Cones comments that the stress on the end of the carrying handle has resulted in most of the examples seen to be cracked, but I must be one of the lucky owners because mine shows no sign of cracking at all – in fact the radio looks to have had hardly any use, and it has been protected by a rare Zenith 'Genuine Cowhide' leather outer carrying case.

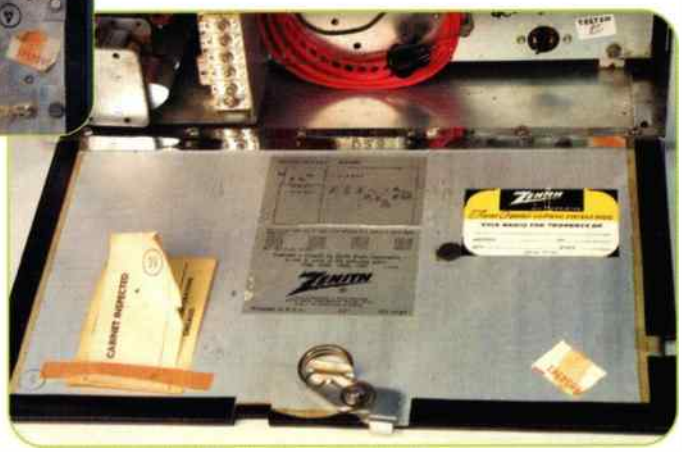
In use, the Royal-1000D sounds very easy on the ear and is very relaxing to tune, but I don't use it too often because of the cost of replacing the batteries! It takes nine 'D' size cells to fill the battery carrier, and that will set you back about fifteen quid. Later versions of the Royal-1000 had the suffix '-1' which indicated that there was provision for external power, but I don't want to modify my pristine 1000D and ruin its untouched status, so I'll just carry on using it carefully, because it's such a lovely looking and sounding receiver.

Why Include A Sony?

Harold Cones and John Bryant tell the whole story of Zenith from beginning to end, and the end was almost predictable. The traditional production processes which Zenith clung to for so long, including the continued use of hand wired assembly rather than using the printed circuit board, seemed to Zenith company executives to represent the best of American values, but they ignored the technological sun rising in the East. Japanese manufacturers such as Sony had pushed forward with new design and assembly processes, which together with the very detailed market assessments that Japanese companies undertake as part of the product planning exercise (I know; I was involved in some of the Kenwood market assessments) meant that Sony radios were appearing on the market which exactly fulfilled the needs and wants of world-wide customers. Zenith had spent all those years establishing a physical and electrical style of radio which was nearly perfect for its customers, so it was not surprising that Japanese radios began to appear which took that 'Zenith' style but brought up-to-date performance at an attractive (non hand-built) price.



Take a look at the photograph of the Sony CRF-5100 and it doesn't take a genius to see where the design inspiration came from. The similarity in layout of the Sony and the later Zenith receivers cannot possibly be an accident, and the CRF-5100 has the drop-down front cover complete with a time zone world map, the horizontal slide rule tuning dial with the band change mechanism driven from a knob on the right hand side of the cabinet, the same carrying handle, even the whip antenna in the same place as the Zenith. It's as close a copy as you can get, but what Sony did was to incorporate features which Zenith had failed to recognise as important. First feature was the inclusion of a b.f.o. so that users could at least listen to s.s.b. channels on h.f. The b.f.o. isn't great, but at least it works and is tunable so that s.s.b. can be resolved with a little 'fiddling'. Frequency coverage of the broadcast bands is 150 to 400kHz long wave, 530 to 1600kHz medium wave, then continuous coverage from 1.6 to 26MHz in five bands, but unlike Zenith, Sony did not provide any bandspread ranges for ease of tuning, and in this respect the Zenith radios are infinitely better for the short wave broadcast listener. However, Sony **did** provide, in addition to broadcast f.m., an aircraft band tuning 108 to 136MHz, and a 'Public Service' band tuning 147 to 174MHz; something that Zenith never managed to do. The Sony receiver has a mains (110V) power supply built in, together with provision for power from an external d.c. supply or internal batteries, and with that internal battery pack in place the receiver weighs in at 7kg (that's a stone in Imperial weight), which makes it a real handful to cart around.



String & Elastic

The tuning on the Sony is a bit 'string and elastic' but not too bad except on the higher short wave bands when you really have to trim your fingernails and sandpaper the fingertips before attempting to get on to frequency. However, in the middle of the main tuning knob there is a vernier trimmer which I guess Sony had to fit otherwise you would never get the tuning spot-on. This also helps in the aircraft and public service bands where the tuning really is quite sharp. Of course the Sony does not have the detachable 'Wave Magnet' antenna of the Zeniths, but as it happens, I now have another

'Royal' receiver, this time the Royal 3000 which came immediately after the Royal 1000 and which contains an f.m. broadcast facility. In order to get the new tuner inside the cabinet, Zenith removed the internal separate 'Wave Magnet' so that was the last time we had the removable antenna - so the Sony is in line with these later Zeniths. All these receivers have facilities for connecting external antennas, so I tried my hand at measuring the sensitivity of them all on their various bands. Now you can't take my figures as absolute because I haven't the faintest idea what the input impedance of these receivers was designed to be - if indeed they were ever designed with a specific impedance in mind, so I simply reverted to calibrations in µV rather than dBm and treated them all the same way. How did they turn out?

Performance

The G500 turned in figures of 4.5µV for 12dB SINAD at 6.1MHz, 3.5µV at 9.6MHz, 5µV at 11.7MHz, 9µV at 15.2MHz and 15µV at 17.7MHz. This may all sound a bit deaf by Racal standards, but within the broadcast bands the radio was designed to tune, the stations came roaring in with great sounding audio.

The Royal 1000 was actually not quite as sensitive as the G500, even after re-alignment, but strangely the best sensitivity was on the 21MHz band at 6.5µV, falling back to 10µV at 6.3MHz. The Sony said on its front panel 'Super Sensitive' and so it turned out to be. With al those bands to cover you had better see a table of results:

Frequency (MHz)	12dB SINAD Sensitivity (µV)
0.840	2
2.5	2.5
5	2
10	2
15	3
21.5	4
120	1.5
134	1.5
148	3
172	3

All these measurements were taken in a.m. mode, but the Sony clearly switched to f.m. demodulation in the public service band, so although you can still listen to a.m. using the f.m. detector, I measured the f.m. sensitivity using 6kHz deviation and found that for 12dB SINAD the sensitivity at 158MHz was 8µV. In the air band the Sony uses proper a.m. detection which results in the excellent performance shown above.

Conclusions?

I'm quite smitten by the audio and relaxed handling of the Zenith G500 but then I'm a valve man at heart. On the face of it, the Sony has the better specification in sensitivity and frequency coverage, but it left me a bit cold by its 'do everything, but slightly uncomfortably' feel. In between comes the Zenith Royal 1000D which retains the short wave bandspread of the traditional Zenith radio but lacks the smooth audio of the earlier valve models, although its performance overall is quite good. Let's put it this way: I walked into my workshop many times when I had all three receivers on the bench, but it was the Zenith G500 which I always turned on first to catch up with the news, and it burbled away very happily providing me with news and music from around the world whilst I got on with testing the next review receiver. However, if I was off on a journey somewhere, it would probably be the Royal 1000 that I took along because of its smaller size and lighter weight; the G500 now being, of course, no longer a portable in the absence of the correct batteries. The Sony? too heavy for me, and if I wanted to listen to air band signals I could carry a hand-held scanner as well as a Zenith and do both jobs properly. As a comment on the demise of Zenith and the rise of Sony I would say that Zenith lost the plot slightly and surrendered too easily to the Far Eastern onslaught, when in fact they had the right ideas all along but couldn't convince the buying public of the merits of their case - which is? - that a dedicated short wave broadcast receiver will perform best if it concentrates on the job in hand and doesn't try to be all things to all consumers. As for the consumers? I never cease to be astonished at the numbers of folk who believe the latest whizzo advertising claims without ever thinking (or being informed) about just what is important in their buying decision. To all of you who really believe that a hand-held v.h.f./u.h.f. scanner will provide good short wave performance because the adverts tell you so - dream on, read more of *Short Wave Magazine*, and start learning some common sense.

Finally, and because of recent experiences, if you want to buy and use an elderly Zenith radio, please be sure that you can treat it with the loving care and attention it deserves and be prepared to spend many hours bringing it back to health and well-being. The G500 I have described came to me after spending some time sitting in a pool of water, and I spent an astonishing amount of time bringing it back to life. If I were to charge proper labour rates for the job I did, the owner could have purchased a much more modern radio and had some money left over, but we lunatics do it for the 'pleasure?'. If similar exploits bring you pain, don't say I didn't warn you.

Happy (valved) listening, and remember that real radios glow in the dark. ***SWM***

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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^3 +30dBm).

The LA350 is 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. When independently tested, the gain of the LA350 was consistently greater on the higher bands than other loops placed alongside.

The LA350 comprises of a small control box with front panel power switch and LED. The top of the control box has a 6.3mm jack socket to accept any one of the four elements (two supplied as standard). The rear of the control box has a 1.3mm power socket (operation is from 12V DC) and a BNC socket for connection to a receiver. The LA350 is supplied with two loop elements (providing coverage from 3.0MHz to 30MHz), a BNC-BNC coax lead and AC power unit:

- 350S 30cm loop element: 3.0 - 9.0MHz
- 350H 30cm loop element: 9.0 - 30MHz

As the elements are mounted on a jack plug, they may be quickly & easily swapped and rotated to exploit the excellent directivity offered by the elements in peaking and nulling signals (ideal for minimising the effects of unwanted interfering local terrestrial signals and noise). The elements feature a High-Q poly-variable capacitor so that each element may be 'tuned' to peak the wanted frequency while achieving maximum rejection of unwanted out of band signals - valuable additional selectivity for your receiver's front-end stages.

Optional bar elements are available for the MW and LF bands:

- 350L bar element: 0.2 - 0.54MHz
- 350M bar element: 0.54 - 1.6MHz

***LA350** loop aerial 3.0 - 30MHz **£199.00** carriage £5.00*

***350L** optional LW bar element **£49.00** carriage £2.50 if ordered separately*

***350M** optional MW bar element **£49.00** carriage £2.50 if ordered separately*

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DA3000 16 element discone aerial specifically designed to match the latest AOR wide band receivers, but is equally suited to other brands. Usable coverage is 25 MHz to 2,000 MHz (2 GHz). Supplied with 15m of coaxial cable and terminated in a BNC plug.
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LA320 Short wave table-top active loop aerial 1.6 - 15 MHz fitted with coax lead and BNC plug ***£99.00** carriage £5.00*

320L Element 0.2 - 0.54 MHz for LA320, not for LA350
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320M Element 0.54 - 1.6 MHz for LA320, not for LA350
***£25.00** carriage £2.50 if ordered separately*

DDS-2A Microprocessor controlled external VFO with 100 memory channels for the Collins KWM-2(A), 75S-3B & 32S-3. Latest DDS technology to produce accurate and clean local oscillator injections replacing the original PTO and HFO of the radio, includes BFO shift compensation. Traditional styling and finish to match the Collins line-up.
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ARD-2 ACARS airband data reception and NAVTEX marine data reception in a compact self-contained unit with built-in LCD display providing two lines of text with up to 32 characters of text per line and a scroll back buffer of 512 characters. A built-in speaker with volume control allows you to monitor activity and assess what is going on, this is particularly useful for fine tuning of NAVTEX and enables you to shut the sound off completely when not required. A LEVEL control provides threshold adjustment to achieve the best capture of weaker signals for improved differentiation between noise and data. Sockets are provided on the front and rear panels for external speaker and earphone connection etc. A 9-pin ***RS232*** socket is also provided to enable ***connection to a computer*** for improved comfort when viewing for extended periods of time (free PC Windows software is available from the our UK web site).
***£249.00** carriage £5.00*

The Morse Assistant

A Morse Reader Program and PC Interface Part 1

Graham Sutton G4EVW brings us a Morse reading constructional project for those with an urge to build. This project works in conjunction with a PC . The required software is available from *SWM*, by post or from our web site. This project is quite complex and is therefore aimed a fairly experienced constructor.

The completed prototype has been working reliably for many months.

Morse is not my forté. I love how effective it is on the air, and how efficient it is to generate, but my poor old brain can not sustain deciphering Morse signals for any length of time. Sending is not such a problem. I imagine I am not alone in this.

Project Aims

Of all the projects I have tried in the past, in search of a 'Morse reading assistant', the one described here has finally proved satisfactory. It is able to handle the chore of reading even erratic Morse, so leaving me free to enjoy the contact.

The system is able to cope with nearly all band conditions, and automatically adjusts to sending speed.

What's To Be Done?

To achieve a robust Morse reader, two problems need to be solved. An **Interface** between the receiver and a computer, and a computer **Program** to decipher the Morse.

An interface is described which accepts audio from a receiver and converts this to the dc voltages needed for the serial port of a PC. The audio filter and decoder circuit is of standard form.

A program is also described which will enable a PC to read and display the filtered Morse code.

The Interface

The Morse assitant interface comprises of three sections - the circuits for which are shown in the following figures:

Power supply - **Fig. 5**,

Audio filter and Morse Detector - **Fig. 6**,

Monitor and RS232 driver - **Fig. 7**.

I built these modules on separate printed circuit boards and housed them in a Maplin project box as can be seen in the photos.

Power Supply

The power supply provides 12V for the monitor board, and 5V for the filter board. Any simple circuit will do this - the one I used is shown in **Fig. 1**.

Note that mains voltage exists up to the transformer primary, this is dangerous as **mains voltages can kill**. Please take care do not forget which parts are live when the case is open ensure also that the case is properly earthed. If you are at all doubtful about constructing a project that contains mains voltages, seek the assistance of someone competent.

Audio Filter

With typical band conditions, you will probably be trying to resolve a station from amongst others, through S5 noise levels. Unless you have a c.w. filter, it is necessary to improve the odds of copying the desired signal accurately.

The filter module achieves this

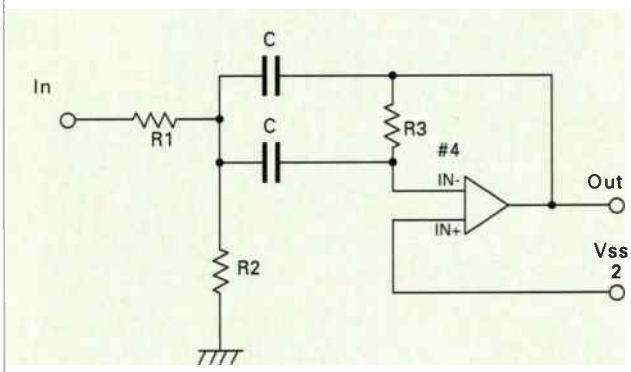


Fig. 1: The audio filter theoretical circuit.

using a 3-stage active filter based on an LM324 quad op-amp. The centre frequency for each stage was provisionally chosen as 700Hz.

Each stage comprises a bandpass filter whose response is set by selecting the values of three resistors and two capacitors.

The capacitors values were chosen as 0.1µF. The selected parameters were a stage gain K of unity, and a Q of 8.

This should provide a single stage bandwidth of around:

BW = f / Q
=700 / 8
= 88Hz

Using three stages will result in signals being rapidly attenuated at frequencies outside this range. Resistor values are calculated from: -

$R1 = Q / 2\pi fKC = 18k\Omega$
$R2 = Q / 2\pi f(2Q^2 - K)C$
$= 142\Omega$
$R3 = Q / \pi fC = 36k\Omega$

(Using practical values R1 = 15kΩ, R2 = 150Ω, and R3 = 33kΩ respectively).

The values are not critical, and the overall result for three stages is as follows:

The centre frequency when tested is about 720Hz, with a 3dB bandwidth of about 80Hz. At about 100Hz either side of the centre frequency, signals are down to 25% of the peak.

This enables the desired signal to be picked out from the crowd, without the tuning being too fine.

A filter in/out switch is fitted on the panel to enable the filter to be partially by-passed if conditions are good.

Tone Indicator

The fourth section of the LM324 is arranged as a gain block, although very little is needed. An internal trimmer is used to set the sensitivity of the interface when the receiver volume is at a leisurely level.

The audio signal is fed to an LM567 tone detector, tuned to the frequency of maximum response of the filter. This illuminates a **'Tune l.e.d.'** on the panel.

Morse Detector

The audio is also fed via a Detector Gain control on the panel, to a missing-pulse detector circuit. The function of this circuit is to convert the audio signals into 5V d.c. levels. Output is low when no tone is present, and rises to nearly 5V when a tone is present.

Two complementary transistors and a 555 timer chip, are used to achieve this. The audio signal peaks applied fo the BC109 transistor, turn it on. When the collector voltage goes low, the missing pulse detector is triggered giving a 5V high on the output pin 3 of the 555. While the tone is present, the 555 is continuously re-set and the output remains high. The timing circuit Rxx, Cxx is chosen to give a time constant longer than a cycle of the tone. In this case, at 720Hz, the tone period is 1.4ms, and the RC time constant is chosen to be 4.3ms.

The Morse detector follows the Morse signal, and drives a **'Signal l.e.d.'** on the panel via a BC107 transistor.

Delay Circuit

To guard against impulse noise, the dc signal pulses are passed through a Delay circuit, with its variable resistor placed on the panel.

The delay can be set from about 0.5 to 5ms. (Slightly less actually, since the CMOS transition voltage is at about 2.5V).

This will have little effect on the Morse elements which are of much longer duration, but should prevent very rapid transients reaching the output. (Note that the computer program to be described later, also detects and ignores untypical short elements - so there is a bit of overkill here).

Logic Buffer Circuit

To isolate the delay circuit and to provide an impedance buffer into the following CMOS circuits, the d.c. Morse signals are passed through one section of a 4002 (dual quad NOR gate), which inverts the Morse signal. The signal is then fed to a VN10KM.

A connector pin in the gate of the VN10 gives a Low (0V) when the key is down, and a connector pin at the drain gives a 5V High.

These signal levels are passed to the monitor and driver board.

Monitor / Driver Board

The circuit for this board is shown in **Fig. 7**.

The incoming (High ON) Morse signal at 5V level is applied to a VN10KM inverter, which changes the signal to 12-volt levels.

Applied to one stage of a 4093 (quad 2-input NAND Schmitt trigger), the Morse signal provides

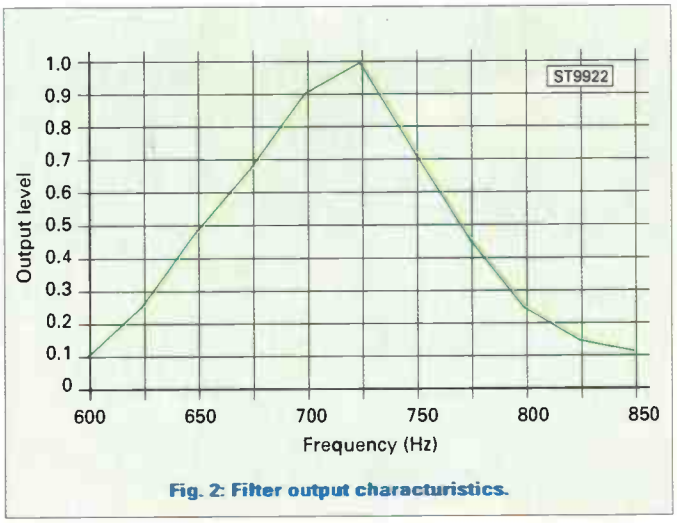


Fig. 2: Filter output characteristics.

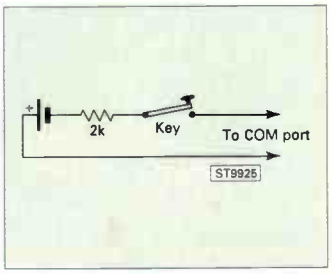


Fig. 4: Manual keying circuit.

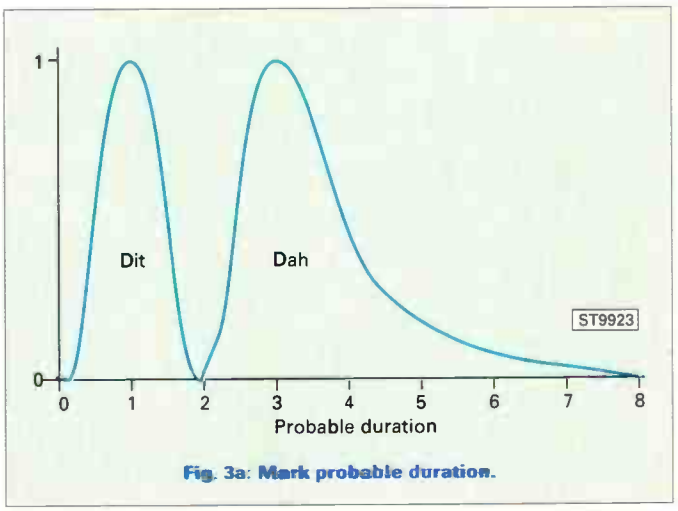


Fig. 3a: Mark probable duration.

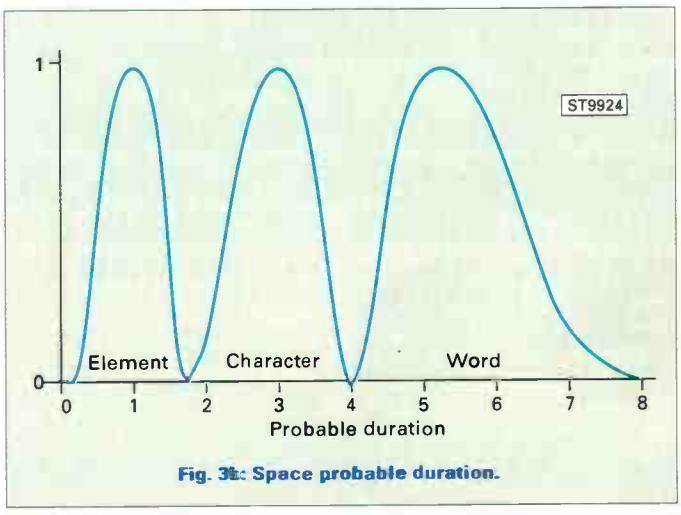


Fig. 3b: Space probable duration.

the output to a rear panel connector to the computer serial port.

The voltage is zero for key up, and 12V for key down. This can be fed to a serial port (either COM1 or COM2) on the computer. The Clear-to-Send port is used. Pin numbers for the serial connector are:

Sidetone

A second stage of the 4093 is used to provide a 12V level (when the key is down), which turns on a 555 configured as a sidetone generator. A Morse key can be plugged into a rear panel connector feeding both stages of the 4093. This simultaneously activates the sidetone and the computer output line.

An internal trimmer is provided to set the frequency to the preferred tone. The tone is passed through an internal volume control to an LM380 audio amplifier. This serves the dual purpose of amplifying the sidetone, and providing a continuous monitor for the incoming audio from the receiver.

A switch is provided on the panel to turn the sidetone on/off.

Setting Up The Interface

Set the receiver for best reception on the band at an easy listening level. Then with the filter switched on, plug in the interface and set the monitor volume for a subdued monitor sound level.

To set the tuning indicator, either use an audio signal generator, or tune through a continuous signal on the receiver. Monitor the output of the filter to find the maximum response - the centre frequency for the filter. Set the trimmer of the LM567 tone detector to illuminate the **'TUNE l.e.d.'**.

It should now be possible to tune to a required Morse signal and the tuning l.e.d. should pulse in unison.

As the detector gain control is advanced, the **'SIGNAL l.e.d.'** should begin to flash. The Morse detection circuit is able to respond to S1 signals quite easily.

Keep the receiver audio level down to minimise noise, such that the tuning l.e.d. just flickers occasionally with no signal present.

If all is well, you should hear all signals on the band through the monitor speaker. As the filter captures a signal, the l.e.d.s should flash and the sidetone should sound. This provides an enhanced audio tone for the desired signal.

If the computer program (see later) is running, the decoded Morse will appear on the screen.

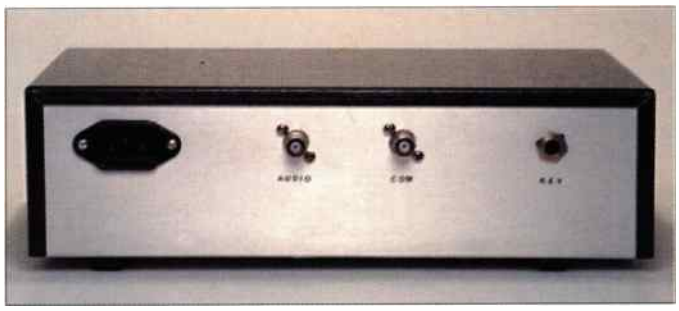
If band conditions are good, the filter can be switched out to give slightly easier tuning of the interface.

Although the prime function is to decode incoming Morse code, a Morse key can be plugged into a jack socket on the rear panel in order to practice sending. This also provides a good test of the computer program, because if your Morse sending is a little irregular, the program has to try to decipher your signals.

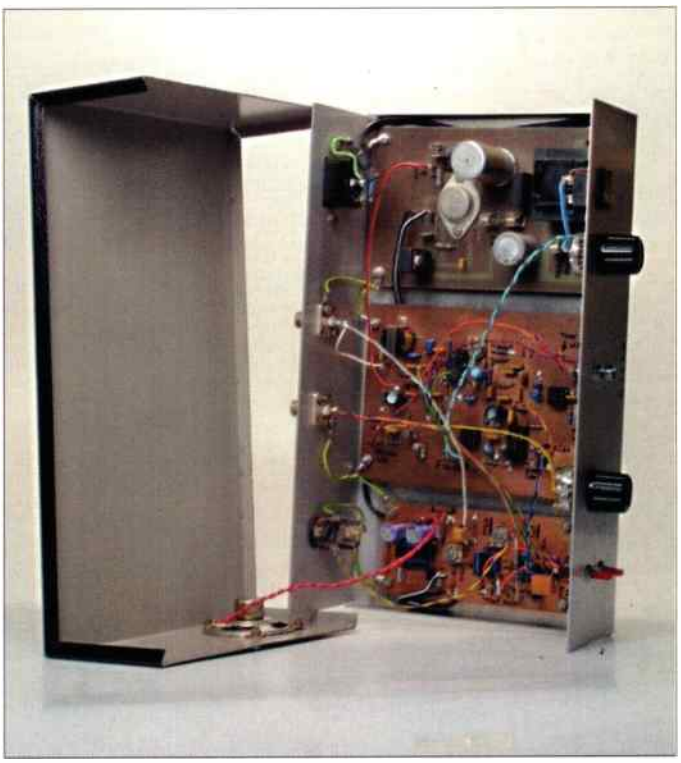
The hardest part is to distinguish between inter-element gaps and inter-character spaces. If the timing of your keying is a bit erratic, you may find that each character is followed by a space. It's a good way to improve your hand-sent Morse.

The Decoding Software

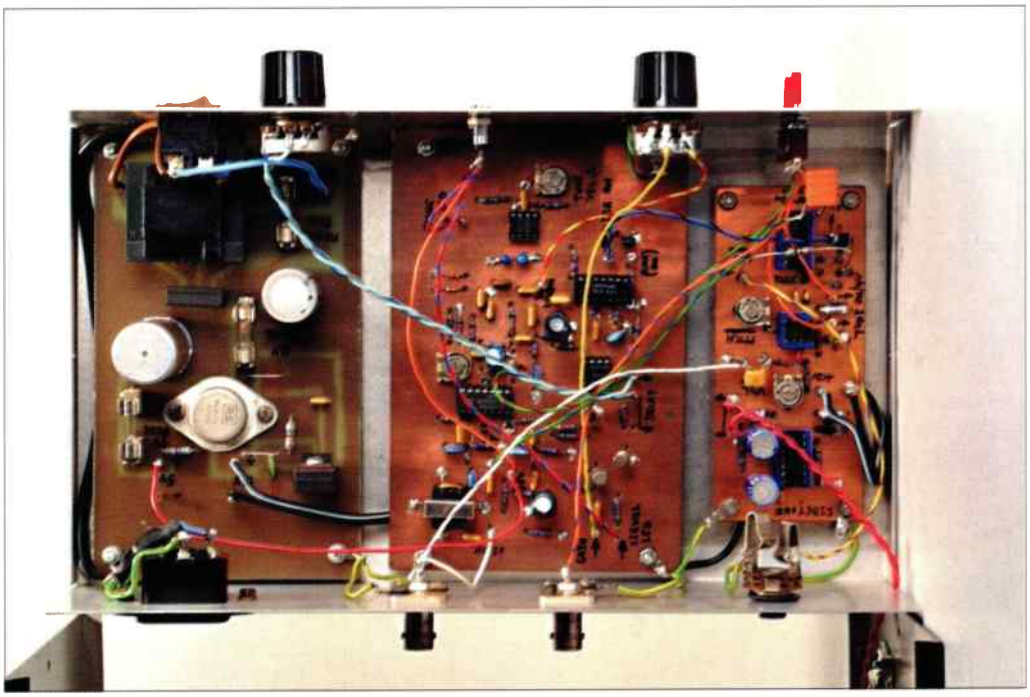
The program to be described will respond to the 12V signals applied



Interconections to radio, computer, key and mains.



Graham's neat construction on show.



Pic. 4: The home-built p.c.b.s.

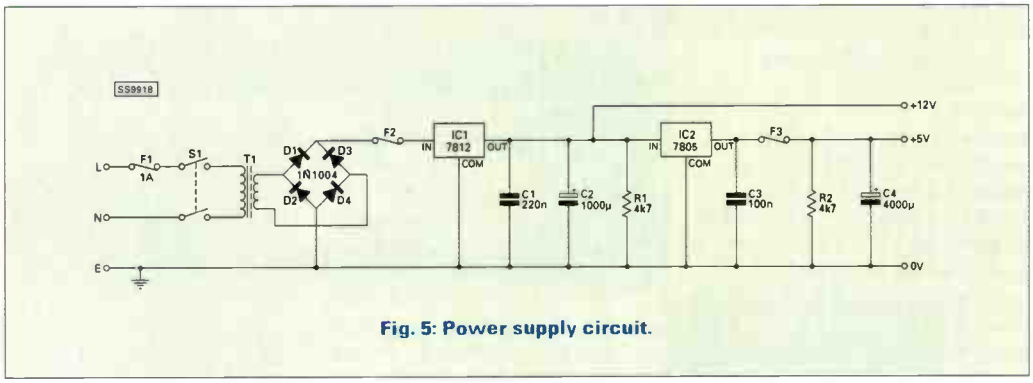


Fig. 5: Power supply circuit.

to a serial connector on the PC via the CTS port. Either COM1 or COM2 can be used.

A computer program normally tends to exhibit a very rigid response to incoming data, which in the context of decoding Morse signals, could result in erroneous or missing characters.

This program has a built-in tolerance for variation in the lengths of dits, dahs, and spaces. Given a few characters, it will adapt to varying sending speeds.

Several other Morse related programs exist, but they often attempt to provide learning and transmitting features as well as decoding. This program focuses primarily on the decoding problem.

What's Involved?

A method is required which will process the continuous stream of signals arriving at the serial port. The program has to decide whether it is dealing with a dit or a dah, and whether periods of no signal (i.e. key up) correspond to an inter-element, inter-character, or inter-word gap.

Having made this decision, the program needs to construct and display the received characters, and to sound a tone to follow the Morse.

All this needs to be done at high speed and with precision. When a workable algorithm has been decided upon, it is necessary to decide how to encode the program for the PC.

Assembly language would undoubtedly be the fastest, followed by C. However, I decided to use Basic and Delphi to write the program - easy to follow and fast enough. DOS, Windows 3.11,

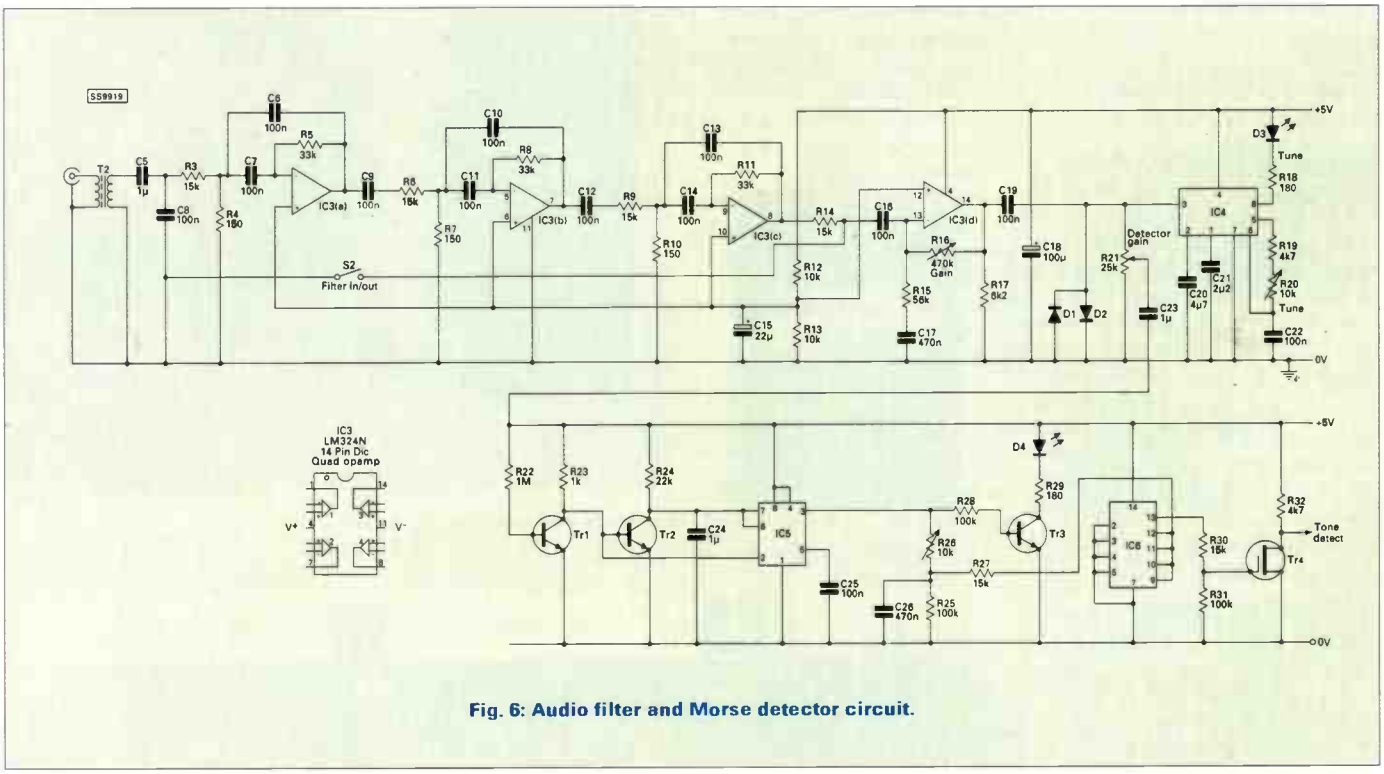


Fig. 6: Audio filter and Morse detector circuit.

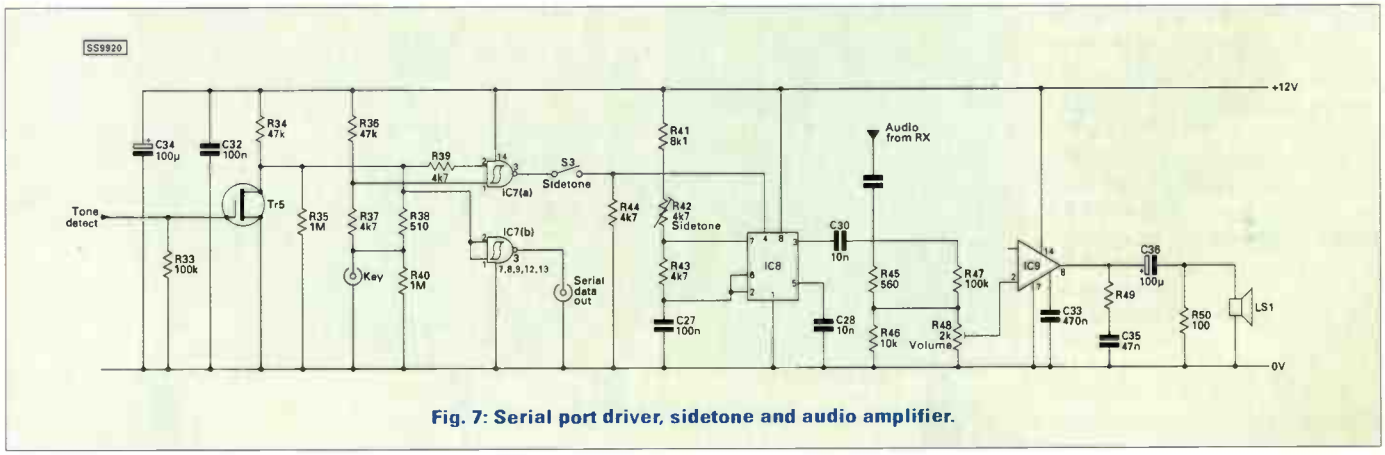


Fig. 7: Serial port driver, sidetone and audio amplifier.

and Windows 95/98 versions of the program all worked well.

Essentials

For Morse code, the basic timing unit is the Dit length. In terms of this, a Dah will average 3 units, an inter-element gap 1 unit, an inter-character gap 3 units, and an inter-word space 5 units or more.

Dit length is related to sending speed by:

Dit = 1200/ (Speed in words per minute) ms

For the PC, what matters is how fast the program can respond to changes in status of the CTS port. The best solution would be for an interrupt to be generated and for the program to respond to this. A second approach is to continually poll the CTS port and process the signal changes as they are detected. As the signals are in a state of continuous rapid change, it was decided that the second approach was simpler and probably not much less effective.

So the method adopted is to keep reading the CTS port status as often as possible, and to process the changes as fast as possible. The computer will be kept very busy.

Timing (as far as the computer is concerned), is governed by how many 'reads' of the CTS port can be achieved corresponding to a Dit. The timing unit is called 'u' in the program.

It will vary from machine to machine, and with the Morse sending speed. Variation from 200 to 2000 'reads' per Dit may be achieved at 12 words a minute, depending on the computer. However, we need to clarify what each 'read' involves.

Contact Bounce

When a key contact is closed, the contact will exhibit a transient resistance and mechanical rebound. For a short period of time, this results in the CTS port status closing and opening several times before finally staying closed.

To a lesser extent, this effect also occurs when the key is opened - CTS opening and closing several times before remaining open.

To follow the true keying signal, it is necessary to make a number of actual reads of CTS to each of the notional 'read' operations mentioned above. Initially, the program uses 20 actual reads to establish the true state of the signal. This can be adjusted as necessary using the Port Read control, to achieve accurate following of the keying.

Flexibility

Unless the Morse is sent by machine, the duration of Dits, Dahs and spaces will be continually varying. A method is needed to decide which signal is currently occurring.

As we are dealing with a two-state system (**on** or **off**), we can consider the following two timing diagrams:

a) Marks - **Fig. 3a**

b) Spaces - **Fig. 3b**

The program evaluates marks as follows:

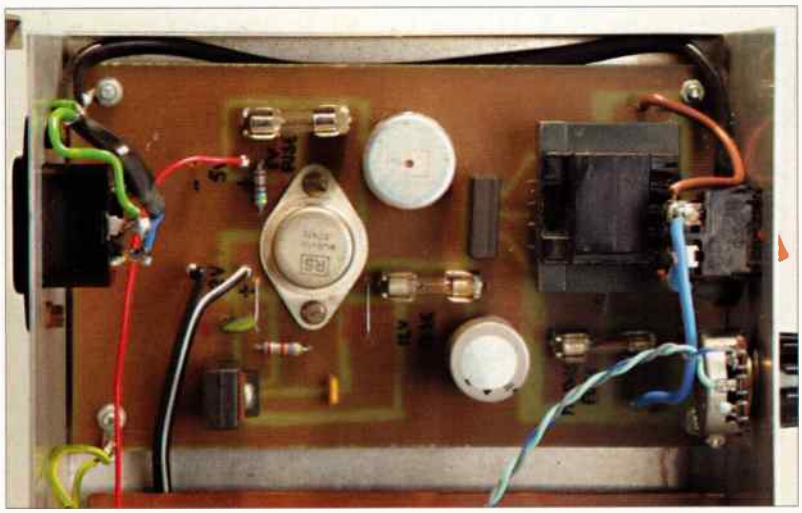
A tone persisting beyond eight units is taken to be a continuous tone with no information present.

Similarly, spaces are timed as follows:

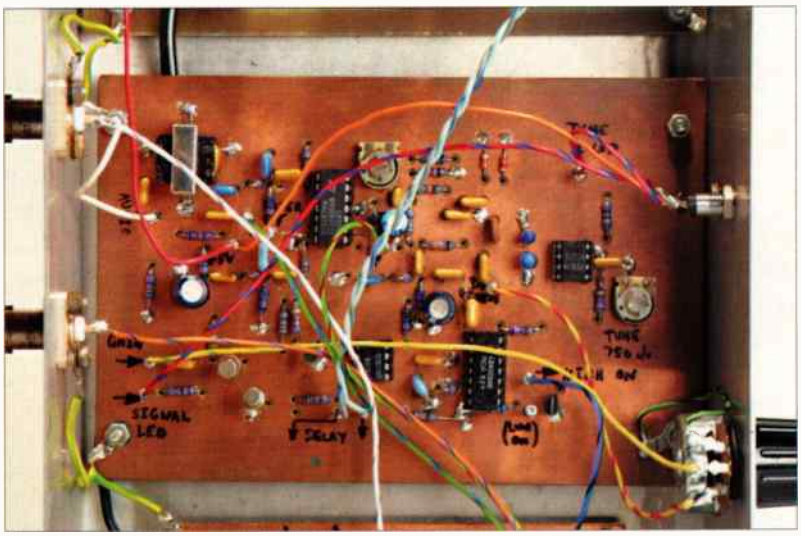
A space greater than five units is regarded as an inter-word space. When the space following the last word has been displayed, the program waits for the next mark to occur.

SWM

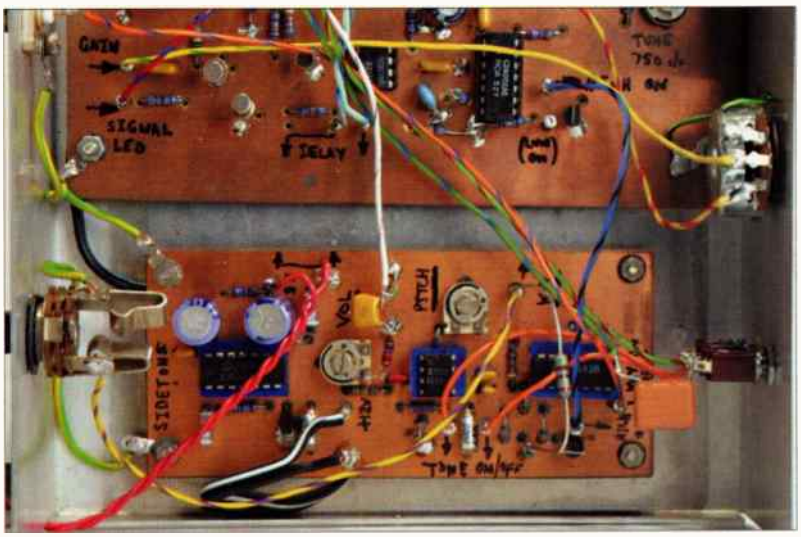
Next month we conclude the Morse Assistant project with a further look at the software and a shopping list.



Pic. 5: The p.s.u. section.



Pic. 6: Main board with ground plane.



Pic. 7: Serial port driver, sidetone and audio amplifier p.c.b.

To obtain the software for the Morse Assistant you can either download it from the *SWM* website at **www.pwpublishing.ltd.uk/swm/downloads/morse.html** or by sending a £1 coin to **Morse Assistant, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH21 7NT**. In return we will send you a CD containing all the versions of the program.

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Amateur Bands

Island On The Air

No doubt one of the major events in July will be the RSGB (Radio Society of Great Britain) IOTA (Islands On The Air) contest which runs from 1200UTC Saturday 27th to 1200 Sunday 28th. It takes place on the 3.5, 7, 14, 21 and 28MHz bands using s.s.b. and c.w. modes. 'Collecting' Islands is a popular pursuit of many amateurs and short wave listeners that is rapidly gaining an increasing following.

To really get to know all about IOTA, the thing to do is buy the *IOTA Directory* which is available from the *SWM* Book Store for £9.95 plus P&P. The directory is so new that it contains pictures of the DXpedition to Sonsorel Island in the Southern Pacific during February this year, (see Feb 2002 *SWM*).

The directory has all the information about IOTA that anyone could want - rules, callsigns and a comprehensive listing of island groups. It also includes details of what, for the purposes of IOTA, constitutes an island. Who knows how many geological islands there are in the world, but a slight clue is that there are 1200 groups of islands listed in the IOTA directory.

Some groups, such as the British Isles, have plenty of amateur activity. Hearing these islands is obviously easy. Plenty of other island groups have no amateur activity at all unless they are activated by DXpeditions. Some have yet to be warmed by amateur radio transmissions. Anyone who gets themselves into IOTA activity and starts collecting islands will be busy for a good few years, so there's little chance to become bored.

Another plus for QSL card collectors is that the IOTA ones from exotic locations tend to be rather prettier than your average QSL card.

A fair number of islands will be activated specifically for the contest in July. One of those is Sisargas, just off the north west corner of Spain, near La Coruna. Half a dozen Spanish amateurs will operate the station from the 26th to the 29th of July using the callsign ED1URJ. Another island to be activated is St. Pierre & Miquelon south of Newfoundland. The operators will be Linda VE9GLF and Len VE9MY.

One of the staff of the Meteorological Station on the very, very small French Island of Tromelin east of Madagascar in the Indian Ocean is Jacques FR5ZU. Shifts permitting, he'll be operating as FR5ZU/T until the 5 July.

Another French Island to be activated for the contest is Isle de Sein, just off the western tip of Brittany. The probable callsign is TM2ON.

Last in my list, with the callsign PA6TEX, is Texel Island which is part of the Wedden Island chain off The Netherlands' coast.

Nets

A core activity of amateur activity is the regular meeting together on the air of members of various groups and clubs. **Colin Ashman** in Northants is a keen listener and monitors various nets. In particular he enjoys using his Icom R8500 to listen to the 'Barometric net' - how did it get that name? - skilfully hosted by Johan G0VZO (**see page 23 - Ed**), with regular characters participating for an hour from 0600 and 1800 on 3.775MHz l.s.b. every weekday. Do let me know of any other nets which would interest other listeners and I'll publish the details every so often.

As you read this, Colin may no longer be limited to listening. If everything has gone to plan, he could have completed his long quest to get on the air and be the proud holder of a Foundation licence with an M3 callsign.

Foundation Calls

Unlike all other UK licences, which have the suffix letters issued in strict alphabetical order, anyone who obtains an M3 call can apply for their own choice of suffix letters. This seems a good idea, and on the whole it is. But **Mike Knight** of Northants found his first three choices of callsign had already been taken. It might end up that finding a callsign becomes the longest part of the process of getting a Foundation licence!

Upcoming DX Stuff

Some Ukranian islands have been seeing amateur radio activity since the 1st May. The callsign being used is EM11E and the activity will continue until the 31st August. Some of the islands are in Ukraine's main river Dnipro, or the Sea of Azov north east of the Crimea, but only those islands in the Black Sea qualify for IOTA. Let's hope they're on a qualifying islands for the contest!

In Argentina the GACW (Grupo Argentino de CW), which sponsors a programme to encourage children into amateur radio, has its 15th anniversary this year. To celebrate this Argentine amateurs have been able to use the prefixes AY, L5 or L6 in place of the usual ones since the 29th April, and will be able to do so until the 29th December this year.

Thanks to *425DXNews* for some of the info and to **http://www.ozemail.com.au/~macinnis/lhi.htm** for the picture of Lord Howe Island

Heard Around

Philip Davies in Shropshire noted that the superb conditions on the h.f. bands at the start of April didn't last the whole month. Solar flares put the spanner in the ionospheric works. The silver lining to the cloud of weak east/west propagation when conditions worsened was improved paths from Africa.

Hearing C56JJ in Gambia, East Africa on 14MHz being a good example. **Alan Barker** in Leicester extended his long wire antenna to 20m - a half wave on 7MHz - and heard the same station on that band working IV3IZU. He also heard HH/K4QD/P in Haiti on 24 and on 28MHz HL4SF in Korea's southern Cheju Island. Other interesting DX in Philip's log are VK9LT, Lord Howe Island east of Australia - XW1HS, Laos on 14MHz. On 21MHz JS6PXB, Okinawa Island south of Japan - 9V1WW, Singapore - A71MA, Qatar and on 28MHz TU2IG, Ivory Coast, East Africa and A43GI, Al Ghanam Island off the northern tip of Oman in the Strait of Hormuz.

Please note all times are UTC.

■ ROGER BUNNEY, 35 GRAYLING MEAD, FISHLAKE, ROMSEY, HANTS SO51 7RU

Satellite TV News

As I compose these opening lines May 7th the US Military Intelligence surveillance operation downlinking from the skies over the Balkans is active from both the 'HUNTER' and 'C-12MARS' aircraft. Images of buildings, groups of people, roads and parked cars are checked from the eye in the sky, and in the evenings infra red scanning is in use for hot-spot activity in the dense mountainside forests.

'Hunter' is a manned Hunter aircraft and on today's prolonged flight the camera panned along the aircraft structure from rear to front surveillance and provided a glimpse of two helmeted aviators! The 'Hunter' downlink service ident is 'AIRSCAN/HUNTERUAV', this live action is viewed in the clear (unscrambled) via *Telstar-11* @ 37.5°W, 11.495GHz-H, SR 19500 + FEC 2/3.

The airborn surveillance operation for US Intelligence over the Balkans is an ongoing security process and checking the *Telstar-11*, 37.5°W downlink at 11.495GHz-H (SR 19500+FEC 2/3) will reveal a couple of NTSC CNN news channels plus four channels within the 'AIRSPAN' package showing either 12 hour clocks in surveillance downtime, or if you're lucky, pictures from the air, mainly afternoons into the early evenings on one or more channels. The landscape images will show Kosovo, Bosnia or elsewhere in that region, the aircraft both manned and unmanned operating at heights from 10000-30000 feet.

Each channel is captioned with the aircraft in use e.g. 'AIRSCAN/HUNTERUAV', 'C12 MARS', 'PREDATOR'. Bank Holiday Monday May 6th produced two surveillance downlinks, the 'Hunter' aircraft offering impressive pictures of the landscape, zooming or 'click' zooming into tight closeups of cars and sides of houses from a wide shot showing a whole town and adjoining countryside.

Balkans 'Airscan' surveillance, note co-ordinates, height ~11685ft - and other data. (Telstar-11 @ 37.5°W).

That night 'Hunter' continued through until at least 0130 the next morning of the 7th with infra-red coverage and clearly isolating figures lurking in woodlands unloading from vehicles - the trees showing as peak white against the figures as black. The graticule overlay cross-hairs on the picture would then 'focus' on specific points of the surveillance area and flick several times, possibly computing the exact co-ordinates for later terrestrial investigation.

On the 'Hunter' surveillance flight May 6th the camera, whilst moving from forward to rear view, panned along the side of the aircraft, antennas, 2nd camera dome, the two crew members and company logo could easily be seen! A 'white balance' for camera registration was also carried out using the side of the aircraft. This is a civilian operation on contract to US Military Intelligence.

As a footnote, **John Locker** (Wirral) writes that all surveillance downlinks are bundled together and uplinked via the UFO sat into the 'States where it's most likely analysed, then the surveillance package plus two added CNN channels are uplinked onto *Telstar 11* for transmission into Europe, the surveillance images are then processed by Balkans military intelligence (see *What Satellite TV* magazine, May 2002, pages 50-53).


Night-time infra-red 'Airscan' surveillance.

Whilst lurking on *Telstar-11*, Stefan Hagedorn's i/net newsletter advises that the UK forces TV channel BFBS-1 went into the clear early May, 11.561GHz-V, SR 5998+FEC 1/2 - but resumed PowerVu encryption a week later, odd!

On one very active day, April 21st with electioneering action across La France, Roy received 19 different frequency Ku-band downlinks - excluding activity on *Intelsat 801* - across satellites *W1, Telecom 2B, Telecom 2D* and *Atlantic Bird 2*. Common parameters were 5632+3/4; 6111+3/4; 6283+7/8 and the odd one out - 3254+5/6. You could easily add a further five frequencies on *801* to this total.

May 5th incidentally was the 75th anniversary of NBC and their NBA basketball sports feed over *NSS-K* 21.5°W using the Reuters 11.462GHz-V (SR 5632+3/4) lease carried many related promos - amongst live NBA action of San Antonio, TX v. LA Lakers and the Boston v. Detroit matches.

And whilst in an *NSS-K* mode, the new *Intelsat 903* sat which has been parked at or about 25°W has been downlinking blank carrier tests - easily visible on an analogue receiver - using several Ku-band frequencies (between 10.900-11.645GHz), prior to moving into the 24.5°W slot that's currently used by the elderly *Intelsat 603* bird. Hopefully this should provide another Ku-band hotspot in the Western sky!

There were few reports of the Queen Mother's lying in state and funeral procession, though **Roy Carman** (Dorking) noted that *NSS-K* carried live the ceremony of the Queen Mother being moved from St. James Palace to Westminster Abbey (11.563GHz-V (SR6111+3/4) on 5th April. A few days later (8th April) on *Eutelsat W2*, 16°E a series of vox-pops interviews with folk camping on the pavements awaiting the Queen Mother's funeral - 11.102GHz-H (5632+3/4 with a service id 'OV Services').

A few news and feature feeds still filter out of Afghanistan, the most prolific being the Fox News Kabul crew that appears at 11.675GHz-V (5632+3/4) with a service ident 'Locked-on 1#1' or sometimes '...1#2' or variations there-to. May 8th and a long report via Fox capacity featured Canadian troops clearing caves in the rugged mountains, dropped in and out of the region from Chinooks.

Mid-morning of April 30th and the same frequency carried a massive military march-past and review of Pakistan forces, troops, tanks, armoured cars, helicopters, parachutists, resembling perhaps an equivalent of the Moscow May Day processions - though this carried the backdrop of snowcapped mountains and deep blue skies. 'Locked-on 1#1' April 27th and the new Afghan leader (pending elections) Mr. Hamid Karzai was wheeled out to face the press and freely answered all questions put to him, transmitted back to Fox News London Europe over the *Europe*Star-1* satellite feed using NTSC (American TV standard) as is the norm.

Dave Dyson (Lancashire) comments on activity via *Eutelsat 2F3* @ 21.5°E. This is an inclined craft that carries a considerable number of feeds daily - though on an intermittent basis - for UK TV stations, particularly during the afternoons. This makes for difficult monitoring of this sat for daily out-at-work readers and only home in the evenings, though Saturday PMs should offer potential. Dave reckons that at least two UK horse meets daily will be carried on *2F3* in the clear via SisLINK - and a challenge to us all is that Dave has logged the majority of downlink frequencies used on *2F3* as detailed on the SatCoDX website listings!

A few weeks back Dave clocked a *2F3* outside broadcast from 'UKI-515 128 London Crew' covering the 'Marbles Championships' from the rear of the Greyhound Inn, somewhere in the South UK! Eutelsat launch their new *W5* Ku-band satellite this summer for TV programme transmission 'and particularly Satellite News Gathering (SNG)' use and hopefully this may slot at the 21.5°E *2F3* slot bring a stable and stronger downlink signals - Eutelsat have yet to confirm a slot for this craft.

'Nile TV' is an interesting Egyptian uplinked TV channel and **Edmund Spicer** (W. Sussex) has seen this channel appear recently on the *Hot Bird* 13°E slot in the clear (or FTA) at 12.520GHz-V (27500+3/4) and another FTA (free to air) signal discovered was 'ORT-INT-UKR', this is of interest to Ukranian anoraks, it's the Russian Ukranian channel package at 11.766GHz-H (27500+3/4) from the rarely mentioned *Sirius* slot at 5°E (actually *Sirius-2* @ 4.8°E).

A final thought, the South African character that paid $14 million to fly to the *International Space Station* via Russian Soyuz capacity is also thought to have paid for a satellite feed into the SABC, J'burg so that his friends and admirers in South Africa could see him flying around. Much of this info. came from a news feed over the *Atlantic Bird 2/Telecom 2D*, 8°W slot at 11.146GHz-H (SR3220+3/4) on April 22nd.


Interim Afghan president Mr. Hamid Karzai holds a live press conference in Kabul (Europe*Star-1).

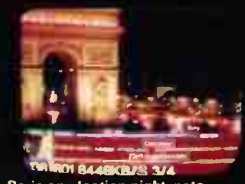

The Pakistan army military march-past April 30th, a live outside broadcast, a tank passes displaying a picture of their leader (Europe*Star-1).

Corporate transmission from the 'States via NSS-K, Globecast package.

A Texas news film of twister damage from KAMU-TV - listed as 'College Station', (PBS Network runs 23.3kW e.r.p. ch.A15) - NSS-K.


The Kentucky Oaks horse racing, a live blimp shot of the race!


President Chirac wins the French election, speech from a street pop concert in a Paris street, via Intelsat 801.


Paris on election night, note service ident.

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SSB Utilities

Last month I told you that I had been experimenting with a new antenna, so this month I will start off by giving you some more details and thoughts upon its installation and use.

For many years I have been using a full-sized G5RV dipole, and this has actually survived remarkably well given the number of times it has been erected and removed. Since I bought it in the late 1980s it has been installed in three different locations, and always in a very simple fashion so that it can be removed quickly. In one location, it was installed as a loop draped around the inside of a loft and on both occasions when it has been in the garden the supporting ropes and poles were installed in such a way that any breakage would simply drop the whole lot to the ground causing minimal damage.

I have been thinking of changing to a different design of antenna for a few years because I wanted to see if a different antenna would give better reception at lower frequencies. I have been gradually collecting together various components ready for the day when I take the plunge and install the new antenna. I have always wanted to try a simple long-wire, and to see if that improves my reception of certain frequencies - this Easter I took the plunge.

Quite a few years ago I picked-up a pair of porcelain 'bar' insulators for the princely sum of £1 at a rally, and two years ago I found an ex-services long-wire antenna for just £2.50. The antenna wire is braided stainless-steel, and very strong, and to aid the average soldier in selecting the correct length of wire for his antenna it has a small piece of rubber sleeving every 300mm along its length. I already had a suitable lightweight antenna mast at the end of my garden, so all that I needed was some way to feed the signal from the antenna to my receiver. I wanted to use coaxial for this, so I needed some sort of balun.

After a chat with Tex Swann of *Practical Wireless*, I followed his suggestion and bought a system from Lake Electronics known as a 'LWC System'. This comprises a pair of 'antenna couplers' - one attaches to the antenna wire and transforms the high impedence of the antenna to low impedance to match the coaxial cable, while the second one converts it back to high impedance before feeding the signal into my a.t.u.

The new antenna has been in use for a few months now and I am still getting used to how it performs. After 12 years with a G5RV, I knew where to set my a.t.u. for certain frequencies and I knew which frequencies I could receive very well and which ones not so well. With the new antenna I now have to learn all this again. I am still experimenting, trying different settings on the a.t.u. for different frequencies, and also trying new frequencies.

One thing that I have noticed is that I have managed to almost eradicate a series of annoying 'birdies' or other interference. For example, I occasionally listen to the German AF h.f. network on **5.687MHz**, but with my G5RV antenna, I seemed to get an increase in background noise on just this frequency. With my new long-wire the interference does not appear.

Airnav 4.0

A few years ago I wrote about the *Airnav* program which allows you to track aircraft by entering their position reports into a computer program. At the time it was version 3.0 of the program and a few months later version 3.1 was released. In the past few months version 4.0 has been released to eager enthusiasts. The latest version has been completely re-written allowing it to be run under *Windows XP* as well as some earlier version of the Windows operating system.

The new program is naturally much larger (7.5MB), but does include a lot of new and useful features. Aircraft can now be tracked by any combination of three sources of data. The user can enter flight position reports into the program as they are heard over h.f. radio and the program can also automatically enter the data via its own ACARS interface. The program is also compatible with existing ACARS decoders, so if you have one of these already there is nothing extra to buy.

It is also possible to download flight data from the Internet to give a semi-realtime tracking of flights. The information from the Internet is a few minutes old, but with repeated downloads over the course of an hour (each download only takes a few minutes maximum) it is possible to work out the direction of flight and that will give the listener a good indication of which frequency any flight may be using. Obviously, using ACARS data will be flight data that will be local to the listener, but h.f. data could be from thousands of kilometres away, but by carefully choosing which h.f. frequencies you listen to, it is possible to coordinate the flights from both sources.

Consider a flight departing from London and flying to New York - you pick-up signals from the flight on ACARS which then appear on the map. After a while you lose the ACARS signals as the flight goes out of range, but then you start to hear the flight talking to Shanwick and you are able to track the rest of the flight. The result is that you are able to track the flight from London to the other side of the Atlantic, and although you won't be able to hear ACARS signals from the USA or Canada, you will be able to check the progress of the flight until it makes v.h.f. contact with ATC.

One of the more interesting visual features is the better graphical interface for creating maps. With a few simple mouse-clicks you can zoom, re-size or alter the current view of the airspace. There is also a new kind of map available for the display of flights.

One of the most important screens within *Airnav* is the map showing where flights are located in relation to one another. This is a kind of 'birds eye' view of the airspace, taken directly from above. This uses a Mercator projection map so that aircraft on the more northerly or southerly routes move across the screen at the correct relative speed. The new version of *Airnav* has a new map which is best described as being a 'slanted satellite' view of the airspace.

The 'map' shows the curvature of the earth with a portion of outer space visible. Flights crossing through that portion of the sky are plotted on the screen as before, but the view of them is from above and to one side. This almost gives a 3D perspective of the airspace. This is a very difficult map to describe in print, but fortunately there is an example map on the *Airnav* home-page.

The databases within the *Airnav* program have been improved and extended, and perhaps the most interesting of these is the ability to display a picture of an aircraft on the screen once you enter details of a flight. The program does not come with a library of pictures, but with access to the Internet it is possible to download vast libraries of pictures of airliners and by integrating these pictures into the *Airnav* program you can now 'see' the aircraft when you 'hear' it. This part of the *Airnav* program was mentioned in Mike Richards' 'Decode' column in the May 2002 issue which includes some screen shots.

Web Watch

Airnav, aircraft tracking software -
http://www.airnavsystems.com/ANST/index.htm

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Shackware

Hello and welcome to 'ShackWare', the trip down silicon's memory lane. This month would've been another helping of your queries plus a snippet or two of news, but then I thought no! Where's the fun in having a columnist's chair at *SWM* if I can't bend the rules and indulge myself occasionally. Stick with me, there is (I promise) some useful stuff in among the reminiscences which follow...

Mac Musing

A recent correspondent documenting the sad demise of his Mac collection prompted me to revisit my own Apple machines. Active in my shack are an LC475, which is a 68040 computer dating from around 1994. Though the LC475 was shipped in the 'small box' format (similar to 68020 LCIIs and 68030 LCIIIs) it was actually more powerful than the Quadra-class computers of its day which were among the fastest Macs money could buy! The LC475 was a dream come true when it first arrived on my desk and was the first 'real' computer I used to decode FAX (with the *RadFax* program) though I'd use the BBC, Spectrum and Atari 8-bit machines for the same task for several years before that.

That old 475 serves me still and has featured in 'ShackWare Specials'. Also, a couple of years ago I document a little project I'd devised to replace the necessary, but expensive and exceedingly hard to find half-sized AA battery which powers the video RAM with a standard AA battery. This latter is as cheap as cheap can be, available everywhere from Tesco to your corner shop and lasts far longer in the machine than the originals did!

Other Apples still going strong here are my first ever Mac, the Mac Plus. Today I keep it for the sake of sentiment (my first book was written on it) and I use it as a Unix box running *MINIX* to experiment with. The Mac Plus cost over £1000 new and came with just 1MB of RAM (though that was quite big at the time) and a single 800K disk drive - no hard drive!

The machine was frankly useless without a hard drive because it relied on hot-swapping OS data between memory and backing storage for best effect. I acquired a second-hand drive for £175 which had originally (i.e. just two or three years before) cost £1750 - and that for just 20MB of hard drive space (compare with the 40GB behemoth in my current PC, one megabyte is a thousandth of a gigabyte).

Alongside these two is a Mac CX, a PC-sized 68030 machine which has an Ethernet network card and is linked into a TCP/IP network with my PC and one or two others again, also for experimenting.

Admittedly, none of these machines compares with anything you can acquire at a tenth of their original price today, but each was, in its own way, a milestone in Mac computing and each can still be put to good use.

While on the subject of Macs, I want to tell you about two useful little bits of software in support of Apple's machine. The first, *MacTuner*, is a net-based radio tuner (i.e. one which tunes broadcasts over the web) and which can be had for around $22 from **www.mactuner.com** Though lacking a few features when compared with the latest *Windows* offerings, it will, at least, get you started listening to webcasts as detailed in recent issues of *SWM*.

The second software item is called *Audiocorder*. Available in flavours for everything from 680XX Macs to PowerPCs and the very latest Macs running OSX, Audiocorder is an automatic recording program which enables you to record the output from any radio, switching into record mode only when there's actually an audio signal. I built a little circuit to do this with a conventional cassette deck a few years ago, but *Audiocorder* is much more convenient, obviates the risk of tape breakages (think of your valuable recordings) and can be programmed to start and stop at particular intervals (like a VCR) or set to record in VOX mode. Better still, *Audiocorder* is available as a try-then-buy download from **www.blackcatsystems.com/software/audiocorder.html** and you pay exactly what you think *Audiocorder* is worth to you - the sum is entirely your choice!

Atari Amiga

Hang on you're thinking, he's lost it now, surely he means Commodore Amiga? Well yes, except that the Amiga was, in fact, designed by Atari engineers who took their project to Commodore when Atari declined to pursue it.

There's a certain irony in that story too, because while Commodore was working up Atari's 16-bit machine for release to what would become one of the best-selling 16-bit computers of all time, erstwhile Commodore founder and boss Jack Tramiel had moved to the hot seat at Atari having bought the company from Warner Bros for not very much money (truly, Warner practically gave the ailing company away just to be rid of it). Tramiel turned around Atari's fortunes and launched that other great 1980s 16-bit computer, the Atari ST (dubbed the 'Jackintosh' by the press who saw it as a Macintosh beater).

My first 16-bit machine was an Atari ST (I felt a great allegiance to Atari having used its 8-bit range for years) though of course I didn't realise at the time that the Amiga was in fact the true Atari 16-bitter! The ST was a great computer, but it's fair to say that the Amiga was better (and that's from someone who was technical editor on *ST Format* magazine and editor of *Atari ST User* during the days of the great ST/Amiga rivalry!

The Amiga featured truly excellent custom sound and graphics chips and sported its own unix-like OS and graphic front-end where the ST made use of the off-the-shelf (and exceedingly aged) *CPM-86* and Digital's *GEM* windows environment. The first STs even shipped with a 'CP/M emulator' which essentially simply stripped away *GEM* and allowed access to the existing *CP/M* beneath the bonnet!

But back to the Amiga. I don't actually have an example at the moment though I would dearly like one. They seem to be regulars at boot sales and never cost more than a tenner or so (often much less), but I have a wife who has views on any more old silicon coming indoors!

My first Amiga was the A500 Plus of 1991 (I think) vintage. A great computer, I interfaced it to an old Amstrad green-screen I had lying around and adapted a spare ST 3.5in mech for use as a second drive. The Amiga was a great hacker's machine ('hacker' in the true sense of the word: someone who loves to explore and pull apart computers and OSs not the malevolent virus writers we have nowadays).

Press the right key combination and you could invoke 'hidden' server-like software which would enable you to attach a slave terminal via the serial port to control the beast. This must've been a leftover from the machine's testbed days which was never removed from the code (though I'm willing to relate the proper story if there is one from true Amiga aficionados.)

For whatever reason, the Amiga has never figured especially large in the world of radio. I can't think that it has any particular deficiencies that might inhibit its use - perhaps it's simply that people who buy Amigas are generally interested in hobbies other than listening or transmitting.

There is, however, software to support the machine and there's even an Amiga-oriented radio group in the UK (though judging by what's written at the group's web site, I imagine it might be almost defunct, please let me know if I'm wrong). The Amiga Amateur Radio User Group (AARUG) is run by Paul Whatton G4DCV and the web site features some very useful stuff including explanations of how to get the machine started decoding RTTY and packet and a contact to enable you to acquire a CD of radio software especially for the machine. There are also lots of links to other Amiga radio sites. Point your browser at **www.qsl.net/aarug/** for a look around.

And Finally

Apologies to all those who have written and await answers to their questions. I didn't set out to indulge my yen nostalgia this month, I just got carried away when I began to write. But then, that's what an affection for old computers is all about... The days are truly starting to warm up and it can be difficult to hide away in the shack when the sun is shining, but until next time, good listening.

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Scanning Scene

If you've ever tried to buy antenna splitters to run multiple scanners from one antenna, you'll be very aware that they cost quite a lot of money. Good news from **Paul Beaumont** who kindly wrote to let me know of a company that market splitters at a very reasonable price. Paul purchased 4-way splitters and 4-way taps and he hasn't been able to fault the isolation of these items on test or in actual use. He has used the units on air using a wire dipole to input signals to four scanning receivers which were tuned to different signals between 60 and 500MHz. There was no interaction between the radios and received signals were of good quality. The only problem is that the units require 'F' type plugs. Paul says that this does not represent any big problem as these can be purchased inexpensively from the same company and can be made to take UR type coaxial cable.

The Bomb Disposal kit.

The four way splitter is the Triax TSS4/344004 and the four way tap is Triax TTS4-10/344410. The units have a frequency range from 5 to 2400MHz.

Now to the cost. The splitters and taps are available at about £7.50 each and the 'F' plugs are about 40 pence each. The company to contact is: **J.W. Hardy Communications, 231 Station Road, Stechford, Birmingham B33 8BB, Tel: 0121-784 8478.** I have spoken to staff at the company and they seem a helpful and knowledgeable lot. Thanks, Paul, for the information.

Into Orbit

I managed to hear Mr. Mark Shuttleworth, the South African cosmonaut who whizzed into orbit on a pay per mission basis. The trip is supposed to have cost him around fourteen million quid and it looks like he's going to get to keep the Soyuz capsule in which he returned to earth. He was overheard on his upward trip on 121.750 a.m. on the 26th April. The signal was monitored in Sweden. I listened to him nattering with the Moscow ground control on 1st May on the historical frequency of 143.625 f.m.

I was expecting the conversation to be of the 'Wow, this is real neat. What happens if I push this red button' kind of talk. I was mistaken. He sounded crisp and professional if a little tense. Perhaps he had just been told about the outside toilet.

Mountain Rescue

'Tis the walking season and no doubt the different mountain rescue services will be keeping pretty busy. In the Lake District, the Ambleside team can be found on 86.3125 f.m. and in South Yorkshire and Derbyshire they are using 86.325. Other MR frequencies in use on low band v.h.f. are 86.3375 and 86.350MHz.

Many years ago I was sent on some sort of roughie toughie course designed to build muscles, etc. (Thankfully it didn't work and I've been devoid of muscles ever since). Much of the course involved climbing mountains and I recall that we were required to become part of a mountain rescue team in the Lakes for a period of time. I had to carry the radio, an enormous old Pye thingy. It's a wonder that it didn't put me off radio for life. The sets are a lot smaller now and some teams are being issued with TETRA stuff that, of course, prevents monitoring.

The Marconi RC690 a.m. police suitcase set.

Custom Made

Any ex army ATO's here? (Ammunition Technical Officers), Bomb Disposal to cowards like me. If you are familiar with that role, you may recognise the equipment pictured. It consists of a large case containing the on-site comms kit for the blokes that had to deal with the devices. This equipment would have been used in the seventies. Clearly custom made it shows little wear and no damage which either indicates that it was never issued or was used by a really competent Bomb Disposal bloke.

The kit would have been set-up with a small transmitter/receiver unit placed near the operator. The unit would be controlled remotely by a line hooked up to the main box situated a safe distance away. The operator would have a small Pye Pocketfone radio wired so as to be easy to use while working. This radio would then only have to transmit a few yards to the remote base with the signal then going down the line to a telephone handset. This was necessary in case the device to be made safe was in an r.f. proof environment in which case the remote TX/RX could be co-sited with the operator. Operation was on u.h.f. f.m.

If you look at the two piece Pocketfone set you can see that some of the army green paint has worn off exposing the original Pye pale blue. An interesting piece of history and one that can be pictured as it's now outdated.

In Daily Use

G-HEMS (Helicopter Emergency Medical Service - it's all acronyms isn't it) is the air medevac helicopter for the London area. It's in daily use and has been involved in numerous life saving missions. It was necessary to institute such a service due to the difficulty experienced by ground units in negotiating London's impenetrable traffic.

When in the air, the machine uses Thames Radar on 132.700 a.m. and the callsign Thames Medevac. The air to base channel is 122.950 a.m. and here the chopper will use an abbreviation of it's callsign, i.e. Mike Sierra. It's own air to ground frequency is 459.5375 f.m. and other air ambulance air to ground frequencies of 459.4875 and 459.5125 may also be utilised. G-HEMS has also been monitored on the ground using

The Pocketfones which go with the kit.

166.425 f.m. and the callsign of Medic 1. The chopper may also use other air band frequencies as necessary or as directed by air traffic controls.

Overheard In Holland

Another item of radio ephemera has come to my attention. This time it's a rumour that the Iranian traffic cops have been overheard in Holland and possibly in the south east of England. It seems that the signals were on 39.100 f.m. I have no idea what the Iranian traffic police get up to, but all the TV pictures I have seen show shed loads of ancient Hillman Hunter cars so I guess that describing an individual vehicle may be difficult for the Persian Plod. If you think that getting nicked for speeding here is pretty rough, just imagine what it's like being fed to the Big Blue Machine in Iran!

For Interest

Lastly, for interest's sake, here is a shot of an ordinary British police Marconi RC690 synthesised v.h.f. a.m. main set radio as used by provincial forces (or at least those who aren't TETRAised yet). This set, as you can see, has been fitted into a briefcase. The idea is that it would be deployed when v.h.f. contact was needed from a static observations point or from where a static security point or office had to be hastily set up. Usually these units would be fed into a magnetic mount antenna popped on top of a filing cabinet or similar.

Surprisingly, due to the amount and location of police relay masts, this arrangement seems to work very well indeed. To change the channel on these radios you punch in the channel number that you require then hit the star * button. If you take more than five seconds to push the star then the radio reverts to the previous channel. Note the Home Office symbol in top left of the control panel.

Have a good month.

All the pictures are taken at the Pye Museum by Martin Briscoe.

■ **PETER BOND, c/o EDITORIAL OFFICES, BROADSTONE**
■ **E-MAIL:** skyhigh@pwpublishing.ltd.uk

Sky High

First up this month we will catch up on some of my correspondence which has been generated by the 'Sky High' column over the past few months - a mixture of questions and subjects, so here goes.

Wellbrook Sky High

I have had three E-mails on the subject of the ALA1530 active h.f. antenna, the first two from **Mike G** and **Richard L** both ask where they can contact Wellbrook, as they do not advertise in *SWM* every month. They can be found at: **Wellbrook Communications, Wellbrook House, Brookside Road, Bransgore, Hampshire BH23 8NA, Tel: (01425) 674174**, web site: **www.wellbrook.uk.com**. The third E-mail from **Peter C** is regarding listening to ACARS using this h.f. antenna - yes I did say ACARS!

I can do no better than to repeat the bulk of Peter's letter for you to observe his results: "Having seen you mention the how and what of ACARS and that you owned a ALA1530 antenna, I thought you would like to know what I have found. I bought the ALA1530 about four weeks ago and I must say you were spot on when you said it was a great antenna, it has now replaced my 20m long-wire. I tried the antenna with my Yupiteru MVT-7100 while scanning the ACARS frequencies and the result was a third increase in messages and a quarter increase in flights over a five hour period. For example, 1500 messages and 350 flights using the old set-up, against 2100 messages and 450 flights with the new set-up. I sent my results to Andy at Wellbrook and he replied that" - 'I too am surprised at the v.h.f. performance. Your may notice that the v.h.f. nulls, (about 20dB) are off the ends of the loop. Placing the loop as high as possible will improve v.h.f. reception'.

Thanks for that Peter, it's always an eye opener to see unusual results with what in theory is mis-matched equipment. Now I am not suggesting that all you ACARS fans rush out and buy an active h.f. antenna to use on v.h.f., but it is always interesting to see what results can be obtained by experimentation!

ACARS

On the subject of ACARS, I am grateful to **Mike L** who has E-mailed me to comment on the ACARS examples I included in 'Sky High'. He writes, "It was interesting to see the ACARS decode examples, with typical *WACARS* errors in the Air Canada example".

"NAT ALPHA M WATERLOO T 53/20 53/30 53/40 53/50 YAY"
"END OF M Stockholm/Arlanda Sweden GEA23E"

Should have read:-
NAT ALPHA MALOT 53/20 etc
END OF MESSAGE A23E

Mike states that the problem is part caused by having the IATA & ICAO identifiers in the same file, he has deleted all the IATA's references, to minimise this problem happening regularly:-

IATA Code	M-ALO	=	WATERLOO-T
ICAO Code	M-ESSA	=	Stockholm/Arlanda-GE, etc.

There are many others which can conflict and become very annoying over a period of time including some in the ICAO file. For example, if an aircraft sends a series of "U's" the programme reads them as a string of "MOSCOW CITY AIRPORT". Mike has run the programme on everything from a DX2-66 up to an AMD 800 and the same problem keeps happening, nevertheless he says that it is a very good program all the same.

Mike took this up with Mike Roberts, the programme writer who apparently wrote it as part of his University Degree course, but there was no easy answer to prevent this problem, other than judicious editing of the Airports .WDF file. Mike has suggested that he could send me an up-to-date Aircraft file 280KB and a fairly comprehensive "Ex Europe" Routes file, 140 KB, which he points out is never fully up-to-date.

Before I could consider his suggestion, I had E-mails from **Mark** in the UK and from **Rob** in the Netherlands who both point me towards a web site from which you can download *WACARS* version 0.7 which contains database files which are currently updated to March 2002. The web site is at: **http://home.kabelfoon.nl/~pdw/alp/** I have had a quick look at this site and it appears to contain lots of information for ACARS and other aviation/airband interests, so it is worth a visit.

Enniskillen

More E-mails - an old friend of mine **Bob C** reports that Enniskillen (St. Angelo) airport closed its doors at the end of April. The airport, which was owned by Fermanagh District Council was suffering financial difficulties following the events of September 11th last year, has been mothballed by the Council.

Commercial operations ceased at the end of March and the locally based flying club was given to the end of April to move. All the Navigation aids, including its NDB EKN 357.5kHz, were switched off at the end of March. Currently a consortium of local businessmen is negotiating with the Council to try to lease the airport and re-commence commercial operations, but this may be some way off - thanks Bob, good to hear from you.

West Freugh

My thanks go to **David** and **Mark** who both report that after a Government announcement the airfield at West Freugh has been closed. The closure was relatively unexpected and apparently came as a shock to both Military Personnel and civilian workers. The fact that the airfield is still listed as operational in RAF documents dated early April shows the apparent suddenness of the closure. David reports that it has been rumoured that a Airline Company may have an interest in the site for a maintenance base, which would be logical as it has a Runway in excess of 6000

Our photograph this month is trip into the civil archives. A very smart Illushin IL-18 of LOT/Polish Airlines on the ramp at Gatwick in1988 - in the days before Russian built types became a common site.

feet. The West Freugh Range in Luce Bay is still operational using frequencies 130.05 and 260.025.

Snippets

- Last month I mentioned two changes to Manchester centre - 124.2 became 134.425, (an ex London Control standby) and 126.65 became 135.4. The information came from a CAA Notam, so I assumed it was a done deed. But from reports I have received, the first change did take place, but on the second change 126.65 has remained as the active frequency.
- **Andy L** has asked me to mention a date change that does not seem to have been widely publicised. Yeovilton Airshow has been moved from its original date of July 13th to the late date of Saturday 21st September.
- With reference to my comments on 8.33kHz spacing in the May column, a couple of interesting statistics were passed on to me. Of the two Northern French UIR's that have converted to 8.33kHz spacing, Paris Control has just 2 out of 20 frequencies/channels utilising 8.33kHz spacing, but Brest Control has 14 out of 22 using 8.33. Whether we can draw any conclusions from these two contrasting statistics to give us an indication of what the UK will do is doubtful!
- Lastly, several interesting calls were heard on May 17th on the US Global h.f. frequency 11.175MHz. SINGSONG was heard making several 'phone patches to a number of DSN numbers, he then passed on several Emergency Action Messages, (EAMs). The EAMs tied in with the TACAMO broadcasts that are made at 07 and 37 minutes past the hour. The most interesting part was a further 'phone patch to NAS Patuxent River, he mentioned the progression of the current exercise and made references to specific documents for Pax River to consult which listed the required data transfer protocols. I guess this has to be a USN E-6B, but it is unusual to hear a 'phone patch to Pax River, did anyone hear more of the conversations or identify the exercise?

New Radios

It always provokes interest when one of the big manufacturers brings out a new product and so Richard at AOR UK informs me that he has recently received a pre-production sample of the new AOR AR8600 Mark 2. This new radio has a number of changes including extended frequency coverage from 100kHz to 3GHz. The Mark 2 uses Mini-Circuit active mixers, which give higher sensitivity on h.f., additional bandpass filters plus higher specification of i.f. filters for sharper selectivity.

The original AR8600 by AOR's own admission gave a reasonable, but limited performance on h.f., but Richard reports that using the pre-production unit with the h.f. enhancements the Mark 2 now performs very well on h.f. There has also been a re-calibration of LEVEL scan/search, a dimmer added to the back-lighting which can now also be squelch activated.

There has also been a reassignment of the ACC socket which includes squelch controlled audio. Unfortunately there is no retro-upgrade available. The new radio is expected to be available late June, at the time of writing a price had not been fixed, but is likely to be similar to that of the present AR8600.

AOR AR-ONE communications receiver.

Richard also reports that a new commercially specified radio called the AR-ONE is also expected soon with some pre-release information having already sneaked its way onto the Internet. Externally it looks similar to the AR8600, but has a detachable head unit. The frequency coverage is 10kHz to 3.3GHz in 1Hz steps, there is a built-in TCXO with 1Hz tuning steps. The i.f. filter bandwidths are similar to the AR5000 with strong signal handling some 10dB better than the AR5000. Unfortunately for most of us, the cost will be in the lottery winning range with the price expected to be in the region of £2500 - £3000, gasp!

Next month is our August airband special and we will be covering a number of subjects including an answer to the question I have been asked the most over the past five years, "What is the best radio for airband listening". (There is a sharp intake of breath from the Editor as he reads those words). I will be dipping my toe into the dangerous waters of choosing what I consider to be the best overall airband receiver. Several radios are in the race for the title, but only one will win - see next month's exciting episode.

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■ E-MAIL: info.orbit@pwpublishing.ltd.uk ■ WEB SITE: http://www.itchycoo-park.freeserve.co.uk

Info in Orbit

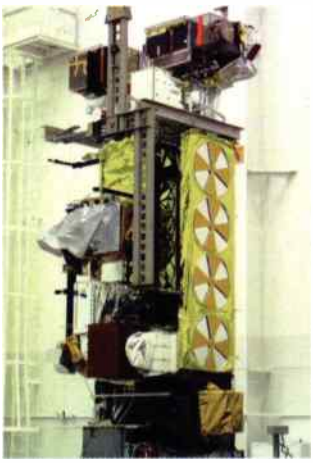


Fig. 1: *NOAA-M* in assembly plant.

Two new weather satellites (WXSATs) are close to launch: *NOAA-M* on 24 June and *Meteosat MSG-1* on 13 August. The adrenaline is rising! In this issue - published just before the launch of *NOAA-M* - let's take a look at both satellites.

NOAA-M - Up, Up & Away

Unless there is a last-minute delay, *NOAA-M* (to be re-named *NOAA-17* once in orbit), is scheduled to be launched late evening on 24 June. The satellite - see **Fig.1** - is to replace *NOAA-12* in a morning, sun-synchronous orbit.

To understand the urgency of the replacement, note **Table 1** - kindly supplied by NOAA (National Oceanographic Atmospheric Administration) - showing red blobs that represent non-operational systems. *NOAA-11*, launched on 23 September 1988, is not an operational WXSAT, although it does have some systems still functioning. *NOAA-12* is the back-up morning WXSAT, but its MSU (microwave sounding unit) and HIRS (high resolution infra-red sounder) are non-operational - partly because its orbit has precessed over the years since launch on 14 May 1991, to an unfavourable state.

Fig. 2: *Titan II* booster *en route* for launch.

Fig. 3: *Titan II* booster arrives at launch pad.

NOAA WXSATs are launched from the Western Range at Vandenberg Air Force Base, California, by a *Titan II* space launch vehicle (SLV). The *Titan II* SLV consists of a *Titan II* intercontinental ballistic missile converted to an SLV configuration through the extensive use of technology and hardware developed during the *Titan III* and *IV* programs. The rocket is 34.75m tall and 3.05m in diameter. The payload fairing is 6.1m long and 3.05m in diameter - see **Fig. 4**.

Fig. 4: Launch of a Titan rocket.

A 1.392m diameter conical adapter fitting fastens the NOAA spacecraft to the launch vehicle. The fairing attached to the forward face of the launch vehicle protects the spacecraft during flight. The *Titan II* SLV is a two-stage, liquid fuelled vehicle. Each stage employs a hypergolic fuel called Aerozine (50% hydrazine, 50% unsymmetrical dimethyl-hydrazine (UDMH), and a nitrogen tetroxide oxidizer which are pressurised with dry nitrogen. Information kindly provided by Lockheed Martin Aerospace.

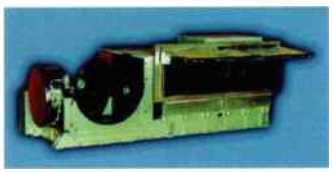


Fig. 5: AVHRR/3 - the Advanced Very High Resolution Radiometer.

Diagram 1 show the equipment schematic of recent NOAA WXSATs and the legend showing the individual systems.

The system responsible for the provision of both high resolution and low resolution images (h.r.p.t. and a.p.t.) is the AVHRR. This is a six-channel imaging radiometer that detects radiation in the visible and infra-red portions of the electromagnetic spectrum. The instrument measures reflected solar (visible and near-infra-red) energy and radiated thermal energy from land, sea, clouds and atmosphere. The instrument provides a nominal spatial resolution of 1.1km at nadir (the ground below the spacecraft). A continuously rotating elliptical scan mirror provides the cross-track scan, scanning the earth from ±55° from nadir. The mirror scans at six revolutions per second to provide continuous coverage.

The radiometer has spectral and gain improvements to the solar visible-light channels that provide improved low light-energy detection. A sixth channel was added, designated 3A, operating at 1.6µm for improved snow, ice and cloud discrimination. Channel 3A is time-shared with the original 3.7µm channel, now designated 3B, to provide five channels of continuous h.r.p.t. data. An external sun shield and an internal baffle have been added to reduce sunlight

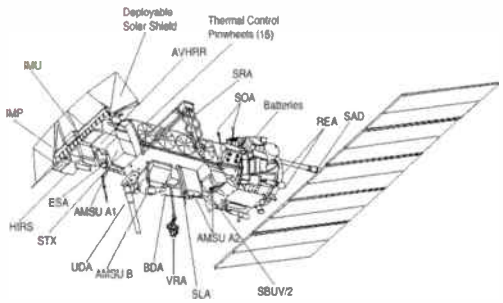
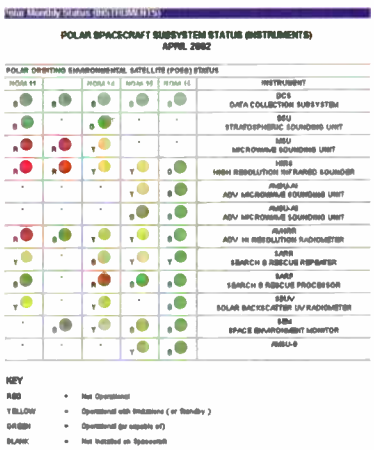


Diagram 1: *NOAA-M* schematic.

LEGEND

AMSU	Advanced Microwave Sounding Unit	SBUV/2	Solar Backscatter Ultraviolet Radiometer
AVHRR	Advanced Very High Resolution Radiometer	SEM	Space Environment Monitor
BDA	Beacon Transmitting Antenna	SLA	Search and Rescue Transmitting Antenna (L-Band)
*DCS	Data Collection System	SRA	Search-and-Rescue Receiving Antenna
ESA	Earth Sensor Assembly	STX	S-Band Transmitting Antenna (1 of 4 shown)
HIRS	High Resolution Infrared Radiation Sounder	SOA	S-Band Omni Antenna (2 of 6 shown)
IMP	Instrument Mounting Platform	*TED	Total Energy Detector
IMU	Inertial Measurement Unit	UDA	Ultra High Frequency Data Collection System Antenna
*MEPED	Medium Energy Proton/Electron Detector	VRA	Very High Frequency Real-time Antenna
REA	Reaction Engine Assembly		
SAD	Solar Array Drive		
*SAR	Search and Rescue		



POLAR SPACECRAFT SUBSYSTEM STATUS (INSTRUMENTS)
APRIL 2002

Table 1: NOAA Polar Satellite Systems Status.

impingement into the instrument's optical cavity and detectors.

The AVHRR system provides a real-time data stream from which all imagery originates. High Resolution Picture Transmission (h.r.p.t.) is in the 1700MHz band; for example, *NOAA-16* transmits h.r.p.t. on a frequency of 1698MHz with a data rate of 665.4Kb/s, so users with the necessary receiver and data handling/processing equipment can receive and process this transmission. *NOAA-15* transmits on 1702.5MHz, *NOAA-14* on 1707MHz and *NOAA-12* on 1698MHz.

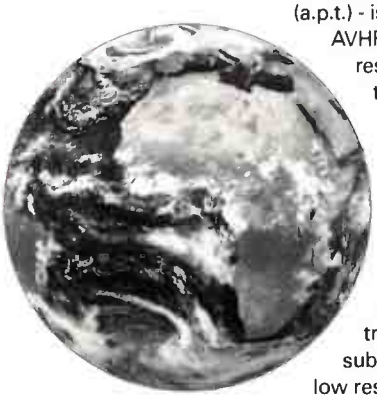


Fig. 6: *MSG-1* channel 2 visible-light simulated image - courtesy EUMETSAT.

Automatic Picture Transmission (a.p.t.) - is real-time processed AVHRR data reduced to 4km resolution per pixel and two channels that are geometrically corrected. The two selected channels are amplitude modulated (a.m.) and transmitted by one of two v.h.f. (137.5 or 137.62MHz) f.m. transmitters with 2.4kHz subcarrier frequency. This low resolution transmission (a.p.t.) is also available world-wide to users with commercially available receiving equipment.

Any two of the five AVHRR channels can be selected and processed as 'Video A' and 'Video B'. One a.p.t. line of data - consisting of one line of Video A and one line of Video B - is output for every third AVHRR scan. Ancillary AVHRR data appear at one edge of each line and their 64-second repetition period defines the a.p.t. frame length. The resulting line rate is two per second. The data are transmitted continuously on v.h.f. as an analogue signal consisting of an amplitude-modulated 2400Hz subcarrier frequency modulating the r.f. carrier at 137.50 and 137.62MHz.

Global Area Coverage (GAC) data has 4km resolution and is AVHRR imagery that has been recorded using the onboard tape-recorder for delayed transmission to NOAA ground Command and Data Acquisition (CDA) stations. Local Area Coverage (LAC) is programmed recorded 1km resolution AVHRR imagery; this output is supplied only to the spacecraft Digital Tape Recorder input selector for the recording of pre-scheduled selected areas. This recorded data is later transmitted to the NOAA CDA Stations. This data is also available via the Internet.

That VHF Beacon

At the end of each column, I usually remind WXSAT monitors of NOAA beacon frequencies - the Direct Sounder Broadcasting (DSB) facility on 136.77 or 137.77MHz. This beacon transmission is also available to users who do not intend to install the more complex equipment necessary to receive high data rate S-band transmissions.

The lower data rates permit the user to install less complex, less costly equipment to receive HIRS/3, SEM-2 and DCS/2 data. The data stream includes information from the Tiros Information Processor (TIP) and from the AVHRR/3. The TIP contains spacecraft attitude data, time codes, housekeeping and low rate instrument science data and the Solar Backscatter Ultraviolet Radiometer (SBUV), if an 'afternoon' spacecraft.

MSG-1 Launch Approaches

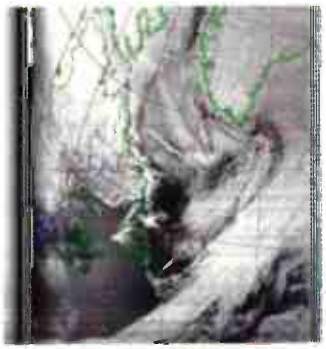


Fig. 7: Low elevation *METEOR 3-5* pass from Mike Grainger.

The issue of the launch date of *MSG-1* is complicated and - up to mid-April - was changing on a weekly basis. Announcements made by EUMETSAT via their web site, to the public and, and to a large extent the PR (public relations) division and User Service Helpdesk, are obliged to report the status as far as is reasonably accurately known, leaving little or no room for speculation. I discussed the question of launch date with **Richard Francis**, Head of User Service Division and he kindly provided me with some of the background situations and how they affect the launch.

First the latest: "The target launch date of *MSG-1* of 13 August 2002 has now been agreed. This followed specific activities conducted between **EUMETSAT/ARIANESPACE/ESA** and the satellite Prime Contractor, leading to a solution of the shock problem for MSG on *Ariane-5* via implementation of suitable shock attenuation devices.

The 'Consent to Ship' the satellite to Kourou (in French Guiana) was released by EUMETSAT on 12 April 2002, the satellite will be shipped to Kourou on 13 May 2002. Further information will be released throughout the launch campaign".

Fig. 8: *NOAA-12* 1707 3 May from Lee Carberry.

The last two paragraphs summarise a long period of uncertainty. It depended on the following matters:

- The satellite is ready for launch; it is still in clean storage in Europe, but may be shipped to Kourou as soon as the precise launch date is agreed.
- The Ground Segment is now in a state in which it can support *MSG-1* commissioning, however, a part of the commissioning will have to be repeated when the final version of the image processing sub-system is finally ready later this year.
- *MSG-1* is qualified for launch on *Ariane-4* or *Ariane-5*; however the environmental data received from some previous *Ariane-5* launches indicated a level of shock and vibration close to or even in excess of that which *MSG-1* could tolerate.
- Hence a stated preference for an *Ariane-4* launcher was expressed and agreed by **Arianespace** in principle (notwithstanding other factors).
- From spacecraft lifetime considerations, certain launch windows have variable attractiveness - the most attractive, given the status of other components, being around mid-July 2002. This was therefore tentatively set as launch date and a co-passenger identified (a European *Telecoms* satellite).
- After the under-performance of one of the recent *Ariane-5* launches there was increased pressure from various customers to use *Ariane-4* and hence increased competition for limited spaces - our position was, however, not significantly impacted.
- In recent weeks our co-passenger has experienced their own delay and would almost certainly not be ready for a mid July launch. No other *Ariane-4* co-passengers appear to be available in the mid-July timeframe - but this, of course, is not an issue over which **EUMETSAT** has any influence.

Fig. 9: *NOAA-15* 0748 12 May a.p.t. from Kevin Hughes.

- This raised the prospect once more of a launch with *Ariane-5*, provided the shock issue could be addressed or the risk associated with it better evaluated.
- Intensive discussions with **Arianespace** have taken place over recent weeks and are still ongoing.

On top of all this uncertainty is the fact that the Launch & Early Orbit Phase (LEOP) operations are performed by **European Space Operations Centre** and their availability has to be taken into account. The situation is even more complex than this, but it could present a picture that becomes almost impossible to assimilate. The option of an *Ariane-5* launch in August meant that the shipping of *MSG-1* and the finalisation of the LEOP operations by *ESOC* can be performed on schedule.

Richard summarises "I hope you can appreciate the complexity of the issues and the difficulties we face as the User Service in maintaining a credible position vis-a-vis the public. I can well sympathise with the more expert community who are keen for more detailed information, rather than repeated statements like "mid-2002 will be the likely launch date". Richard kindly E-mailed me immediately the announcement of launch statement was distributed to EUMETSAT staff by the Director General.

The Manufacturers Respond

EUMETSAT provides a list of companies on the METEOSAT website that have registered an interest in possibly supplying *MSG-1* reception systems (published in last month's column). I received two replies:

Timestep Weather Systems

Timestep and RIG will endeavour to introduce a 'CIS' - common interface standard - that will allow different systems to plug together, much like you would expect any video recorder to plug into any television. It is envisaged that Timestep, RIG and the Werkgroep Kunstmanen group will provide everything from ready built 'out of the box' systems, to kits and constructional ideas. MSG Low Rate Information Transmission (LRIT) systems will be of comparable cost to existing METEOSAT systems but the resolution will be almost as high as h.r.p.t. Existing users of PHempt preamplifiers and 900mm dishes should be able to use these with the new MSG systems. To register an interest please E-mail **Dave Cawley** at **msg@rig.org.uk**

Bradford University Remote Sensing (BURS) Ltd

Dr. John Stephenson told me that they developed a receiver for MSG about two years ago. It can be programmed in the field for either the high or low data rate streams from MSG and can also be programmed for all current METEOSAT transmissions, including Primary Data and MDD, and for NOAA h.r.p.t. When MSG is launched and they are able to specify antenna size more exactly, then "We will be offering MSG reception systems". The design of the system allows for remote monitoring of performance so that we would be able to provide on-line help more effectively than we were able to do with earlier systems.

Correspondence

Although I published a picture from the 1825 *METEOR 3-5* pass from 11 April last month, I am including a different version taken by **Mike Grainger** because he received a longer period of signal from this very low elevation pass. Mike lives in the Midlands and uses a Paul Hayes QFH antenna with double insulated satellite cabling through a pre-amp, feeding a RIG (Remote Imaging Group) RX2 receiver. He used *wxsat/satsignal* to process the images.

Mike's images were received using the pre-amp because he found that without it the images didn't start until the satellite was higher in the sky - and they still gave interference. Some recent lower elevation passes had quite a lot of interference, so Mike has thought about trying without the pre-amp for a while.

Fig. 10: *NOAA-15* 0748 12 May h.r.p.t. version received in Southampton.

Lee Carberry sent me an image received from *NOAA-12* on 3 May, processed by *wxsat*, with added artificial colour. Lee noted "an interesting streak of cloud that starts from the right of Iceland and drops down to the north of Scotland, that was there all day". This was one of several days during which cloud systems hovered over the south coast, leaving western areas relatively clear.

Kevin Hughes believes that the Radiocommunications Agency may have identified the source of interference that has been spoiling his WXSAT images. The possible cause should be revealed in the next edition! Meanwhile, he sent **Fig. 9**, the a.p.t. version of the Sunday morning *NOAA-15* pass received at Tamworth, for which I received the h.r.p.t. version at Southampton - see **Fig. 10**.

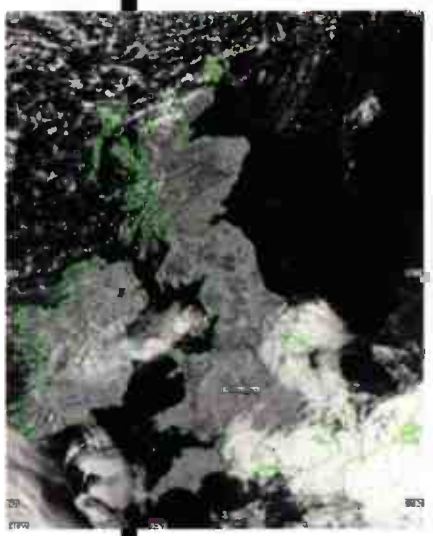


Fig. 11: *NOAA-14* 0755 12 May from Cedric Roberts.

Cedric Roberts rises early each morning and collects live h.r.p.t. images, of which **Fig. 11** - the *NOAA-14* transmission - is an example. "This image is part of a particularly good pass this morning from the *NOAA-14* 0755UTC pass over this site. Since we had a very cool night with a low sun angle, quite a lot of land detail is available, especially the Pennines, Welsh Mountains and the Scottish Highlands. The next frontal system is already lining up in the south west approaches to give us a poor following day".

Fig. 12: *FENGYUN-1D*, the new Chinese meteorological satellite was launched on Wednesday 15 May. The first transmissions were activated soon after and the following picture was received in Southampton on 17 May at 1002.

Frequencies

NOAA-12 and *NOAA-15* transmit a.p.t. on 137.50MHz.
NOAA-14 transmits a.p.t. on 137.62MHz.
NOAA-16 has an unresolved fault with a.p.t.
NOAAs transmit beacon data on 137.77 or 136.77MHz.
METEOR 3-5 usually transmits on 137.30MHz when in sunlight.
OKEAN-4, *SICH-1* and *OKEAN-O* have used 137.40MHz for brief transmissions.
METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.

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Propagation Forecasts

How to use the Propagation Charts

The charts contain three plots. The lower dashed line represents the lowest usable frequency (LUF), or ALF (Absorption Limiting Frequency). The chances of success below this frequency are very slim.

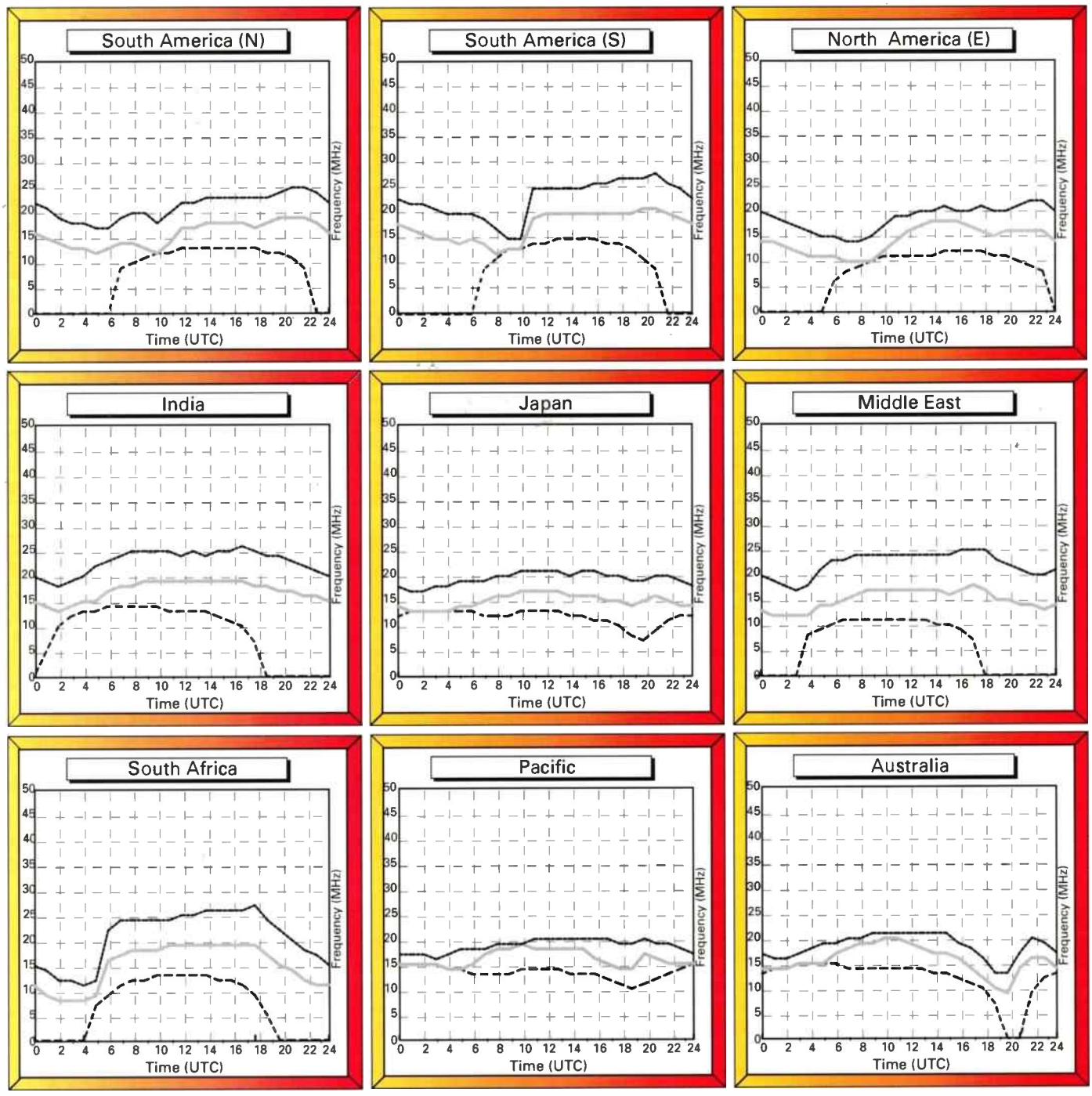
The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50% probability of success for the path and time.

To make use of the charts you must select the chart most closely located to the region containing the station that you wish to hear. By selecting the time chosen for listening on the horizontal axis, the best frequencies for listening can be determined by the values of the intersections of the plots against frequency.

Good luck and happy listening.

July 2002
Circuits to London

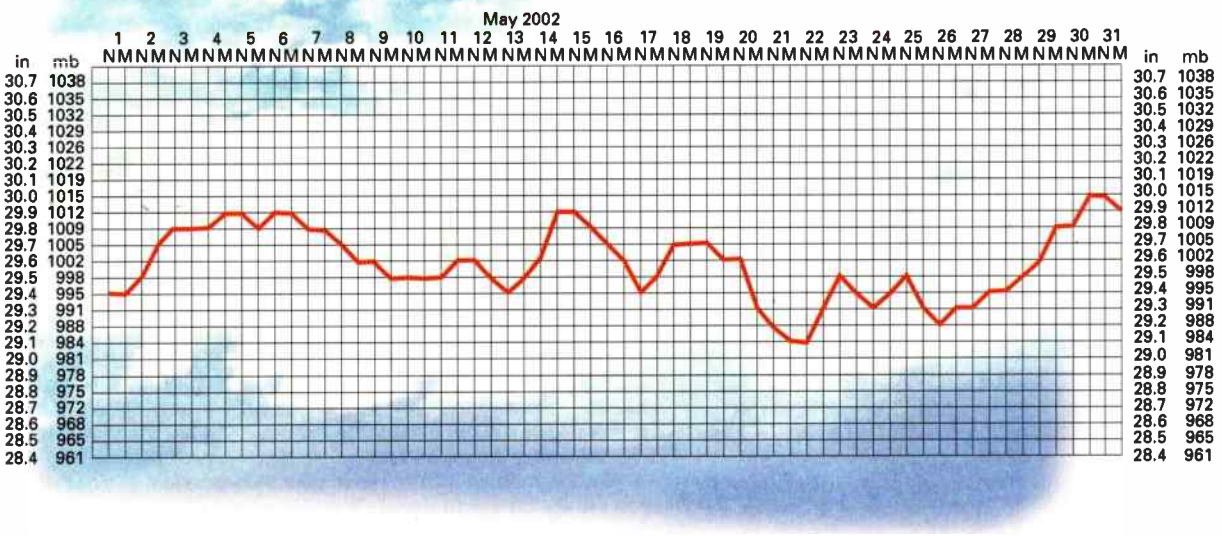


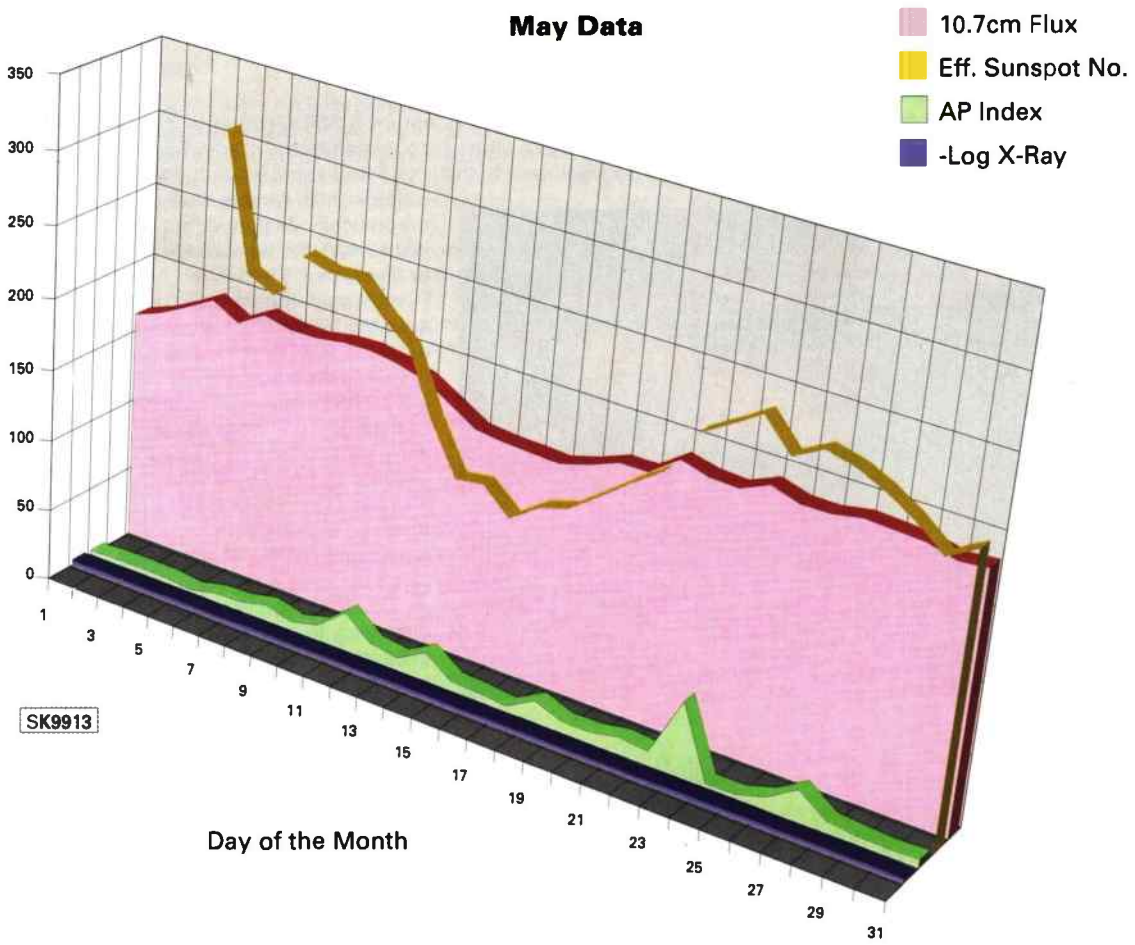
SK9912

■ KEVIN NICE G7TZC, SWM EDITORIAL OFFICES, BROADSTONE ■ E-MAIL: kevin.nice@pwpublishing.ltd.uk

Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, May 2002.





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.

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■ E-MAIL: decode@pwpublishing.ltd.uk ■ Web: http://www.mikespage.btinternet.co.uk

Decode

Ian MacCartney has written enthusiastically about the *PC-HFDL* software I covered in a recent 'Decode'. If you recall, this is the software (only one available at the time of writing) that can decode HFDL, which is the h.f. version of ACARS. I've had a huge

***DX Atlas* used to track long distance flights.**

response from this feature and it seems lots of you are giving it a try. To get your copy visit **www.pwpublishing.ltd.uk/swm/downloads/**

Because decoding software for this mode is still in its development phase, I haven't found anyone supplying software with an automated link to mapping software to track the movement of aircraft. *AirNav* systems have this for v.h.f. ACARS, but not yet for HFDL. I'm sure they are working on it, but in the meantime, you have to use manual plotting.

In his letter Ian reports great success using *DXAtlas* as the mapping program. I've now taken a look at this program and it is certainly a useful mapping tool. 30-day demo copies can be downloaded from the web at the following site: **http://www.dxatlas.com** The program file is around 3MB, so is not too bad a download. If you can, I would also recommend downloading the high-resolution relief add-on. The only snag with this is that it is a 5.8MB download. If your connection can cope, it really is worth having as it makes a dramatic improvement to the image quality.

When you've followed the download and install procedures you will probably be presented with a map showing amateur callsign areas. Unless you particularly want this, the first step is to change the view to show Lat and Long grids with a rectangular map. To do this choose the Map menu item and select Rectangular then choose Map Grid and select Lat/Long its also worth checking to make sure the show grid box is checked.

At this point you might also want to set-up your home location. This doesn't have a great deal of relevance for our purpose, so you could set it as one of the large airports rather than your home location. You do this via Map and Change Home Location.

Before you start using the map to plot aircraft, it's worth spending some time to familiarise yourself with the map and its navigation features. The program is very well thought through and works a dream if you have a mouse with a scroll wheel. *DX Atlas* uses the scroll wheel to control the zoom, so moving the wheel towards you causes the map to zoom-in whereas moving the wheel away causes it to zoom out. If you want to move around a zoomed map all you have to do left-click on the map and drag it wherever you want. This was a very quick and efficient way to get around the map. This flexibility combined with the good image quality makes *DX Atlas* a dream to use.

Now on to the plotting: the first task is to set HFDL so that it captures aircraft data - for you to do this just tick the HFNPDU box. You can then just click the flight you want in Aircraft Data and you will get a separate display showing the vital data including the lat and long. The best way to do manual plots in *DX Atlas* is to use its electronic pins. All you have to do is move the mouse cursor to the position you want and then right-clicking your mouse. When you do this, a menu will appear that will give you the option to stick a pin or remove an existing pin.

If you choose a new pin you have a choice of colours that you can use to mark the track of different aircraft. Finding the right position for the aircraft is real easy because you just note the lat and long positions from HFDL and use the lat and long indicators in the bottom right of *DX Atlas* to find the matching position on the map.

SSTV Primer

As this month's QuickStart feature is SSTV, I thought it might be helpful to provide a short introduction to the mode. SSTV's origins go right back to the rock & roll years when many of today's utility modes were theoretically designed, but few were viable with the technology available at that time.

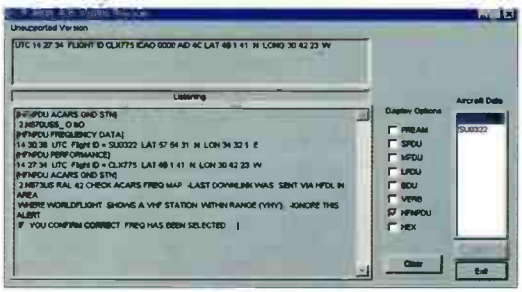
JVComm receiving an SSTV image.

It would appear that the first amateur systems were put together between 1958 and 1962. In those days the radio amateurs had to rely on government surplus items for many of their components. The key to the early success of SSTV was the availability of surplus radar displays. The most important feature of these displays was the very long persistence of the P7 phosphor screens.

This long persistence was necessary to make sure the radar blips remained visible until the next sweep of the radar antenna. For the radio amateur this long persistence had a brand new use in the display of slow scan TV. If these screens were viewed in a darkened room, a dot could still be seen for around eight seconds after the signal had disappeared. This characteristic made possible the idea of scanning an image from a camera and sending it bit by bit over the air. It was the persistence of the screen that determined many of the characteristics of the initial transmissions.

The first US systems were based on their 60Hz mains

frequency and ran at 15 lines per second. That meant they could send a total of 120 lines in the eight seconds available from the persistence of the display. In the UK and Europe where 50Hz mains was standard, the transmission rate was



PC-HFDL set-up for aircraft tracking.

16.66 lines per second. I've shown a sample of one of the original pictures in the column.

The very first transatlantic SSTV contact was made in 1969 between SM0BUO in Sweden and W8SH in the US. There was also a very early prototype colour transmission made in 1969 between K4YPX and W8SH. The next most significant development came in the 1970s with the development of the Robot model 70 & 80 analogue cameras. However, up till this point, amateurs were still using the P7 phosphor displays and viewing their precious images in darkened rooms.

The real revolution came in the mid 70s with the development of the scan converter. These neat devices digitised the incoming scan using 128 lines with 128 pixels per line. Each of the pixels being represented by a 4-bit binary number that gave 16 possible shades of grey. This was a real revolution because now SSTV images could be stored electronically and displayed on modern monitors in full daylight!

Image received on 19 May.

SSTV image from Iceland.

The commercial unit that took the market by storm was the Robot 400, which handled SSTV images with a resolution of 128 x 128 x 16. It was not long before a colour version became available and then the all singing and dancing Robot 1200 hit the streets. This proved to be the ultimate foundation as it included software on EPROM.

It was not long before enthusiastic amateurs started devising their own variations and burning their own EPROMs. It was this experimentation that led to the development of the Martin and Scottie modes that prevail today. Most of the modern systems use 256 lines with 320 pixels per line plus colour. Many new listeners get very confused as to which of the many modes to use. Its generally very simple as most European transmissions use Martin 1 whilst US signal are usually Scottie 1.

SSTV Quickstart

Let's start with the list of things you need for the mode:

Here is the step by step process:

1) Download the software using the following link select the latest version of the program from the supplied list: **http://www.pervisell.com/download/jvc32/** You will be prompted to choose a directory to save to file - make a note of this.
2) Install the software by double-clicking on the file you've just downloaded and follow the instructions.
3) Connect the 'Line-out' or 'tape-out' of your receiver to the 'line-in' on soundcard.
4) Tune your receiver to 14.230MHz and set the receive mode to u.s.b.
5) Use the START, Programs, *JVComm32* to run *JVCom32*.
6) With the program running press Alt + C to bring up the configuration menu.
7) Click the Interface Tab and make sure the soundcard and chosen input is selected.
8) You now need to find a SSTV signal. 14.23MHz is usually the best place to start and you may have to tune up or down 10-15kHz to find a signal, Sunday mornings are usually best! If you don't have any luck, try tuning around the following frequencies: 3.786 (l.s.b.), 21.34 (u.s.b.) and 28.66MHz (u.s.b.). When you hear a SSTV signal running press the Right-Arrow play button to start reception you should see a picture start to build-up line-by-line. If you don't seem to be getting a signal through go back to the Configuration screen Alt + C and double check you have selected the right input. It this is OK choose Start Settings Control Panel and double click the Multimedia icon. Click Record and make sure the volume slider for the input you're using is around the mid-point. If this doesn't work you've probably got a problem with your connecting lead.
9) Assuming you're able to receive some sort of picture you now need to sort-out the slant correction. The slant is caused by small timing errors in the PC and is easily corrected. First you need a decent chunk of received picture at least half a screen. When you have this you just click on the toolbox icon and then click the slant correction icon you will be presented with an explanatory box. Move your cursor away from the box and it will turn into a cross hair. Now click at the top of the image near its edge and drag a line following the slant of the picture. When you're comfortable that you've done this you can click the OK box and the program will calculate, adjust and store the new timing values.

That's it, you are now in business to receive SSTV signals!

One of the very early (1966) SSTV images.

STOP PRESS

Charles Brain, the author of *PC-HFDL*, has just released an enhanced version of the software which allows interaction with commercial software including *DXAtlas*. This commercial version costs $35 for a single user licence. Without the licence key the program runs for 10 minutes before closing down.
For more info see **www.chbrain.dircom.co.uk/pchfdl.html**

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E-MAIL: dxtv@pwpublishing.ltd.uk Web: www.test-cards.fsnet.co.uk

DX Television

With the demise of F2 activity, long-distance reception during April seemed very bleak. Often there is some Sporadic-E activity towards the end of the month, usually the good old favourites such as Spain and Italy. Last year Norway and Spain made brief appearances, although one year there was a memorable opening with Russian and Eastern European signals as high as Channel R3 (77MHz).

Reception Reports

Peter Barber (Coventry) found E4 to be the most productive channel for monitoring with Dutch NED-1 signals from Lopik occasionally hovering above the noise. A few Meteor-Shower pings were also encountered.

A small tropospheric lift on the 24th from 0800 brought in recognisable Belgian signals from Wavre on E8 and E10. Both signals had completely faded by 1131. The same day **Stephen Michie** (Bristol) identified French Canal Plus signals on L5 (Lille) and L9 (Caen or Reims) showing a Spitting Image type political satire programme followed by trap racing. NED-2 E32 (Goes) and NED-3 E35 (Lopik) were also present.

George Garden (Edinburgh) has been experimenting with a 140mm mono portable TV which has been acquired quite cheaply. It boasts v.h.f. and u.h.f. TV bands as well as a.m. and f.m. radio. However, George suspects that the v.h.f. TV bands may not be active - a pitfall sometimes, unfortunately. On the 6th he tested it using a log-periodic antenna on the roof of his van and was rewarded with TV-2 Denmark on E22, identified by the TV-2 logo in the top-left of the picture. Signals peaked around 1800 fading some 20 minutes later but continuing with a news bulletin with the word 'Nyhederne' on the screen.

In South Africa things were far rosier with a range of signals via F2 or TEP which included Spain, Italy, Iran and Syria. The latter sometimes broadcasts in French, so this could explain why occasionally there are reports of a 'mystery' French-speaking station on E2. An unidentified E2 transmitter has also been received in South Africa. Its direction suggests the Balkans.

Coaxial Cables

Simon Hockenhull (Bristol) comments that care should be taken when routing coaxial cables. On a makeshift domestic loft installation he temporarily coiled the downlead around the antenna support mast. However, running the cable directly down the mast showed a considerable increase in local signal levels.

John Faulkner (Sutton-in-Ashfield) noticed a reduction in interference levels when coaxial cables were buried as opposed to a route at 'clothes line' height between the mast and house. Double-screened coaxial cable is reasonably inexpensive these days and is recommended even for Band I frequencies. John has recently erected a four-element Band I array (VF-1004) and can detect low-level signals constantly on E3 and E4 using a scanner. The likely stations are Liège (Belgium) and Lopik (Netherlands).

DXing In The USA

Michael Schulsinger (Springfield, Ohio, USA) confirms that some hams near the east coast regularly monitor frequencies around 48MHz for signs of European TV signals to indicate the likelihood of a 6m path being established. Although the lowest US TV channel operates at 55.25MHz (Channel A2), many TV receivers are 'cable-ready' and will tune below this frequency. Some US digital terrestrial broadcasts have been successfully received over vast distances under tropospheric lift conditions.

Due to the large number of channels available in many areas, log-periodic arrays covering all v.h.f. TV frequencies are favoured for domestic reception.

For u.h.f. reception, wideband grids are popular among the DX fraternity. **William Mitchell** (Columbus, Ohio), uses an amplified Channel Master 4228A eight-bay 'bowtie' antenna which has proven to be outstanding in terms of gain and directivity. The antenna resembles two standard u.h.f. grids stacked horizontally, i.e. side-by-side, but is actually manufactured as a single unit.

Some of the Channel Master antenna designs are incredible beasts with arrays looking far more ambitious than anything found in Europe. There is even a 'seven foot' parabolic reflector antenna (Model 4251) for 'deepest fringe' u.h.f. work. The reflected signal is focused onto a twin bowtie antenna mounted some distance in front of the parabola. Try installing one of those on your chimney - the neighbours would go crackers!

Service Information

Belgium: A third terrestrial Flemish network called 'Kanaal 3 Belgique' will be launched in 2003.
Italy: RAI UNO and RAI DUE are to be privatised. RAI TRE will remain public.
Hungary: Magyar-2 (formerly MTV-2) will relay 'Euronews' during the day in English.
Russia: Repair work is continuing at the Ostankino TV tower, which was partially destroyed by fire in 2000. 'TV Tsentr' has resumed on Channel R3 and a new installation for ORT on R1 has been commissioned. An unlisted R1 station is operating at Saratov in the European part of Russia with an e.r.p. of 10kW. The station is horizontally polarised.
Ukraine: The YT-1 network is now broadcast from Kiev instead of 'Inter'.

This month's Service Information was kindly supplied by **Lionel Michelland** (France) and **Gösta van der Linden** (Netherlands).

Keep On Writing!

Please send your DXTV, slow-scan TV and f.m. reception reports, news, off-screen photographs and information to arrive by the first of the month to:- **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS.** We can also use off-air pictures stored as JPG files on PC disks and good-quality video recordings. Our DXTV and Archive TV website can be found at: **www.test-cards.fsnet.co.uk**

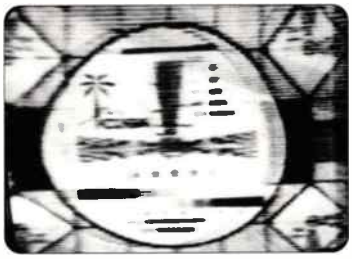

Fig. 1: An unusual test card from Cuba, captured via Sporadic-E in the Seventies by Ken Simon in Florida. Cuba later went on to use the familiar G-204 test card broadcast extensively throughout Russia and the CIS States.

Fig. 2: WLKY Louisville, Kentucky, received on Channel A32 at around 330km by William Mitchell during tropospheric enhancement.

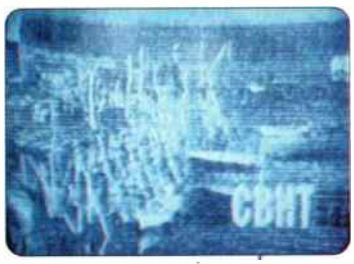

Fig. 3: Identification caption used by CBHT (Channel A3) in Halifax, Nova Scotia, snapped by Michael Schulsinger (Springfield, Ohio) during an intense Sporadic-E opening in 1976.

Fig. 4: Mexican station XHY (Channel A3) transmitting from Mérida, on the Yucatan Peninsula, received by Michael Schulsinger. The identification caption features a Mayan Indian playing his wooden drum.

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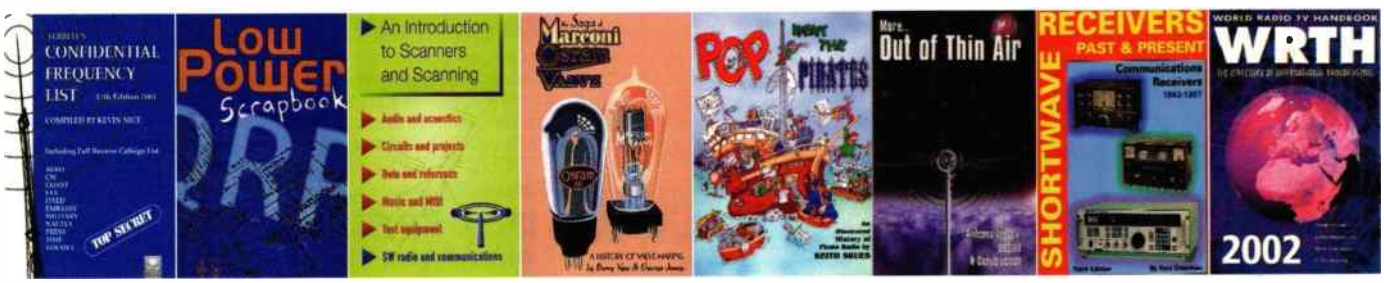

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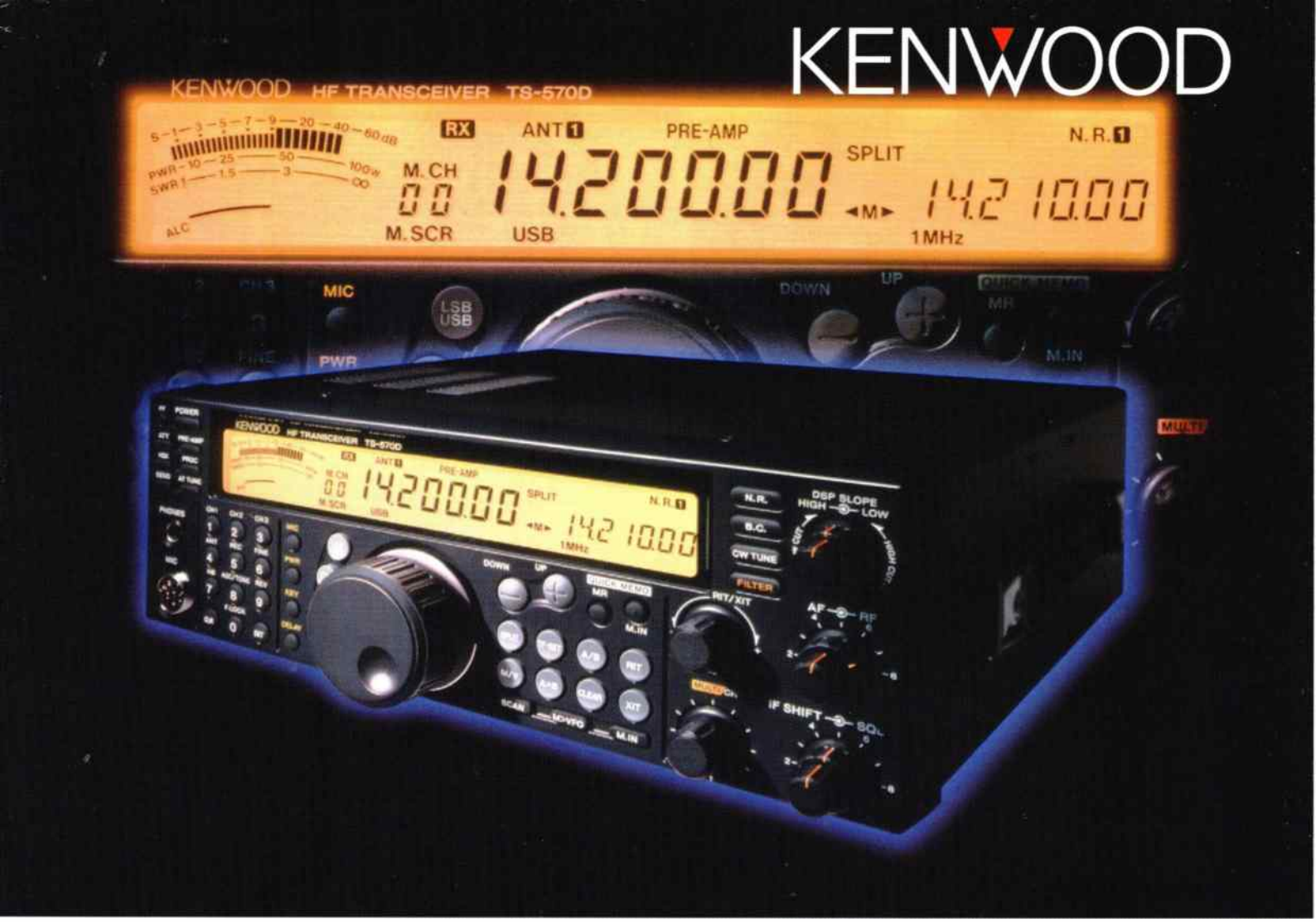

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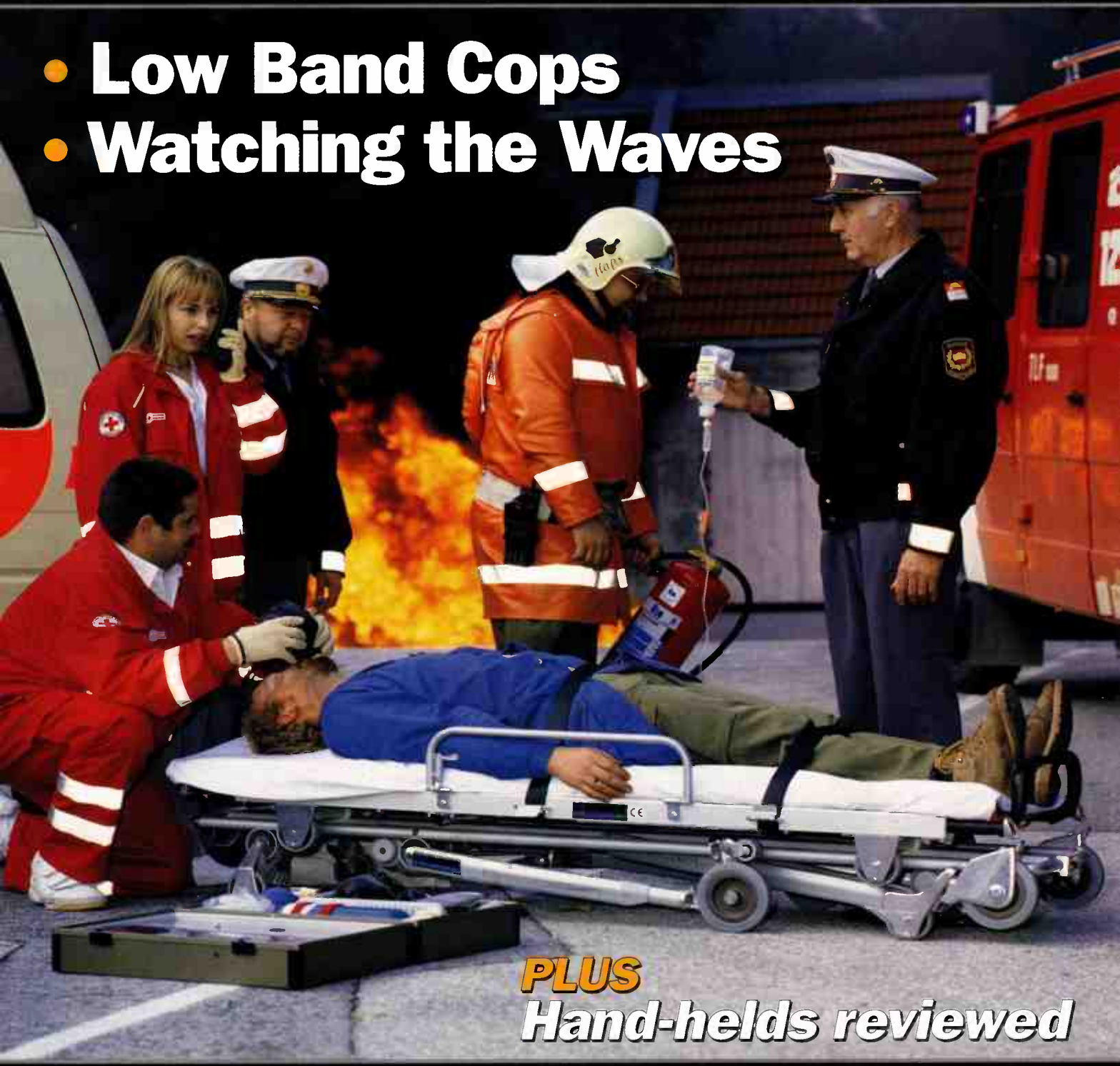

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NEW AR8600 *Mark2* RECEIVER - *any time, any place*

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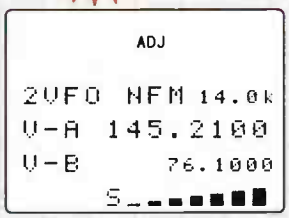

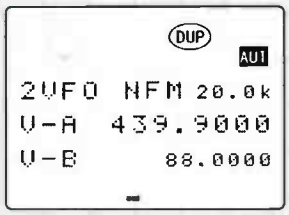

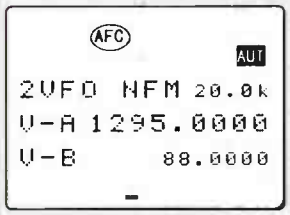

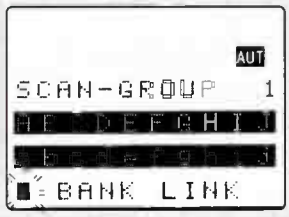

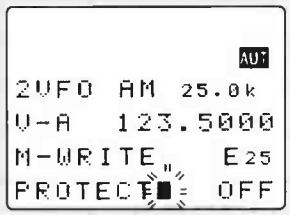

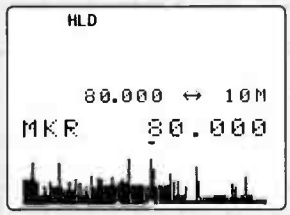

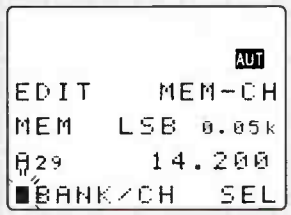

The **AR8600 *Mark2*** is an amazingly versatile receiver which can be used mobile, base or trans-portable... powered from an external 12V d.c. power supply, 12V vehicle or from an optional internally fitted NiCad battery pack. Due to continuous development of our products, the AR8600 *Mark2* has been enhanced in several areas. The upper **frequency range has been extended to 3000MHz** (3.0GHz), lower band sensitivity has been increased (now officially covering to 100kHz) with an **enhancement to short wave performance** by the addition of further bandpass filters and revision to I.F. filters. **Mini-Circuits RMS1 / RMS2 mixers** have been employed with **active SPM aerial switching devices** (not diode-switching) abundantly employed throughout the signal path. ***[Technical boffins** will recognise the significance of such devices in minimising signal loss & maximum spurious free range, and will be versed with the quality of Mini-Circuits parts].* The AR8600 *Mark2* provides remarkable short wave performance, making other similar wide band competitors mediocre by comparison. When the AR8600 *Mark2* arrived in the UK, **short wave listeners were amazed at how the AR8600 *Mark2* sounds so much like a dedicated short wave receiver** with pleasant audio on SSB and good CW tone with Radio Japan rolling in on a simple telescopic whip, much less like the usual expectations of a scanning receiver!

A strong twin metal case with die cast front panel characterises the multi-purpose role. All mode receive capability is provided including Single Side Band with programmable tuning steps down to a resolution of 50Hz with the frequency established by a highly accurate **Temperature Compensated Crystal Oscillator** (TCXO). An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites.

Many microprocessor features have been adopted from the trendsetting AR8200 Series-2 hand portable receiver, with the addition of a **lamp dimmer and squelch operated lamp**. The AR8600 *Mark2* RF front-end is an all new design with additional RF bandpass filters, sharper I.F. filters, SPM aerial switching devices for minimal signal path loss and Mini-Circuits mixers. RF preselection is provided through the crowded areas of VHF and UHF to ensure the highest levels of adjacent channel rejection with software spurii cancellation. In addition to a hinged telescopic whip aerial, the AR8600 *Mark2* is supplied with a **detachable plug in medium wave bar aerial** which locates on the rear chassis of the receiver for localised medium wave monitoring. An additional BNC socket is mounted on the rear chassis providing **10.7MHz i.f. output**.

The all important 8.33 kHz airband channel step is *correctly implemented* (eight-and-one-third, 33, 66, 00). Channel steps are provided in a menu and may be programmed. Step may be programmed by the operator in any receive mode using multiples of 50 Hz in any mode (i.e. 5 kHz, 12.5 kHz or even 1.25 kHz). Extensive **step-adjust** and **frequency offset** facilities are also provided (as per AR5000) to ensure tracking of the most obscure band plans, **AFC** (Automatic Frequency Control) is included for spot on tuning ensuring that nothing is missed.

A wide frequency coverage is provided from **100 kHz to 3000 MHz** (no gaps). **All mode receive:** WFM, NFM, SFM (Super Narrow FM), WAM, AM, NAM (Wide, standard, Narrow AM), USB, LSB & CW. A 3.0 kHz SSB filter is employed with true carrier re-insertion resulting in non-offset frequency readout for easy tuning of SSB transmissions. **Optional substitute SSB and AM Collins mechanical filters are also available**. An attenuator and noise limiter are also featured.

Computer control is available via a standard 9-pin RS232 D-type connector on the rear chassis, just a standard RS232 cable is required for connection to a PC, the extensive RS232 command list is printed in the operating manual. A **FREE software package** is available as a download from the AOR web sites, this provides frequency control & management, searching, scanning, logging with support for geographic data from a GPS and audio recording to disk.

In addition, **'optional internal SLOT CARDS'** (which fit into the rear chassis of the AR8600 *Mark2*) extend the capabilities even further, five cards may be fitted with two operational simultaneously ●***Memory slot card*** (increase storage to 4,000 memories, 160 search banks). ●***CTCSS slot card*** squelch & search. ●***Record chip slot card*** (records up to 20 seconds of audio) with 'continuous loop' capability. ***Tone eliminator slot card.*** ●***Voice inverter card.*** *The slot cards are common to the AR8600, AR8600 Mark2, AR8200 and AR8200 Series-2.*

Portable operation is a reality, when the optional BP8600 battery is fitted, **several hours operation** is provided away from the base or vehicle power supplies. *(Note, considering the BP8600, a 15V regulated d.c. supply is recommended for charging purposes so that the battery obtains a full charge, full charging time 48 hours. This may also be used as a power supply).*

Supplied with: comprehensive operating manual, RA8600 whip aerial, MW bar aerial, d.c. lead with cigar plug.

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editorial

Welcome to the first edition of *Scanning Scene Extra* - a free magazine from *Short Wave Magazine*. Inside, Dave Roberts takes a look at the essential role of the UK Coastguard, in his own inimitable style. Taking the opportunity offered by his recent visit to Stornoway to get the low-down on the CG ops, he also brings us a report on the rescue helicopter operation.

Lowband v.h.f. DXing is a wonderful bonus to the scanner owner so Dave also brings us an insight to what's possible with only modest gear.

Considering buying a scanner? We've got four reviews and a scanner selection chart to help you choose in this dedicated scanning publication.

We hope you read and enjoy. Please remember that in the UK, listening to transmissions other than broadcast stations and radio amateurs is prohibited. Anyone using a scanner needs to exercise discretion.

Be careful and enjoy.

Kevin Nice - Editor

Scanning Scene EXTRA

presented free with July 2002 SWM

SHORT WAVE SWM

Cover - Typical scene of high radio use - much interest to the scanner user.

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Monster Scanner Competition!

Win one of seven hand-helds. See **page 16** now! £1500 of prizes to be won.

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Presented free with *Short Wave Magazine* July 2002

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monitoring the coastguard

Police, fire and ambulance - we can monitor them all, but don't forget there's another service that those of us near the coast or tidal waterways can monitor - Her Majesty's Coastguard.

How often have you been awake late at night, unable to sleep? Despairing of ever dropping off again you stagger to the radio equipment, throw a few switches, turn on the h.f., the scanner and switch the antennas in line. The displays light up and eventually you end up listening to other people at work. Maybe the police, perhaps the fire and rescue service or ambulance staff.

Have you monitored the airband on these sleepless nights? These people are hooked up to radios and getting paid for it while you and I are listening to the same traffic, having ourselves paid for the gear with which to do so. The big difference is that when sleep again overtakes us, we can crawl back to bed and carry on where we left off. The emergency service staff can't.

This picture was taken by Martin Collins of HM Coastguard · shows MU outside the Coastguard MRSC at Stornoway.

In control rooms all over the world, staff are hunched over computer displays, headsets wired to the telephone and radio twenty four hours a day, every day

In control rooms all over the world, staff are hunched over computer displays, headsets wired to the telephone and radio twenty four hours a day, every day. The police, fire and ambulance services currently have their own control facilities, but may merge control facilities in the future. But there's another service that those of us near the coast or tidal waterways can monitor - Her Majesty's Coastguard.

Initiation & Co-ordination

Part of the Maritime and Coastguard Agency, HM Coastguard are responsible for the initiation and co-ordination of all civil maritime search and rescue within the United Kingdom Search and Rescue Region. Basically, this responsibility is implemented via the nineteen Maritime Rescue Co-ordination Centres and Maritime Rescue Sub Centres which are located around the coast of the UK. These centres all have an operations room which is what the centres are all about.

Known as the Watch Room, this is where any rescue plan will be formulated, it is the location from which rescue units will be dispatched and from where the rescue will be co-ordinated. Often it is also the place that receives the initial information of an incident. In addition to all this, routine weather information is broadcast together with other data deemed necessary to assist mariners.

Emergency Situation

When an emergency situation is declared, a number of resources are available to the coastguard. There are Coast Rescue Teams whose members are part time staff of the Coastguard Auxiliary Service. They are called out when needed to deploy to a shore location to provide on scene communications, incident assessment and/or cliff or shore rescue. They are specially trained in search techniques and for mud and cliff rescue work. They will also provide patrols and engage in public relations duties.

It's worth noting that if your radio club is in a coastal area, it may be

an idea to contact the coastguard in order to arrange a visit. In addition to the Auxiliary Coastguard, the operations room also have other facilities for rescue at their disposal.

These include the Coastguard tugs. Officially known as Emergency Towing Vehicles there are four tugs based around the UK. One is based in the Fair Isle channel, way up north, another is based in the Straits of Dover. The third tug is in the South West Approaches and the fourth operates out of Stornoway in the Western Isles. All the vessels are chartered from their owners, but not all are on station throughout the year. Some only operate during the winter months.

Coastguard Helicopter

Another resource available to save life is the Coastguard Helicopter. Chartered from Bristow helicopters, they operate from four locations around the UK. Their bases are at Shetland, Stornoway, Lee on Solent and Portland. Bristows also supply back up helicopters for these locations. The aircraft are currently the Sikorski S61N type of aircraft.

Of course the Coastguard also have the all volunteer crews of the Royal National Lifeboat Institution at their disposal together with independent lifeboat services including the lifeboat at Caister which is the only independent lifeboat service to operate a full size boat in the UK.

The sign outside MRSC Stornoway. *(photo by Iain Macaulay MMOBFF).*

Other resources can be brought in to assist the Coastguard including the armed forces whose Nimrod aircraft often supply on scene co-ordination. Any other vessel that happens to be in the area may also be available to assist with Royal Naval vessels being particularly useful. The police, fire and rescue services may also be called on to assist.

Although the HM Coastguard make use of the telephone network and advanced command and control systems, there is only one system that will link all the resources on land, sea and in the air...yes that's radio for sure.

Most Vital Link

Now you don't need me to tell you that the most vital link in this massive and complex system is communications. Although the HM Coastguard make use of the telephone network and advanced command

Table 1: VHF channels.

Channel No	Frequency (MHz)	Comments
0	156.000	This is the Coastguard SAR frequency and is for Coastguard use only. Marine band radios will not normally be fitted with this channel.
99	160.600	Coastguard search units (often used by Auxiliaries) Another channel fitted only to Coastguard radios where it may be labelled P.01.
16	156.800	Distress and calling channel.
6	156.300	On scene search channel.
10	156.500	Pollution control channel. Used also for weather forecasts in some areas.
23	157.150	Weather forecasts and sometimes use by lighthouse maintenance staff. (paired freq. is 161.750MHz).
53	158.650	Mountain Rescue - this channel not fitted in normal marine sets.
53A	153.600	As above.
13	156.650	Sometime rescue use - channel also preferred by DERA/QinetiQ MOD Ranges.
67	156.375	Working channel and weather, some use as a secondary calling channel in Solent area.
73	156.675	Weather and working channel.
86	157.325	Paired with 161.925 in some areas. Weather Ch.
70	156.525	This is the DSC channel using data.

Table 2: HF Frequencies.

Frequency (MHz)	Usage
2.182	International Distress, safety and calling. CG TX on a.m., RX on u.s.b.
2.187.5	MF DSC.
2.226	Aberdeen, Humber, Falmouth CG. Fishing boat natter channel.
2.241	Intership.
2.246	Intership.
1.743	**Stornoway Coastguard MRSC.**
2.860	Coastguard helicopter.
1.641	Solent Coastguard MRSC.
1.767	Milford Haven Coastguard MRSC.
1.770	Shetland Coastguard MRSC.
1.869	Yarmouth Coastguard MRCC.
1.880	Holyhead Coastguard MRSC.
1.883	Clyde Coastguard MRCC.
2.596	RNLI, Coastguard and Trinity House, Northern Lighthouse Board.
5.680	Kinloss Rescue Co-ordination centre primary.
5.699	As above secondary.
4.718	As above secondary.
3.380	As above secondary.
3.023	Aeronautical frequency night use.

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and control systems, there is only one system that will link all the resources on land, sea and in the air...yes that's radio for sure. From the initial report of a vessel or individual in distress to the final closure of an incident, radio is the only system that links all the rescue units and the Coastguard make full use of it.

The little dots on the map represent rescues. *(photo by Iain Macaulay MMOBFF)*

There are several radio systems available. The most recently implemented is the Global Maritime Distress and Safety System (GMDSS). Part of GMDSS comprises digital radio operating on 2.1875MHz and on Channel 70 (156.525MHz), but the entire system also includes the existing analogue marine radio equipment. GMDSS equates to a standard to which vessels of certain types must conform. The system ensures that a vessel, at sea anywhere in the world, can send a distress message to a shore base that can initiate a Search And Rescue in a short period of time.

GMDSS equates to a standard to which vessels of certain types must conform

The Ops room - showing the ICCS screen with Martin Collins. *(photo by Iain Macaulay MMOBFF)*

All cargo vessels of over 300 tonnes gross weight, all sea going passenger vessels with more than twelve fee paying passengers and mobile offshore rigs and platforms of over 300 gross tonnes must also have GMDSS standard equipment. There are some exceptions and additions, but this is the basic requirement. There is, of course, nothing to stop other vessels being fitted to the standard.

Digital Easy

The digital side of the systems makes it extremely easy for almost anyone on board the vessel to be able to send the distress message if necessary. The signal can be sent by merely hitting a button. Included in the data sent will be the ship's MMSI number which is a unique reference number that identifies the vessel and the location provided that the transmitter is hooked up to a GPS receiver.

A transponder (SART) on 9GHz should also be carried. This will enable the location of survivors by a suitably equipped ship or aircraft. Individuals in the drink may have EPIRBs (for details of these numerous abbreviations see the separate panel). These beacons operate on 406.025 and 121.5MHz or on 9GHz. They can be received by low earth orbiting satellites. Beacons can also be located by direction finding gear on SAR aircraft and vessels.

Signals in the UK are downloaded to the Rescue Co-ordination centre at RAF Kinloss. In addition to this, the GMDSS digital system can act as a transponder on a vessel and be interrogated by Coastguard Centres as to its location and status. This makes it easier for Coastguard watch staff to keep an eye on vessels in their patch. Satellite communications can also be installed as part of the standard as can NAVTEX receivers on 518 and 490kHz. NAVTEX provides written data on marine safety matters, weather and SAR activity.

In addition to the above, m.f. and v.h.f. analogue radio communications are also used. Not all the above gear need be installed on all vessels in all areas. The amount of equipment required depends on the type of ship and the area of operation. As radio is the vital link in this whole operation I reckon that it's time to take a look at some of the frequencies involved. Have a look at both **Table 1** and **Table 2** for the details. I have also overheard rescue operations on 3.864, 2.596, 7.470 and 9.001MHz.

It's also worth noting that 234MHz a.m. and 121.5 a.m. are aeronautical distress frequencies for military and civil aviation respectively.

Other SAR frequencies include 123.100 a.m., 138.700 a.m. and for military rescue try 282.800 a.m.

The comms recording gear. *(photo by Iain Macaulay MMOBFF)*

My Visit

The amount of radio equipment in use by the Coastguards and their assets can only be imagined. In short they have masses of kit.

Recently I was fortunate in that I was able to visit the MRSC at Stornoway. Together with Iain Macaulay manning the digital camera, I visited their ops room. We were met by Martin Collins who was running the operations room that shift. He explained that their premises at Battery Point by the harbour at Stornoway were opened in 1994, but that there had been a Coastguard base in the town prior to the last world war.

The Stornoway MRSC is responsible for the co-ordination of search and rescue from Cape Wrath at the north west point of the mainland, to Ardnamurchan Point and including the Western Isles, Minches and as far out into the Atlantic as Rockall. For those that are unfamiliar with the concept of Rockall. If you imagine a roughly conical shaped rock sticking out of the North Atlantic by about a hundred and twenty feet, that's the place. No facilities, no shops, no crumpet. Just rock, sea spray and seabird guano.

Rockall is west of Ireland, but is nevertheless British. As you can imagine the MRSC at Stornoway have a large area of seascape and coastline to mind. The Operations Room is manned by four watches (shifts) of six people. The staff of the unit consists of thirty in total.

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Vintage photograph courtesy of RSGB.

Count on us!

Extensive Equipment

The equipment list is extensive with a Skanti m.f./h.f. radio transceiver running 750W. Most coastguard centres have an output of 250W and not all have a m.f. facility but, like I said, Stornoway has a large area to cover. Weather broadcasts and other safety information is transmitted on m.f. and v.h.f. from the centre. It's no surprise to learn that the MSI broadcasts have been heard on m.f. from some fairly distant parts and the staff at Stornoway have received QSL reports. Yes, they always reply with a letter confirming the reception report and outlining the equipment in use and v.h.f. power is 25W.

The Ops room. *(photo by Iain Macaulay MM0BFF).*

The Ops Room is a very modern affair with the operating workstations each boasting two computer terminals. One is dedicated to ICCS (see panel) and the other hosts back up functions including the Coastguard Intranet facility, an information database and the SARIS 2 (Search And Rescue Information System).

Firstly ICCS... in police and fire controls a similar set up is known by the same initials which in those cases stand for Integrated Command and Control System. In Coastguard use, the system allows touch screen control of the radio and telephone equipment including recording and playback of the weather and Maritime Safety Information broadcasts.

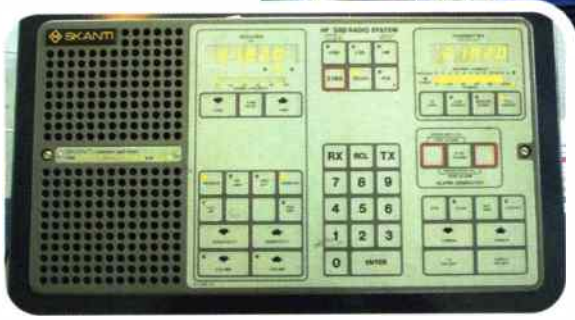
As you would expect the operations room staff also have numerous charts available covering their area.

From the touch screen, a watch keeper can select a transmitter site, operate the d.f. facility, receive information and poll vessels fitted with digital transceivers and control his or her telephone lines. Using ICCS a telephone call can be put on hold or can be additionally monitored by the Watch Manager (like Martin) who can communicate with the staff member taking the call without the caller overhearing his prompting.

All communications with the Watch Room are recorded using Dictaphone multi-channel digital recording equipment and this may also be controlled using the ICCS touch screen. As you would expect the operations room staff also have numerous charts available covering their area.

Searching for individuals or vessels in trouble in the ocean is not just a question of turning up in the helo and taking a look around. A search plan will have been formulated by the watch staff, taking into account a mass of information regarding the incident. What sort of vessel is in difficulty? Are survivors in the water? These questions together with tide status, wind direction and speed, current type and many other factors relating to the rescue will have been calculated by the staff. To assist them the Coastguard have the SARIS 2 computer program that will also plot these details for them. A search area and plan can then be suggested to the rescuers at the scene.

MRSC Stornoway. *(photo by Iain Macaulay MM0BFF).*



The Skanti MF radio control unit. *(photo by Iain Macaulay MM0BFF).*

Many Rescues

The Stornoway MRSC co-ordinated 383 rescues during 2001, a figure of 140 more than the previous year. All rescues are marked by a pin stuck in the wall map on the Watch Room wall. At the end of each year the pins are taken out because if they left them in after a couple of years you wouldn't see the map at all.

The future will see increased use of digital distress calling, but rescue communications will remain analogue for the foreseeable future. In time, the practice of monitoring Channel 16 on an operators headset will cease, but 16 will then be spouting from loudspeakers at the workstations. Don't fret about this. Even in a period of high activity the Watch Room remains a calm, quiet working environment. Her Majesty's Coastguard won't miss a call.

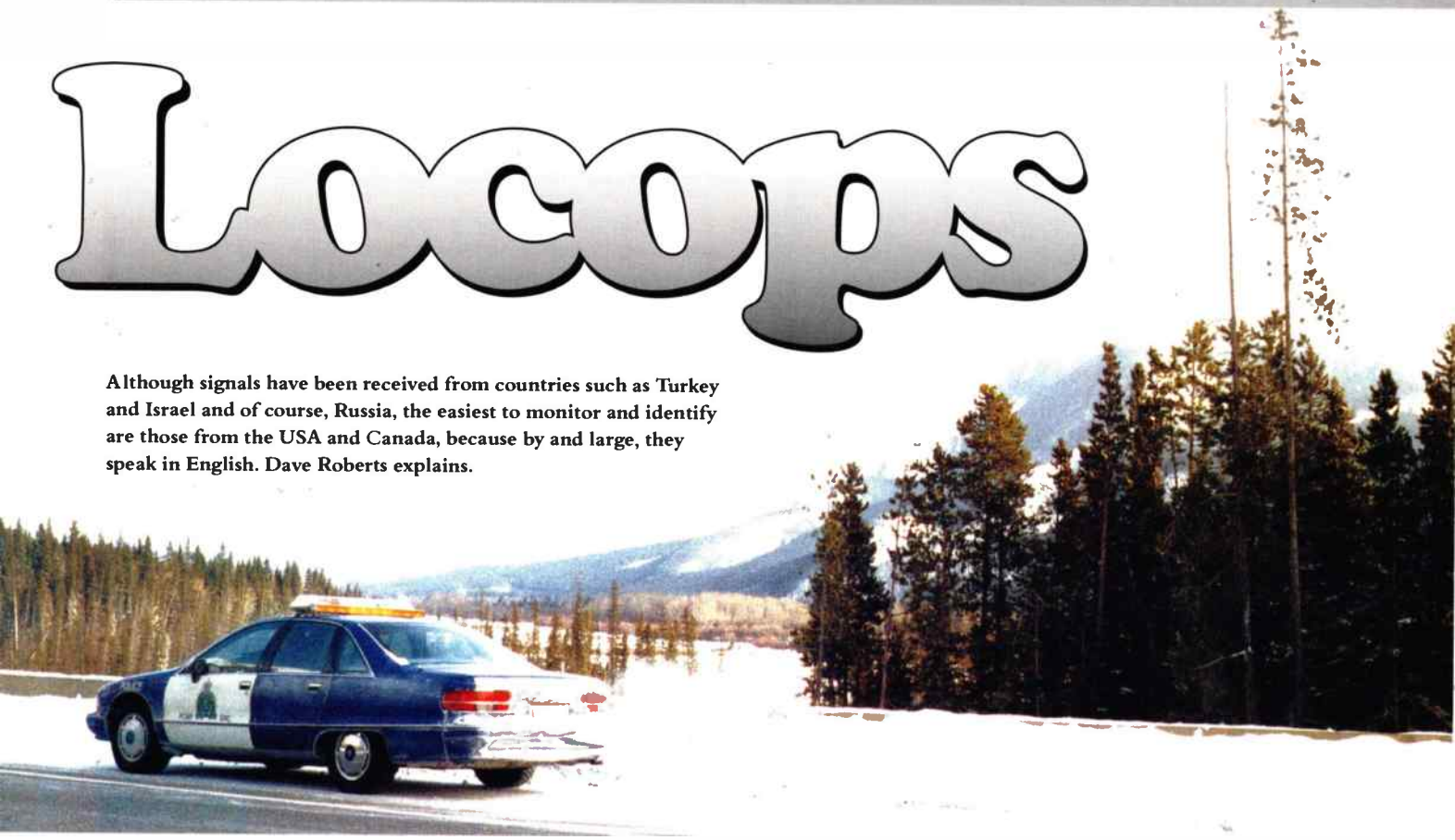
SWM SSE

Some abbreviations...

CG	Coast Guard (haven't you been paying attention at all!)
DF	Direction Finding
DSC	Digital Selective Calling
EPIRB	Emergency Position Indicating Rescue Beacon
GMDSS	Global Maritime Distress and Safety System
Helo	Helicopter
ICCS	Integrated Coastguard Communications System
MF	Medium Frequency
MMSI	Maritime Mobile Service Identity
MRCC	Maritime Rescue Co-ordination Centre
MRSC	Maritime Rescue Sub Centre
SAR	Search & Rescue
SARIS	Search & Rescue Information System
SART	Search & Rescue Transponder

Loops

Although signals have been received from countries such as Turkey and Israel and of course, Russia, the easiest to monitor and identify are those from the USA and Canada, because by and large, they speak in English. Dave Roberts explains.



A Chevrolet Caprice of the Royal Canadian Mounted Police operating on Highway one in Alberta near Castle Mountain. The car is fitted with a Motorola set operating on several channels at 155MHz. The temperature was -35°C. that day and standing outside for more than a few minutes was very miserable

The last year has been a fairly good period for monitoring the emergency services. Not those in the UK, although for those people who listen to the British 999 responders it may have been the last year that it has been possible to do so. No, it's been a pretty good year for low v.h.f. signals.

Although signals have been received from countries such as Turkey and Israel and of course, Russia, the easiest to monitor and identify are those from the USA and Canada, because by and large, they speak in English.

Monitoring between around thirty and fifty 'megs' will have provided interesting and sometimes exciting entertainment. A large number of police and fire/emergency medical service departments from across the Atlantic have been regularly monitored in the UK and although conditions are now on the wane, it's possible that more will be heard before the demise of the current sunspot cycle.

The size of American fire trucks never ceases to amaze me. This rescue tender has a guy sat at the back steering the rear wheels.

Regular Visitors

Many signals have been heard on the low v.h.f. bands and those from several fire departments using 33.900MHz f.m. have been regular visitors to our radio speakers here in Britain and Ireland. Unless you have an interest in a particular service or area in North America, then the best advice for the general scannist would be to tune in 10kHz steps right through the band.

Most of the US and Canadian services in fact use 20kHz channel spacing. The Canadian Police have now migrated to higher frequencies that we are unlikely to be able to monitor over here, but they still have some fire, medical and commercial users in the lower frequency bands. The main users of the low v.h.f. channels over the water are the United States Police and Fire and EMS departments.

Equipment required for attempting to hear this long distance traffic can be as simple as a hand-held scanner hooked up to a reasonable antenna. When conditions have been good, I have heard the police and fire departments in several different states on my Kenwood TH-F7E with a length of wire hooked up to the SMA antenna socket. Quite amusing when camping out in a bivvy tent on a rain swept hill, to hear the police operating in warmer climes.

Generally a better antenna system will be required. I suggest a decent outside antenna, a log periodic on a rotator is superb, but excellent results are achieved using a discone or other multiband antenna. CB base station antennas are also good for the purpose. Use good quality coaxial cable and

hook up to a reasonable base radio and a mass of signals can be heard when conditions allow. Of course the better the equipment, the better the reception, but bear in mind that if the propagation is not there, then even the best radio and antenna system aren't going to hear a thing.

Police, Fire and Medical services do pretty much the same job anywhere in the world. Sudden deaths and domestics at Christmas and punch-ups on Saturday nights are the norm. If you have monitored these services in any country, you'll immediately notice the similarities.

Important Tool

Communications are the most important tool, especially in law enforcement and Motorola seems to be the preferred supplier of radio kit. Throughout the Americas, their equipment sits in police and emergency vehicles whether it's operating on low band in the west or on the 400MHz system of the New York Police Department.

Take a peek inside any Canadian or American police car and you'll see the same basic equipment. Usually the car's centre console has been replaced with a specialist equipment housing that enables more gear to be fitted in the car. The manufacturer's interior light (called a dome light) has been replaced with a much larger unit that gives more light to enable officers to more easily see the paperwork that is a large part of police work.

There used to be handles, fitted to the windshield pillars, to control outside spotlamps, but these 'alley lights' have now been replaced with additional lights on the light bar ends. The control handles were found to get in the way of air bag deployment on newer vehicles, but some are still in use. The refitted centre console will contain the radio comms gear, which may include a mobile repeater set. There will be a mobile data terminal which, like the radio, is often supplied by Motorola.

The MDT will look like a small v.d.u. and keyboard allows patrol staff to receive dispatched tasks and to complete their own vehicle and person checks with the criminal records and Department of Motor Vehicles systems. The MDT systems are well known to fail at the busiest times!

There will be a combined lightbar/public address/siren control system. The units made by 'Touchmaster' being popular amongst police departments. Often, at the top of the windshield, inside the car will be the controls for the 'Eyewitness' video system, together with a video camera that peers through the front screen. The rear of the car may contain a cage to separate prisoners from the police. It can also have a fibreglass moulded seat to prevent those in custody from hiding items in the car.

The Ford Crown Victoria has u.h.f. trunked system fitted, together with a repeater unit. The mountain bike on the rear rack is to allow the officer to patrol the Santa Fe, New Mexico downtown on a more personal basis. He was grabbing a coffee at the hotel at the time

Another Chevy Caprice, this time in the warmer climes of San Francisco. The car is nicely presented and the crew have the windows rolled up to enhance the performance of the air conditioner.

Finally, there will always be the trusty Remington 870P pump action twelve bore shotgun with a nice short barrel that can be brought into play when traditional police diplomacy fails. This may be mounted in an electrically controlled clip in the roof behind the driver. Many of these systems are also fitted in the numerous unmarked police vehicles. The unmarked light metallic blue Chevvy Caprices of the often monitored Missouri State Highway Patrol are the bane of speeding motorists in that state.

The signals are due to start rolling in again in about twelve weeks time until around the end of April, so now is the time to prepare your monitoring station for the winter's excitement. SWM SSE

European cars have not made many inroads into Transatlantic policing, but some departments in Colorado have used Saabs and the Georgia State Highway Patrol have some BMWs. Here this VW Bug looks quite at home with it's smiling Constable at Whitehorse, Yukon, during the hot summer. They usually have Chevvy Blazers and Caprices. This vehicle is not fitted with a radio, the officer relies on his personal radio for contact.

Dave Roberts took advantage of being in the right place at the right time and took a look at the Stornoway rescue helicopters.

As I was in the Stornoway area and seeing as the Coastguard have access to a helicopter, it would have been daft not to try to arrange a visit to the operational base of the Coastguard rescue helicopter. Thanks to Captain John this became possible and Iain and I popped down there one morning.

Helo

Front shot of G-BIMU

There's a massive hangar at Stornoway airport. It's cavernous interior houses a few light aircraft, some maintenance equipment, air portable rescue pumps and two darn big Sikorski S61N helicopters. The choppers are painted in the bright red and white livery of their owner, Bristow Helicopters. Contracted to HM Coastguard these aircraft, G-BIMU and G-BBHL provide the airborne rescue service for the Stornoway MRSC area.

The primary aircraft, MU is named Stac Pollaidh due to a previous close encounter of the third kind with that granite hill near Plockton. The crews at Stornoway will always use MU as the primary SAR aircraft when possible.

John, Iain and I boarded MU. John explained that the aircraft had been extensively modified for it's search and rescue role. The vehicle has a heavy lift capacity together with extra fuel tanks that enable it to travel to a maximum 240 miles out from base to the scene of a rescue and remain at that location for a quarter of an hour before having to head back home. Not surprisingly one of the additional fuel tanks is visible inside the aircraft. Normally rescues are not that distant, but if range is necessary then Mike Uniform has it.

You won't find many seats inside one of these helos. Apart from the two pilots sat up front, there may only be a couple of other staff on board. These will inevitably be a winch operator and a winchman. Both these men are highly competent in emergency first aid, but are not qualified to administer intravenous medication. With this in mind, the helicopter will sometimes carry a doctor or nurse depending on the mission specification.

Few Creature Comforts

Saving life is what this aircraft is all about and it comes as no surprise to find that creature comforts are few. The floor is mainly covered in a low basin type of floor covering. This waterproof cover is necessary as people removed from the ocean and the winchman are usually brought on board in a pretty wet state. The floor covering protects the aircraft and it's systems from moisture. Additionally, less seating inside the hull means that more room is available to deposit folks that have been hauled on board and in some cases the number of people crammed on board one of these aircraft during a rescue has been impressive.

A large number of stretchers are carried. As a layman it's difficult to imagine the different types of stretcher that need to

More G-BIMU

If you want two sugars, you push this one!

be available to deal with specialist rescue requirements, but they are available for use on MU. The crew can get airborne within a few minutes and, of course, the aircraft is on twenty four hour stand-by.

Impressive Equipment

The helicopters are fitted with some impressive navigation equipment including a system developed by a company called Louis Newmark (later absorbed by Bristow) that enables the aircraft to fly to a location automatically with minimum crew input. In addition, when the aircraft is at the scene of a search, the system will fly the helicopter through an automatic search pattern. The reason for these systems being utilised is simple, it frees up the pilots to conduct a visual search themselves allowing four extra eyes to look for casualties.

On scene, search equipment includes a lighting system that can illuminate a large area, called Night Scan it is a favourite of rescue services. The aircraft are also fitted with Forward Looking Infra Red (FLIR) equipment. A sophisticated video recording system is fitted and this enables rescues to be recorded to assist in training and to make the footage available to news agencies. The system in the Stornoway helicopters does not include a transmitter.

There's a pretty powerful winch at the starboard side of the aircraft. This machine is the one that sends a man on the end of the wire to haul casualties on board. It can operate at high speed if necessary and has a small explosive cutting tool fitted in order to sever the cable should that become necessary. The winch operator has a control by the hatch so that he can control the movement of the helicopter in order to keep the aircraft over the target.

Remember the pilots are up at the front and may not be able to get a view of winching operations. The primary role of Coastguard helicopters is to save life. In the hanger at Stornoway there are, however, some rescue pumps that may be carried on to a ship that is taking on water in an attempt to keep it afloat. Additionally some pollution control equipment may be deployed below the aircraft should time and opportunity allow.

FLIR and video control (forward looking infra red)

The winch

HM COASTGUARD
SEARCH & RESCUE FLIGHT
STORNOWAY
BHL

The sign outside the hangar at Stornoway airport. BHL - Bristow Helicopters Ltd. (photo by Ian Mackay-Wright)

Radio Gear

As you can imagine the helicopters carry a massive array of radio gear - h.f. radios are carried as well as v.h.f. marine band equipment. Military u.h.f. airband radio is also fitted. The Coastguard helicopters have to be able to operate in conjunction with any other air or seaborne units. Frequencies that are usually monitored within Mike Uniform or Hotel Lima are 121.5, 243.000, 123.500 (Stornoway Airport), 129.775MHz (all a.m.), (A Bristow company frequency) and 5.680MHz u.s.b. or other h.f., frequency as directed by RAF Kinloss.

When operating at extreme range or in difficult weather conditions, the Coastguard helicopters may also be assisted by an RAF Nimrod aircraft dispatched from Lossiemouth. These jets, which are also equipped for search operations, provide top cover for the helicopter crews and can relay radio traffic.

A high priority is given to training and the Stornoway aircraft carry out a continual programme of winching and rescue exercises. The Stornoway rescue helicopters are called out to around a hundred and twenty rescues a year and the number of lives saved by the crews can be calculated from this figure. It's a lot I can tell you. SWM SSE

Airport fire truck coming to practice with the helicopter crew

The newly revised VR-120D from Yaesu, is an excellent choice of miniature scanner. The external power socket of the new version adding to its already amazing versatility. Following is a look at the original offering from 2001.

It never fails to amaze the way modern radio manufacturers manage to turn out a constant stream of new innovations. The latest to come my way is the VR-120 from Yaesu.

One thing that's been missing from the scanning market is a compact, easy-to-use scanner that's not short on features. Combining functionality with features in a small radio is a real conundrum for the designer and requires great skill to get the right balance. At first sight it rather looks as though the Yaesu might just fill that gap. It certainly has the looks and a quick glance through the specification shows that it has an enormous range of features. With a.m. and f.m. coverage from 100kHz right through to 1299MHz, 640 memories, scanning and search options plus there's even a game built-in!

Yaesu VR-120

...very powerful set of user configurable options..

Shakedown

As soon as the Yaesu arrived there was a fight-on for who was going to play with it first and we were all willing it to be a good performer! There can't be much doubt that it scores highly for good looks!

Fortunately, the VR-120 only needed a couple of AA cells for power so it was on the air in no time at all. It seems one of the essentials of modern life, if you've got kids, is an endless supply of AA batteries! The use of AA batteries is a very sensible choice as you can get them just about anywhere these days so you shouldn't get caught out. AA cells are also a very cheap power source, especially when combined with the VR-120's battery saving circuitry. I never did get to see how long the batteries lasted because the original set were still going strong at the end of the review!

Being of an impatient nature, there was no way I was going to read the manual before I started listening. Now this is where the designer gets his (or her) first test - can you use it without the manual? You can guess the answer - a resounding yes. As you can see from the photos, the layout is really simple with a conventional volume/squelch control combination and a separate knob for the tuning. This 20 position tuning control has a great feel with soft detents that were set just right for rapid, but accurate, tuning. Notice the display? Not your normal miniature digits, but a well-sized display that I could read easily - so could others without their glasses. There was even a decent backlight to aid clandestine listening from younger listeners under the bed covers!

Civil Monitor

I went straight for my old favourite - the civil air band between 118 and 136MHz. This is a great band for checking a radio because there are always lots of signals around and there are a number of stable VOLMET signals that can be used as a rough and ready reference. I have to admit to be disappointed at first because the VR-120 seemed to be a bit deaf. However, I soon realised that the supplied rubber whip antenna was a wide-band antenna and not at its optimum on airband.

After replacing it with a simple telescopic whip and the signals came booming in.

The provision of a standard BNC antenna socket on the top of the set added a degree of flexibility to the antenna choice and made connecting an external antenna simplicity itself. With the replacement antenna in place, the VR-120 put in a pretty impressive performance and I could easily hear the Hurn VOLMET signal that some receivers fail to detect using an external discone. When I did connect-up my discone the VR-120 really

started to fly with lots of signals to be heard. There was even a handy attenuator in case you get problems with very strong local signals.

Having decided that the VR-120 was a very capable receiver I decided to try-out the Smart-Search facility. This is a great time saving feature for checking-out activity when you're either looking at a new band or listening at a new location. Smart-Search comes with its own dedicated set of 21 memories that it uses to store active frequencies within its scan range. Some very simple programming lets you select the upper/lower and start frequencies for the scan. When activated, the VR-120 searched up then down the band and stores all active frequencies in the 21 memories - really neat. This worked well for me and I soon had a good set on interesting frequencies to monitor.

This facility comes into its own at air shows or sports events when you need a quick way to capture the active channels. If you find any useful frequencies you can recall them and save them in the main bank of 640 memories. For such a small radio I have to say I was impressed with the VR-120's audio quality. Airband signals were exceptionally clear both through the internal speaker and using an ear piece.

Ferrite Bar

The next opportunity to put the VR-120 through its paces came when I took the family along to Zurich Rugby League Championship Final at Twickenham. I'd checked the Radio Authority's Web site **www.radioauthority.org.uk/rsl/sporting.htm** and found that Ref!Link would be in action, so I could try the VR-120's medium wave performance. In case you're not familiar with Ref!Link, it is a great system that broadcasts the referee's microphone in the medium wave band. The normal frequencies are between 1500 and 1600kHz and in this case 1503kHz had been allocated. It was a beautiful sunny day for the match so summer clothes were the order of the day, i.e. not a lot of room for radio equipment. The VR-120's small size was really great and made listening a real pleasure.

With all the noise in a rugby ground I decided to use an ear piece rather than the internal speaker to listen to Ref!Link. This worked really well with the VR-120 in my pocket and a discrete wire running to the ear piece. However, reception on the whip antenna was not too good so it was time to switch to the VR-120's internal ferrite bar. Having the choice was a real treat and also gave me an opportunity to introduce the SET menu. At the beginning of this review I said that the VR-120 had an impressive range of features, but very simple operation - the SET menu is one of the radio's little secrets.

At the beginning of this review I said that the VR-120 had an impressive range of features, but very simple operation - the SET menu is one of the radio's little secrets.

If you press the 'FUNC' and 'SCAN' keys at the same time the display changes to show the 'SET' menu. From here the tuning knob is used to scroll through the 25 available settings. When you get to the one you want to alter you just hold the 'FUNC' button whilst altering the tuning knob to choose the setting you want. This has to be one of the simplest and most foolproof option setting systems I've come across - it was a real delight to use.

You could use this menu system to set a huge range of system parameters and it lets you customise the VR-120 to your personal taste. If you get in a muddle you can either refer to the default setting in the manual or use the system reset to return to the factory defaults. Even this had been carefully thought through with two reset options. The first just restored the default settings whilst the second cleared the memories as well.

Back to the rugby. Switching to the bar antenna solved the problem with Ref!Link and I was able to listen comfortably. However, this was an ideal opportunity to give Smart-Search a go and see what else was around. The most interesting find was the TV talkback link that the director used to control the switching between cameras. This was a great source of information as the control room were giving out player and substitution details and you could hear the TV commentary in the background!

...a.m. and f.m. coverage from 100kHz right through to 1299MHz...

If you want to be really discrete with your listening, you can use one of the 'SET' menu options to use the earphone lead as the v.h.f. antenna. The VR-120 could then be tucked away out of sight.

HF Listening

A few years ago adding short wave to a v.h.f./u.h.f. scanner was a bit of a marketing joke as the performance was often truly awful. Short wave with the VR-120 is certainly not a joke - the performance was fine for general broadcast listening. Even whilst I wrote this I was tuning around and spotted VOA, Radio Canada, Radio France - all with crystal clear signals. Just to make short wave broadcast listening about as simple as you can get, the VR-120 includes a set of special memories with all the active frequencies of 23 top international broadcasters. Not only are the frequencies stored, but also the station name is shown on the main display - you can't get simpler than that!

Child's Play

The VR-120 is a great little radio. The size is just right for real portable operation, the display is particularly clear and basic operation is child's play. The technical performance was also very respectable and certainly good enough to give a few desk scanners a run for their money. Don't let its diminutive size fool you; the VR-120 includes a very powerful set of user configurable options. In addition to all the features I've already covered, the VR-120 includes a standard set of memory management tools for its 640 memories including the ability to group them into ten groups of 64 complete with name tags. SWM-SSE

The full version of this review appeared in the July 2001 issue of *RA*.

Win Prize total

Scanning Scene bumper competition

Win one of seven hand-helds brought to you by *Short Wave Magazine* and the advertisers featured in this edition of *Scanning Scene Extra*. Whether you are a seasoned scanner user or a total newcomer here's a chance to win either the new addition to you arsenal of receivers or your very first radio.

Scanning Scene Extra in conjunction with *Short Wave Magazine* and the generous importers who have kindly donated the fabulous prizes on offer, wish you luck and urge you to enter our unbelievable competition.

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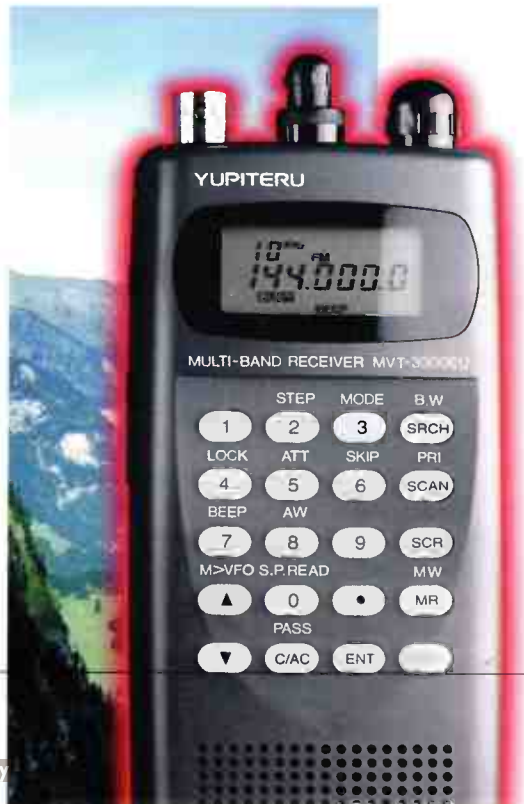
Alinco DJ-X3 scanner worth £130
AOR AR8200 Series2 high-end hand held scanner worth £400
Bearcat UBC280XLT SportCat worth £180
Icom IC-R2 mini scanner worth £160
Kenwood TH-F7E wide band receiver and transceiver worth £290
Yaesu VR-120D miniature scanner worth £160
Yupiteru MVT-3300 hand-held scanner worth £180

£1500 of prizes to be won.

To enter our massive seven prize competition you need to answer the seven questions featured on the entry form.

Our thanks go to AOR (UK) Ltd., Icom UK Ltd., Kenwood Electronics UK Ltd., Nevada and Yaesu UK Ltd. for their generous donation of the prizes for this spectacular prize draw.



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Entry Form

To enter this prize draw, please fill in your details on the entry form, (photocopies can be accepted with the original corner flash attached), answer the seven questions and post your entry to: ***SWM* Bumper Scanner Draw, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.** The closing date for this draw is 1 August 2002. The draw will take place 16 August 2002. The winners will be announced in October *SWM*.

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Q1: Which of the prizes also transmits on two amateur bands?

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Q2: How many of the prize radios can be computer controlled?

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Q3: Which prize has feline connections?

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Q5: Which prize was the first to be reviewed by *SWM*?

.....

Q6: What are you likely to hear on 125.6MHz?

.....

Q7: Which radio service uses 8.33kHz channel spacing?

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Please tick the prize you would most like to win.

AR8200 Series2 ☐ *DJ-X3* ☐ *IC-R2* ☐ *MVT-3300* ☐ *TH-F7E* ☐ *UBC280XLT* ☐ *VR-120D* ☐

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Kenwood TH-

– An Obje

Not just a capable scanner - the TH-F7E is also a v.h.f./u.h.f. amateur band transceiver too. Dave Roberts ended up having to buy one...

The Kenwood is sold as a dual-band hand-held transceiver with receive capability on the secondary band of between 0 and 1300MHz. All mode. The radio transmits up to 5W of f.m. in the UK 2m and 70cm amateur bands. The version of this TH-F7E marketed in the US is the TH-F6A and has some additional features including transmit capability on the 220MHz band which is not open for amateur use here in Britain. Don't think that the Euro version is the poor relation of the Stateside set simply fitted with different software. This is not the case and the unit itself is clearly marked as an F7 and as a dual-band radio.

Testing...Testing

The handbook features a quick guide to getting going and having looked at this, I thought it best to go and try the radio out in the field. After all it is a portable radio and is built to some sort of American military standard which means it should keep a shower of rain out. Accordingly, I hiked up to the top of the cliffs about kilometre from my home. While strolling up the hill I had a natter on 2m band with my mate GM3JIJ who was also out walking near his place on the Isle of Lewis. Now Jon and I live around 64km apart across a stretch of ocean called The Minch. So we have a pretty good path for signals.

Jon was out hiking with his dogs and he agreed to sit on a rock in the rain with his 5W hand-held set until I had scaled the cliff. I arrived at the top and as we were already talking on v.h.f. with S7 signals both ways, we switched first to 70cm band where the signals read around S6 in each direction. Now, Jon's little set has 1296MHz on board too. The TH-F7 will receive on that frequency and so we thought it would be worth a try.

Jon transmitted to me on 1296 and his signals came booming out of the speaker with a signal strength of S3 which I thought was pretty good. It was raining hard by now and Jon headed back home. I was able to fire up the local repeater, GB3IG on v.h.f. and access it easily on the 5W. From this location the repeater is around 80km or so away, but I can usually get in on any 5W hand-held radio from the cliff by the old RAF Chain Home radar site.

It seemed to me that performance on transmit and receive on v.h.f. and u.h.f. was the same as any other similarly powered handy talkie. I also had the opportunity to try the Kenwood in the south of England the following week and the results from the crowded south were exactly the same as other radios of the same output that I have used. Accessing the local repeaters, GB3VA and GB3AL on v.h.f. and GB3HZ on 70cm was a reliable and easy experience. It does seem to me that people in England hardly converse any more on f.m. as I found no one to talk to on simplex frequencies, despite being in a very built up area. Where are you all?

Fitted As Standard

Anyway, the HZ repeater is a somewhat different unit in that to access it requires a 77Hz CTCSS tone. This presents no problem for the TH-F7 as it has CTCSS fitted as standard, together with DCS and DTMF in addition to a 1750Hz tone button. From the amateur point of view this is an extremely competent pocket radio. The power comes from a supplied 7.4V Lithium-Ion rechargeable battery pack.

The supplied charging unit is a moulded plug top type. The battery appears to give around nine hours intermittent transmit and constant receive use. I must confess that I wasn't too sure about this as time just flew by when using this radio. Charging up the battery takes around six and a half hours and the two little orange l.e.d.s on the set's top extinguish when the charge is completed. Overcharging will damage these batteries and they aren't cheap, so may I suggest using a timer switch to prevent brewing up the power pack.

A Problem

There is a problem with the 'F7 using the supplied charger. You have to charge the battery with it fitted to the radio and you can't run the radio when the battery is charging. This means that for the charge period the radio is out of commission. The only way round this is to buy the empty battery tray and bung some AA cells in it so that you can change packs when the Li-ion pack goes flat and then pop it on charge when you next hit the sack.

This is a physically tiny radio, but not in features or performance, this

F7E

ct of Desire

does mean though that the controls are small. They are, however, well laid out and obviously very well thought out so that having used the radio for a few hours their use becomes instinctive. The most innovative control is a 'menu' button which is in fact a 5-way joystick type device. This is particularly useful when tuning h.f. Yes h.f.!

As the specification says, the radio tunes from 0-1300MHz on receive on the B band. The TH-F7 being a true dual-band rig has two bands available for display and use. Both at the same time if you require. The A band will only tune in UK amateur v.h.f. and u.h.f. bands and allows transmit in these areas. The B band tunes right across the range, but again only allowing transmit in the 2m and 70cm segments. This means that if you have an amateur licence you can monitor the calling channel on v.h.f. and perhaps your local v.h.f. repeater at the same time. Or you can monitor one frequency at v.h.f. and one at u.h.f. Or if you prefer to scan around or perform a search you can do this on the B band while monitoring your local repeater on the A side. Or listen to Radio 4 while waiting for a call on two or seventy. Pretty impressive, eh?

There are 400 channels to program with your favourite frequencies and 10 search bands to load up too. There are call frequencies to programme and heaven knows what else. Receive performance on the bands from low v.h.f. to 1296MHz seems to me to be really excellent and separate squelch levels can be set for each of the two bands. Believe me there are a mass of scan parameters which can be set up.

As I said earlier this radio receives h.f. too. The supplied rubber antenna is really only useful for monitoring h.f. broadcast signals in the dark hours. You can't alter the laws of physics I'm afraid (although I think Kenwood are working on that as well) and the internal bar antenna for medium and long wave reception was only very effective when closer to a m.w. or l.w. transmitter. Although one night I could hear a French broadcast station on it.

But the h.f. works well when you hook up a different antenna to the SMA socket on the top. All the hand-held radios that I have tried perform to some extent when connected to an additional antenna. The thing with this set is that it is actually on frequency. Wide-band scanners have always displayed a frequency somewhat different to that being received. This is one of the problems in making a set to be all things to everyone. Not so the Kenwood. Put it on 5.680MHz u.s.b. and hear the rescue frequency. Right on the button. Likewise through the amateur bands and the military frequencies. Always on frequency. Believe me this is no mean feat for the constructors. Wire this radio to a dipole or long wire and you will really need the built-in attenuator.

But this isn't the true test. This is a small portable set for portable use. Anyone who is using this on the road, in a tent or bivvy bag, or in a hotel room isn't necessarily going to have a darn great dipole antenna hanging from a handy tower. I grabbed around 5m of wire from a drawer and wired it via a connector or two to the TH-F7's antenna socket. I draped this wire around the room. Yes, there was 5.680 loud and clear. Up to the 7MHz amateur band. Sure enough. Reasonably strong readable signals. Likewise through the h.f. Oceanic air traffic frequencies and military stuff. The amateur bands on 20 and 17m were rolling with traffic and I heard a **big** pile up on the IOTA frequency of 14.260MHz. This is where the small stick control comes in handy, just keep your thumb on it and it will roll up or down through the frequencies for you.

I listened to the rescue channel on h.f. while monitoring amateur traffic on v.h.f. All at the same time. I tried the same set-up in the open air with better results. You'll have to experiment a bit with wire lengths to see which suits your listening priorities, but you won't be disappointed.

First Rate

I have now taken up too much space writing about this set and I've not really scratched the surface of its features. It's a first rate scanner, receiver, transceiver. Anyone who tries one will want to have one handy all the time. It's well thought out, well built and it works just fine.

SWM SSE

The full version of this review was featured in *SWM* November 2001

YUPITERU form&function

~~£249~~ **£229**

MVT-7100E

RESOLVES SSB!

Probably the UK's most popular handheld scanner amongst the advanced enthusiasts. Unlike it's rivals, the MVT-7100 uses true carrier insertion with selectable USB or LSB on sideband reception.
With fine tuning down to 50Hz, receiving SSB and CW is easy - in fact the MVT-7100 is so stable it can even be hooked up for Fax and Data reception.

- 100kHz - 1650MHz
- AM, FM, WFM, LSB, USB, CW
- 1000 Memories
- Supplied c/w Nicads, mains charger, 12VDC cigar lead, belt clip and carry strap.

Frequency	100kHz - 1650MHz (cont)
Freq steps	50Hz 100Hz for tuning LSB & USB and 1, 5, 6.25, 9, 10, 12.5, 20, 25, 50, 100kHz *(WFM mode 50 or 100kHz is automatically selected)*
Sensitivity	AM 0.5μV, 10dB S/N
Scan/Search speed	approx 30 ch./steps per sec.
Power	4 x AA size NiCads (1.2V) or 12 VDC ext. supply via supplied adaptor
Weight	320g
Size	155(h) x 64.4(w) x 3.2(d)mm

~~£289~~ **£259**

MVT-7300

YUPITERU'S LATEST SCANNER FEATURING:-

VFO, S-meter, monitor, search pass, attenuator, battery saver, dual colour LCD backlight, speech descrambler

Coverage	531 kHz - 1320 MHz
Memories	1000
Memory Banks	10
Modes	AM, FM, WFM, NAM, USB, LSB, CW, Auto
Steps	50/100Hz. 1/5/6.25/8/9/10/12.5/ 15/20/25/30/50/100/125 kHz
Scan	30 channels/second
Search	30 steps/second
Audio	90mW at 10% THD
Power	3 AAs, 4.5V DC
Current	180 mA receiving? 105 mA standby?
Size	2.4" x 4.3" x 1.3" (WHD) 60mm x 120mm x 32mm
Weight	310g
Accessories	Antenna, belt clip, AC adaptor, earphone

MVT 9000EU

With a range exceeding 2000MHz, a real time bandscope, twin VFO receiver, and a host of other features, this is Yupiteru's flagship model!

- 531kHz - 2039MHz
- 1000 memory channels
- All modes: W-FM, FM, N-AM, AM, LSB USB, CW
- Multiple scanning steps 50Hz-125kHz
- Band scope with marker function for direct access to displayed frequencies
- Duplex receive capability - hear split frequency signals easily with VFOs
- 20 search bands
- Supplied complete with Nicads, mains charger, 12VDC cigar lead, belt clip and carry strap.

Frequency range	531kHz - 2039MHz
Frequency step	50, 100 200 500Hz. 1, 5, 6.25, 8, 9, 12.5, 15, 20, 25, 30, 50, 100, 125kHz
Searching rate	30 steps s
Scanning rate	30 channels s
Power supply	4.8V (NiCad, 1.2V x 4)
External supply	(240V car battery: 12VDC)
External dimen	155(H) x 66(W) x 40(D) mm
Weight	410g approx *(inc antenna and batteries)*

£369

~~£159~~
£149

MVT 3300EU

The very latest handheld scanner from Yupiteru with an especially 'HOT' receiver. This scanner will hear traffic that others cannot. It's simple and easy to use with a clear easy to understand display.
User functions include Receive mode, frequency step, Duplex reception, Auto write, Search pass memory.

- 66-88,108-174, 300-470MHz, 800-1000MHz
- AM/FM (Narrow)
- 5 steps 5/6.25/10/12.5/25kHz
- 200 memory channels
- 100 Search Pass memories
- 10 Band memories which can be rewritten
- 10 Priority Channel memories
- RF attenuator
- Priority scan
- Comes complete with antenna, earpiece, carry strap

Search rate	40 steps/per sec.
Audio output	100mW into 8Ω
Sensitivity	0.7μV (10db S/N) AM, 0.5μV (12dB Sinad)NFM
Power	4xAA Batteries (not supplied)
Size	152(h) x 59(w) x 32(d)
Weight	310g

YUPITERU SPARE PARTS

OP51	MVT-7100 Soft carrying case
OP-90	MVT-9000EU Soft carrying case
OP-373	MVT-7300EU Soft carrying case
STA-7100	MVT-7100 replacement antenna
STA9000	MVT-9000 replacement antenna

HANDBOOKS

Original handbooks for:-

- VT-125
- MVT-3300
- MVT-7100
- MVT-9000
- VT-225
- MVT-7000
- MVT-8000

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NEVADA - Official UK Distributors of Yupiteru

Dave Roberts ponders, what can you do with £129? A meal for two with wine at a fancy restaurant. A night in a good hotel with dinner. A few pairs of jeans... perhaps fill both tanks on the Daimler with super unleaded. Or, you could buy a DJ-X3 scanner from Alinco.

The first thing that I noticed about the DJ-X3 was it's slightly unconventional look. The radio clearly follows Alinco's sensible idea of building differing radios within the same case moulding. The DJG-5EY transceiver, the X10 and X2000 scanners are all clothed in the same frame. Similarly, looking at the DJ-X3 it's apparent that the stylish case is built to also hold a transceiver - in this instance the DJ-S40. The audio issues forth from the two vents either side of the display screen. The DJ-X3, at about 150 by 75mm and with a depth of about 25mm with the small battery pack installed, fits just fine in a shirt pocket, although the 170mm long rubber antenna could get in the way. The DJ-X3 has a plastic case which is surprisingly sturdy and unlike some other hand-held sets the battery pack is a very secure fit.

The first thing to do is to get some power in the little beast and to this effect I consulted the handbook. At this stage it must be said that the unit supplied for review is clearly an early production unit and the handbook is purely in a draft stage. Ten hours charge says the book of words and accordingly I hauled the charger from the bubble wrap. This item is a plug top charger type with a holding base for the set and/or a battery to sit in while on charge. As such, I was unable to check the fuse as the charger is a moulded single plug top item. The base unit is adjustable to fit differing physical sizes of battery and the Nickel Metal-Hydride battery sat snugly in the charger. I timed the charge for exactly ten hours, as it does not appear that the charging l.e.d. changes to green to show a charged state from the red indication and so over charging the battery remains a possibility without careful monitoring of the cooking time. The DJ-X3 features a socket for an external power supply from between 4.5 and 16V d.c.

Charged Up - Raring To Go

Ten hours later and I returned to the handbook. The DJ-X3 can receive a.m., n.b.f.m. and w.b.f.m. between 100kHz and 1299.995MHz. The antenna arrangement is interesting. The menu driven controls allow no less than four antenna options. Firstly there is the straightforward whip mounted on the radio. Secondly there is an internal antenna which can operate on long and medium wave bands and also for transmissions in the lower frequencies. These two options are listed in the menu as 'AbAr' and 'SbAr' respectively and both have on or off options. Finally, a menu option allows any earpiece wire to be used as an antenna, providing that its operation is enabled using the appropriate menu switch. From the look of the radio it's clear that a menu driven control system is employed with this set. Some folks that I know believe that keypad entry on a scanner is a must and that for quick and efficient frequency input a keypad cannot be bettered. I admit I used to support that tendency myself, however, more recently I have come to my senses and have found that once I have found my way around a particular piece of equipment, the lack of a keypad is not a handicap. In the case of this little Alinco set, I could change frequency very quickly using it's few controls and tuning became second nature.

Alinco

DJ-X3

ALINCO

wideband scanning receivers

the POWER to perform

DJ-X10E

ADVANCED FEATURED SCANNING RECEIVER

- Receives: 100kHz - 2000MHz
- Multi mode reception AM - WFM - NFM - SSB - CW
- 1200 memory channels
- Channel scope spectrum analyser that allows monitoring of 40 channels
- Advanced scanning features: Programmed scan (up to 10 groups) Programmed memory scan
  - Any memory scan
  - Mode scan

  (not found on many scanners!)
  - VFO search
  - Dual VFO search
  - Band encursion scan
  - Priority scan
  - Any channel ship scan
- Battery save facility
- Facilities for cloning another set
- Built-in 24 hour clock
- Switchable attenuator

£299.95

CHEQUE SPREAD

CHEQUE SPREAD

DJ-X2

THE ULTIMATE LIGHTWEIGHT SCANNER

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

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

£169.95

DJ-X2000

THE 'INTELLIGENT' SCANNING RECEIVER

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

£499

Includes FREE:

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

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

CHEQUE SPREAD

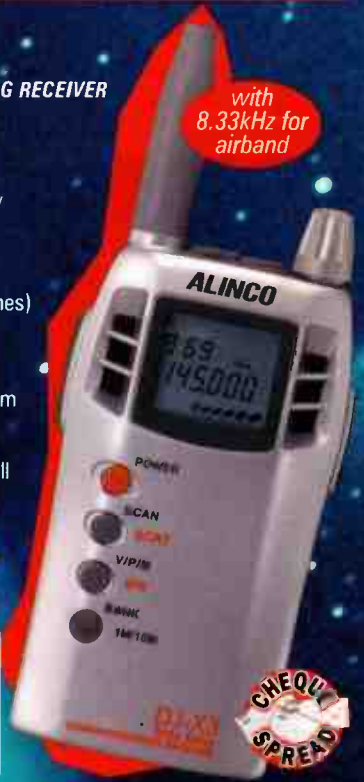
DJ-X3

ULTRA MODERN SCANNING RECEIVER

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

£129.95

with 8.33kHz for airband



Optional extras

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

CHEQUE SPREAD

NEVADA

available from our dealers throughout the UK or direct

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

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

NEVADA - Official UK Distributors of Alinco

Alinco DJ-X3 *continued*

Working through the many functions, the menu starts with an attenuator option, followed by the three controls regarding antenna selection. Then there is the mode option control which selects either of the three reception modes available or an automatic option which allows the DJ-X3 to switch the mode depending on which frequency is in use (a.m. for airband, etc.). This option only allows a.m. on the lowest frequencies in the range. The next option is a stereo/mono switch. Allow me to explain. The radio has a stereo receiver which only comes into its own when stereo headphones are plugged into the earphone socket. The appearance of the set could fool you that those two vents either side of the display are in fact two speakers that belt forth stereo sound when the earphones are not utilised, but I doubt it. It seems therefore that the stereo/mono option is a tad unnecessary, but I guess that it was all part of the control chip that Alinco decided to use in the DJ-X3 so there was no point in disabling it. The same goes for the next option which is labelled as a bug detector. This option assumes that you know pretty much everything about any surreptitiously placed surveillance transmitter, everything except under which end of the carpet it's been hidden. Please don't bother with it.

Getting To Grips

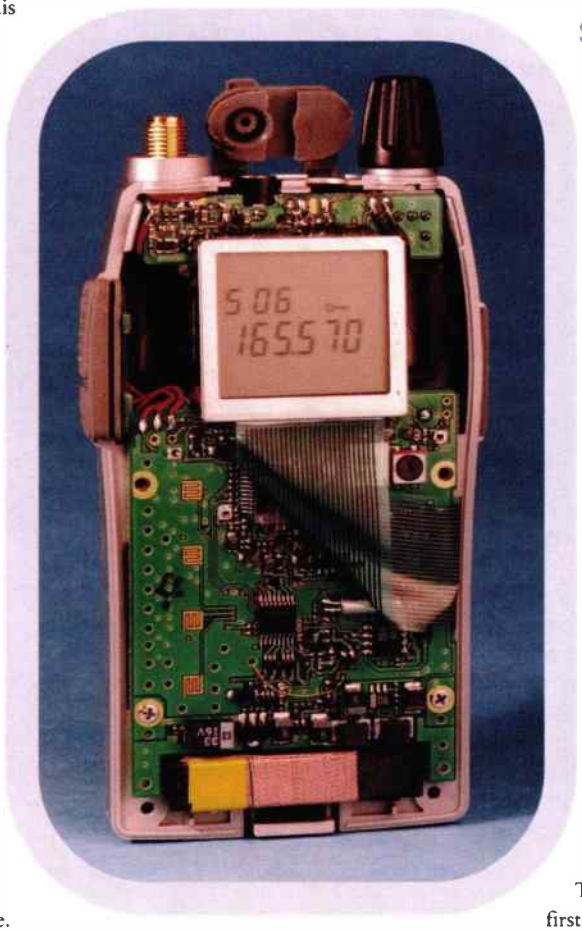
Memory management allows ten banks of seventy pre-programmed frequencies to be scanned. A maximum of 700 channels are available. There are numerous memory scanning options. You can scan individual banks or link up to five banks of seventy channels for scanning, or you can scan the lot! It's the same with searching. Pre-programme the search limits and away you go. Like most modern scanners there are more memory options than you can shake a stick at. On this little set they are sensible and easy to operate. Skipping a memory by switching it out is very simple and it's just as easy to restore it to the scan again.

The rest of the menu switches are the usual controls dealing with priority scanning, lamp function, memory protection, switch options and the like. The DJ-X3 also has the ability to decode audio inverted transmissions and I tried this on the PMR446 frequencies and it works fine.

"there is an internal antenna which can operate on long and medium wave bands"

It's not going to crack the National Crime Squad's gear for you, but for simple stuff it operates adequately. There is a variable frequency step option which can be set at various spacings between 5 and 100kHz including 8.33. If any frequency is tuned below 1620kHz the tuning step and modulation type are fixed to 9kHz and a.m. respectively (just out of interest under 153kHz you can tune in 1kHz steps). Finally, should you buy two of these sets, and some people will, one can be cloned from the other with a cable link.

"The DJ-X3 has a high audio tone which is first class for communications quality and those pilots boom into the speaker with alarming clarity"



So What's It Like On Air?

The DJ-X3 has been well designed so that the radio feels like a sturdy little unit and fits into the hand readily. The first thing that I did was to load up seventy of the most used frequencies in my area. These are all v.h.f. and u.h.f. and include a.m. and f.m. channels. Then I just let the Alinco roll on, simply scanning that one bank for signals. At these frequencies let me tell you that this set is sensitive. It received distant signals on its supplied whip antenna. Signals which other hand-held scanners that I have, were just not hearing. Marine v.h.f. just romped in and the received signal compared very favourably with my two other hand-held scanners tuned to identical frequencies using their supplied antennas. Military airband is a delight with the DJ-X3. I don't know what anyone else thinks, but the audio that issues forth from a military pilot when he's strapped into a small space, breathing through a foul smelling oxygen mask, pulling three Gs and wishing he'd missed out the Allbran at breakfast, is not of BBC quality. On most scanners I am able to confirm that the chap is speaking, but I don't have a clue as to what he's saying. The DJ-X3 has a high audio tone which is first class for communications quality and those pilots boom into the speaker with alarming clarity.

Big Audio Dynamite

Like I said the audio is a big surprise. The quarter watt or so from the speaker was clear and produced a good tone as well as adequate volume. It may not be loud enough to overcome a mixture of road and engine noise, but you won't get much better from a hand-held set. The clarity of recovered audio was particularly impressive but having said that, Alinco sets normally perform well in that respect which, let's get it right, is what radio reception should be about. Going down to the lower frequencies is a tad disappointing. Coverage starts well down the frequency bands and I thought that I'd see how I got on down there. I never expect much at all from the whip antenna mounted on all band scanners when it comes to

Alinco DJ-X3 *continued*

the bottom end of the spectrum and so after giving it a go, and hearing nothing, I thought that I would try using the earphone and lead option. After diving into the menu functions and switched the setting to EAr from wHIP (capitalisation is a trifle odd due to the constraints of the l.c.d. used), I unravelled an earpiece, wedged it in my lug and tuned around. This is where a small difficulty regarding tuning steps arises. The smallest step that the DJ-X3 will accept is 5kHz which does not allow enough precise tuning. However, that makes no difference as with the antenna set to EAr I couldn't hear anything anyhow. So I turned that function back to wHIP, removed the earpiece and moved up through the menu to the 'AbAr' function, which means a.m. bar antenna. I couldn't get a peep out of that either. The same went for the 'AbAr' - short wave Bar antenna. No, nothing there either. I was now determined to get something from the lower frequencies to work and so I hooked up the SMA socket to which the whip antenna normally connects, to a dipole antenna. Signals came romping in but with a minimum tuning step of 5kHz, it was a hit or miss affair. Overloading was going to be a problem and I turned on the attenuator. Sadly this only made a small amount of difference and although short wave broadcast stations were audible it did not make for particularly easy listening. Running the scanner at the low frequencies during the later hours of the day did result in short wave broadcast stations being heard on the whip antenna, but it was still a hit or miss affair with the 5kHz tuning steps.

Higher in frequency the Alinco becomes really useful and really this is what a portable scanner is about. It's not really fair to expect a tiny radio which is firmly at the budget end of the market to perform too well all over the spectrum. Frankly, I'm surprised that the DJ-X3 performed as well as it does at the low frequencies. By the time the set is in the upper 20MHz range it has come into its own. It really works very well throughout low v.h.f. and for the rest of its coverage. The DJ-X3's 700 channel memory capacity means that you can load up some CB channels and work your way through the spectrum adding council frequencies, some emergency service stuff, v.h.f. amateur channels and onwards and upwards, loading the mode in use and in practice not run out of space. You can even save a bank for f.m. broadcast stations and listen to 'The Morning Concert' in stereo with your 'phones on. The scanning speed is certainly not the fastest that I have ever encountered and is nothing like the speed of some other models of scanner, but this set doesn't cost as much as other scanners either. It certainly doesn't weigh as much and is nothing like the size of most hand-held units.

Result

Searches are efficiently performed by the DJ-X3 and saving frequencies of interest is straightforward. Volume settings run on a scale from 1 to 30 and squelch settings from 1 to 10. I found that squelch setting '1' was about right for me at v.h.f. and u.h.f. with a higher setting being required as you move lower in frequency.

One thing that intrigued me about the radio was when executing some functions I could hear a creaking from inside it. I reckon that it has something to do with a microchip operation. I have only ever heard this once before and it was when I was using a Sharp 'Pocket Computer' about fifteen years ago. Don't get me wrong this didn't effect operation of the DJ-X3 one little bit. It just interested me.

I discovered that a charged battery will last between six and eight hours depending on volume control setting and the time with the squelch open. When the power pack is on the wane, the handbook says that an icon, showing a battery, is displayed. It is, but only for about half a second before the radio switches itself off but obviously this is not a problem.

I can't think of too many accessories that I would want to accompany the radio. It doesn't have CTCSS facilities, but I never use that when scanning anyhow. I guess that I would probably want to buy a spare battery and a carry case is always useful, but that's about it. I am unsure what options Alinco will be offering for sale with the DJ-X3 but really not many are needed as it comes supplied with a battery and charger just ready to go.

"the DJ-X3 can take daily wear and tear in its stride"

You may have guessed, I like this set. Firstly it's size lends it to being able to be stuffed in a pocket and although it's a simple point I believe it to be important in a portable radio. If you are reluctant to take the set with you then you're not going to have it with you when you want to hear something. It is also a light piece of gear. By no means fragile, despite it's plastic construction, it can take daily wear and tear in its stride. The sensitivity is really good and it seems very well matched to the supplied rubber whip antenna at frequencies from low v.h.f. right to the top of the tree where the DJ-X3 also performed very well at frequencies of over 1GHz.

My Advice

Who's going to buy it then? For a start, it's a great radio for someone who perhaps has no particular interest in radio or scanning but is interested in what goes on at his local airfield or fire station or other facility and it would be ideal for monitoring special events. Anyone who goes to work in an office or site where they would be able to use a radio will be likely to take this Alinco with them loaded with favourite frequencies to make sure that they don't miss out on anything of interest when away from the main station. It's small size, exceptional sensitivity and fine audio mean that it will be an effective companion pretty much anywhere.

My advice would be to take your girlfriend to the burger joint, borrow a tent from a friend, get your clothes from the market and walk to the shops. Save the £129.95 that you could have spent on restaurants, hotels, clothes and petrol and get yourself an Alinco DJ-X3. **SWM-SSE**

The full version of this review featured in *SWM* August 2001.

Which Scanner?

Your scanner selection guide

If you're thinking of buying a scanner, new or used, then it is important that you can make your purchasing decision based on facts. To help you spend wisely we've compiled the selection guide on the two pages overleaf.

The radios that feature in the guide are those that are currently available in the UK. Hand-held, base station and solely computer controlled receivers are featured.

Vital information such as frequency range covered, modes available, numbers of channels, scanning speed, and price are some of the vital information presented.

Additionally, a reference to the review that has been published in an earlier issue of *SWM* is given to allow further in-depth information to be obtained on specific models of interest.

If you wish to obtain a copy of a full review, these are available from the *SWM* Book Store - contact information is given on this page.

Key to Which Scanner Selection Guide

✔ Included
❍ Optional
* Transceiver

Further Reading...

There are numerous books covering all aspects of scanning which can be obtained from the *SWM* Book Store.

A selection follows, a full listing can be found on page 66 of this month's SWM so can an order form. The ***SWM* Book Store** can be contacted on **(01202) 659930.**

LISTENING

Airband

Airwaves 2002
£9.95

Airband Radio Guide (abc)
5th Edition
£8.99

Airband Radio Handbook (Haynes)
£12.99

Abbreviations used in *SSE*

a.c.	alternating current
a.f.	audio frequency
a.f.c.	automatic frequency control
a.g.c.	automatic gain control
a.m.	amplitude modulation
B	Bel logrithmic ratio unit
c.w.	continuos wave (Morse)
d.c.	direct current
d.s.p.	digital signal processing
dB	decibel (logarithmic ratio) - one tenth Bel
dBd	decibel referenced to a dipole
dBi	decibel referenced to an imaginary isotropic radiator (one dimensional antenna)
dBm	decibel referenced to 1mW into a 50Ω load (standard units for radio measurement)
dBW	decibel referenced to 1W
f.f.t.	fast fourier transform (mathematical function used by d.s.p.)
f.s.k.	frequency shift keying
h.f.	high frequency
Hz	Hertz (cycles per second) unit of frequency
i.f.	intermediate frequency (in a superhet receiver)
IM	intermodulation
IP	intercept point
K	Binary multiplier x1024
k	Decimal multiplier x1000
kHz	kilohertz
λ	lambda symbol for wavelength
l.c.d.	liquid crystal display
l.s.b.	lower sideband
l.w.	long wave
M	mega x1,000,000
m	milli /1000
m.w.	medium wave
MHz	megahertz
MW	megawatt (1,000,000 watts)
mW	milliwatt (one thousandth of a watt)
MΩ	one million ohms
n.b	noise blanker
n.b.f.m.	narrow band f.m
n.f.m.	narrow band f.m (alternative)
p.s.k.	phase shift keying
r.f.	radio frequency
RX	receiver
s.s.b.	single sideband
s.w.	short wave
SINAD	ratio of signal plus noise to noise (used for performance measurement)
SINPO	scheme for recording reception quality
SNR	signal to noise ratio
t.c.x.o.	temperature controlled crystal oscillator
TX	transmitter
V	Volt unit of electrical potential difference
v.c.o.	voltage controlled oscillator
v.h.f.	very high frequency
W	Watt, Unit of power
w.b.f.m.	wide band f.m.
w.f.m.	wide band f.m. (alternative)
Ω	ohm (unit of electrical resistance)

Air Traffic Control (abc) 8th Edition
£8.99

Callsign 2002
£9.95

Civil Aircraft Markings (abc)
£7.99

Flight Routings 2002 Williams
£7.95

Military Aircraft Markings 2002 (abc)
£7.99

Military Air Scan 2002
£15.99

Frequency Guides

Proma Scanning Scene CD
£4.75

UK Scanning Directory 8th Edition
£19.75

General Scanning

Scanners 4 Scanning Into The Future
Bill Robertson
£9.95

Antennas

Antenna Toolkit (inc. CD-ROM)
Joseph J. Carr
£25.00

More Out Of Thin Air
£6.95

Physical Design Of Yagi Antennas
(Hardback) D.B. Leeson W6QHS
£15.50

Receiving Antenna Handbook Joe Carr
£17.50

VHF UHF Antennas I.D. Poole
£13.99

Which Scanner?

Model	Coverage				Modes					Memories							
	Min. Frequency	Max. Frequency	Continuous Coverage	Hand/Base/Comp	a.m.	w.b.f.m.	n.b.f.m.	s.s.b.	c.w.	Banks	Channels	Lock-out	Total	Scan Speed (ch/s)	Search Bands	Search Speed (steps/s)	8.33 Steps
Alinco																	
DJ-X2	0.522	1000	Y	H	✔	✔	✔			10			700	10			
DJ-X3	0.5	1300	Y	H	✔	✔	✔			10			700	10		20	
DJ-X10E	0.1	2000	Y	H	✔	✔	✔	✔	✔	10	40		1200	5		25	
DJ-X2000	0.1	2150	Y	H	✔	✔	✔	✔	✔	50	40		2000	5		30	✔
AOR																	
AR5000+3	0.01	2600	Y	B	✔	✔	✔	✔	✔	10	100		1000	45	20	45	
AR8200	0.53	2040	Y	H	✔	✔	✔	✔	✔	20	50		1000	37	20	37	
AR8600	0.5	2039	Y	B	✔	✔	✔	✔	✔	20	50		1000	37	40	37	✔
Bearcat																	
UBC60XLT-2	66	512	N	H	✔		✔						80				
UBC120XLT	66	512	N	H	✔	✔	✔						100	100		300	
UBC220XLT	66	956	N	H	✔	✔	✔			10	20	10	200	100		300	
UBC280XLT	29	956	N	H	✔		✔			10			200	100	10	300	
UBC3000XLT	25	1300	N	H	✔	✔	✔			20	20		400	100		300	
UBC278CLT	29	956	N	B	✔	✔	✔			5	20		100	25		25	
UBC780XLT	25	1300	N	B	✔	✔	✔			10	50		500	100		150	
UBC9000XLT	23	1300	N	B	✔	✔	✔			20			500	100		100	
Fairhaven																	
RD-500VX	0.02	1750	N	B	✔	✔	✔	✔	✔	234			54682	50	99	50	
Icom																	
IC-R2	0.495	1310	Y	H	✔	✔	✔			8	50		400	10	25	30	
IC-R3	0.495	2450	Y	H	✔	✔	✔			8	50		400	15	25	30	
IC-R10E	0.5	1300	Y	H	✔	✔	✔	✔	✔	18			1000	6		17	
IC-R8500	0.1	2000	Y	B	✔	✔	✔	✔	✔	20	50	50	1000	15	20	15	
IC-PCR100	0.1	1300	Y	C	✔	✔	✔				Computer dependant						
IC-PCR1000	0.1	1300	Y	C	✔	✔	✔	✔	✔		Computer dependant						
Kenwood																	
TH-F7E	0.1	1300	Y	H*	✔	✔	✔	✔	✔	8			410		10		
Maycom																	
FR100	66	470	N	H	✔	✔	✔			5	20		100				✔
AR108	108	180	Y	H	✔		✔						198	10		25	
Yaesu																	
VR-120D	0.1	1300		H	✔	✔	✔			10		64	640	12	8	20	
VR-500	0.1	1300		H	✔	✔	✔	✔	✔	10	100		1000	12	10	20	
VR-5000	0.1	2599		B	✔	✔	✔	✔	✔	100	20	100	2000	15		15	
Yupiteru																	
MVT-3300 EU	66	1000	N	H	✔		✔			10	20		200	40	10	50	
MVT-7100 EU	0.53	1650	Y	H	✔	✔	✔	✔	✔	10	100	500	1000	30	10	30	
MVT-7300	0.521	1320			✔	✔	✔	✔	✔	10	100	500	1000	30	10	30	✔
MVT-9000 EU	0.53	2000	Y	H	✔	✔	✔	✔	✔	20	50	500	1000	30	20	30	

scanner quick reference chart

Features																
Recargeable	Charger	Rotary Tuning	Case	Batery Saver	Computer Control	Data Cloning	Trunking	Bandscope	AFC	Noise Blanker	DSP	AFC	Review	Current Model	Guide Price (£)	Model
																Alinco
				✔									Aug-00	Y	170	DJ-X2
				✔		✔							P21	Y	130	DJ-X3
✔	✔	✔	○	✔	✔			✔					Sep-96	Y	300	DJ-X10E
✔	✔				✔	✔		✔					Jul-01	Y	499	DJ-X2000
																AOR
					✔				✔	✔			Jun-96	Y	1500	AR5000+3
✔	✔	✔		✔	✔	✔		✔	✔	✔			Jun-98	Y	399	AR8200-2
○		✔			✔								Nov-00	Y	600	AR8600
																Bearcat
														Y	80	UBC60XLT-2
✔	✔													Y	130	UBC120XLT
✔	✔													Y	150	UBC220XLT
✔	✔	✔											Apr-02	Y	180	UBC280XLT
✔	✔	✔												Y	200	UBC3000XLT
														Y	159	UBC278CLT
		✔			✔	✔	✔						Feb-02	Y	329	UBC780XLT
														Y	325	UBC9000XLT
																Fairhaven
		✔			✔							✔	Aug-98	Y	899	RD-500VX
																Icom
○		✔		✔									P29	Y	159	IC-R2
✔	✔	✔		✔				✔				✔	Jun-01	Y	449	IC-R3
					✔			✔		✔			May-97	Y	259	IC-R10E
		✔			✔				✔	✔			Sep-96	Y	1549	IC-R8500
					✔			✔					May-99	Y	185	IC-PCR100
					✔			✔	✔	✔	○		Oct-97	Y	385	IC-PCR1000
																Kenwood
✔	✔	✔		✔									P18	Y	289	TH-F7E
																Maycom
														Y	100	FR100
		✔											Sep-99	Y	70	AR108
																Yaesu
○		✔		✔		✔							P14	Y	159	VR-120D
○		✔		✔	✔	✔		✔							199	VR-500
		✔			✔			✔		✔	○		Jul-01	Y	599	VR-5000
																Yupiteru
		✔											Feb-98	Y	180	MVT-3300 EU
✔	✔	✔											Apr-93	Y	269	MVT-7100 EU
✔	✔	✔											Oct-00	Y	259	MVT-7300
✔	✔	✔	○	✔	✔			✔					Feb-97	Y	369	MVT-9000 EU

UBC 780XLT

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

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

£349.00 Bearcat Scanners

UBC 278CLT

NEW BASE SCANNER WITH MW/FM RADIO & ALARM CLOCK

NEW!

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

- Freq: 25 to 956 MHz *(with gaps)*
- VHF Radio : 88 to 108 MHZ
- 100 Memories
- 20 Radio Presets
- Full frequency LCD readout
- Fully Programmable
- Channel Lockout
- Priority Channel
- Scan Delay
- Alarm Clock

£159.00 Bearcat Scanners

UBC 280XLT

SPORTCAT TWIN TURBO HANDHELD

NEW!

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

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

£179.95 Bearcat Scanners

UBC 9000xlt

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

£269.00 Bearcat Scanners

Bearcat Scanners

UBC 60xlt-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

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Alan Gardener gives the Icom palm sized scanner a once over.

ICOM IC-R2

The IC-R2's most striking feature after its size is the lack of numeric keyboard. This raises the question of how easy it is to quickly enter frequencies without having to fiddle about with endless permutations of button presses. Well, the answer is that it is actually quite straightforward, due to one or two special features which Icom have incorporated into the design. In fact, I don't think that it took me any longer to input frequencies into the IC-R2 than it did into my ageing IC-R1, which has a keyboard and is approximately the same size as the new model. So let's take a look at this new hand-held, and in order to keep your attention, I'm going to save the best bit until last!

The IC-R2 weighs about 170g. The front face is divided into three main sections. The bottom half consists of the loudspeaker grill, the middle quarter has function buttons for the band selection, volume adjustment, reception mode, memory/v.f.o. operation and tuning step size, the remaining button is the power switch. As is normal practice these days, most buttons also have second and third functions, which can be actuated by various permutations of button presses. However, it is possible to lock controls in order to prevent accidental operation.

The remaining upper quarter of the front face has a large liquid crystal display to indicate the receive frequency, memory location and other relevant information. The left-hand face of the radio has a large monitor button which can be used either momentarily or in a latched manner to disable the squelch. Underneath the monitor button is a much smaller button, which is used in conjunction with the front panel controls to select the second functions. Personally I would have preferred the function of these two buttons to have been reversed.

The top of the receiver has an antenna (SMA) a socket for both earphone and clone operation and a tuning knob, whilst the rear has a plastic moulding which accepts the supplied belt clip and hand strap. The bottom half of the rear face is the battery compartment containing the two AA size cells which power the unit. The IC-R2 does not have an external power or charging socket but it is relatively easy to remove and replace the batteries. I used a couple of non-rechargeable cells which were still going strong at the end of the review period, so I don't believe Icom's omission of an external power socket is actually a problem. If you accidentally leave the radio on for long periods, the Auto Power-Off function may be of use to you. This can be programmed to turn the radio off after a period of 120, 90, 60 or 30 minutes, which is quite handy if you want to use the IC-R2 as a bedside radio.

Wide Range

The IC-R2 has a frequency range of 0.495-1309.995MHz which can be tuned in step sizes of 5, 6, 9, 10, 12.5, 15, 20, 25, 30, 50 and 100kHz with reception of a.m., n.b.f.m. and w.b.f.m. possible. European aviation enthusiasts may be disappointed by the lack of 8.33kHz frequency steps. The scanner has 400 memory channels in eight banks and 25 search bands which can be scanned at a rate of 10 channels per second, or searched at a rate of 30 channels per second, which is a bit slow by current standards, but I found it to be acceptable. Other features of note include a handy switchable 10dB attenuator, and a display backlight which can be set to be automatic in operation, illuminating for a short period when a key is pressed or the tuning control turned. The squelch level is also adjustable by means of a separate menu but I found that, providing I left it set to the auto position, it didn't really need any additional adjustment.

In operation the v.f.o. mode is selected by means of the front panel 'V/M' button and new frequencies can be quickly selected by first using the 'Band' button to select the approximate frequency range, then turning the rotary control whilst pressing the second function to get very close to the desired frequency. An automatic speed up feature can be enabled which adjusts the tuning rate to the speed of knob rotation. Final fine tuning is then achieved by releasing the second function button. I initially found this a bit too fast for my reflexes, but after a short while I got used to compensating for it, and by the end of the review period I was beginning to wish that all hand-held radios had this feature.

Icom have chosen to split the entire tuning range of the IC-R2 into eight preset bands. Presumably they have chosen to do this in order to

facilitate the rapid manual selection of widely spaced frequencies, and in some respects they can be considered to be similar to eight separate v.f.o.s. However, this does present the problem that if you tune through one of the pre-defined frequency limits set by Icom the parameters for the next band take effect, frequently causing the tuning step to change, unless you have taken the trouble to ensure that adjacent band settings are the same. It may eventually be possible to do something about this. Like many other modern radios, the IC-R2 has a PC connection/clone port and software available to permit external management of its memory contents.

in adjacent memory locations and scan through those instead.

Storing wanted frequencies or locking out unwanted frequencies from a search is easy with a single extended button press, and once programmed, memory contents can be reviewed by simply pressing the 'V/M' button to select the memory mode. There are 400 memories available in eight separate banks. The bank in use is indicated by a very small number and icon placed just in front of the memory number on the display. I found this a bit difficult to read at times, which made locating specific memory contents rather time consuming. However, moving

"Icom seem to have designed the r.f. stages properly and the worst case image rejection measured as being greater than 40dB in the region of 750-800MHz"

Required are the CS-R2 plus interface, to exploit this. Many amateur radio transceivers with this facility have been re-programmed to provide extended receive coverage and continuous tuning options, so keep an eye on the Internet for software patches.

The tuning step size depends on the value selected for the chosen band, this can be modified by pressing the 'TS' button. Offset tuning steps can be selected by first tuning to an offset channel with a small size tuning step selected (say 6.25kHz) and then by reselecting a larger tuning step (say 12.5 or 25kHz) providing the larger tuning step is an exact multiple of the smallest size tuning step. So tuning 12.5kHz channels with a 6.25kHz offset is possible, but tuning 10kHz steps with a 6.25kHz offset is not. You can set up 25 different pairs of search band frequency limits but unfortunately the mode and step size is not stored and defaults to the current selection for the frequency band in use. This is a real nuisance and I don't understand why Icom have chosen to do it this way, but providing the band selections are set up appropriately it is tolerable.

Search and scan functions are enhanced by a global programmable pause time of 2-20s or unlimited which forces the search or scan to start again after a pre-set period, and a resume time of 0-5s or unlimited which holds the search or scan for a pre-set period after a signal has disappeared. Having these parameters adjustable is very useful for setting up the radio to your personal preferences for monitoring different types of radio traffic.

One missing feature is the ability to automatically search and store in memories active frequencies. I find this facility extremely useful on my ageing IC-R1 as the small size of the radio means that you can leave it running in a jacket pocket and then just scan through all the busy frequencies at your leisure, which is great if you only have a limited amount of time to listen whilst visiting events or new places. I suspect Icom have not added this feature to the IC-R2 in order to differentiate it from their more upmarket IC-R10, which is a pity.

Tones

A really nice feature is the provision of a CTCSS tone scan facility. The tone scan searches through 50 of the most commonly used CTCSS frequencies in about 12 seconds, so you do need to be receiving reasonably frequent transmissions before you can hope to find the tone in use. However, if you already know the likely tones, say those used for PMR446 applications, it may be just as easy to program the different tones

memory contents around is quite easy requiring just a few button presses. Individual memories can store the frequency, mode, tuning step size, duplex frequency, tone squelch frequency, and whether or not to be omitted from a bank scan. Individual pre-set ranges, bands or the entire frequency range can be searched. Whilst individual banks, or all banks, can be scanned with the ability to omit individual memory channels as required, selecting individual groups of memory banks for specific scans or searches is not possible, although a priority watch function with an audible warning bleep can be set up on a nominated memory channel.

On-Air Performance

Listening to various signals with the IC-R2 gave good results on frequencies above 88MHz; this is mainly due to the size of the supplied antenna, which is already about as big as Icom could reasonably get away with, given the small size of the radio. Medium and short wave reception is possible providing the end of a few metres of wire is wrapped a around the supplied antenna to improve signal pick-up.

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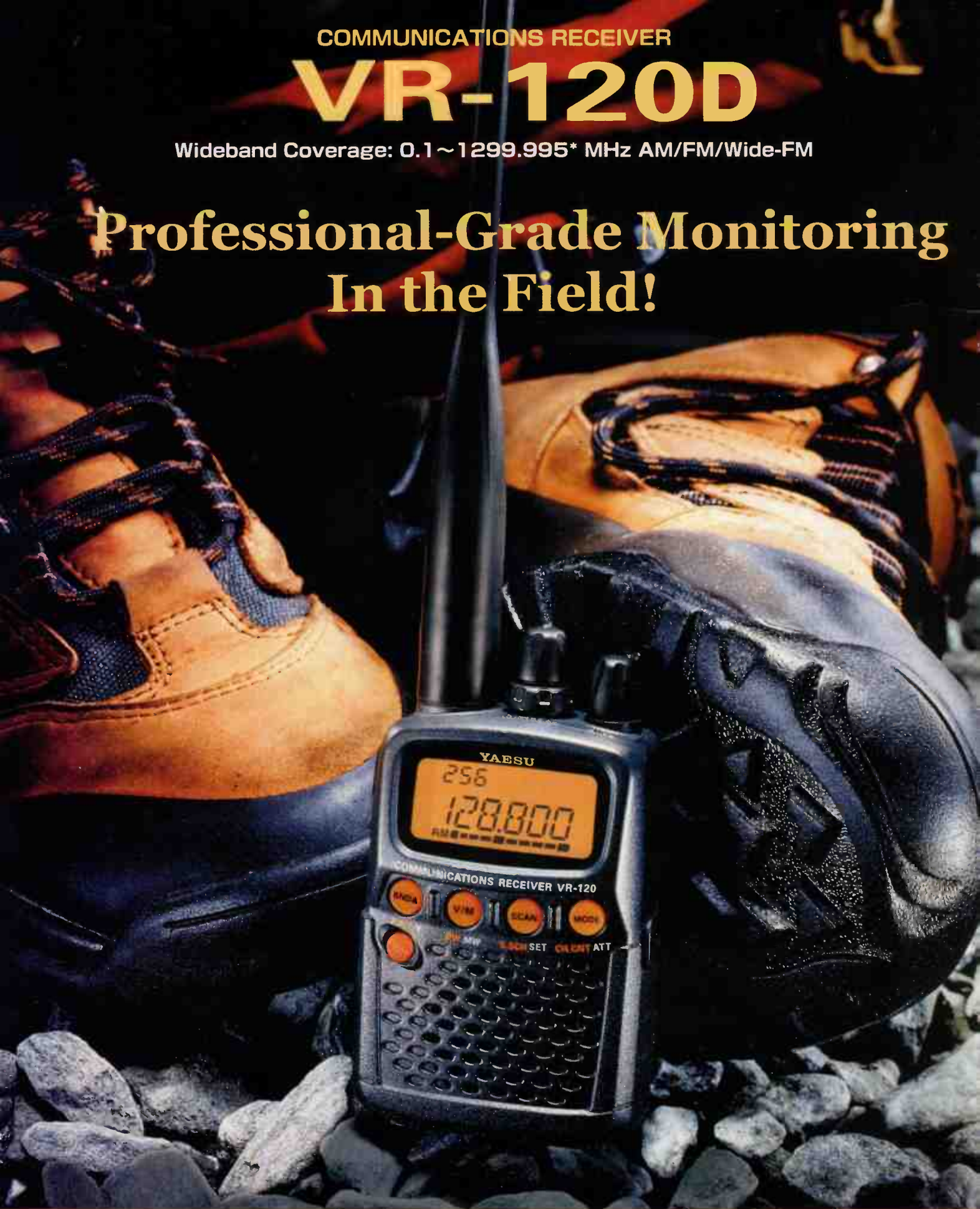

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The minimum size 5kHz tuning on short wave and fixed 9kHz tuning step on medium wave is a bit of a limitation, but adequate for listening to strong signals for entertainment purposes rather than trying to catch exotic stations. Airband reception was good and lots of reasonably distant signals could be heard on u.h.f. with just the supplied antenna, although I would suggest that a BNC to SMA adapter is likely to be one of the first accessories most users are likely to purchase, as this facilitates the easy connection of more exotic antennas. Audio quality was loud enough for use in a car and good for the size of unit.

Performance

The IC-R2 has a measured sensitivity of -120dBm for 12dB SINAD for 2.5kHz modulated n.b.f.m., -111dBm for 12dB SINAD 60% modulated a.m. and -109dBm for 50% modulated w.b.f.m. signals at 150MHz. The i.f. filter bandwidth is a compromise as the radio is designed to cover a large range of different transmission standards. I found them to be a bit too wide for European channel allocations, I noticed that a search would occasionally stop on an adjacent channel if a strong local signal had been locked out of the search range. The Intermodulation Free Dynamic Range

"the audio was more than loud enough for use in a car"

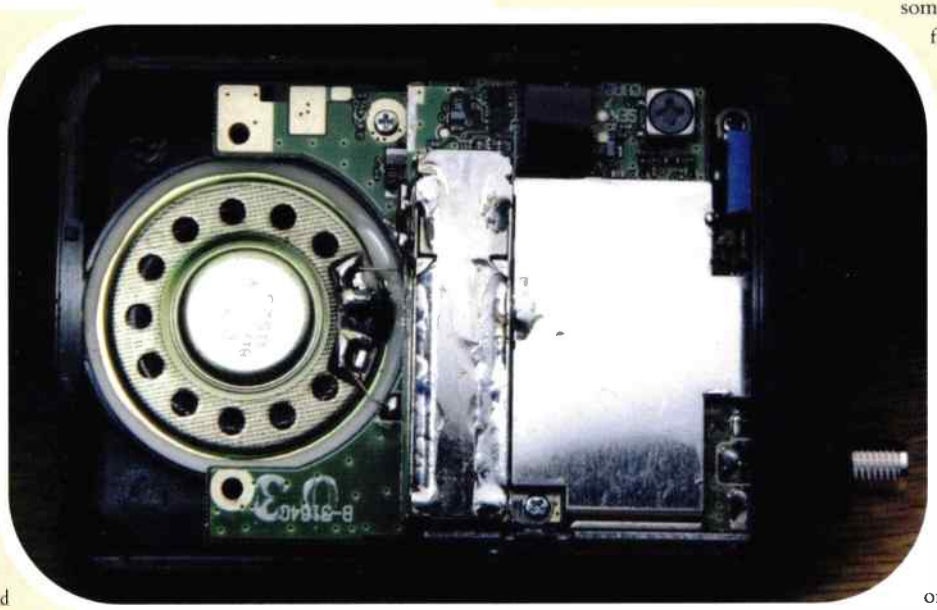
for a 100kHz channel spacing measured in at 46dB, giving a projected third order intercept point of -51dBm, which is not spectacular by modern standards. Paging interference could be heard over a reasonable frequency range once an external antenna was connected. However, if you are only ever likely to use the IC-R2 with its supplied antenna, you should not experience any problems.

One other concern I had when I looked at the technical specification of the IC-R2 was the choice of 266.7MHz as the first i.f. frequency. Although this is good in terms of reducing the likelihood of hearing false signals, the image frequency, which occurs at two times the i.f. frequency high of the actual receive frequency, lies in the u.h.f. TV broadcast band for a fair proportion of the useful receive frequency range (an actual receive range of 0.495-500MHz corresponds to an image frequency range of 544.895-1033.4MHz). In the past a poor image rejection figure would only have caused a problem at one or two spot frequencies where the image happened to correspond to a strong local TV transmission. With the advent of digital television, the u.h.f. broadcast band is now practically full of blocks of digital noise which could seriously degrade the receive performance at the wanted frequencies. Fortunately, Icom seem to have designed the r.f. stages properly and the worst case image rejection measured as being greater than 40dB in the region of 750-

800MHz . Image rejection of frequencies used for cellular telephone base stations was better than 70dB, which is good.

The Best Bit

Lastly, as promised I have saved the best bit until last - the price! The current recommended retail price for the IC-R2 is £139 inc. VAT, with some suppliers offering further discounts. Even though this price does not include NiCad batteries or a charger, I still believe it represents remarkable value for money and will almost immediately drive the price of both new and used scanners down to a more acceptable level. I consider it to be an ideal buy for people wishing to use radio in conjunction with another hobby interest such as airband or sailing, newcomers to the hobby or those of us who already have one scanner but would like another small radio which is light enough to carry in the pocket.



SWM-SSE

The full version of this review was featured in *SWM* January 1999.