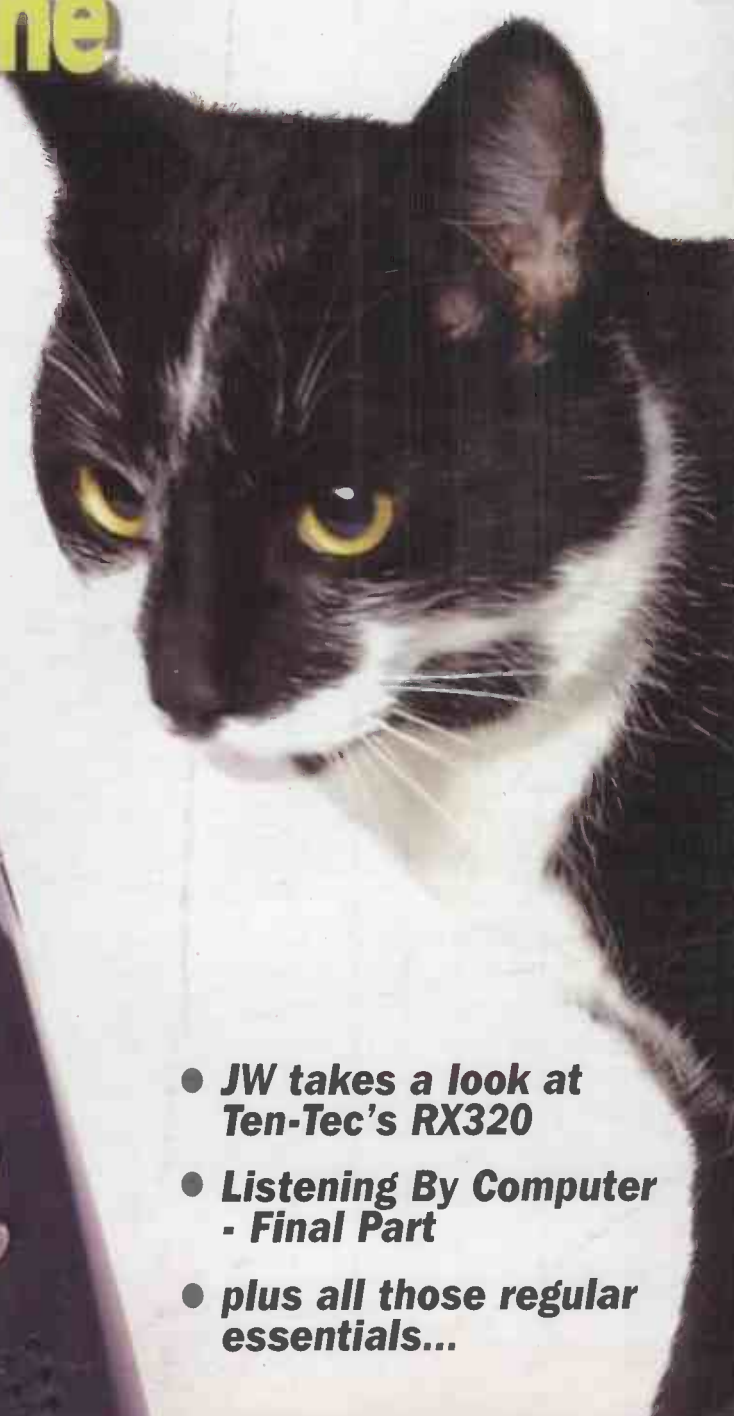
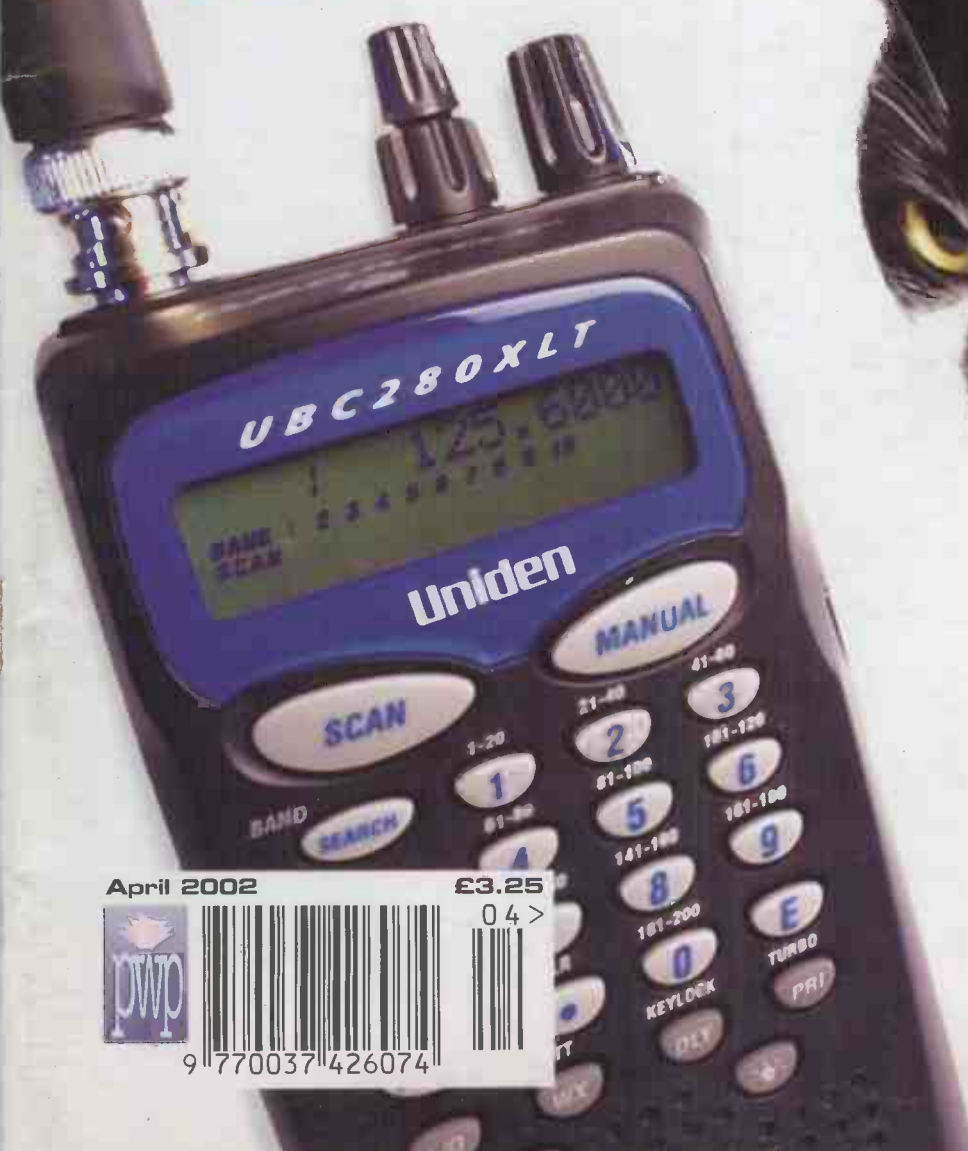


The SHORT WAVE Magazine SWW

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& Scanning Scene

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- JW takes a look at Ten-Tec's RX320
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April 2002

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23 UNIDEN BEARCAT UBC280XLT REVIEW

Dave Roberts takes a look at a new hand-held scanner from Uniden that's great for beginners who might be intimidated by more complicated sets.



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28 TEN-TEC'S RX320 - MIGHTY MOUSE FROM TENNESSEE

Something a little different this month from John Wilson, the diminutive but spectacular computer controlled h.f. receiver from Dolly Parton Parkway.



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35 MAKING YOUR HF ANTENNA BETTER

The vital, but often forgotten part of any antenna system - the earth - should not be overlooked in order to get the best from your antenna system. The late Joe Carr K4IPV explains...

39 LISTENING BY COMPUTER - PART 3

This month, Martin Peters concludes his journey through the world of alternative listening - are you ready to join the Internet action? See how to put your own station on the 'net.



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TURN TO PAGE 25 NOW TO SEE HOW TO WIN

A UNIDEN BEARCAT UBC280XLT SPORTCAT

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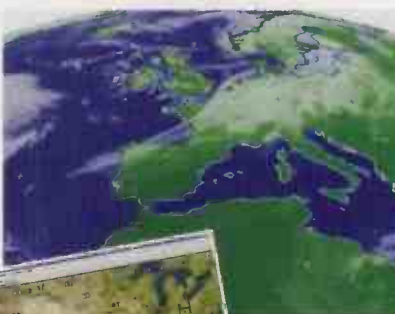
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COMING NEXT MONTH IN SWM MAY 2002

- * Collins R-390 Reviewed - JW goes 'in deep' with the valved classic.
- * The Other Man's Shack
- * Monitoring with the RA - Kevin Nice reports on his recent visit to Bladock.
- * WIN tickets for the Golden Jubilee Royal International Air Tattoo held at RAF Fairford.
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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.**

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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.

ED'S comments

As many of you know I am a keen h.f. utility listener and member of WUN, the World Utility Network. I receive a regular stream of E-mail, via the lists' server - I hate to think how many messages from the WUN list I've read in that past eight years that I've subscribed, but a quick calculation tells me that it's way in excess of 100,000 mails!

On March the first I received an E-mail that really grabbed my attention. It was from fellow WUN list member and software expert Charles Brain G4GUO. Some of you may be aware of one of Charles' successes in the hobby arena - *PC-ALE*. I've mentioned this software in previous 'Ed's Comments' so I'll not repeat earlier endorsements. Suffice to say that Charles writes excellent software and he's very generous with his contributions to the listening community in that he supplies such fruits of his labours for free. The content of the E-mail I'm referring to was a simple announcement that a new program *PC-HFDL* for decoding aircraft h.f. data link transmissions otherwise and erroneously known as h.f. ACARS was available for download from his web site.

Amazingly the 14 days since has resulted to the WUN list almost entirely turning over to those who have loaded *PC-HFDL*. Charles stated modestly that the program was designed to work on 800MHz and faster machines as the use of d.s.p. algorithms is high. To his credit *PC-HFDL* has been shown to work on much slower hardware, including my 300MHz Pentium lap-top!

As I write this, *PC-HFDL* is already on its second revision. I'm sure Mike Richards will be covering this great program in detail in 'Decode' so I'll leave it there and just say that if you want a copy then the latest version can be downloaded from www.pwpublishing.ltd.uk/swm/downloads/

Foundation Licence

Speaking of E-mail groups... Here's a gem from our own SWM-Readers list posted by Mike Burgess, as a follow-up on an extensive discussion as to why or not to take the plunge and have ago at the recently announced initiative to generate renewed interest in amateur radio. There are clearly lots of people who want to muster the courage and have a go. Following is Mike's summary of reasons that list members have given for **not** enrolling on a Foundation course;

"I trawled the following from this group over the last couple of days...

- I have a fear of maths as I'm no good at it
- I'm not sure I could pass the exam
- I wouldn't be able to afford any of the equipment
- The Morse is too hard for me to get my head around
- I have no confidence in my own ability

- I'm not sure if they are doing it in my area
- The hours I work mean I can't go to night school
- I do not fancy the task of having to fill in a log book
- It would be too far to travel
- Any additions?"

Please don't think that I'm trying to ridicule anyone who made the above comments, this is most definitely not the case. The point that both Mike and myself are making is that if you are interested in radio and are motivated enough to acquire radios and knowledge to use them, you read this magazine and have a little free time then take the plunge. I'm sure you will be pleasantly surprised.

We have recently had a success here at the Editorial Offices, with Tex Swann a self-confessed non-Morse operator having just acquired the call sign M3NGS. Please take encouragement and make the commitment - you will not regret it.



Cell Sites Get Clean Bill

The DTI recently announced that following a mobile 'phone base station audit by the Radiocommunications Agency between December 2000 and December 2001. During which electromagnetic emissions from 100 mobile base stations located on or near schools were measured. The findings showed that levels ranging between 1/279 and 1/825764 of the international exposure guidelines set by the International Commission on Non-Ionising Radiation Protection (ICNIRP).

The Radiocommunications Agency undertook the audit in response to recommendations made by the Independent Expert Group on Mobile Telephones, chaired by Sir William Stewart which reported in April 2000. The Group's report found that evidence did not suggest that mobile 'phone technologies put the health of the general population at risk. The Group recommended a precautionary approach be adopted, and that an audit of base stations be carried out, with base stations near schools as a priority.

It was also announced that the programme of testing would continue at the same rate of 100 tests in 2002. The testing will be widened to include locations other than schools.

Details of each of the 100 audits to date can be found on the Radiocommunications Agency web site www.radio.gov.uk

That's it from me, I just need to thank Banjo Hardy for turning up on time and behaving impeccably for our front cover shoot this month. I hope you enjoy this issue of SWM. Until next month when you can join me with a trip around the RA's Monitoring Station at Baldock in Hertfordshire.

M4 73 Kevin

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

The row between John Wilson and Keith's Vintage Racal site is becoming silly. As far as I can judge, John has fully won the technical argument as regards the relative sensitivities and performances of the RA17, RA1772 and RA1792 and let's leave it there.

The fact is that supreme sensitivity at h.f. is not important. This holy grail was abandoned by most professional engineers about thirty years ago. The high level of galactic and man-made noise at h.f. makes supreme sensitivity completely pointless. So although the RA17 undoubtedly is more sensitive with a noise figure of around 6-7dB as compared with a noise figure of 10dB for the RA1772 and RA1792, this increased sensitivity achieves little.

Some excellent professional receivers, such as Eddystone's EC958 have a noise figure as high as 17dB and are none the worse for it unless the antenna is very short. It was famously said by Sosin of Marconi that the only reason to design a supremely sensitive h.f. receiver was to be able to place an attenuator in the antenna lead in order to improve the intermodulation performance. To that extent, the attenuator on the RA17 is valuable, but it is not needed with the RA1772 or RA1792 because their intermodulation ranges are so much better.

I also feel sorry for poor Mr Freight who really ought to do his homework before putting pen to paper. He says he cannot find anywhere in John's articles that Racal acknowledged that they had a problem with the a.g.c. of the RA17. If he reads page 42 of the December issue carefully, he will see in plain words that I was the source of John's information. I sent John extracts from the manual for the RA177E which show a radically new a.g.c. circuit and Racal's explanation for it for use with s.s.b. - primarily to shorten the a.g.c.'s attack time substantially and to extend the decay time. I have had an RA117E and I can confirm that its a.g.c. response was better than the RA17L's and the other versions of the RA117, but RA117s have problems in other areas, in particular bad v.f.o. stability and I still prefer the RA17L.

As to Mr Freight's problems with his RA1792, these demonstrate the well known maxim that he who fails to read a review carefully will suffer the consequences and the more so when the receiver is as sophisticated and expensive as the RA1792. It may look simple and uncluttered on the outside, but inside it is a highly complex beast and repairs can be very expensive. John stated this clearly and advised that purchasers proceeded at their peril. I wonder if Mr Freight

overlooked this bit as well.

In fact, most of the faults are likely to be simple, such as oxidation of the pins of the microprocessor i.c. or a duff Varta battery on the computer board. Most faults are fixable at minimal cost, but you need to know what to do and to have access to the requisite test kit or to an engineer who does otherwise you may be in deep trouble, as Mr Freight found out. No one sensible would even contemplate buying a new CPU from Racal for £2400 plus VAT!

The lesson to be learned from Mr Freight's unfortunate experience is to read reviews carefully, obtain sound advice from experienced users and only then to spend big money. I should remind all readers of two memorable pieces of advice: the first from Alexander Pope that "fools rush in where angels fear to tread" and from William Shenstone that "a fool and his words are soon parted".

**Michael O'Beirne G8MOB
Surrey**

Dear Sir

My receivers are Sony 2001D, Tandy 2006 scanner and a war-time German 2 valve + rectifier t.r.f. Oops, I nearly forgot - eight Eddystones! I'm almost embarrassed to mention 1837 and 958 in what seems to be a Racal dominated society.

Military installations of receivers in close proximity to high power transmitters would have had 'wave trap' band-pass filters and cathode-follower amplifiers to feed receivers. The receiver sitting on its own isn't the whole story!

I have had over 40 years using instruments and have seldom noticed a **complete** tie-up between test results and practical use. Antennas are, even 100 years down the road, a black art. Sometimes chickenwire beats G5RV.

My volirsempfanger (Goebell's ?) will pick up a 1.5kW local radio station on 855kHz from 112km away, using a fire-guard as an antenna. QSL from BBC suggesting Eddystones and Datong antenna are faulty.

It will be a shame if s.w.l. and ownership of all types of receivers reduces to a civil war with armies grouped about their respective gurus!

If push comes to shove, I'd flog the lot and have a Drake R8B with an ECC189 varimo triode in antenna filter/amp! I would not give house room to JRC digital i.f. or anything with vari-cap diodes tracking front-end with micro-processor control.

Eddystone managed to tame vari-cap trimming, but in 'super scanners' they are a recipe for cross modulation disaster. Above all, don't forget its only a hobby

(Racal and Eddystone, muskets at dawn). By the way, I had a Trio R500 and thought it noisy and only fit to partner home-brew transmitter, as general coverage receiver, blooming evil!

So, proving the old saying, 'one man's meat is another man's poison'.

**John R. Gomer G8UNZ
Essex**

Dear Sir

Following the review by John Wilson of the Ten-Tec RX340 receiver in October 2001 *SWM*, there can be few readers for whom this set would not be a dream h.f. set. Provided size isn't a barrier (it wouldn't look out of place in a rack at Jodrell Bank), the only stumbling block is cost, for it's the Rolls Royce of receivers with regard to build/performance and price. Perhaps what one can or cannot afford can be put into perspective by making a comparison with the cost of smoking. How long would it take a twenty a day man to save enough to buy one were he to give up? A good few years? Well, the emphasis is on the word few, for unless I've touched the wrong keys on my calculator, the answer is two years, six months and four days. That's based on the standard price of King Size Filters at £4.36 for 20.

On a separate topic, isn't a two year guarantee on new equipment a bit penny pinching? LG washing machines now come with a five year parts and labour warranty. I doubt any other domestic appliance is subjected to a more punishing work schedule. Once the controls of some receivers have been set, nothing moves. The only exceptions would be an 'S' meter or loudspeaker cone. Would not a ten year warranty for new gear with perhaps two for second-hand for fairer?

A motor trader who deals in second-hand cars is expected to service them. A dealer who sells ex-professional receivers, we are back to the ill-fated Racal RA1792, should provide a repair facility at no cost for a decent period. In lieu of that, items should be advertised 'as seen', not guaranteed working and at a price, say, between £50 and £100. Buying these is a gamble and as with betting on horses (I live in Newmarket) or playing the stock market, the golden rule is don't lay out more than you can afford to lose.

It only takes one manufacturer or dealer to stipulate ten years and business acumen will dictate the rest following suit and if they're not to be seen as dragging their heels, offering the sub-standard deal.

**Mr Hilary Humphries
Suffolk**



Communiqué

News and Products

Dover ARC

The **Dover Amateur Radio Club** meet every Wednesday at 1930 during term time in the Dover Boy's Grammar School. The club is a centre for the Foundation Course, the Intermediate Training Course as well as the Morse Training and Assessment Centre, plus the RAE Exam Centre for the area. Visit www.darc.org.uk or contact **Jim Carins M1BK1** on (01304) 852773 or **Ian Keyser G3ROO** on (01304) 821588.

Bangor's News

The **Bangor and District Amateur Radio Society** meet on the 1st Wednesday of every month in 'The Stables', Groomsport at 2000. On **Wednesday 3rd April 2002** the Society are holding their annual constructors contest. There will also be a talk on construction. Visitors and new members are (as always) most welcome. General enquiries from **Mike G14XSF** on 0284-277 2383 or check out <http://welcome.to/bdars>

Don't forget Bangor's summer radio rally, which is to be held on **Sunday 23rd June 2002**. There will be a good selection of radio and computer traders in attendance, plus the always excellent Bring & Buy. The rally will be located at the Crawfordsburn Country Club, which is near Bangor, County Down. Doors open at 12 noon. Further details from the club's website or **Myles G10VTS** on 0289-146 5635 or E-mail myles@boyle1.freemove.co.uk

Finally, the Society have just completed their first Foundation licence course. This was the first completed course in Northern Ireland! 22 students attended the course and all 22 passed! Everyone had a great time and the 22 new radio hams are now eagerly awaiting their new M13 callsigns. Another course is planned for later this year. Check out their website for updated information.



Manchester's Meeting

The next meeting is scheduled for **Saturday 27th April**, starting 1600 at the Wetherspoons pub (no trainers allowed on Saturdays!) on Piccadilly Gardens, Manchester, by the bus and Metrolink interchange, and close to Piccadilly railway station. Later, everyone shall adjourn to one of the excellent restaurants in the nearby Chinatown (most probably the Tampopo), and then onto further hostelrys to finish the evening. Early indications are that a big

turnout is expected with all the regulars and several more travelling in over greater distances. Mobile contacts for the day should be **Chris Brand** on 0771-167 2319 and **Martin Dale** on 07776 364359. As a further possible contact, **Tom Read** (M1EYP/M) will be active on the local amateur radio repeater (GB3MN - 145.650MHz) at approximately 1500-1600, 1830-1900, 2030-2100 and 2300-2345UTC. Further details from Tom Read via E-mail aaw@bdxc.org.uk or telephone (01625) 612916.

IC-7400 Base Station Transceiver

The IC-7400 achieved a fantastic reputation as a powerful h.f. base station that gave excellent performance at a competitive price. Well its successor is here...new from **Icom (UK) Ltd.** is the **IC-7400**.

Covering h.f., 50 and 144MHz bands, with the same powerful 100W of output power, the IC-7400 carries on the reputation earned by the IC-746, but offers improved performance and a wide range of new features that are destined to set a new benchmark in this important market.

The biggest news of all is that this new transceiver has adopted the same i.f. d.s.p. as the IC-756PRO and its successor, the IC-756PRO2. Icom has used a 32-bit floating point d.s.p. and 24-bit AD/DA converter at the heart of the IC-7400, which makes this base station fresh and exciting. Furthermore, the digital i.f. filter shape is selectable from sharp to soft for both s.s.b. and c.w. modes.

With a recommended selling price of **£1568** including VAT, contact **Icom (UK) Ltd., Sea Street, Herne Bay, Kent CT6 8LD, Tel: (01227) 741741, FAX: (01227) 741742**, or visit www.icomuk.co.uk for more information.



Special Events

The Scarborough **Special Events Group** have informed the *SWM* Newsdesk of some up and coming events for 2002.

May 18-19 - GB5SF - Scarborough Flyer

To commemorate the revival of the famous 'Scarborough Flyer' train service from London to Scarborough, hauled by steam locomotive *Green Arrow*. Full colour QSL of the famous loco.

June 1-4 - GQ0000 - Queen's Golden Jubilee

To commemorate the Golden Jubilee of the Queen. The QSL will be a full colour official photograph of Her Majesty Queen Elizabeth II.

August 17-18 - GB2SCA - International Lighthouse Weekend

Operation from the lamp room of the Scarborough Lighthouse and the QSL will be a full colour photograph of the lighthouse.

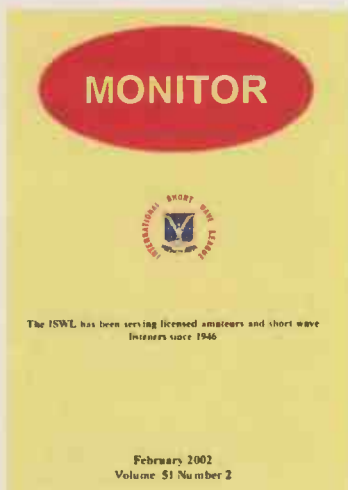
Operation will be on 40m s.s.b. and c.w., 2m s.s.b./f.m. and 70cm during each of the above events. The group helpline number is (07881) 542532 - this number is always active during a special event weekend to give advice to any newcomer or QRP stations have difficulty in making contact. Listener reports are very welcome, either via the Bureau or direct to **G0000**. More details from **Roy Clayton G4SSH**, Chairman on (01723) 862924 or E-mail: g4ssh@netscapeonline.co.uk

Communiqué

News and Products

ISWL

In January of this year, the **International Short Wave League's** monthly journal - *Monitor* - became one of the first club magazines to be produced in colour - without any increase in membership rates, which, incidentally, have remained at the same levels since 1994!



The ISWL caters for all sectors of the short wave hobby that includes licenced amateurs, beginners, novice licences, those interested in data communications, short wave listeners and broadcast band enthusiasts. For those seeking further information, please contact the Hon. Sec. **John Raynes G16436/G0BWG, 267 Pelham Road, Immingham, NE Lincs DN40 1JU** or check out www.iswl.org.uk

G1TEX Becomes M3NGS!

Tex Swann G1TEX

Technical Project Sub-Editor for sister magazine *Practical Wireless*, Technical Illustrator and Photographer for *SWM*, is now the proud owner of the callsign **M3NGS** following his successful completion of the Morse Assessment on Sunday 3 February 2002. Tex, accompanied by two fellow members of the Poole Radio Society, took the assessment under the watchful eye of assessor **Phil Mayer G0KKL**.

The assessment took a little over one and a half hours to complete for all three, which included coffee and biscuits to calm the nerves! The *SWM* team would like to congratulate all three participants and would especially like to say 'Well Done' to Tex for becoming the magazine's first M3!

In case you're wondering, the letters of the callsign are actually Tex's initials of his real name. He really wanted M3TEX, but upon applying for it, he was told it had already been issued! We suggest the holder of M3TEX keeps a low profile as Mr Swann was not a happy M3 at hearing this news!



Video Viewing For Radio Enthusiasts

Radio Club Secretaries looking for material to provide interesting evenings for their club members may now find that their job has become easier, thanks to a new video from the Radiocommunications Agency.

On Wednesday 6 February **Kevin Nice G7TZC**, Editor of *Short Wave Magazine* and *PW's* Editor **Rob Mannion G3XFD** were the guests of the RA's Baldock Monitoring station in Hertfordshire. They were entertained most royally by the station staff - along with the opportunity to see the newly made video showing the organisation's work, before being given a guided tour around the facility - including a chauffeur-driven Land Rover 'safari' to see the various antennas on the huge site.

However, despite their most interesting day at the station one of the treats in store for the pair was watching the newly-produced video showing the RA's field and investigation work. It runs for about 20 minutes and is absolutely fascinating.

Kevin and Rob were most impressed. They can thoroughly recommend that Club Hon Secs contact the RA for the loan of the video. It's superb, totally unlike the usual corporate video promotional programme and it was actually directed and made by one of the RA's Field Managers - an Engineer himself - and shows the dedication, interest and activities of the RA staff extremely well.

There are also some historical shots and some aerial photography included within the programme. In fact, it provides a fitting tribute to the often misunderstood work which the RA does on our behalf and all spectrum users.

Particularly interesting are the sections dealing with the investigations to find and prosecute a hoaxer who transmits on the police frequencies in Wales. (And we think we've got problems on our repeaters!). The RA are to be congratulated on this excellent production and in my opinion it will help us all and also provide an interesting part of you club's meeting.

Loan copies of the RA video are available (post free) direct from the RA. Those clubs interested in borrowing a copy of the video are requested to telephone **Mary McParland** (Secretary to **Barry Maxwell**, the RA's Director of Customer Services), in the first instance to arrange the loan, quoting the news item in *SWM*. (Please be aware that only a limited number of loan copies will be available). **Mary McParland, Radiocommunications Agency, Wyndham House, 189 Marsh Wall, London E14 9SX, Tel: 0207-211 0483**



New & Improved

Icom (UK) Ltd. have announced details of an expansion to their website www.icomuk.co.uk Featured on the site are four new sections that the company feels will add value for customers visiting online.

The new site features a diary page which highlights all the trade and consumer shows that Icom (UK) Ltd. will be attending, along with a download section which allows the user to download electronic copies of leaflets and instruction manuals. An accessory section categorises the company's range of accessories and a competition section allows the users to win Icom equipment and merchandise every month of

the year. The first competition will give online users the opportunity to win the company's latest amateur hand-held, the IC-T3H.

Ian Lockyer, Marketing Executive of Icom (UK) Ltd. said, "Over the next nine months, the Icom UK site will increase in size with benefits for both our consumer and trade customers. At present, the changes we have introduced will draw more people back to our site and keep them better informed of all our company activities".

Contact Icom at **Sea Street, Herne Bay, Kent CT68LD, Tel: (01227) 741741, FAX: (01227) 741742** or visit www.icomuk.co.uk

DRM Celebrates Its Fourth Anniversary

The consortium Digital Radio Mondiale (DRM) reached the fourth anniversary of its inaugural meeting in Guangzhou, China on March 5, 1998. DRM was formed when a small group of leading-edge media organisations and broadcast equipment manufacturers decided to collaborate to create a universal, digital system for the broadcasting bands below 30MHz - short wave, medium wave and long wave. DRM has expanded into an international consortium of 72 of the world's best-known broadcasters, manufacturers, network operators and researchers. DRM's digital on-air system (also called DRM) will launch in 2003.

Since its inception, DRM has been led by Chairman Peter Senger, who is also Chief Engineer, Deutsche Welle. "We started with an idea, and together we have developed a digital system that will provide near-f.m. quality sound to the broadcasting bands below 30MHz", says Senger.

DRM reached several milestones toward its 2003 launch in the past year. The International Telecommunications Union (ITU) approved its recommendation of the DRM system in April 2001. DRM unveiled mobile reception tours at IFA 2001, Germany's largest consumer electronics show, in Berlin last August. DRM introduced new equipment specially built for its system at the International Broadcasting Convention (IBC 2001) in Amsterdam last September. Soon after, the European Telecommunications Standards Institute (ETSI) published the DRM system specification.

DRM audio samples can be heard online at www.drm.org



WRN & Grammy

The 2002 Grammy Awards were broadcast live from the Staples Centre, Los Angeles by radio stations across Europe via **World Radio Network's** digital multiplex on the *Hotbird 5* satellite, back on February 28th. WRN was commissioned to distribute live coverage of the 44th Awards by European rights holder MediaLane International, the UK-based radio distributor, in association with Westwood International. The audio feed was received at WRN's Master Control Room from Los Angeles via ISDN for onward transmission in digital

stereo via *Hotbird 5* and downlinked by radio stations across Europe. Visit WRN at www.wrn.org

WRN



rallies

April 7: The 45th Northern Mobile Rally & Computer Fair will be held in the Sports Hall of the Harrogate Ladies College, Clarence Drive, Harrogate. Details from **Gerald GOUFFI** on (01765) 640695 or visit www.harrogateally.co.uk

April 14: The Cambridgeshire Repeater Group are holding their annual rally at Bottisham Village College, Bottisham, which is six miles east of Cambridge. Access is via A14 and A1303. Features include a large hall, car boot sale, Bring & Buy and the group's renowned auction of radio and electronic equipment. Doors open at 1030 and admission is £1.50. Refreshments will be available and there will also be a talk-in on S22. More information from **Paul Dyke G0LUC** on (01462) 683574, E-mail: g0luc@btinternet.com or visit their web site at www.gb3pi.org.uk

April 21: The 18th Yeovil QRP Convention takes place today at the Digby Hall, Hound Street, Sherborne, Dorset. Doors open at 1000. Talk-in on S22 GB2LOV. There will be three lectures by notable speakers, superb in-hall catering, trade stands, Bring & Buy, Construction Challenge and lots more. Details from **Derek M1WOB** on (01935) 414452 or E-mail: m1wob@tiscali.co.uk

April 28: The Aldridge & Barr Beacon Amateur Radio Club will be holding their 3rd Surplus Radio & Electrical Sale at the Aldridge Community Centre, Anchor Meadow, Middlemore Lane, Aldridge, from 1030 till 1430 and admission is just 50p. **Charles** on (01922) 636162.

April 28: The Andover Radio Amateur Club will again hold a Spring Boot Sale at the Village hall in Wildhern. Details from **Terry G8ALR** on (01980) 629346 or **Jim G4NWJ** on (01980) 610594.

May 6: The 9th West Wales Amateur Radio & Computer Rally will be held at Penparcau School, Aberystwyth. Doors open 1000 till 1530. Admission is £1. There will be good parking facilities, with easy access for disabled visitors and traders for all stalls. Demonstrations of h.f., v.h.f., on the air. Amateur Radio and computer traders, Bring & Buy, clubs and Special Interest Groups. Talk-on S22. Further information from **Ray GW7AGG** on (01686) 628778 or E-mail: mwmg01@aber.ac.uk

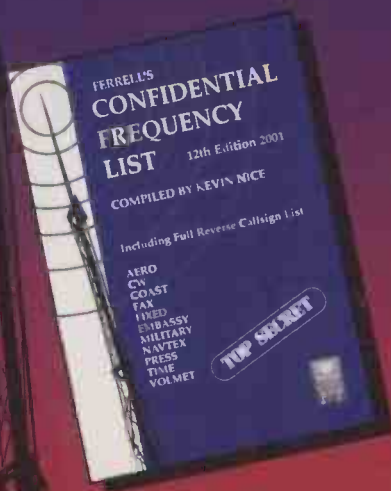
May 6: The Dartmoor Radio Rally is to be held at Pannier Market, Tavistock, Devon, in the same new location as last year, giving plenty of space for traders to display their wares and for visitors to see them and talk to old friends. There is also access for disabled visitors. Plenty of public car parking within five minutes walking distance. There will be trade stands, Bring & Buy and refreshments. Doors open at 1030 (1015 for disabled visitors). Talk-in on S22. Beautiful views over Dartmoor - ideal for picnics, so why not bring the family. **Ron G7LLG** on (01822) 852586.

May 19: The Midland Amateur Radio Society are holding their Drayton Manor Radio & Computer Rally at Drayton Manor Park, Fazeley, Tamworth, Staffs. The main traders will be in three marquees, there will also be a large outside flea market, a Bring & Buy, local clubs and societies and special interest stands. Doors open from 1000 onwards. More information from **Peter G6DRN** on 0121-443 1189 (evenings please).

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REVIEWED!

* **Rob Mannion G3XFD**'s been on holiday and took along the new Icom IC-756PRO II to review - find out how he got on in this issue



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LM&S



If you intend to refer to the data herein when searching the short wave bands, please bear in mind that it is highly likely that alterations will be made to broadcast schedules on March 31 to compensate for seasonal changes in propagation. Details of any changes which you encounter would be very welcome here for inclusion in 'LM&S' - please be sure to state the frequency, station name, language and time of reception in Universal Time Co-ordinated (UTC), which is similar to GMT.

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 January.

The new all talk sports programme broadcast by Team Talk on **252kHz** has been attracting the attention of **Thomas Williams** in Truro. He says "The broadcasts vary a lot from day to day. Regarding the signal, it can be very 'jerky' sometimes - not as good as previously. I heard one night a voice speaking under their signal, but could not identify the language". Such effects are likely to occur when enhanced propagation conditions are present and the sky waves from Tipaza, Algeria on **252kHz** reach our shores.

The reception of an unknown broadcaster under Roumoules on **216kHz**, which was reported by **Ernie Strong** (Ramsey, Cambs) in 'LM&S', *SWM* February 02, resulted in some interesting correspondence. Commenting from E.Bristol **Simon Hockenull** says "Like Ernie Strong I have heard a signal under Roumoules on **216kHz** during the evening. When I identified the language as French my suspicions were aroused. Using another receiver I identified the transmission as Allouis on **162kHz**. Using other receivers I have eliminated image breakthrough and cross modulation. I believe the cause is intermodulation within the ionosphere or E layer, an effect that was once called 'the Luxembourg effect'. It is caused by two high power signals passing through the same part of the ionosphere."

The suggestions from Simon about the Luxembourg effect were endorsed by **Jacques d'Avignon** (Ontario, Canada), who prepares monthly propagation forecasts for *SWM*. He mentioned that in February 2001 many listeners reported that a French speaking signal could be heard under the normal signal on **216kHz**. The general consensus is that l.w. transmissions are only propagated by ground wave across the Atlantic but his feelings are that an ionospheric propagation component is often present. He pointed out that most, if not all of the l.w. stations use vertically polarised antennas which produce a wavefront with a very low take off angle, so it is conceivable that the signal is only refracted once from the ionosphere on its way to North America and it is at this first refraction that the extraneous modulation occurs.

fact that other broadcasters chose to ignore it could be due to lack of forethought by those responsible for service planning. Whatever the reason, such inactivity is an appalling waste of this part of the spectrum. Many listeners are hoping that additional broadcasters will now decide to include it in their transmission schedules for the summer period, starting March 31.

The transmissions from Deutsche Welle (DW), Germany on **25.740** (Ger to Asia 0800-1400) have been received well by **John Parry** in Larnaca, Cyprus. He rated them SINPO 45554 at 1340UTC. In the UK the reception of them is unreliable because it is dependent upon back scatter and other propagation modes. The SINPO ratings quoted in the latest reports for DW were 34433 at 0845 by **Vic Prier** in Colyton; 44333 at 0925 by **Rhoderick Illman** in Oxted; 54454 at 0945 by **Robert Hughes** in Liverpool; 45544 at 0945 in Newry; 25333 at 1002 by **Fred Pallant** in Storrington; 45434 at 1020 by **Bernard Curtis** in Stalbridge; 45343 at 1025 by **Fred Wilmshurst** in Northampton; 34333 at 1030 in Truro; 25522 at 1145 in E.Bristol; 34333 at 1230 in Morden.

Although on a different beam heading to that used by DW, the transmissions from Radio France International (RFI) on **25.820** (Fr, Eng to E/C.Africa 0830-1300) also result in unreliable reception in the UK. The SINPO ratings quoted for RFI were 44433 at 0923 in Oxted; 35534 at 0930 in Colyton; 33233 at 0945 in Liverpool; 45434 at 1015 in Stalbridge; 45444 at 1020 in Northampton; 34333 at 1035 in Truro; 25522 at 1140 in E.Bristol; 24232 at 1145 by **Peter Pollard** in Rugby; 44243 at 1200 in Newry, Co.Down.

In contrast to the situation in the 11m band quite a few broadcasters have taken advantage of the propagation conditions which prevailed in the **21MHz (13m)** band during the winter. It seems likely that most of them will include this band in their transmission schedules for the summer period.

Good reception over long distances has been evident most days, the exceptions being when the effects of solar activity have disturbed the state of the ionosphere.

R.Australia's early morning transmission to Pacific areas from Shepparton on **21.725** (Eng 0200-0900) has often reached the UK. It was rated 24332 at 0855 in Oxted. It is followed by a broadcast to Asia via Shepparton on **21.820** (Eng 0900-1400), noted as 54434 at 1255 in Stalbridge.

Other broadcasters using this band during the morning include the Voice of Russia **21.790** (Eng to Oceania, Australasia 0600-0800), rated 34132 at 0725 in Newry; R.Japan via Yamata, Japan **21.755** (Jap to Oceania, Australasia 0800-1000) 44333 at 0835 in Colyton; Swiss R.Int via Sottens **21.770** (Eng, It, Ger, Fr to M.East, Africa 0830-1030) 44433 at 0840 by **Stan Evans** in Herstmonceux; DW via Wertachtal? **21.840** (Ger to Africa, Eur 0600-1400), 45544 at 1015 in Northampton; R.Pakistan **21.465** (Eng, Ur to Eur 0800-1100) 44454 at 1020 in Liverpool; R.Finland via Pori **21.800** (Fin, Sw to SE.Asia 1000-1200) 44444 at 1102 in Truro; HCJB Quito, Ecuador **21.455** (Eng [u.s.b.]) 33433 at 1108 by **David Hall** in Morpeth; VOIRI Tehran **21.470** (Eng to Asia 1100-1230) 35444 at 1130 in Rugby.

Those active after mid-day include Channel Africa via Meyerton, S.Africa **21.725** (Eng to W.Africa 1300-1455, Sat/Sun), rated 35533 at 1303 in E.Bristol; R.Prague, Czech Rep **21.745** (Eng to E.Africa, N.America 1400-1429) 44444 at 1418 by **Vera Brindley** in Woodhall Spa & 44444 at 1400 by **Gerald Guest** in Dudley; R.France Int via ? **21.580** (Fr to Africa 0700-1700) 45554 at 1505 in Larnaca, Cyprus; WYFR Family R. via Okeechobee, USA **21.525** (Fr, Eng to Eur, Africa 1800-2200) 44333 at 1600 in Morden.

Noted in the narrow **18MHz (15m)** band were R.Sweden **18.960** (Eng to N.America 1230-1300, 1330-1400, 1430-1500), rated 44444 at 1230 in Morden & 55555 at 1345 in Herstmonceux; R.Norway Int **18.950** (Norw to N.America 1700-1730) 44444 at 1705 in Truro; Family Radio WYFR via Okeechobee FL, USA **18.980** (Eng to Eur, M.East 1545-1945) 34222 at 1915 in Newry & 34444 at 1925 in Northampton.

There is a high level of activity in the **17MHz (16m)** band and broadcasts from many areas reach our shores during the day. Mentioned in the reports were the BBC via Cyprus **17.640** (Eng to E.Africa 0500-0700 & via UK 0700-1500 [also to CIS via Woofferton, UK 0800-1500]), rated

Listeners:-

- (A) Bernard Curtis, Stalbridge.
- (B) Simon Hockenull, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) Eddie McKeown, Newry.
- (E) George Millmore, Wootton, IoW.
- (F) Fred Pallant, Storrington.
- (G) Ernie Strong, Ramsey, Cambs.
- (H) Thomas Williams, Truro.
- (I) Fred Wilmshurst, Northampton.

Long Wave Chart

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

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

Medium Wave Reports

After dark, the sky waves from some of the many m.w. stations in the Middle East, N.Africa, Europe and Scandinavia were picked up by listeners in the UK - see chart. Those from Dammam, Saudi Arabia (1600kW) on **1440kHz** were rated SINPO 13211 by **Eddie McKeown** in Newry, Co.Down.

During daylight, the ground waves from some local radio stations reached quite distant places - see chart. Those from BBC R.York via Fulford on 666 were rated 33222 at 1400 by **Sheila Hughes** in Morden.

Short Wave Reports

During the winter good use was made of the **25MHz (11m)** band by Radio France International (RFI) and Deutsche Welle (DW), Germany. The

MLP32 Log Periodic

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

MLP62 Log Periodic

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★ Gain: 10-12dB **£169.95**
★ Length: 3.00mtr
★ Conn: N-type
The ultimate receiving antenna - a must for the dedicated listener

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24" T&K (pair)19.95
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MD37 SKY WIRE (LONG WIRE BALUN KIT)

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



£39.95

MWA HF Wire Antenna Mk11

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



NEW LOW PRICE £49.95

SUPER SCAN STICK

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

£29.95

SUPER SCAN STICK II

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

£39.95

5' SWAGED POLES

Heavy Duty Ali (1.2mm wall)
SINGLE 1 1/4"£7.00
SET OF FOUR 1 1/4"£24.95
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SET OF FOUR 1 1/2"£34.95
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RG58 6mm standard.....£0.35 per mtr
RG58 6mm mil spec.....£0.60 per mtr
RF mini 8 7mm mil spec.....£0.85 per mtr

CONNECTORS

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

Hi-Spec coax cable

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

X1 HF Vertical

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

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UK SCANNING DIRECTORY

8th edition
£19.50

Wideband 25-1800MHz SuperGainer Rubber Duck Antennas

MRW-100 40cm long BNC£19.95
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Increase the performance of your hand-held, without an external antenna.

EXWM-1 Window clip mount

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

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(ADAPTERS FOR OTHER FITTINGS AVAILABLE)

MRP-2000

(Pre-amplifier) Freq Range 25-2000 Mhz 9-15v input (Battery not included) 14 db Gain. Complete with lead and BNC connectors. **£49.95**

WEATHER SATELLITE ANTENNA

TURNSTILE 137 Freq. 137.5 MHz Length 1000mm

This Antenna is designed for external use to receive weather satellite signals. Complete with mounting hardware. **£39.95**

SWP HF30 Freq. Range 0.05-30MHz Length 770mm

Although small, surprisingly sensitive for the H.F. user. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. (Good for the car user who doesn't want an external antenna). **£39.95**

SUPER DISCONE

Freq. Range 25-2000MHz Length 1380mm Internal or External use (A Tri-Plane Antenna). The angle of the ground planes are specially designed to give maximum receiving performance within the discone design. The Super Discone gives up to 3Db Gain over a standard conventional discone. Comes complete with mounting hardware and brackets. (Ideal for the Experienced Enthusiast). **£39.95**



HF DISCONE

Freq. Range 0.05-2000MHz Length 1840mm Internal or External use (A Tri-Plane Antenna). Same as the Super Discone but with enhanced HF capabilities, comes complete with mounting hardware and brackets. (Ideal for the Short Wave H.F. Listener). **£49.95**



ROYAL DISCONE 2000

(Stainless Steel) Freq. Range Receive 25-2000MHz Transmit 50-52MHz 144-146MHz 430-440MHz 900-986MHz 1240-1325MHz Length 1540mm Connector N TYPE The Ultimate Discone Design. 4.5DB GAIN OVER STANDARD DISCONE! Highly sensitive, with an amazing range of transmitting frequencies, comes complete with mounting hardware & brackets (The Best There is). **£49.95**



G. SCAN II

Freq. Range 25-2000 MHz.Length 620 mm. Magnetic mount Mobile Scanner Antenna. 2 vertical loaded coils for good sensitivity complete with magnetic mount and 4mts of coax, terminated with BNC plug. (Good for when you are driving about). **£24.95**



SWP 2000

FREQ. RANGE 25-2000 MHz. Length 515mm. Multiband good sensitivity for its small size. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. (Good for the car user who doesn't want an external antenna). **£29.95**



ADD £6 P&P PER ORDER



Pacific 1430-1625) 44444 at 1430 in Dudley; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1300-1730) 54444 at 1540 in Herstmonceux & 35553 at 1655 in Larnaca, Cyprus; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1700-1730) 55455 at 1714 in Manchester; R.Japan via Sri Lanka? **11.970** (Eng to Eur 1700-1800) 33343 at 1720 in Rugby; All India R. (AIR) via Bangalore **11.620** (Ind, Hin, Eng to Eur 1745-2230) 44444 at 1825 in Colyton; R.Kuwait via Kbd **11.990** (Eng to Eur, N.America 1800-2100) 54444 at 1850 in Liverpool; RAI Int, Rome **11.880** (Eng to E.Africa 2025-2045, Port to E.Africa 2050-2110) 24222 at 2033 in E.Bristol. Note: During the gap in the RAI transmission R.Australia may be audible on 11.880 (Eng to Pacific, N.America 1700-2200). It was noted as 32323 at 2045 in Stalbridge.

Much later, the BBC via Ascension Is **12.095** (Eng to S.America 2100-0300) was rated 24322 at 0010 by **Michael Wasley** in Scunthorpe; R.Havana, Cuba **11.705** (Eng [u.s.b.] to Eur 0100-0500) was noted as 44444 at 0257 by Bill Griffith in W.London; V.Cristiana, Santiago, Chile **11.690** (Sp to S.America 0100-1300) 44444 at 0300 in W.London; BBC via Meyerton, S.Africa **11.765** (Eng to S.Africa 0300-0700) 44444 at 0440 in Morpeth.

R.Australia's broadcasts have been received in the UK on four frequencies in the **9MHz (31m)** band from Shepparton: **9.710** (Eng to New Guinea, Pacific areas 0800-0900), noted as 22322 at 0835 in Colyton; **9.580** (Eng to Pacific areas, N.America 0800-2130) 34333 at 1107 in Morpeth; **9.475** (Eng to Asia 1100-1400, 1530-1900) 43333 at 1255 in Herstmonceux; **9.500** (Eng to Asia, Eur 1900-2130) 45434 at 2005 in E.Bristol & 34332 at 2028 in Manchester.

Some of the many other broadcasts in this band originate from HCJB Quito, Ecuador **9.780** (Eng to Eur 0700-0900), rated 35233 at 0712 in Newry; Swiss R.Int via Julich, Germany **9.885** (Fr, Ger, It, Eng to Nr.East, Africa 0600-0800) 53444 at 0750 in Stalbridge; R.Korea via Sackville, Canada **9.650** (Eng to N.America 1130-1230) 33222 at 1130 in Appleby; VOA via Tinang, Philippines **9.795** (Special Eng to Far East 1500-1600) 42444 at 1525 in Woodhall Spa; Voice of the Mediterranean via Prato Smeraldo, Italy **9.840** (Eng to Eur 1700-1730) 44444 at 1700 in Dudley; China R. Int via ? **9.585** (Eng to W/N.Africa 1900-2000) 24443 at 1914 in Manchester; R.Vlaanderen, Belgium **9.925** (Dut, Ger, Fr, Eng to Eur 1800-2100) 54444 at 1950 in Liverpool; Israel R. Jerusalem **9.435** (Eng to Eur, N.America 2000-2030) SIO 222 at 2022 by **Francis Hearne** in N.Bristol; R.Thailand, Udon Thani **9.535** (Eng, Ger, Fr, Thai to Eur 1900-2115) 43333 at 2040 in Rugby; Voice of Armenia, Yerevan **9.960** (Eng to Eur 2040-2100) 54444 at 2040 in Morden; R.Cairo, Egypt **9.990** (Fr, Eng to Eur 2000-2245) 33333 at 2140 in Truro; WEWN Birmingham, USA **9.975** (Eng to N.America 2200-0000), noted as 'hardly audible' at 2200 in Swansea; R.Nederlands via Bonaire, Ned.Antilles **9.845** (Eng to N.America 2330-0525) 33333 at 2332 in Oxted; Voice of Turkey, Ankara **9.830** (Eng to Eur, N.America 2300-0000) 45555 at 2335 in Northampton; WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) 44444 at 2351 in Scunthorpe.

The **7MHz (41m)** band carries a number of broadcasts for listeners in Europe. Some come from R.Japan via Woofferton, UK **7.230** (Eng 0500-0700), rated 34553 at 0515 in Larnaca, Cyprus; VOA via Woofferton, UK **7.170** (Eng [News Now] 0400-0700) 44444 at 0600 in Morden; Voice of Russia **7.300** (Eng) 54545 at 1820 in Stalbridge; AIR via Bangalore **7.410** (Eng, Hind 1745-2230) 43444 at 1820 in Colyton; Voice of Turkey **7.125** (Eng 1930-2030) 44444 at 1938 in Newry; R.Denmark via Sveio, Norway **7.490** (Dan 1930-1955) 54454 at 1945 in Liverpool; R.Slovakia Int. **7.345** (Eng 1930-2000) 55555 at 1950 in Liverpool; R.Budapest, Hungary **7.135** (Eng 2000-2030) 33333 at 2000 in Rugby; Voice of the Mediterranean, Malta via Russia **7.440** (Eng 2000-2100) 44333 at

2030 in Truro; R.Polonia (Polish R), Warsaw **7.165** (Eng 2030-2130) 44332 (distorted modulation) at 2045 in E.Bristol; Vatican R, Italy **7.250** (Eng 2050-2110) 55544 at 2105 in Northampton; R.Ukraine Int. **7.240** (Eng 2200-2300) 55555 at 2200 in Appleby; China R.Int via Russia **7.170** (Eng 2200-2330) SIO 333 at 2233 in N.Bristol.

Some to other areas may also be received here, They include R.Prague, Cz.Rep **7.345** (Eng to N.America 2330-2357), noted as 33343 at 2347 in Scunthorpe; World Harvest Radio (WHRI) via Maine, USA **7.580** (Eng to N.America) 44444 at 0445 in Morpeth; KTBN via Salt Lake City, USA **7.510** (Eng to N.America 0000-1600) 34232 at 0918 in Oxted.

Many more broadcasts for European listeners may be heard in the **6MHz (49m)** band. Some come from R.Vlaanderen Int via Julich, Germany **5.985** (Eng 0800-0830), rated 44444 at 0811 in Oxted; R.Nederlands via Julich, Germany **6.045** (Eng 1130-1325) 54554 at 1300 in Herstmonceux; Deutsch Welle (DW) via Julich **6.140** (Eng Service) 55555 at 1530 in Morden; Deutschland R, Berlin **6.005** (Ger 24hrs) 54434 at 1646 in Scunthorpe; R.Japan via Rampisham, UK **6.175** (Jap 1700-1900) 55555 at 1700 in Stalbridge; R.Prague, Cz.Rep **5.930** (Eng 1800-1830) 44434 at 1800 in Colyton; R.Slovakia Int. **5.910** (Various 1900-2100) 54554 at 1955 in Northampton; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 54454 at 2000 in Liverpool; R.Budapest, Hungary **6.025** (Eng 2000-2030) 44333 at 2002 in Newry; AWR via Rimavska Sobota, Slovakia **5.995** (Eng 2030-2100) 43333 at 2030 in Appleby; Voice of Korea, Pyongyang **6.575** (Kor 2000-2050) 32232 at 2035 in Liverpool; R.Sweden, Stockholm **6.065** (Eng 2030-2100) 44444 at 2040 in Truro; Vatican R, Italy **5.885** (Various, Eng 2050-2110) 44444 at 2108 in E.Bristol; China R.Int via ? **5.965** (Eng 2100-2155) 55444 at 2140 in Northampton; R.Bulgaria, Sofia **5.800** (Eng 2200-2300) SIO 333 at 2209 in N.Bristol; R.Taipei, Taiwan via WYFR Okeechobee, USA **5.810** (Eng/Chin 2200-2300) 34232 at 2249 in Newry.

Noted to other areas were VOA via Morocco **6.040** (Eng to N.Africa, M.East 1700-1900), rated 32343 at 1845 in Rugby; American Forces Network (AFN) via Puerto Rico **6.458** (Eng [u.s.b.]) 44444 at 2300 in W.London; R.Canada Int (RCI) via Sackville **5.960** (Eng to USA, Mexico, Caribbean, Lat America 2300-0000) 43323 at 2316 in Scunthorpe; R.Ext.Espana **6.055** (Eng to N.America 0000-0200) 55555 at 0000 in Manchester; R.Havana, Cuba **6.000** (Eng to N.America 0100-0500) 44444 at 0319 in W.London; BBC via Antigua, W.Indies **5.975** (Eng to Caribbean, C/S.America 2100-0600) 44444 at 0405 in Morpeth; WHRI South Bend, USA **5.745** (Eng to N.America 2000-1000) 44434 at 0802 in Oxted; WEWN Birmingham, USA **5.825** (Eng to N.America 0000-1300) 44444 at 0804 in Oxted; WWCR Nashville, USA **5.935** (Eng to N.America 0000-1400?) 44333 at 0808 in Oxted.



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

Signal Strength	
5	excellent
4	good
3	fair
2	poor
1	barely audible
Interference	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Noise	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Propagation Disturbance	
5	nil
4	slight
3	moderate
2	severe
1	extreme
Overall Merit	
5	excellent
4	good
3	fair
2	poor
1	unusable

List of Equipment Used

LM&S for February, #March 2001, *April 2002.

- # Adam Birchenall, Coalville, Leics: Grundig Yacht Boy 400.
- \$* Vera Brindley, Woodhall Spa: Roberts R-867 or Sangean ATS-803A + r.w.
- * Michael Casey, Manchester: Roberts RC828 + table-top loop.
- \$* Bernard Curtis, Stalbridge: Realistic DX-400 + rod or r.w. in loft.
- \$* Stan Evans, Herstmonceux: Kenwood R-2000 + Balun + 11m wire in loft.
- * Bill Griffith, W.London: JRC NRD-535 + 25m wire.
- \$ Bill Griffith (W.London), while in New Zealand: Sony ICF-SW55 + 10m wire.
- \$* Gerald Guest, Dudley: Roberts RC-818 + r.w.
- \$* David Hall, Morpeth: ADR AR7030 + Global AT-2000 + 13m wire.
- \$* Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
- 4* Simon Hockenull, E.Bristol: Battery powered Roberts R-876 or Bush TR130 + built-in antennas or AKD HF-3 + 10m wire.
- \$* Robert Hughes, Liverpool: ADR AR7030 + 15m indoor wire or Drake RBE + RF Systems MTA on roof.
- \$* Sheila Hughes, Morden: Sony ICF-7600DS + home built loop or Panasonic DR48 + 16m inverted L.
- \$* Rhoderick Illman, Oxted: Kenwood R-5000 + r.w. or AN-1, Sony ICF-7600DS.
- * Howard Jones, Swansea: Sangean ATS-909 + 6m wire.
- \$* Eddie McKeown, Newry: Grundig Yacht Boy 400 or Sangean ATS-818.
- \$* 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, while in Appleby: JRC NRD-525 + a.t.u. + r.w.
- \$* 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' in loft or another Sangean ATS-803A + 60m Helix or a loop.
- # Harry Richards, Barton-upon-Humber: Grundig Satellit 700 + AD-270 or r.w. or Grundig Yacht Boy 400 or Matsui MR4099.
- \$* Ernie Strong, Ramsey (Cams): AKD HF3 or Yaesu FRG-8800 + a.t.u. + 30m wire.

Bandscan Europe

Pace Micro Technology are to launch a digital TV adapter at the end of March. Just connect the £100 box between your conventional TV antenna and your set and the adapter does the rest, allowing access to a raft of free-to-view digital terrestrial channels. Digital TV has been generally available only to owners of new, digitally enabled televisions and subscribers to satellite, cable and terrestrial pay TV services charging a monthly fee. The Pace set-top-box entails a one-off purchase of the adapter with no strings attached.

The usual five networks will be there, plus *BBC Knowledge* and *Choice*, the new BBC digital-only channels launching now/soon, *ITV2*, *ITN* and a smattering of other channels that are free for a very good reason. If you want to expand your viewing horizons to include subscription channels, then the set top box can do this too. The price tag and the offer of hassle-free, extra channels for now may be enough to persuade the public to make the switch, allowing for the possibility of an analogue switch-off sooner rather than later. Coming to a high street near you, soon.

On the same high street (but not quite so soon) will be the first sub-£100 DAB receivers to hit the market. Digital One has announced the development of a digital radio and audio processor chip which will allow portable DAB radios to retail for under £100 from the middle of the year. The first commercial customer for this chipset is Goodmans, a subsidiary of Alba, who will incorporate the processor into a variety of products priced between £99 and £200. However, will audiophiles, i.e. those most interested in snapping up hi-tech gizmos, be put off by a product sporting the Goodmans badge?

Signed Up

Irish broadcaster RTÉ has signed up for carriage on Sky Digital platform, with effect from April. As a result, RTÉ was hoping that Channel One, Network 2 and TG4 would be available to all Sky subscribers on the island of Ireland in addition to their four radio channels. In Britain, only the radio would be accessible. However, the plan has been temporarily blocked by the Broadcasting Commission, who has decided that the national broadcaster must first seek a licence, despite RTÉ's protestations to the contrary. More, as we have it.

Long wave radio is still making the headlines and promises an interesting year ahead. Ireland's Atlantic 252 pulled the plug on December 21st with teamTALK running promo tapes and pre-launch programming ahead of their February 25th start up. They have also commandeered Atlantic's website at www.atlantic252.com Unfortunately for teamTALK, the high-power Algerian transmitter which shares 252kHz has just come back up after an extended period off the air causing a not inconsiderable distraction during the hours of darkness - especially noticeable now that the format is speech only. In southern England, you can null either station out by judicious positioning of your portable radio or loop antenna.

Meanwhile, it looks like long wave radio from the Isle of Man is - finally - to be a reality. Agreement has been reached, at least in principle, for building an offshore transmission facility in Ramsey Bay, about 8km off the coast. The platform will support the transmitter and antenna, with offices, on-air and production facilities based in Ramsey.

Interestingly, the unconventional Crossed-Field Antenna is still proposed for the 279kHz installation. As this design is unproved, as yet, for high power, long wave transmissions, this could be a technical stumbling block for the enterprise. UK performance tests of the CFA have been delayed by everything from Foot and Mouth Disease to the September 11th attacks and the entire design

concept is the subject of much debate within the industry.

Founder and chief executive, Paul Rusling, views the CFA as a positive boon and cites several reasons for its use. Paul E-mailed me, "The antenna's smaller profile makes it easier to assemble and erect on a platform at sea and, once installed, it will be reliable and robust against the elements.

Secondly, the CFA displays a wider bandwidth compared to a traditional resonant mast, meaning that the treble frequencies are broadcast unhindered, ensuring greater fidelity. Thirdly, the CFA radiates most of the energy as ground wave, and rather less as sky wave, thereby reducing the effects of unwanted sky wave interference and increasing the station's useable night time range within the target area. Finally, use of the CFA means a reduction of interference to other electronic equipment in the immediate vicinity - a function of the CFA creating a much reduced induction field within the so-called near field".

Paul continues, "Of course, by being over the sea, the efficiency of the antenna will be much improved and the signal will get out far better than if we had been on land. Ramsey Bay is sheltered by the Bahama sandbank and, in the 1960s, the Radio Caroline North ship anchored there, achieving remarkable coverage into the British Isles. The Isle of Man is in fact at the geographic centre of these Islands and so an ideal location for our service". Launch is now expected to be "sometime in 2003".

Big Plans

And there's more. Norway's Northern Star Broadcasting have big plans for a 2003 launch of Cruisint' 216. Their pan-(northern) European programmes are to be music-led in English and will include international news and weather together with blocks of Christian programming. Funding will be through advertising.

Even with 1.2MW, the station will still encounter interference from the other European occupier of 216kHz, Radio Monte Carlo, broadcasting from Roumoules. The station is asking for help from experienced short wave listeners and if you think you can be of assistance, then check out their website at www.northernstar.no

Finally, on the long wave front, it looks as though the Dutch-based Delta 171 project has failed. A condition of the licence was that transmissions should start by January 1st. There was talk of buying a vessel from which to broadcast, on a temporary basis, until the offshore platform could be built, but this never came to fruition.

Four Year Deal

Merlin Communications, recently bought by Vosper Thornycroft by the way, has struck a four year deal with Belgium's Radio Vlaanderen. Under the deal, Merlin will transmit seven hours of short wave programming daily (11 hours on Sundays) utilising short wave transmission facilities in the UK and South Africa providing coverage into target areas within Western Europe and Central Africa. Merlin receives programme material into their London Control Room via the *HotBird 5* satellite at 13°E, and then distributes via satellite to two of its UK sites, as well as its partner site in Meyerton, South Africa.



High Power

Since January 1st, China Radio International has been broadcasting to Europe via a high-power medium wave transmitter in Luxembourg. The transmitter, on 1440kHz (of Fab! 208 fame), carries German programming from RTL at other times. CRI in English goes out each night at 2100-2200UTC.

What else happened? Well, Macedonia has commissioned an upgrade to their 810kHz facility by installing a 1.2MW transmitter at Ovce Pole. This should cover most of Europe during the hours of darkness.

In Holland, the controversial question of redistribution by auction of broadcasting frequencies has been postponed. Current licences will be extended (again) and remain valid until September next year.

The BBC launched its first digital-only radio station on February 2nd with the start-up of Five Live Sports Extra. Available only to those with Sky Digital or DAB radios, the station will not broadcast full-time, and will provide extra coverage of football, rugby, cricket, tennis and Formula One. Next in line is pop and rock station, 6 Music, slated for a March 11th, digital-only launch - www.bbc.co.uk/6music has more.

In Austria, the media authority, KommAustria, has granted the first private nationwide TV broadcasting licence to cable channel ATV, ending state-owned ORF's monopoly over terrestrial broadcasting. Regional and city-wide licences are to be offered next.

I'd have liked to be able to tell you about the DAB listeners, up in arms because the bit rate of BBC channels has been reduced to accommodate more stations; about SW Radio Africa, beaming in anti-government programming from London-based studios into Zimbabwe ahead of the elections; about huge budget cuts at Radio Norway and the silencing of Radio Yugoslavia as they haven't paid their electricity bill. But I'm afraid there isn't time!

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OUR PRICE **£139.00** P&P £10

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

SONY SW-100E



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

OUR PRICE **£149.95** P&P £10

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

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Over 40 channels of crystal-clear, fade-free programming direct from satellite to your portable digital radio. Includes antenna! Original RRP £249.00.

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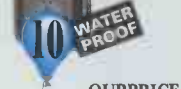
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NEW GPS MAP 76



New GPS with built-in map database, new improved built-in antenna, 8 meg of spare memory on board (data lead supplied). Auto track log/waterproof and will not sink in water. Accepts mapsource CD data.



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

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GPS12		£135.00
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Etrx "CAMO"	new model	£129.95
Etrex	Special offer	£135.00
Emap	Special offer	£229.00

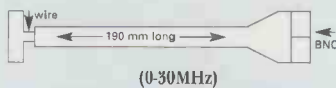
items of interest

MICRO MAG ANTENNA MM-1

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

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OUR PRICE **£21.95** P&P £1.50

DB-22

Superb SMA antenna at under 3 1/2" long. (Less than 90mm). This antenna is ideal for use at airshows or undercover surveillance work. (Performance on this antenna is traded off against it's very small size).

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A unique ready to go antenna system that works from 0-30MHz. The antenna is centre fed with coax (supplied) and incorporates six tuned coils for optimum reception. The system also incorporates an anti-interference balun and comes ready assembled for immediate use. At only 15.5mtrs (51ft) long it will certainly fit most gardens. (Mounts horizontally down garden). Includes 20m coax lead and PL-259plugs.

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Starter kit includes charger & 4 x AA cells.

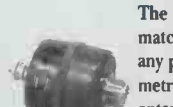
£14.99 + £3.00 P&P.

Please note that only the special cells can be recharged with this charger.

Extra cells available @ 8 x AA pack £10.99 £1 P&P. 4 x AA pack £5.99 £1 P&P. 4 x AAA £6.25 £1 P&P.

Rechargeable Alkaline. No memory effects. 1.5V cells. 3 x capacity of nicads.

MLB (R.F. SYSTEMS)

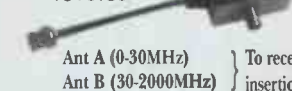


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Can be used in reverse



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

Allows two antennas to be connected to one receiver without interaction.

£54.95
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Can be used in reverse

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

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SP-1 TWO WAY COMBINER (PROFESSIONAL)



Can be used in reverse

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

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SSP: £899.00

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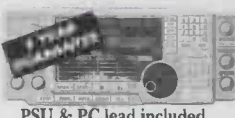
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Next generation wideband receiver. 0.1-2GHz. (All mode)

2 YR G'EE

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sw receivers

2 YR G'EE

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

★★★★ VRTH gave it 4 star rating.

Optional DSP unit
£85.00

OUR PRICE **£575.00**

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★ Selectable tuning steps (down to 100Hz)

★ 240 or 12V ★ Digital S-meter ★ Attenuator ★ Key pad entry ★ 160 memories ★ Noise blanker. Was £299.00.

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★ Fully digital world receiver
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ONLY

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Optional case £14.99£7.50

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60MHz-2.6GHz alphanumeric LCD + light + vibration alarm. Will detect different types of digital modulations such as: TDMA, GSM, APCO25, Tetra, plus more. 1000 memories plus reaction tune facility. Compact size.

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The exciting world of communications listening, from Longwave to Microwave, comes to your home or station with Yaesu's new VR-5000 Communications Receiver.

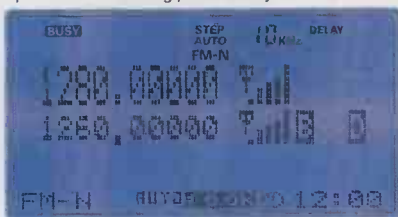
Professional features, professional ergonomics, and professional DSP-based selectivity* are yours to enjoy today-and only from Yaesu! *Optional DSP-1 Unit required

ULTRA-CONVENIENT AUTO-MODE, AUTO-STEP, HIGH-PERFORMANCE RECEIVER!

Despite its incredibly compact size, the VR-5000 provides coverage from 100 kHz to 2599.99998 MHz on all popular operating modes: LSB, USB, CW, AM-Narrow, AM, Wide AM, FM-Narrow, and Wide FM. Making operation simple and efficient is the "Auto" mode, whereby the tuning steps and operating mode are automatically programmed according to the frequency you have selected. You won't miss those quick, important transmissions with the VR-5000!

■Dual Receive

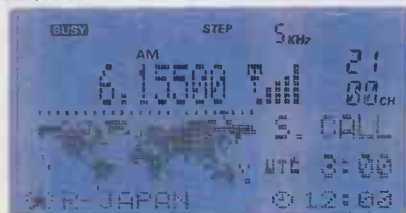
When monitoring on the "main" displayed frequency, you can simultaneously listen to a second station operating within 20 MHz of the main frequency in the AM and FM-Narrow modes. This can be especially helpful while monitoring public safety communications.



■Preset Shortwave Broadcast Station Memory Bank

Featuring a handy world map showing the station's location, the special Shortwave Broadcast Station Memory Bank includes several different frequencies from a number of popular shortwave stations, including Voice of America, BBC, Radio Japan, Voice of Russia,

etc. The operating frequencies may be changed by the owner, to keep up with changing station schedules!

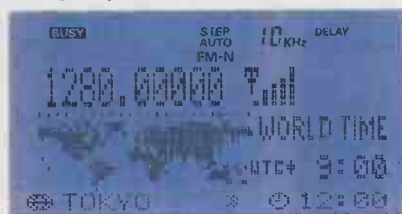


WORLD CLOCK WITH UTC/LOCAL SETTINGS AND PROGRAMMABLE TIMER

The World Clock will show you local time anywhere in the world, and you can label the cities in each time zone according to your individual requirements.

■Program Timer

Don't miss important broadcasts while you're busy monitoring other frequencies! With the Program Timer feature, the VR-5000 will automatically switch to a designated frequency at a programmed time, ensuring that you don't miss an important broadcast.



■Alarm Timer

The VR-5000 also includes a handy Alarm Clock feature, which will wake you up via a broadcast (Radio Alarm) or a beeping tone (Beep Alarm).

■Sleep Timer

Go to sleep listening to your favorite program! The VR-5000 can be set to shut off after 30/60/90/120 minutes. It's a great way to begin a great night's sleep!

OUR PRICE **£575.00** £10.00 del
Optional DSP£79.99

REAL-TIME SPECTRUM SCOPE FOR VISUAL ACTIVITY VIEWING

To aid in finding band activity, the VR-5000's Real-Time Band Scope, used while operating in the "VFO" mode, will sweep the band in search of activity, displaying the received signals graphically according to frequency and signal strength. The sweep width can be set to 1/2/2.5/5 or 10 MHz. The sweep rate can be set to 100/200/250/300 or 500 kHz, and you can adjust the channel steps for best resolution of the frequency range in use.



YAESU VR-5000

Frequency range:

0.1-2.6GHz

all mode



Actual Size

■ **ANDY CADIER, 28 ROMNEY AVENUE, FOLKESTONE, KENT CT20 3QJ**

■ **E-MAIL:** off.the.record@pwpublishing.ltd.uk

Off The Record

A travel media group represented by Nik Fox are looking into the possibility of reviving Channel Travel Radio - a small f.m. station that broadcast to Channel Tunnel and Dover Harbour passengers bound for France. The original CTR had been run by the tunnel operator Eurotunnel and had been partially financed from the sales of duty-free cigarettes and alcohol. Legislation led to the discontinuation of tax-free sales on the short crossings to mainland Europe and subsequently to the closure of CTR at midnight on 27 November 2000.

The new operators would hope to run an independent commercial service to benefit both tunnel and ferry travellers alike. The previous radio station was owned by one of about three competing cross channel operators who were in direct competition with each other. The ferry operators were understandably not exactly keen to contribute and have their operational problems broadcast on Eurotunnels radio station.

The old CTR frequency of 107.6MHz has now been set aside by the Radio Authority for a forthcoming commercial station at Ashford in Kent about 20km away. However, an initial approach to the Radio Authority resulted in a letter from David Vick, their head of development, saying that now there were no f.m. frequencies for this kind of radio travel service in East Kent. The only other option would be to use medium wave.



to carry the peace message, probably due to the high levels of investment and risk that offshore radio presents.

A new gay radio station has been launched on the new digital multiplex in London. Digital Purple Radio was turned on by former Culture Club personality Boy George, who opened their DAB broadcasting service at midnight on 25th January. Previously Purple Radio had been available on the Internet only. Purple Radio have been selling DAB radios at a heavily discounted price of £239.00 via their website, the snag is the sets they are offering only cover Band 3 DAB.

The British (and much of Europe's) allocation also includes part of the L-Band, which will be used by UK stations from 2007. So your newly acquired DAB radio could be virtually obsolete in just five years and totally useless if used abroad as France for instance only uses L Band frequencies. The warning is to look at the specifications before you buy.

An offshore pirates reunion is being planned for this summer, originally it had been intended as a Radio London event, but as this is the 35th anniversary of the Marine Offences Act, the governments legislation against offshore stations, all ex-offshore personnel are invited. The provisional date for the event is 10th August, but the venue is not yet decided upon, it could be in either London or Harwich. More information should soon be on the Radio London website www.radiolondon.co.uk as we get nearer the date.

Stations Old And New

The German pirate station Radio Mono was raided by police and PTT officials on Saturday 26th January, the station had been operating on 6.295 and 9.380MHz. Radio Caroline boss Peter Moore says he will no longer be monitoring the Radio Caroline list server. This follows the receipt of critical messages from supporters making unrealistic suggestions on the way forward for his station.

Laser Radio has announced plans for a regular broadcast via a 100kW short wave transmitter at Julich in Germany and hopes to launch this service very soon. You can check out their website <http://www.laserradio.net> for further information. The station is also seeking presenters who can pre-record one hour shows and send them to the station for future broadcast. The mailing address is: **Laser Radio, BCM Aquarius, London WC1N 3XX.** The station's format will be music from the 70s to the 90s.

For those interested in the old offshore pirates, there is a new and developing web site at www.marine-broadcasters.com - this contains some excellent photographs of the Radio Caroline North Ship, MV *Caroline*, including some rather sad pictures taken in the breakers yard. Soon this site will give more technical details of the vessels and their broadcasting equipment.

RSL Versus Pirates

The short term Restricted Service Licences, that allow temporary broadcasts to be made to local areas using low powered 25W f.m. or 1W a.m. transmitters for periods up to 28 days, are becoming increasingly expensive. Many organisations used to use these licences to help raise money for charities and other good causes. However, as costs have increased, many broadcasters have been forced out of the market.

At present, most of these short term stations are being run by organisations that have other funding and are not reliant on the station covering its costs, let alone making a profit. With many RSL stations needing to earn over £200 a day just to cover their licensing and copyright/phonographic performance fees, it is no wonder some find these licences an unattractive proposition.

The problem is many RSL groups own their own equipment and if they are unable to continue they disband and sell their transmitter to anyone they can find with the cash. The new owner is then faced with the decision of spending RSL fees of about £5,000 a month with the authorities, which is more than some long term stations pay, or paying nothing and become a pirate. The penalties for an illegal radio operation seldom come to anything near £5,000, so you could argue that the exorbitant RSL fees are encouraging radio piracy, which I am sure was the opposite to the original intention.

Readers Pirate Logs

Here are just some samples received from **Stephen Kelly** who read about the s.w. pirates in *SWM* and thought he would give it a try.

Skyline Radio	3.906
Driland	3.927
Livewire	3.906
Borderhunter	3.905
Laser	3.970
Dr Tim	3.920
Nova	6.210
Britain	6.235
Casanova	6.260
UK Radio	6.266
FRS Holland	7.450
WMR	7.527

Stephen also received Oscar the engineer on 1116kHz m.w., this was probably Radio Argos as they have an engineer of that name and also Radio Barones from Holland on 1646kHz.

The National Anthem

A cross party of British MPs are pressing to have the national anthem played more frequently by radio and TV broadcasters. With the advent of 24 hour programming, stations no longer actually close down, BBC Radio 4 is the only station that plays God Save The Queen on a daily basis. The MPs are suggesting this is extended to include BBC 1 television. The BBC at present also play the anthem on the Queens birthday, both real and official and that of the Queen Mother, Duke of Edinburgh and the Prince of Wales.

International Radio

Kol Israel is reported to be discussing the curtailment of all foreign s.w. broadcasts other than those in Hebrew and Arabic. Radio Norway International will probably have stopped completely by the time you read this and there is talk of Iceland ceasing s.w. broadcasting too. Radio Canada International are involved in another round of cutbacks to be imposed on top of those imposed last year.

Stations In The News

I have been advised that the London based pirate station Swinging Radio England recently suffered a double bust by communications officers and lost both their m.w. and s.w. transmitters during different raids. They had previously been widely heard on 819kHz and 6.276MHz. Irish communications officials have started taking action against unlicensed f.m. stations, particularly in the Dublin area where local dance station Energy FM announced their closure during February.

Radio Nova have been conducting tests in the 31m band and are seeking reception reports sent to the mailing address at Rueil in France. In Israel, a feasibility study by the Harry De Winter Group into the possibility of opening of a new offshore Peace Station has taken place. It has now been decided to use other mediums

A few years ago I was resident in Canada and I owned a Sport Utility Vehicle called a GMC Jimmy SLT. This truck had everything, electric seats, cruise control, air conditioning and a leather interior that would have decimated around three herds of prime beef. It was made for driving on the wide empty highways of North America and was equally at home on the rough logging roads and dirt trails, where I spent much time. When I first took a peek at the box for Uniden's new Bearcat scanner and spotted the words UBC280XLT Sportcat, I thought that the receiver would also be a rugged unit with some seriously luxurious features as well.

The box is an impressive

package. The full name of the unit is emblazoned on the front and there are colourful photographs depicting all the events you can reasonably expect to monitor in the USA without being arrested. The unit itself is around sixty five millimetres, by one sixty by fourty. It is fitted with a one hundred and fifty millimetre rubber coated helical antenna with a BNC plug at the end. A screw-on belt clip is supplied, as is a small earphone.

The radio is a reasonable size to hold and feels sturdy, although the case is of moulded plastic. The display is at the top of the front panel and is bounded by a blue plastic frame reminiscent of some makes of PMR-446 radio. The front panel is certainly a well styled item with good sized translucent looking

any of the buttons on the front panel.

At this point, I referred to the instruction book. The manual is a clear document that guides the user through the radio's features efficiently. It does not, however, give you any details as to how long the supplied plug top charger should be putting power into the nickel cadmium battery. I reckon a charge from totally flat should take around twelve hours.

Like I said, entering frequencies is a simple process



Uniden Bearcat UBC280XLT

Scanning Scene's
Dave Roberts
takes a look at a
new offering
from Uniden,
that's ideal for
beginners who
might be
intimidated
by more
complicated sets.

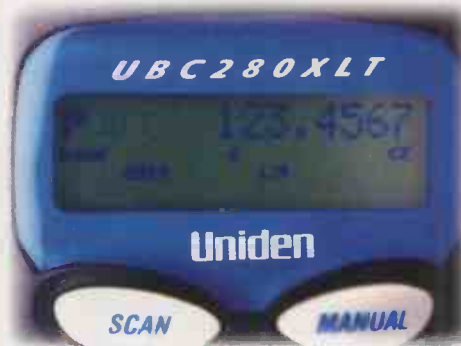
buttons to control the search and storage of frequencies in the 200 channel memory.

The controls are well thought out, are clearly labelled and are large enough to be operated with gloves on, or by someone with fingers the size of bunches of ripe bananas. The case, despite it's efficient, rugged look, is not claimed to be waterproof. It is, however, a tough job that would withstand a fair bit of abuse.

Switch On

On switching the rotary on/volume control the display comes alive and quite honestly, entering frequencies into memory was an extremely simple process. The difficulty is that the display characters are rather on the thin side with minimal contrast and I found it a tad awkward to see the figures in the window. Turning on the lamp function made only a slight difference and I was surprised to find that the lamp switch did not backlight

that is established swiftly and the first entry that I made could well be one that many scanner users implement. I programmed 156.000 - the Coastguard's



Channel 0. This is the frequency that they use for their own communications purposes. There it was, bang on that frequency...a birdie, sproggie, internal oscillation, call it what you will. It was there. The sound of a blank carrier right on a frequency used for vital communications. This made the channel totally unusable. Worse to come, I'm afraid.

A look at the well compiled instruction manual confirmed that between 25 and 88MHz the radio receives only f.m. in 5kHz steps. This changes to a.m. and

12.5kHz steps in the civil air band. Reverting again to 5kHz and f.m. between 137 and 174MHz. The remainder of the Sportcat's coverage is between 406 and 512 and 806 and 956MHz and is 12.5kHz stepped and, again, f.m. only. The set does not appear to have the US cellphone channels blocked as do other radios intended for that market. This means that in effect, the radio is of

minimal use for receiving some commercial and official users in the UK.

When the snow comes, will you want to hear the council highways department on low band v.h.f.? If you do, then this radio may pick up the channels that work out at 25kHz spaces, but the chances are that you'll miss most of their communications. Do you want to

hear amateur band transmissions on v.h.f.? Well you may be OK there, but many amateurs now use 12.5kHz spacing on these frequencies and one first rate amateur repeater certainly does. No folks...you won't be hearing some of the action on two metres.

Moving On Up

Moving on up, should you feel the need to listen to the police (illegal, but I have heard that some folks do it), well forget v.h.f. with this set. Remember at



the 146 to 154 range it's f.m. only (some forces run on a.m.) and 5kHz spacing. Most v.h.f. police comms will not be audible, though that does still leave u.h.f. within the Sportcat's grasp.

It's true that whatever the set does hear, it hears very well. Starting with the low v.h.f. end, hook this set up to a half decent antenna and when the propagation is there, the American medics, police and fire services romp in, as does other traffic on low v.h.f. Wind the Sportcat up to civil airband and it really works fine. There is no 8.33kHz channel option, which is no surprise considering that it won't go to twelve and half at v.h.f. Good sensitivity makes the unit a useful tool at civil airband frequencies, although personally

I find the audio a bit 'thin' or 'toppy'.

At the 2m band, reception is very good on those channels that the radio will actually receive and I was hearing a repeater 70km away on the supplied 'rubber duck' antenna.

For the u.h.f. side of things, reception was very good indeed and the fixed twelve and a half channel step and f.m. only restriction was no great inconvenience, but then it would be if you needed to monitor some 'official' communications at u.h.f. which actually have 5kHz spacings. The radio is claimed to scan and search at 100 channels per second, which is a respectable rate. Searches can be carried out at that speed or at a 'turbo' speed of 300 channels if the channel spacing is 5kHz.

The radio has alpha numeric labelling capabilities together with the usual priority channel options and a useful 'alert' facility, which means that you can set the radio to beep when a selected channel (or channels) comes alive. There are delay and lock out options and an attenuator function all of which are standard on scanners these days.

The Sportcat also has CTCSS and CDCSS fitted and a useful search option for these modes. For users in the USA and Canada, the Sportcat has ten dedicated, pre-programmed channels in the 161 to 163MHz range for reception of weather warning broadcasts. These channels cannot be reprogrammed and are of no use to us here.

Control Software

Established users of Bearcat receivers will notice that the control software for this unit is pretty much the same as for other Bearcat receivers for that matter the fixed mode by band plan operation should be pretty familiar too - doesn't seem to stop them being high up in the 'top ten' most popular scanners though. Notification of duplicate channel entry and deletion follow the same path as other scanners in the UBC range. Sportcat owners (or reviewers) will also have some fun attempting to find undocumented functions of the receiver.

As an example, the handbook for this radio states that to unlock a

previously locked out channel, the channel should be selected and the L/O button pressed to return the channel to the active list. This implies that should you wish to unlock more than one channel in the same bank each should be selected and unlocked individually. This is not the case.

To unlock all previously deselected channels in any one bank, firstly select any locked out channel. Press and hold the L/O button. The channel you are viewing will unlock, but with the control still depressed, a double beep will be heard and you'll find that all locked channels in that bank are now back on line.

There are other functions and control tricks that can be performed with just button pushes, including one to write all the memories with American two metre amateur allocations. This could be handy if you have frequencies in the banks that you'd prefer were not discovered by other folks. The difficulty is that you have to hold so many buttons while turning the radio on that your left hand may be permanently deformed as a result.

My Conclusion

There's no doubt that this receiver functions well within its design limits. The difficulty for purchasers in the UK and Europe is that the specification is definitely that for the North American market. The '280 would, however, suit someone who needed to monitor civil airband and marine frequencies



and is the sort of set that could be safely left to bash around on the dash of a vehicle without suffering unduly.

Although the set is not ideal for the UK, I have no doubt that it will find devotees here. These days there are many receivers of this type competing for our custom and it's a healthy market that offers us the choice of all that is available.

But like my Jimmy truck, the UBC280XLT Sportcat is really at home on the other side of the Atlantic.

Thanks go to Nevada who kindly supplied the review radio. The UBC280XLT costs £179.95 including 240V mains adapter. For more information contact: **Nevada, Unit 1, Fitzherbert Spur, Farlington, Portsmouth PO6 1TT.** Tel: 023-9231 3090 or visit www.nevada.co.uk

Specifications:

Architecture:	Triple conversion superhet.
Channels:	200
Banks:	10 - 20 channels each
Search Bands:	10 (pre-programmed) 25-88MHz, f.m., 5kHz step 108-136.9875MHz, a.m., 12.5kHz step 137-143.9950MHz, f.m., 5kHz step 144-147.9950MHz, f.m., 5kHz step 148-174MHz, f.m., 5kHz step 406-419.9875MHz, f.m., 12.5kHz step 420-449.9875MHz, f.m., 12.5kHz step 450-469.9875MHz, f.m., 12.5kHz step 470-512MHz, f.m., 12.5kHz step 806 956MHz, f.m., 12.5kHz step
Scan Rate:	100 ch. per second
Search Rate:	100 steps per second - normal (300 - Turbo)
Scan Delay:	2s
Audio Output:	180mW (8Ω) - internal speaker, 38mW (32Ω), 9mW (64Ω) - supplied earpiece
Weight:	320g
Antenna:	50Ω BNC socket, rubber helical supplied
Power:	4.8V d.c. internal NiCad rechargeable battery or 240V a.c. adapter/charger.

Win a Sportcat!

worth £179.95



So you've read Dave's review, and your appetite is whetted - now here's a chance win a UBC280XLT of your own.

Nevada have provided a brand new Sportcat for a lucky *SWM* reader to win. To win this rugged hand-held scanner all you need to do is answer the questions below and post the entry coupon to the address on the entry form. All correct answers will be entered in the prize draw.

Here's an ideal opportunity to either add to your scanner collection or take that first step into the world of scanning for free!

The UBC280XLT comes from a long line of popular scanners, produced by one of the most prolific and oldest manufactures of scanning radios in the world. Featuring 200 channels, organised in 20 banks, which can be scanned at the rate of 100 memories per second, the Sportcat is an invaluable addition to the radio monitors mobile arsenal. Keep up with the mobile action. Complete and ready to go, the pleasant audio of Sportcat can be discretely monitored with the supplied earpiece. The internal 800mAh NiCad battery makes for cost effective running.

This remarkably sensitive set is a joy to use, with the supplied rubber helical producing exceptional reception.

The closing date for this competition is 23 May 2002. The draw will take place on 5 June 2002, the results will be published in the July 2002 issue of *Short Wave Magazine*.



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 three questions and post your entry to: **SWM Sportcat Draw, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.**

Name

Address

Tel:

E-mail:

Do you receive *SWM* every month?: Where do you buy *SWM*?

Q1: What modes can the UBC280XLT receive?
.....

Q2: Who makes the Sportcat?
.....

Q3: Where can you buy a Sportcat?
.....



**Sportcat Comp
April 2002**

10 days money back guarantee

MAIN STORE:

- 22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS
- TEL: 01702 206835/204965
- FAX: 01702 205843
- ORDER LINE: 08000 73 73 88
- E-MAIL: sales@wspc.com
- WEB: www.wspc.com.
- HOURS: MON - SAT 9am - 5.30pm

MIDLANDS STORE:

- BENTLEY BRIDGE, CHESTERFIELD RD, MATLOCK, DERBYSHIRE, DE43 5LE.
- TEL: 01629 582380
- FAX: 01629 580020
- E-MAIL: info@lowe.co.uk
- WEB: www.lowe.co.uk
- HOURS: MON - FRI 9am - 5.00pm
SAT - 10am - 4.00pm

SCOTTISH STORE:

- 20 WOODSIDE WAY, GLENROTHES, FIFE, KY7 5DF.
- TEL: 01592 756962
- FAX: 01592 610451
- E-MAIL: jayceecom@aol.com
- WEB: www.jayceecom.com
- HOURS: TUE - FRI 9am - 5.00pm
SAT - 9am - 4.00pm

REPLACE YOUR FACTORY-SUPPLIED ANTENNA AND HEAR THE DIFFERENCE!

WATSON



• **W801 MkII 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

• **W881 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

RIGblaster NOMIC

Lets you receive:

- CW,
- RTTY,
- PSK31,
- PACKET,
- AMTOR,
- Dvkeyer
- MS-wsjt,
- Repeater Mode.



£62.95
Plus £6.00 Carr.

Direct from the USA, the perfect interface between receiver and PC sound card. There's nothing else quite like it! All leads and software provided. No external power required. Operates under all PC Windows versions.

Uniden-Bearcat UBC-220XLT



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

£119
Plus £6.00 Carr.

STEEPTETONE 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 • Facle Protection Bars • Powered by Mains or Batteries (Not supplied)

VR-120 RECEIVER



- 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: 8NC • Supply 9.0-13.8V DC • 2 x AA cells • Battery voltage: 2.2-3.5V DC (nominal 3V)

£159
Plus £6.00 Carr.

YUPITERU MVT-7100EX 100kHz - 1.65GHz



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

- 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 48 x 38mm
- Weight: 36g



£169
Plus £9.00 Carr.

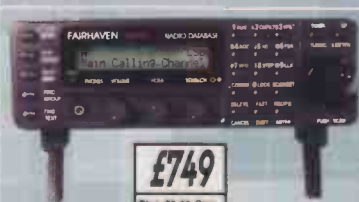
AOR AR-8600



- AOR's exciting new scanner.
- 500kHz - 2040MHz
 - 1000 Memories
 - 37ch sec scan
 - RS232 PC interface fitted
 - 10.7MHz IF for SQU5500
 - Accepts up to 5 slot-in cards
 - Detachable MW bar aerial
 - FM AM SSB CW
 - 2000 pass frequencies
 - 8.33kHz airband steps

£649
Plus £9.00 Carr.

Fairhaven RD500VX Radio Database Receiver



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

£749
Plus £6.00 Carr.

Yupiteru MVT-7300



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

£259
Plus £6.00 Carr.

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+ 6879 C

YAESU VR-5000



£699
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.

WDP-30 SHORT WAVE DIPOLE

NEW

8.5m long!



Coax Feeder included **£49.95**
Plus £6.00 Carr.

- True Dipole Performance
- Receive Only
- 1MHz - 30MHz
- 10m Long approx.

- Low noise design.
- Matching Module
- 50 Ohm Input
- SO-239 socket
- 10m Coax

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

STREET PILOT III

NEW FROM GARMIN
IT TALKS TO YOU

"TURN LEFT
IN 1 MILES"



£945.95
Plus £9.00 Carr.

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

GARMIN GPS-V

WITH WAAS
for even greater accuracy

£499.95
Plus £6.00 Carr.



The GPS V is one versatile navigator that delivers automatic routing, detailed mapping and WAAS capability - all in a compact handheld GPS. It comes with the

MapSource City Select CD, which gives you access to detailed street-level maps with locations of restaurants, hotels and other services. Use the GPS V to look up a location and it will automatically calculate a route and guide you to your destination with turn-by-turn directions and audible beeps that alert you to upcoming turns.

IC-R75 RECEIVER 30kHz - 60MHz



£599
Plus £9.00 Carr.

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

BAR-888U RADIO CONTROLLED WEATHER CENTRE



£59.95
Plus £6.00 Carr.

Desktop display with radio-locked clock to Rugby atomic standard, inside and outside temperature recorder (with wireless remote sensor), barometer plus 24-hour forecast trend and day/date information.

Order: BAR-888U

GLOBAL AT-2000 ANTENNA TUNER



£89.95
Plus £6.00 Carr.

The classic wire antenna tuner for short wave listening. Covering 1.8 - 30MHz, it includes our exclusive 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"



£1199
Plus £9.00 Carr.

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

The IC-R8500's all mode capability allows reception of a variety of different modes, from the world over: SSB [USB, LSB], CW AM, FM and WFM are included, along with several '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 Blunker
- 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



£279
Plus £6.00 Carr.

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

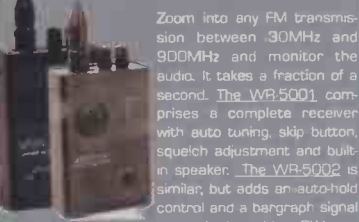


£59.95
Plus £6.00 Carr.

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

SPY CATCHERS

NEARFIELD MONITORS



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

WR-5001 £99.95 WR-5002 £159.95

OPTOELECTRONICS DS-1000 DIGITAL COUNTER



£599
Plus £6.00 Carr.

- 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 500µs RF pulse required
- Reaction times (requires lead)
- Display: 2x16 alphanumeric LCD (with backlight)
- Signal strength displayed in dBm and bargraph
- Built-in RS-232, direct connection to PC
- Supply: Battery (5-6 hours), ext. 9V DC, 150mA

AOR-8200 SERIES 2 500KHZ - 2040MHZ



£379
Plus £6.00 Carr.

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

- USB, LSB, CW, FM, WFM
- Programmable steps
- 1000 memories in 20 banks
- Alphanumeric display
- Built-in AM antenna
- 8.33kHz steps for air band
- Rechargeable ni-cads, AC charger and helical antenna.

PCR-1000 10kHz - 1300MHz COMPUTER CONTROLLED RECEIVER



£299
Plus £6.00 Carr.

Connect this up to your PC and enjoy high quality reception with an amazing station data base and memory log. Can be used remotely from PC. Requires included!

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

ICOM IC-R2 500kHz - 1309MHz

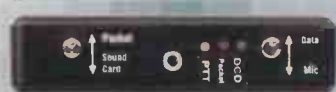


£139
Plus £6.00 Carr.

This palm size handy offers great performance. Offers

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

WATSON WMM-3 MkII



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

New layout - for easier hook-up to computer and rig New modern 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.



Phone
Plus £9.00 Carr.

R-861 PORTABLE SW WITH RDS



£199.95
Plus £6.00 Carr.

- 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

MFJ-461 MORSE CODE READER



£84.95
Plus £9.00 Carr.

The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays CVW 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.

SANYO WS-1000 WORLD SPACE DIGITAL RECEIVER



£149
Plus £6.00 Carr.

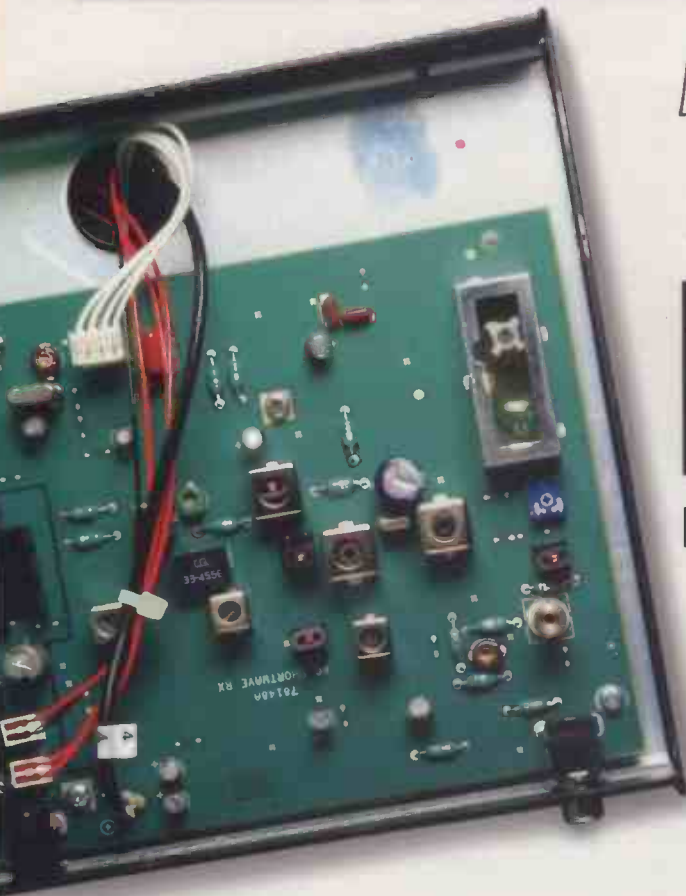
Comes complete with detachable mini flip-up dish and with 5m of cable. Receives digital broadcasts from the WorldSpace Satellite. Runs from supplied AC mains adaptor or optional batteries Audio output via internal mono speaker, external optional stereo headphones or stereo line out via phono connectors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

HITACHI KH-WS1 WORLD SPACE DIGITAL RECEIVER



£149
Plus £6.00 Carr.

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.



Ten Tec's RX320

Mighty Mouse from Tennessee

Something a little different this month from John Wilson, the diminutive but spectacular computer controlled h.f. receiver from Dolly Parton Parkway.

I've had a succession of Rascal receivers over the past few months, so it was almost with relief that I received a shoe-box sized package containing my next review rig. Having already cast my ruler over the Ten Tec RX340, I had been looking forward to taking a look at their mighty midget, the RX320. The number may be similar, but the concept is quite different. This is a receiver without a front panel, and some of you will have already guessed that the Ten Tec RX320 is controlled by an external computer. Actually, some of you will know that the RX320 has been around for a couple of years, but has not made an appearance in Europe despite having earned itself a good reputation from users in the United States, the reason being connected with European legislation, but we won't go into that here except to say that I'm trying to do something about it in conjunction with Ten Tec. Some may also remember my acid comments about the wisdom of allying h.f. receivers with computers, but that related to a receiver on a PC card which was installed within the PC itself and

consequently suffered from enormous interference problems as well as not being a very good receiver to start with. Icom showed the right way to go with the PCR1000, but Ten Tec have, in the RX320, applied all their skills to producing a real h.f. receiver which will satisfy the needs of a wide range of listeners.

Deceptively Simple

Compared to the recent run of receivers you have seen in these pages, the RX-320 is deceptively simple in appearance. The front panel carries nothing except a Ten Tec badge whilst the rear panel has an antenna connector (phono socket - ugh), a d.c. power input socket, a 3.5mm loudspeaker socket, a 'line' output socket, an on/off switch and the all-important 9-pin RS-232 connector. That's it, so in many ways I have travelled a short distance from the rear panel complexities of the RA1772 to the ultimate in simplicity, but don't be deceived by this simplicity; the RX320 proved to be a very capable receiver in use.

The handbook specification tells us that the RX320 covers 100kHz to 30MHz and offers a.m., u.s.b., l.s.b. and c.w. modes. The quoted sensitivity is 0.3µV for 10dB S/N ratio in s.s.b./c.w. mode in a 2.5kHz bandwidth, and 0.64µV for 12dB S/N ratio in a.m. with a 6kHz bandwidth. Assuming that the figures are quoted as p.d. rather than e.m.f., this

equates to -117dBm in s.s.b. and -111dBm in a.m. The a.m. sensitivity by the way, is measured using 80% modulation depth, so that's one more test modulation depth to add to the long list already compiled from Rascal and others. Third order intercept point is quoted as +10dBm in a 2.4kHz bandwidth and a signal spacing of 50kHz, with a dynamic range of 90dB. Overall, these are not bad for such an apparently simple receiver, but missing from the list is the second order intercept point and any mention of phase noise performance. Selectivity is quoted as "Selectable 6, 2.5, 1.8kHz and 500Hz, all 1.5:1 shape factor or better" but this is far from the whole story as you will discover as you read on.

The handbook is obviously aimed at the beginner in short wave listening and is extremely simple, to the extent of omitting any technical detail about the receiver itself. Knowing that most of the readership like to know a little of the circuit architecture of any receiver, I contacted Ten Tec and found them very helpful. They sent me a concise description of the RX320 which is obviously written with more authority than I could command, and I give it here exactly as it was sent to me, with grateful acknowledgement to the author in Tennessee.

"The RX320 is a superheterodyne receiver designed to receive

frequencies from 100kHz to 30MHz in c.w., s.s.b. and a.m. If the external telescoping whip antenna is used, signals pass through an active antenna circuit. Should an external antenna be used, the active antenna is switched out of circuit. The first section of the RX320 filters r.f. from the antenna. The filter is made of two sections. The first is an a.m. broadcast 'trap' that provides about 10dB of attenuation on the a.m. broadcast band to help prevent strong stations from overloading the receiver. The next section is a 30MHz low pass filter to provide all of the front-end selectivity. From the filter, r.f. is passed on to the first mixer. The first mixer uses this input along with the first l.o. to create a first i.f. of 45MHz. The first l.o. tunes from 45 to 75MHz in 2.5kHz steps and is generated by a Motorola MC145170 PLL synthesiser i.c. The 45MHz i.f. passes through a monolithic crystal filter (roofing filter) that provides a selectivity of 15kHz. From there the signal goes through a stage of i.f.



that is tripled and amplified. The signal leaving the second mixer is actually 457.5kHz (not 455kHz). The 2.5kHz offset is corrected in the d.s.p. This second i.f. is passed through a ceramic filter with a selectivity of 15kHz. After another stage

create an i.f. of 12kHz. This is all the hardware used to prepare the signal for d.s.p. processing. Once in d.s.p. the fine tuning is resolved, the 2.5kHz offset is corrected, all demodulation is performed, and the 34 d.s.p. filters are

of "34 d.s.p. filters" which raises questions about the four bandwidths quoted in the RX320 specification in the manual. All will be revealed shortly. First of all, what happens when you get the carton delivered to your door and open it up?



The back panel is the business end of the RX320.

gain before it is passed on to the second mixer. The second mixer uses this 45MHz input and the second l.o. to create a second i.f. of 455kHz. The second l.o. is fixed at 45.5425MHz and is generated by a reference output from the MC145170 of 14.8475MHz

of i.f. gain the second i.f. is mixed with the third l.o. to create the last stage of i.f. before the d.s.p. The third l.o. is generated by a 4.67MHz crystal that is divided by 10 to produce a frequency of 467kHz. This 467kHz is mixed with the 457.5kHz i.f. to

available for further selectivity. An Analog Devices ADSP-2101 is used for the main processor and an AD1847 codec is used for i.f. sampling and a.f. processing."

Well you can't have a more authoritative description than that, but notice the mention

Take Your Pick

Take out the black box measuring a minute 3 x 6.25 x 6.5in (I just love reading American manuals because they use Imperial measurements) and take a moment to wonder how this small box can possibly be a receiver. Connect a d.c. supply of between 13.5 and 15V at around 500mA, connect the RS-232 cable supplied to your PC and load the software provided by Ten Tec. Connect an antenna and fire up the software and away you jolly well go (as an elderly Radio 2 presenter would say). The opening screen looks reassuringly like a receiver front panel and actually behaves like a conventional receiver. The virtual front panel display, **Fig. 1**, shows the various functions which are fairly self evident. Tuning the receiver can be by pointing the mouse cursor at the top or bottom of the tuning knob to increase or decrease frequency; by

Ten Tec's RX320

Mighty Mouse from Tennessee

pointing to the left or right arrows at the right of the analogue tuning scale to step at the rate chosen from the 'step' list, or to the double right and left arrows at the left hand end of the analogue scale, which tunes at ten times the rate chosen from the 'step' list. You may also click on the analogue scale and 'drag' the receiver up or down, or even 'double-click' anywhere on the analogue scale to instantly send the receiver to that frequency. The tuning steps provided are comprehensive, but the list omits a 9kHz step which would be useful for European long and medium wave listening. The tuning action in any mode is smooth and 'glitch' free, and at the 10Hz tuning rate is really imperceptible.

Of course, the obvious way to enter frequency in a system controlled by a keyboard is to use the numeric keys, and this makes the RX320 very simple to tune. You can enter in kHz, for example as 909, ending with a letter 'k' to signify kHz, or enter in MHz, as 8.906 without needing a terminating letter, in which case the receiver will instantly tune to 8.906MHz. If you really feel the urge, you can keep on entering digits down to the least significant (1Hz), although the smallest step available from the list is 10Hz.

Mode selection is obvious from the list shown. Both u.s.b. and l.s.b. are correctly positioned either side of the displayed frequency as virtual carrier, whilst c.w. has the filters offset by 800Hz so as to give an 800Hz tone with the received signal centred in the middle of the passband. The AM/SW button selects a.m. mode, the 'SW' presumably meaning short wave, since this is not a dual-mode button. The i.f. filter passbands are linked to default settings of

the mode selection, coming up as 8kHz for a.m., 2.5kHz for u.s.b./l.s.b., and 1.8kHz for c.w. Once the mode is selected the filter bandwidth can be changed by selection from the 'Selectivity' list, but on changing modes the default setting will always be restored. All the operating settings are shown in a panel to the right of the frequency display, together with local and world time. To the left of the display is a dual pointer analogue signal strength display, the bottom pointer



Plain and simple front panel.

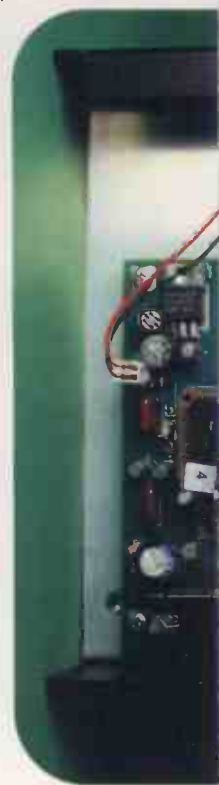
showing current signal strength, with the upper pointer having a peak hold characteristic which retains the peak signal recorded, taking some 30 seconds to fall from full scale to zero. The signal meter has scale markings from zero to 80, and on the sample measured, 80 represented -63dBm (approximately 10dB above S9), with each division being quite close to 10dB per step, although the meter never went back to zero, hovering in the noise at a scale reading of 20. The a.g.c. time constant is the same in all modes at about one second decay, with the signal meter taking a lot longer to decay. Clearly the meter reading and the a.g.c. control are separately derived, which is a useful feature. I did my usual measurements on

the a.g.c. response to a stepped input and found that, just for a change, there was no sign of a 'pop' from the RX320. As you can see from Fig. 2, there is a digital system delay of about 4ms before the a.g.c. comes into action, but no sign of overload apart from the little squiggle at the start of the a.g.c. onset. The lack of drama was evident in all operating modes and the Ten Tec designers have really got it about right in this department.

Software Features

At the bottom left hand corner of the front panel display you will see the section devoted to memory storage and recall, and one of the major advantages of

having a receiver controlled by a PC is that you gain almost unlimited space within the PC for the storage of channel information. The memory access functions are clear: to save a station setting you click on the 'Save Station' button and get a dialogue box into which you can enter frequency, mode, bandwidth, station identifier in text (case sensitive) together with a section for your own notes. The layout of the data entry box can be seen in Fig. 3. Having stored the station, recalling it is simply a click on the 'Recall Station' button which brings up a dialogue box (Fig. 4) which you can organise in station order by station name, in frequency order, or in country order. The 'Auto Tune' facility puts the RX-320 on to the chosen station as you select the station entry, and facilities are also provided for deleting, editing or adding entries. Very comprehensive and really



simple to use, even for geriatric analogue receiver lovers like me.

A further software function is a spectrum sweep display which is called up from the main receiver screen, as shown in Fig. 5. The facility allows you to sweep a band of frequencies either around the centre frequency to which the receiver is tuned, or around any frequency you wish to choose manually (as in the example of Fig. 4). Sweep widths up to 1.5MHz can be used, and the same i.f. filtering available in the receiver is also selectable for the spectrum analyser. When a sweep is completed, the mouse drives a two axis cursor within the display which allows you to measure what frequency is shown and its relative level. Double clicking on the cursor can transfer the displayed frequency to the main receiver. In Fig. 4 I was actually listening to Shanwick on 8.906 u.s.b. whilst checking the strength of the medium wave stations around 909kHz.



Quite fascinating, and very powerful. One final facility from the tool bar is the 'TIME/UTC' button which brings up a list of the world's standard time and frequency

stations from which you can directly tune the receiver. Oh, and I haven't mentioned the volume control, but you can see that for yourself. In addition to audio output for driving a loudspeaker, there is also a fixed line level output for connection to a tape recorder or other audio device such as a data decoder. Wow.

Performance

Ten Tec describe the RX320 as an h.f. receiver, so I carried out my standard range of performance checks on it for your information. It has to be said that my previous experiences with PC controlled receivers did not fill me with much hope, for the first one (WinRadio) was totally, and I mean totally, unusable as an h.f. receiver (review in *Short Wave Magazine* March 1997), whilst the second one (Icom PCR1000) was much better, but was designed as a wide range (to 1300MHz) receiver and not as a high performance h.f. unit.

Ten Tec of course have a long reputation for designing h.f. equipment for the amateur radio market, and listening to the RX320 had already convinced me that it would perform quite well.

Sensitivity: measured in a 2.5kHz bandwidth in s.s.b. mode, the RX320 returned a 12dB SINAD sensitivity of between -117 and -118dBm all the way from 30 to 1.5MHz. Below this frequency the sensitivity drooped slowly until at 150kHz it was down to -53dBm. In a.m. mode with a 5kHz bandwidth, the sensitivity at h.f.

was -109dBm, again drooping below 1.5MHz as in the s.s.b. case. The drop in sensitivity is accounted for by Ten Tec in their receiver overview earlier in this review, but I would like to have seen the gain maintained and

allowed the user to make their own arrangements for external attenuation, but I do realise that this is the view of an enthusiast, whereas the RX320 is perhaps aimed at the user who is not able to understand the finer points of the listening hobby, as distinct

from (I hope) the readership of this magazine. Actually, in the medium wave band it's probably a good idea to have some attenuation in place all the time because of the huge signal levels encountered from broadcast stations. As an aside on the subject of a.m.

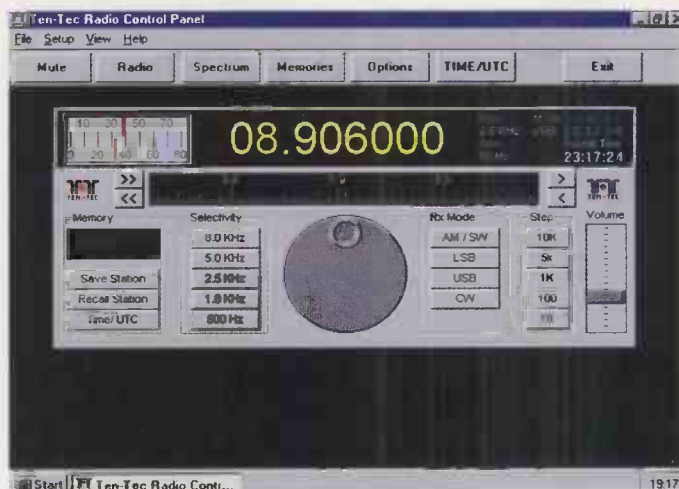


Fig. 1: Virtually a front panel.

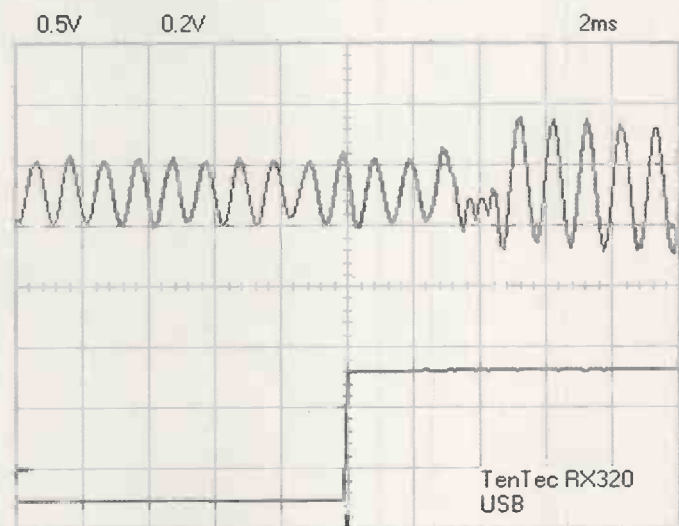



Fig. 2: The RX320 a.g.c. response.



Fig. 3: Details of an entry.

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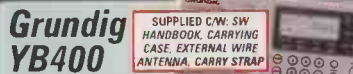
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TenTec's RX320

Mighty Mouse from Tennessee

sensitivity measurements, it's important to keep in mind the effect of modulation depth on measured sensitivity. Just for information, I measured the a.m. sensitivity at 9MHz in a 5kHz bandwidth on the RX320 at -112dBm with 80% modulation depth, -109dBm at 60% and -103dBm at 30%. Doing the same measurements again with an i.f. bandwidth of 4.2kHz gave figures of -115dBm for 80%, -112dBm for 60% and -106dBm for 30%. The overall spread in these measurements is a massive 12dB, so beware any and all sensitivity measurements which do not state the measuring bandwidth and the modulation depth. Bland statements that the RAXX has an a.m. sensitivity of $1.2\mu\text{V}$ are totally meaningless.

Third order intercept point measured at a nominal 14MHz was +15dBm with a 50kHz signal spacing as used by Ten Tec themselves (handbook specification +10dBm). Dynamic range was 98dB against the specification of 90dB, so all better than manufacturer's figures. The RX320 has a wide band front-end, so I expected the second order intercept point to be quite modest, but it measured at +53dBm with a dynamic range of 92dB. Whilst this kind of performance is not as good as the top premium grade receivers I have been testing recently on your behalf, it is remarkably good when compared with any receiver in the mid-price class, and considerably better than the Lowe HF-150 which also had a wide-band front-end and turned in a second order intercept of only +35dBm. Phase noise performance showed -105dBc/Hz at 10kHz falling to -127dBc/Hz at 100kHz; again not up to premium standards but hey (as our Prime Minister might

say) we're looking at a low cost receiver here, with a price tag of about one tenth of its big brother, the RX340.

Sharp minds amongst you will have by now spotted that I mentioned an i.f. bandwidth of 4.2kHz in my a.m. measurements, but the RX320 software from Ten Tec doesn't have this as an option....how did I do it? Well, the RX320 has been around some little while in the USA and several clever people have written control software for it, a lot of it available as shareware on the Internet. I went looking and came across several interesting packages from which I was mightily impressed by one in particular. Take a look at **Fig. 6** which shows the initial control screen. The screen contains essentially all the features of the Ten Tec software but with considerably enhanced capability. For a start you will note that the a.g.c. time constants are selectable; the tuning steps are much more comprehensive, ranging from 1Hz to 100kHz and include the 9kHz step I mentioned earlier. The filter bandwidths are selectable from a total of 34, ranging from 300Hz to 8kHz and available in all modes, and an all mode squelch control has been provided. Twin v.f.o. operation is included, and the memory store and recall functions have been enhanced. The spectrum analyser function is not present, but a digital recording and replay function has been added, which allows you to record audio of-air through the computer sound card. This is an excellent piece of software writing, but there are others out there just waiting to be used.

In Conclusion

The Ten Tec RX320 is an amazingly satisfying receiver to use, and despite its simple appearance when you take a look inside, it really does perform and has perhaps come the closest yet to marrying the power of a PC with a high performance



Fig. 4: RX340 memory dialogue.

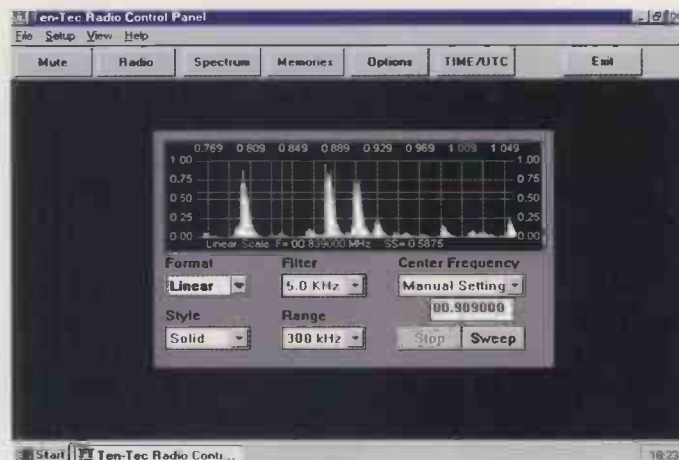


Fig. 5: The spectrum sweep function.

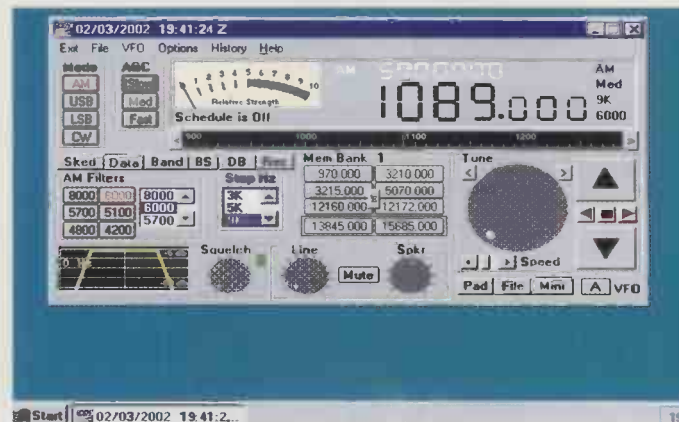


Fig. 6: Third party control software.

short wave receiver. The tuning action is smooth, the a.g.c. system works properly, the d.s.p. is excellent and shows no sign of adjacent channel 'spill' when using my test of listening to 900 and 918kHz stations in the presence of giant sized Radio Five Live on 909kHz. The overall flexibility is marvellous and given that many individuals are taking the time to write software for the

RX320 I can foresee a long and happy future for any owner of this great little powerhouse. It looks like Ten Tec have produced another winner, with the only drawback that at the moment it is not CE marked and cannot be sold in Europe and the UK - but I'm working on that with my other EMC Test House hat on. I'll be in touch. Happy listening!

SWM

Joe Carr K4IPV suggests that the vital, but often forgotten part of any antenna system - the earth - should not be overlooked in order to get the best from your antenna.

There are any number of antennas that short wave listeners use. There are two basic classes: Hertzian and Marconi. The Hertzian antennas are balanced with respect to ground. The most common example of the Hertzian antenna is the half wavelength horizontal dipole. The Marconi antennas are unbalanced with respect to ground. The most common examples are verticals and random length wire antennas (which is often the first antenna an s.w.l. builds). There is one means for making all of these antennas better - an improved ground plane. Let's take a look at how this can be done. But first, let me set the stage by describing our reference antenna, the simple (but effective) resonant dipole.

The Dipole

The basic construction of a half wavelength horizontal dipole antenna suitable for short wave use is illustrated in Fig. 1. The supports are shown here as masts, but they can be any combination of things that gives the needed height: trees, buildings, masts (commercial and home-made). The antenna is hooked to the masts through ropes. Nylon rope works best (Nylon parachute cord is easily available). Cotton based

The wire segments are made of 14s.w.g. stranded copper wire (special antenna wire is best). The element lengths (A) are each quarter wavelength long, and the overall length is $B = 2A$. The general formula for length is that

$$B = \frac{143}{F_{\text{MHz}}} \quad (\text{m})$$

and,

$$A = \frac{71.5}{F_{\text{MHz}}} \quad (\text{m})$$

The '143' constant is an approximation of the foreshortening from the 'real' half wavelength ($150/F_{\text{MHz}}$) caused by capacitive end effects and the wire's velocity factor. For example, if you want to make a dipole for the 31 metre international short wave band, pick a frequency in the middle of the band (e.g. 9.75MHz) and solve the equations:

$$B = 143/9.75 = 14.67 \text{ metres}$$

and,

$$A = B/2 = 14.67/2\text{m} = 7.34\text{m}$$

The height of the dipole above the earth's surface affects its angle of radiation and feedpoint impedance. Most authorities recommend either quarter wavelength ($75/F_{\text{MHz}}$) or

performance. I use the Nittany-Scientific *Nec-Win Basic* software to model antennas. That software allows you to pick various types of ground, including the 'standard' Sommerfield ground, or make up one of your own. The conductivity of the soil is the principal issue, I suspect. When you select the various categories the radiation pattern changes with the type of ground, with the elevation extent (including angle of radiation) being most affected. The best performance occurs when the ground has a high conductivity. Hence, the ground plane.

I actually saw examples of a ground (earth) plane quite early in my career. One was at the home of an older ham when I was a recently minted General Class amateur radio operator (late 1950s). 'Ol' Abe' (as we called him) had been around in ham radio since before World War I, and worked professionally as an electronics engineer. He had a unique ground system. I discussed 'Abe's bathtub' in some of my antenna books. He actually buried an antique copper bathtub beside his house before the backfill was done during its construction (any idea what that tub would be worth today?). I would love to hear what someone says if they accidentally come across

Making Your

HF Antenna

Better

'clothes line' rope stretches and causes the antenna to droop, and when it gets wet it basically begins to deteriorate (making it a short-term solution). Other forms of rope tend to be too large to fit through the holes in the insulators. The ropes are tied to end insulators, either ceramic, glass or nylon.

half wavelength ($150/F_{\text{MHz}}$), if you can't make it much higher than one wavelength (i.e. 'free space'). In this article I am recommending $3\lambda/8$ ($113/F_{\text{MHz}}$).

The Ground Plane

The nature of the ground underneath an antenna profoundly affects its

that tub while digging around the foundation of the now deceased Abe's house!

But Abe's bathtub isn't really the point of this discussion. The other aspect of Abe's ham radio ground was a ground plane screen. Before the contractor who built the house put in the top soil, Abe and a couple of buddies went

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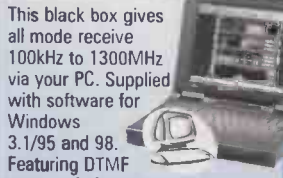


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out there and laid down a grid of 10s.w.g. bare copper wire. They soldered the junctions of the wire with a special lead/tin solder that also contained 2% silver.

Another friend, a broadcast

they should be longer than $180/F_{MHz}$. The wires should be spaced not more than one-tenth wavelength ($D \leq 0.1\lambda$) for the grid to be effective ($D \leq 15/F_{MHz}$). The overall length of the grid should be at

same manner as radials for a vertical are installed.

Ground planes of this sort can be installed for almost any form of antenna. The trick is to make the ground plane a bit larger than the antenna

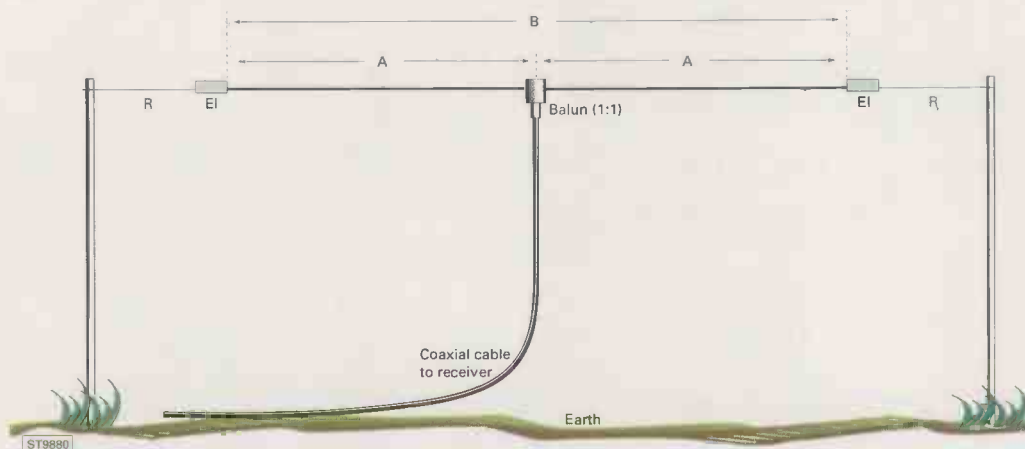
dimensions, and place the wires more or less symmetrically around the antenna. On a vertical antenna, for example, a field of radials (sixteen is considered the optimum number) is placed in a symmetrical circle around the base of the antenna.

Other antennas, such as the long wire, half-delta, or Beverage, are often improved considerably by adding even a single ground return wire from the far end of the antenna wire to the ground connection at the feedpoint.

Of course, if you want to spend a lot more money on copper and sod, and want a ground system like ol' Abe, then go for it. For lesser aspirations, however, the ground plane presented in this article is more than sufficient.

SWM

Fig.1



engineer named 'Davo' (really!), told me about a relatively low power m.w. broadcast station that he built. The station had an excellent signal all over the area, much more so than would be explained by the power level. The way he achieved that success was to place a ground plane of wires underneath the surface.

Still another m.w. broadcast station had to install a new antenna tower. The station engineer used the occasion to also order an extensive ground plane installed. The turf was bulldozed up, and the wires installed. The site was then re-turfed.

In all of these cases, the signal strength of a transmitter was improved by a ground plane underneath the antenna. One of the 'laws' of antennas is the law of reciprocity, i.e. the antenna works on receiver as it does on transmit. If the ground plane works well for transmitters, it will also work well for receivers.

It Makes Sense

Abe's ground plane was a little excessive. It made sense to him, but was a case of overkill. The same effect can be obtained using a ground plane such as **Fig. 2**. In this type of ground plane a number of $> \lambda/2$ wires beneath the antenna. The minimum length for the wires is $L = 0.6\lambda$, so

least $C \geq 1.5\lambda \geq 450/F_{MHz}$. The grid can be made of 16s.w.g. bare antenna wire, and need not be connected to the antenna in any way.

The side view of the ground plane installation can be seen in **Fig. 3**. The grid is on or immediately below the ground surface, and can be in contact with the ground. There is, however, a safety issue if the antenna is on the surface. Pedestrians can trip over the ground plane wires. You might be held liable in a civil suit even if the victim is a trespasser. That's why I recommend buried ground planes. If your lot is still bare, then it's easy. But even if it isn't, you can use the tip of a spade or other tool to cut a slit trench for the wires, in the

Fig.2

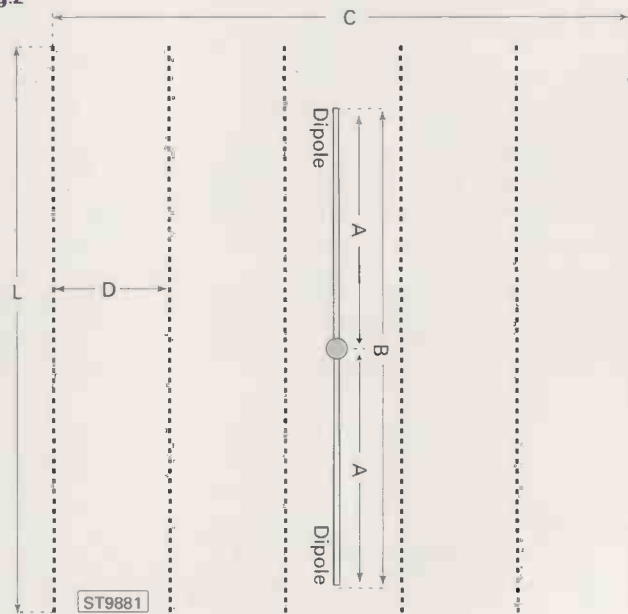
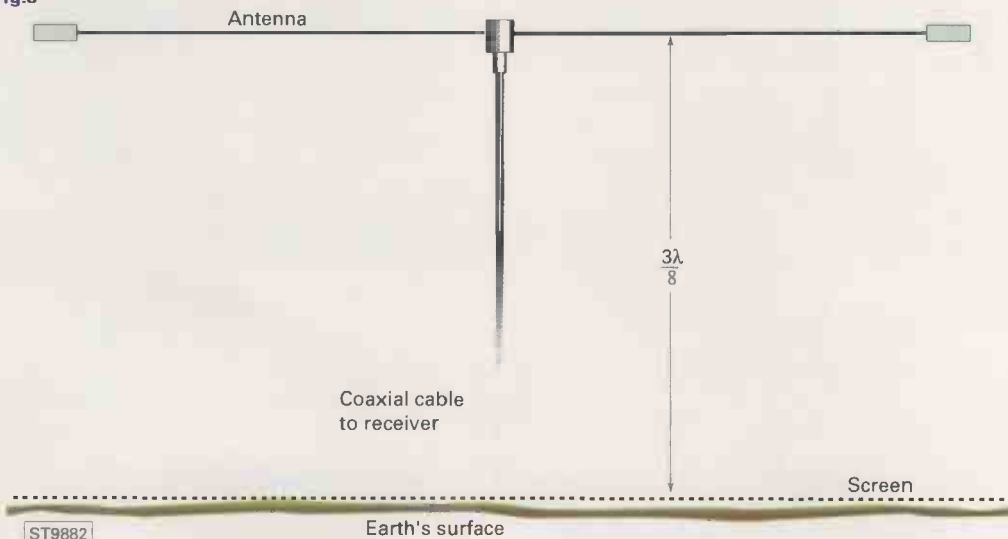
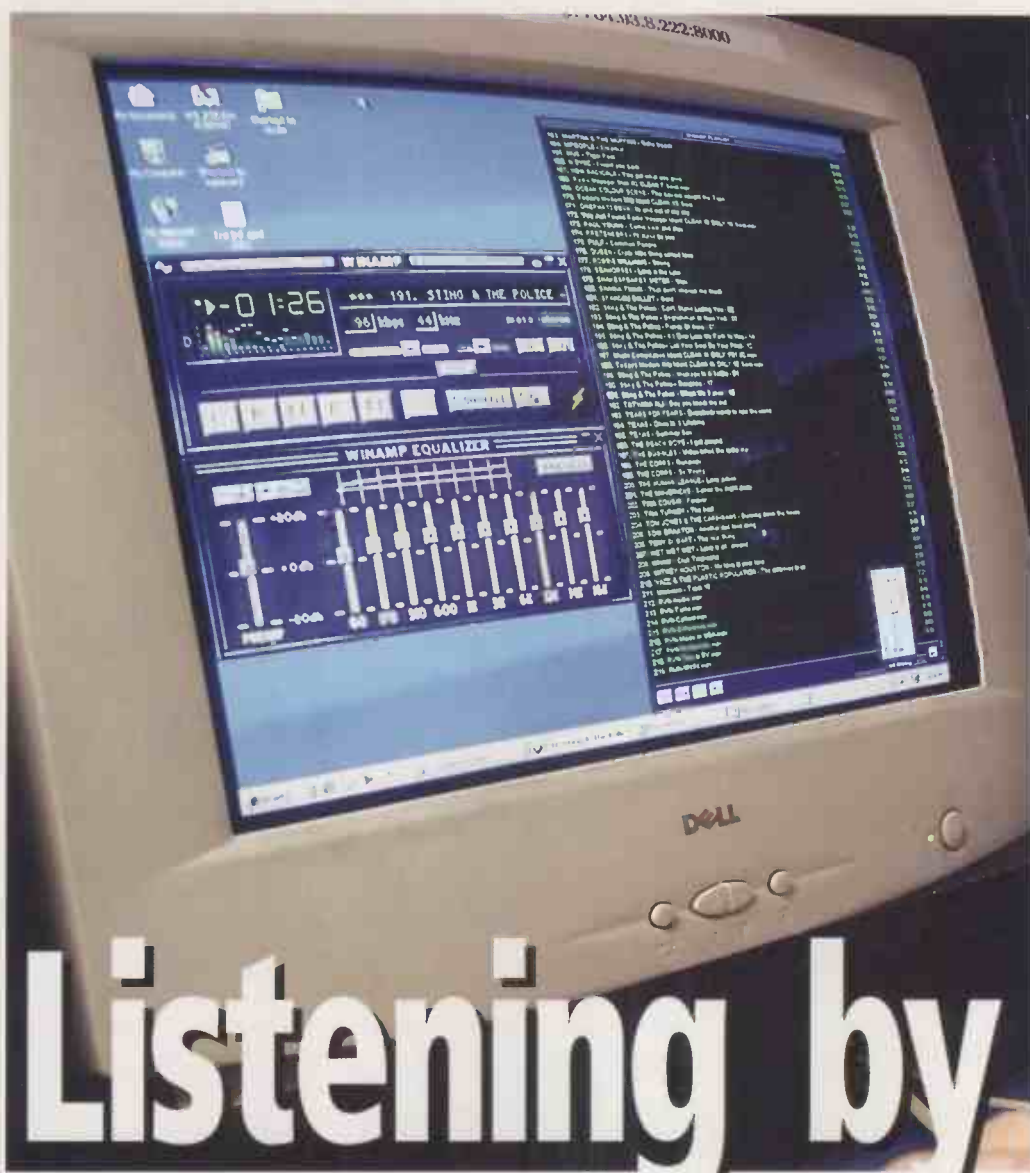


Fig.3





This month Martin Peters concludes his journey through the world of alternative listening - the phenomena that is 'Internet Radio'. Are you ready to join the action?

appear. Click on this and select the Radio Station Guide. From here you can select language, genre, band - a.m., f.m. or Internet-only. Click on the station of choice and press Play. This should take you straight to the audio stream (this is good) but on occasion you will find that the link is to the station's web site where you may have to hunt around for the audio (this is bad). If you have an old version of *Explorer* or are a *Netscape* user, the guide - merely another web site - can be found at <http://windowsmedia.com/radiotuner/default.asp>

There is only a fraction of the stations available on-line here and for a more comprehensive account of what's out there you'll have to check into one of the dedicated listings sites.

My personal favourite is this one - www.live-radio.net - used by hobbyists and professionals alike to quickly establish contact with radio stations' audio streams. As the name suggests, this site deals only in stations that are streaming live to the web although some may also provide archived material. Hundreds of stations are broken down into continents and then by country into alphabetical order. There's also an area for Internet-only stations.

Listening by Computer part 3

Welcome to the third and final part of the series. Last month we considered the various types of Internet connection available, hooking the PC up to your hi-fi, and the pleasures of Internet TV. This time we'll look at some of the better on-line listings sites to help you trawl the Internet airwaves, talk about running your own radio station, and round off with a selection of

radio-related web sites that you can try.

With thousands of stations on-line, sifting through what's on offer to find something to your taste can present a challenge. Sure, you could perform a search on Google or Alta Vista. Tapping in the words 'Internet Radio' comes back with half a million hits. Not much help.

Luckily, someone has done all the hard work for you and there are now several sites carrying links to a multitude of

broadcasters. Radio stations are usually categorised by country or by programme type - news, sport, jazz and so on.

Before you consider visiting a specialised site, it's quite likely that your web browser already provides a link to a rudimentary station listing. If you open Internet Explorer and find that the 'Radio Stations' button isn't already up on the toolbar, right click anywhere over the existing toolbar and select the Radio option. The button will then

Listening by Computer part 3

Each country heading is accompanied by the appropriate flag and shortcuts to a map, the current weather conditions there and even a currency converter.

Scroll down to the station of interest and select either their main web site or go straight to the audio feed. After the usual connection and buffer delays, all things being equal, sound will spring forth from your 'speakers'. This paragraph is being written to the tropical sound of ZIZ, live from the island of St. Kitts.

The LiveRadio site features so-called 'FastKey Enabling' which in essence means that hitting the 'E' key will take you straight to the European page whilst the 'W' key brings up the World page. The 'B' key displays a

old shows from the 1920s to the sixties, including the CBS Radio Mystery Theatre, Vanishing Point and Roy Rogers. Doesn't everyone?

Virtual Radio Tuners

If you're looking for a software package to deliver you easy access to what's on-line, you may wish to consider *vTuner*. The *vTuner* is a 'front-end' or user interface that lists on-line



stations by format or location, and takes you straight to the audio when you highlight the station and press Play. When listening to 'FAB FM', or whatever, you can then call up station information, which may be just a short description of the

broadcaster, or could include the programme schedules. There's an 'On Now' pointer, and in-depth searching allows you to locate individual programmes of interest. Shunt your favourites to one side for easy access or interrogate the Most Recent folder. Add to that a Personal Start Page which can be customised to display favourite shows and events, the ability to set program reminders, and automatic updating that ensures users always have the most recent station links, and you'll see that *vTuner* is more than just a listing site. Download a 15 day trial from www.vtuner.com

Not so much a radio tuner, *Spinner* is better described as a virtual jukebox with 150 channels of themed music to your desktop - for free. Download the player at www.spinner.com When you open *Spinner* up for the first time you'll hear a welcome message from a bloke with a great voice, after which you are free to browse the channels. Most tastes are catered for here

with everything from Mozart to Motorhead on offer. For those who like a good story there's even an audio book channel. You can select some favourites and display what is on each, should you wish to channel-hop.

Advertising seems to be minimal and, with Windows being a multi-tasking environment, you can leave the application running in the background whilst you get on with more important stuff on the PC.

Running your own radio station - how easy is it?

After spending some time listening around to what the world's on-line radio stations have to offer, you may think

you could do something better - or maybe even something new. If you're thinking of running your own, on-line radio station, remember that in order to entice people back, time and again, you have either to be very good at what others do already or, more likely, offer something different. If you hit the 'airwaves' as Dave Doubledecks, playing non-stop hits from yesterday and today on the all new better music mix, chances are, that apart from your dog (and your dog's flea) your audience will be extremely limited - and bored.

If you intend to run a music station with anything like a slick, professional sound, a bare-bones production studio would include a couple of CD decks, a reasonable quality microphone on a stand and an audio mixer. If you're feeling adventurous you may want to use a MiniDisc deck for playing in the occasional interview or even the odd jingle. Rather than broadcast live, you'll probably want to record your efforts onto MiniDisc or cassette before transferring it all to the computer.

You can record your session onto the hard disk of your computer using, say, *Cool Edit*, an

industry standard for sound file manipulation. Once in the can, you can edit out selected phrases, paste in new audio or simply cut out any unwanted 'Ums' or 'Ers'.

www.syntrillium.com

A word of caution. Internet radio is in its infancy and the real world has yet to catch up with some of the issues that are being flagged up. Just as back in the early eighties, when so-called 'video nasties' were initially exempt from certification, Internet-only radio stations have yet to worry the record companies to any great extent.

Mainstream broadcasters with large audiences pay a hefty fee, via the Performing Rights Society, to the record companies and so to the artists. Payment of the royalty fee gives the radio station the right to broadcast the music. Low powered, part-time charitable stations have, in the past, had their PRS fees waived as a special concession.

Signs are that the record companies are just starting to get wise to the potential of charging Internet-only webcasters and the revenue that it might generate. They've already got their claws into the likes of Napster, the on-line music sharing site. They may now decide to turn their attention to smaller fish.

In reality, if push comes to shove, small time operators will withdraw, as most are hobby radio stations and, as such, a labour of love.

If paying for music becomes an issue why not think about giving exposure to unsigned bands

- especially from your area. This not only side-steps the problem of rights but also provides you with material for transmission not being heard anywhere else. Win, win.

If you have an altruistic streak and want to help the community, consider providing an on-line talking newspaper service for the blind and partially sighted. You could produce a weekly programme with items culled from the local press, the type of community news that doesn't make it, even to the local radio stations, but often of great

SPINNER



counterfeit error message on your screen - more subtle than furiously 'ALT TAB'ing when the boss strolls by.

A no-nonsense guide to getting started, which includes a brilliant description of how streaming works (involves a bucket), and an on-line form that allows you to update station details make this site a 'must-see' for anyone needing a comprehensive, user-friendly guide to main-stream Internet radio.

Another well organised site is that provided by www.comfm.com

Their home page invites you to browse through over 4000 radio stations, 500 live TV channels and over 2000 web cams. After making your choice you're presented with a couple of lists, one geographical, one by genre. Follow the links through to your station of choice.

www.shoutcast.com lists many stations not featured elsewhere, including Old Time Radio, specialising in reruns of

importance to people's daily lives.

Approach your local paper direct, sell them the idea and they may even sponsor you. You'll certainly have a piece written about your efforts with publicity for your web site guaranteed.

If the service you provide turns out to be popular you may even be able to sell advertising space on your web site - either in the form of visual banner ads or as an audio insert - just like on the radio.

If the newspaper runs its own web site make sure it contains a link to your contribution. Resist the temptation to add your own interpretation or spin on the news - just read it out verbatim or at the very least, select extracts to highlight the salient points. The newspaper will very quickly disassociate itself from you if you start disagreeing with its editorial stance.

Don't be first to be hauled before the courts for being libellous or defamatory over the Internet airwaves. Just because something is already in the public domain, it doesn't mean you can not be had, simply by repeating the offending article on the air. If in doubt, leave it out.

Broadcast & Hosting

Broadcasting over the Internet is a fairly specialised requirement, even these days, and unlike the media players there is, as yet, no software supplied with the likes of *Windows* that does the job.

As ever, there are several avenues you can explore in your quest. Here are three of the best.

Radio Destiny

One of the easiest ways that I have found to get on-line is with the Radio Destiny Broadcasting system. Point your browser to www.radiodestiny.com and, in the first instance, download and install their player. I recommend that you do not, when asked, select the player as your default for the various types of sound files. At just over 400KB this little player is your gateway to other broadcasters on the Radio Destiny system.

Open the player and click on the 'Radio' button. This will take you to the station directory

containing broadcasters currently on line. These are split into genre - music, information and special interest, amongst others. Open your folder of choice and click on the station of choice. A dialogue box will open, offering a few details of the station that is about to download before connecting you with the server. Click on the 'Web' button to take you to the station's associated web site, if any. Click on 'E-Mail' to contact the broadcaster direct.

Initiating your own broadcasts



via Radio Destiny is almost as easy. From their web site, download the broadcaster software - about 800KB this time. Unzip and install the program and start the application. Incidentally, if you need the *WinZip* programme, you'll find a link to it (www.winzip.com), and many other sites of interest, at the web page I've set up to accompany this feature - see later.

When the Destiny user interface pops up the first thing you'll want to do is configure the it to your particular circumstances. Click on the 'Settings' button and then on the 'Change' button in the connection settings window. Tick the RD3 box if not already done so, set the maximum bit rate to match, as close as possible, your connection speed and check the stereo option if appropriate. Click OK. Next, click on the 'Change' button in the Station Settings window. Fill the boxes in as required. How you fill in the Station Name and Description boxes determines that which appears in the corresponding player windows for your listeners. Fill in your E-Mail and web site address if you want to make them available and click OK.

You are now ready to make your broadcasting debut. A few more details before you book your Stretch-Limousine to whisk to down to the pub and your adoring fan(s).

You have to inject some audio

into your PC and this can be from a variety of sources. If you're going on-air live with speech only simply plug your microphone into your PC's sound card. On the Destiny control panel click on 'Begin', take a deep breath and speak.

If playing-in your material from MiniDisc or some other external source, simply plug the machine's 'line-out' to the sound card's 'line-in'. If you have assembled a little studio, as described earlier, take the line

output from your mixer and plug this in to your computer's

'line-in' socket.

At this point, you'll want to make sure that your efforts are hitting the Internet. Click on the 'Mixer' button. Make sure the 'Line In' button is active (red) and move the virtual faders up and down so that the level meters almost hit the top of the scale on speech or music peaks.

You may need to refer to your PC's mixer panel. Double-click the little loudspeaker at the bottom left of your screen. In 'Options', choose 'Properties'. Check the recording option and ensure either 'Microphone', 'CD' and or 'Line In' are checked. Click 'OK'. Now check the box that corresponds with the input you are using to feed your PC, set the fader to about mid-way and close the box.

Ultimately, the acid test is to convince a friend to download the Destiny player to make sure your broadcasts now feature on the listing and that your audio is as you expect.

Don't forget that you are now live 'on air' so save your profanities for another day.

If you don't actually have 24 hours-a-day to make radio, why not produce a programme, say, once a week, save it on your hard disk and let the Destiny Broadcaster repeat it, over and over, until you choose to update.

Alternatively, you can store a selection of clips, add them to the playlist in Destiny and have them play out in a particular order or at random.

There's a neat feature that

lets you check how many people are listening to your handiwork. Click on the LISTENERS button and as soon as anyone logs into your stream you'll be advised. There's also a graph depicting when and how many people have surfed by over a one or 10 day period.

So there it is. The Radio Destiny network provides an easy (and free) route for your entry-level foray to Internet broadcasting. The disadvantage is that, a) you're limited to a few listeners at a time - only two if you have a 56Kb connection, b) listeners will have to download the player to sample your wares and c) you have to remain on-line for as long as you want to stay on the air.

Live365

Another easy alternative, and I have to say, my personal favourite, is through the facilities offered by Live365.

The nice people at Live365 lay on a comprehensive service for individuals and organisations wishing to broadcast on the web, either live or archived on their servers.

Uploading a programme to Live365's servers means that you don't have to sit in front of your computer 24/7, belting out the hits whilst clocking up a phenomenal 'phone bill. Make your programme, upload it to the site, and there it sits, enjoyed by up to 365 people simultaneously, until you update it with something fresh. This is the basic service from 365 and costs just under five dollars a month. If you want to broadcast live then you need the next tier up at double the price. Listeners don't have to download a special player, and you can E-Mail a link to all your friends so they can just click to listen. Getting going is straightforward enough - it's all explained on the web site - www.365.com

SHOUTcast

SHOUTcast provide a suite of free broadcasting solutions for anyone who wants to have a go. Have a look at their homepage at www.shoutcast.com If you're just interested in listening to other SHOUTcasters then all you need is an MP3 player - *WinAmp* is recommended. A visit to the SHOUTcast directory lists

Listening by Computer part 3

all that's on offer. The services that SHOUTcast provide seem very comprehensive and the only fly in the ointment is the set-up procedure. Even their own web site admits it can be somewhat of a challenge and they promise they're looking into making it easier to configure. All the instructions are up on the site if you're feeling brave.

To summarise, my advice is to try the Radio Destiny solution to have a dabble, then either get on to Live365 in the mid-term and wait for SHOUTcast to make life easier or go straight to SHOUT if you feel you've got what it takes.

Another alternative is to cut out the middle man and broadcast directly from your web

site. Unless there is a link from another site, as in the case of the talking newspaper, discussed earlier, there is very little chance of people stumbling across your audio by accident. You will have to start your own web site - not something we're covering in this series - and upload the audio to it. Most ISPs allow their users 10MB of web space and this does not equate to many minutes of audio when saved as a 'wav' or 'mp3' file. Better to encode your sound files into RealAudio. Download and install the RealProducer Basic package from the Real web site and use the on-board wizard to assist you.

Some hard-core DXers may consider web radio listening not

to be in the true spirit of the game. It's really just another facet that compliments the more traditional side of the listening hobby. If you're more interested in programme content than the



means by which it gets to you then Internet radio is definitely for you. Even if you're a die-hard traditional radio DXer then you may still feel a flutter as you connect to Simba FM in Uganda or Laser 101 from Netherlands Antilles and hear life going on the other side of the world.

There's something almost voyeuristic about tuning into the domestic news from some tiny speck in the Pacific, and listening, in near-f.m. quality, to peoples' daily lives, and the places and events that matter to them.

For those of you who have not taken the Internet plunge yet, web radio may be just the excuse you were looking for. What you can't do

on line now isn't worth doing (with one or two notable exceptions) and after a few months you'll wonder how you ever survived without it. I hope this introduction to Internet broadcasting has stirred up some interest and encouraged you to have a go. See you there. **SWM**

Audio Sites Of Interest

Apart from listening to broadcasts over the web there is a wealth of other sites containing audio, many of interest to the radio listener.

One of the most useful aids to identifying a radio station when listening by conventional means is the interval signal. The Interval Signals Archive is a collection of audio clips, as put together by Dave Kernick. In it you will find identification announcements in various languages, signature tunes and jingles, and of course, interval signals. Dave regularly reviews the site's contents with new sound clips being constantly added to the collection and existing ones updated. Audio is arranged in country order and there's even a handy search engine. Check it out at www.intervalsignals.net

If your interest includes Amateur Radio, you may know that the Radio Society of Great Britain (RSGB) broadcasts a weekly news programme each Sunday for radio amateurs and short wave listeners. What you may not know is that as well as being transmitted on the amateur bands, it is also available on-line and on-demand at www.innotts.co.uk/~asperges/rsgb.html

Radio nostalgia your bag?

www.paulplu.demon.co.uk/radio/sound.htm will tickle your senses with a collection of recordings culled from vintage commercial radio including Radio Normandie, the final hour of Radio London and bunch of other stuff that'll bring a tear to your eye.

On-line scanners are becoming increasingly popular, especially in the US, and there are several sites listing a selection of what's available. Try www.geocities.com/ResearchTriangle/1803/police.htm for a fair smattering. Many of the links here lead to the web sites of some of fire and police departments who are only too happy to make their communications available on-line. Compare that to here in the UK where recently an individual from the scanning community decided to rebroadcast some fairly innocuous Air Traffic Control communications. No harm done, you may think. Without going into too many details, this experiment resulted in a visit from the authorities, who were not best pleased. Best you don't try something similar.

Dick Becker, who hosts the site, has a section showcasing some of the more bizarre broadcasts you'll find on-line, from a station churning out only computer-generated music to a Texan outlet providing information on the daily fish activities. Don't fail to miss it! www.geocities.com/ResearchTriangle/1803/unusual.htm For

more on-line scanners go to www.shoutcast.com and perform a search on scanners.

Taking things one stage further, there are a couple of on-line TV receivers you can monitor. Intended mainly for TV DXers, one is in Kentucky USA and, when checked, was tuned to v.h.f. channel 2. The idea is that the TV tuner is set to a channel that only shows signs of activity when propagation conditions are enhanced. A blue screen means no signal is currently being received. The video is sourced direct from a TV tuner card associated with the host PC and the picture updates every 10 seconds. You'll find it at www.dxfm.com/fmdx_main.htm

Less hi-tech is the other on-line TV you may wish to try out at <http://malmo.javaradio.com:1023/TVDX>. A web cam is pointed at a TV, tunes between the European channel E2 and the Russian R1. Last time I looked, the TV was switched off and the image hadn't been updated for a month. Maybe it'll be back on-line by the time you read this.

Ratchet-up the sophistication one more notch and you're in the realms of web-controlled receivers. From the comfort of your PC chair you can control a variety of radios enabling you to listen to the bands as they sound in Perth Australia, New York and a handful of other sites dotted around the globe. The licensed among you could use these as a tool for testing antennas, power levels, listening to your own signals as they sound having traversed the ionosphere. The home page for the Java Radio Network is at www.javaradio.com. Many more enthusiasts would put their receivers on-line but for the fact these splendid radios run on the Linux operating system, not Windows. You'll be able to listen, though, and not only tune the radios but alter most of the receivers' other parameters. Chat on-line with other users too. www.qsl.net/oe3mzc/receivers.html lists a few more.

www-pw.physics.uiowa.edu/mcgreevy is where you'll find off-air recordings of naturally-occurring radio signals emanating from lightning storms, aurora and the Earth's magnetic-field. Recordings were made during an expedition into the auroral-zone region of northern Alberta, Canada.

If the thought of painstakingly tapping in all these web sites is putting you off then please feel free to make use of a links page that I've put up for you from where you can jump straight to all the sites I've mentioned during the series - and a few more besides. It's at <http://homepage.ntlworld.com/martin.peters/swm.htm>. Also long, but at least once you're there, you're in.

- SSL credit card order facility from our web site https://aoruk-com.secureserve.co.uk/c_card.htm
- Phone, fax or post your credit card details
- Post a cheque or postal order (made payable to AOR UK LTD)

Items are usually available from stock for immediate despatch, however please allow up to 28 days for delivery dependant upon demand, all delays greater than one week will be notified. Prices include VAT @ 17.5%



Welcome back XTAL2.4 SSB crystal filter

Due to popular international demand, the 2.4kHz SSB optional crystal filter for the AR7030 has been produced again. Stock numbers are limited so availability is on a **first-come-first-serve basis at a very special price** - and only while stocks last. This filter enjoys an excellent reputation being capable of pressing the AR7030 to its ultimate stop-band performance with minimal ripple.



To mark the reappearance of the XTAL2.4, we will also be WELCOMING YOUR AR7030 BACK TO OUR PRODUCTION FACILITY (from where it was born) so that the **XTAL2.4 filter & FL124 daughter board may be expertly fitted** and the opportunity taken to **check over alignment, update the firmware** (where applicable), implement component changes - such as the addition of temperature compensation to the synchronous AM circuit of early production units. All for a **very special price of £125.00 inc VAT**, this includes the XTAL2.4 filter, FL124 daughter board, service and two way insured carriage via Securicor.

Go on, make your AR7030 feel like its birthday has arrived!

Please phone to arrange for collection of your receiver. From collection by the courier to return is likely to take in the region of 7 to 10 days. When you call to arrange collection, we will allocate stock so that the process runs smoothly... if due to demand, current UK stock is unavailable, it may take around 28 days for further stock to arrive. Remember, total stock numbers are limited and the offer will stop once depleted.

2.4 kHz (nominal) SSB CRYSTAL filter XTAL2.4	
Centre Frequency	455 kHz
6dB bandwidth	± 1.2 kHz
60dB bandwidth	± 2.4 kHz Max
Number of poles	8
Pass-band variation	2 dB Max
Insertion loss	6dB Max
Spurious rejection	± 20 kHz 70dB Min

Your AR7030 welcome back deal - collected & returned, the XTAL2.4 filter & FL124 fitted, receiver tested / serviced **£125.00** (UK mainland only)

XTAL2.4 filter & FL124 daughter board for self fitting **£103.99**
P&P £5 extra

XTAL2.4 filter only
£79.00 P&P £5 extra



The **NEW 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 IP₃ +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. Supplied with two loops, 3.0 - 9.0 & 9.0 - 30MHz **£199.00 carriage £5.00**

- **350L** Optional element 0.2 - 0.54 MHz for LA350, **£49.00 carriage £2.50 if ordered separately**
- **350M** Optional element 0.54 - 1.6 MHz for LA350, **£49.00 carriage £2.50 if ordered separately**



LA320 Short wave table-top active loop aerial 1.6 - 15 MHz fitted with coax lead and BNC plug **£99.00 carriage £5.00**

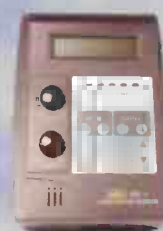
320L Element 0.2 - 0.54 MHz for LA320, not for LA350 **£25.00 carriage £2.50 if ordered separately**

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

DA3000 16 element discorne 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. **£69.00 carriage £5.00**

SA7000 Twin element 'passive' ultra wide band receive aerial 30 kHz to 2,000 MHz (2 GHz). Supplied with 15m of coaxial cable and terminated in a BNC plug **£99.00 carriage £5.00**

MA500 Mobile VHF-UHF aerial mounted on a magnetic base, centre and base loaded whip. Supplied with around 4m of coax cable terminated in a BNC plug **£49.00 carriage £5.00**



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**

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. **£POA carriage £5.00**



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



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■ E-MAIL: clive@pwpublishing.ltd.uk.

Amateur Bands

Some months ago in this column I mentioned the International Short Wave League. After some research I've found out some more information regarding this keen band of amateurs and listeners.

ISWL

For the award collector there are a number of awards in the form of certificates that can be obtained from the League. All awards are for the reception of, or contact with, amateur radio stations only.

So both licensed amateurs and listeners can claim the awards. I'll only deal with listeners for the time being. The first award that most people go for is the Century Club award. This is awarded for the reception of amateur stations in 100 different countries. What constitutes a country can be found in the ISWL Country List which, combined with a prefix list, is available from The Hon. Secretary, **ISWL HQ, 267 Pelham Road, Immingham DN40 1JU** for a mere £1.

There are other awards. For example, the Continental Award for hearing or working ten stations on each of the world's six continents, and the European Award 50 stations in European countries. For more details contact the ISWL Awards Manager, **Kenneth Burrell M1DZT, 27 Manners Gardens, Seaton Delaval, Whitely Bay NE25 0DW**.

In order to claim an award it is necessary to prove to the ISWL that the requirements of the award have been fulfilled. The league asks for a copy of the logs of the reception reports, countersigned by two radio amateurs confirming that they have seen the QSL cards for the stations that have been heard.

Many thanks to Pete Rayer, Honorary Vice President of the ISWL for all the information.

QSL Cards

Although using a QSL bureau is more economic, often the only way to obtain QSL cards for those really exotic stations in your log is send your reception report directly to the stations concerned. DXpedition stations to such countries without a bureau will often have a QSL manager in a country which does have a bureau, this manager receives the reports and sends out the cards via that country's bureau. Whichever means you use to solicit that QSL card, happy collecting!

Spreading The Word

Readers of February's 'Amateur Bands' may recall the Diamond DX Club's visit to Sonsoro Island, in the Palau group, south east of the Philippines. Roy Walker G0TAK, tells me that missionary priest, the Reverend Bill Burton, is the resident amateur on the Palau. His call is T88BA and he operates QRP (low power) on 14.040 using c.w. every day except Sunday. Work interfering with play perhaps?

Living History

It seems that a.m. is making a comeback! Well, just a little one! After Philip Davies reported hearing an Italian using the mode on 29MHz in November last year, Ted Stanmore heard quite a few more stations using a.m. on 29MHz during January. Most were stateside, but YO3ACX (Romania), LZ2DO (Bulgaria), and UR5QGE (Ukraine) on this side of the pond were also heard. Ted gets a special mention for being up at 0400 recently, when all sensible people are asleep, just to hear the land of the Star Spangled Banner on Top Band (1.8MHz).

A JRC NRD-345G receiver connected to an 11m long wire via a balun is the tool of choice for Alan Barker in Leicestershire as he works his listening skills across the amateur bands. Alan has owned a few radios in his time, and speaks very highly of the '345. A healthy number of European countries and American states feature in his log for January.

Which Way?

Interestingly, Alan's antenna runs north to south and, apart from nearby European stations, and noteworthy P40PW on 21MHz in the Netherlands Antilles off the coast of Venezuela, all the stations in his log are roughly north west or north east of his QTH. This includes his best DX on 14MHz of ZL4NBR and ZL4NR in South Island, New Zealand.

Every antenna is affected by its environment. This is particularly so at h.f where the ground is, in terms of wavelength, pretty close. Antennas at the sort of height that most amateur and listening stations can achieve will have some directional properties different from those that theory predicts. Alan is aware of his antenna's directivity and plans some adjustments to try and improve his reception to the south. We await to hear the results!

DXpedition Time

A couple of Brits are off to Midway in (believe it or not) the middle of the Pacific for a week from March 30. Jim, G3RTE and Phil, G3SWH will be on both s.s.b. and c.w. with the call W4M, and will be particularly looking for European stations.

Jan, PA9JJ should be using the call C56JJ from the Gambia, in west Africa between 15 and 19 April.

Temotu, which has the call prefix H40 and is in the Solomon Islands north west of Australia, will be activated between 28 March and the 12 April by Nick VK1AA and Ranko YT6A. The web site for the operation is at <http://www.qsl.net/vk1aa/temotu/>

Thanks for the correspondence and logs of your listening activities. Please address your letters to Clive Hardy G4SLU, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW, or to clive@pwpublishing.ltd.uk. If you write, a daytime 'phone number is very helpful.

The Amateur Bands (v.h.f. & u.h.f.)

Band	Frequency (MHz)	
6m	50.000 - 52.000	By convention c.w. and s.s.b. are used in the lower portion of each band
4m	70.000 - 70.500	
2m	144.00 - 146.000	
70cm	430.000 - 440.000	Mostly ATV activity in this band
23cm	1240.0 - 1325.0	
13cm	2310.0 - 2450.0	Satellite + ATV

ST9892



■ DAVE ROBERTS c/o SWM EDITORIAL OFFICES, BROADSTONE

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

Scanning Scene

I read so many differing theories regarding propagation that it seems pretty obvious that no single person has got the complete angle on the subject yet. It certainly never ceases to amaze me what can be received, seemingly against all odds.

At the beginning of February, I was having a natter with a mate of mine on 70cm band simplex. I heard him hollering for me to wait. He sounded a bit agitated. A few seconds later he explained that he had monitored another transmission on our frequency. He had recorded a few seconds of the audio and sent it to me via E-mail. Neither of us can figure out what language it is. It's not French, German or Dutch and sounds more like some sort of central European lingo. Add this to the fact that some months ago, two of us again found an amateur station from Athens, Greece listed on our packet radio lists, it seems that v.h.f. and u.h.f. signals are behaving unpredictably at the moment.

On the same subject I received a note from 'Tiffy' of Peterborough who hooked up an outdoor (I think) CB antenna to his PRO-2042 and received signals that have been romping in recently on 42MHz from police departments in the USA. He thought that he was doing pretty well. He kept searching through the 42MHz band and two days later heard much more traffic from the States on that band. The surprise is that on this occasion he was monitoring using only a magnetic mount multi-element antenna bunged on top of the ubiquitous biscuit tin lid, the whole set-up being sat on the window sill in a room in his bungalow. The property is, he tells me, only a metre or so above sea level.

Yes, propagation is a total mystery.

Unaccounted For

The Metropolitan Police have admitted that around six hundred of their personal radios appear to be unaccounted for. They say that the radios have not been lost or stolen and that there is no security risk associated with the loss. They reckon that the sets have been damaged or destroyed through normal wear and tear, but that they have not been recorded as such. The loss appears to have accumulated over a period of five years.

Having once seen a police officer trying to smash a windscreen on a Vauxhall Astra using a PFX set,

I'm not totally surprised that they get a few written off. The Met say that with twenty six thousand police in their force, the figure of six hundred totalled radios is not too bad over a period of five years. They also say that the sets cost a thousand pounds apiece. Is that the correct figure? It seems a tad excessive. Maybe they are considering an insurance claim! Perhaps they should send a few of their blokes to some radio rallies with a bag of cash. It may save them a bob or two.

Paging Systems

A few questions have been asked regarding Coastguard paging systems. As far as I am able to ascertain, their pagers come in two types, which are both set up on the Coastguard frequency of 156.000MHz f.m. (Channel 0). Both are tone only pagers activated via a 'Selcall' type individual tone set. One model of pager will beep happily to summon the coastguard auxiliary and that completes that unit's function.

More fortunate staff are issued with a pager which can be set to an open squelch mode. This setting enables the pager to receive voice transmissions on Channel 0. Therefore, when the pager goes, the recipient of the page transmission can tune in and get some idea of what the incident is all about by monitoring the radio traffic.

Favoured Frequency

The frequency 173.0625 f.m. has, of late, been busier than usual. For some years this has been a favoured frequency of private detectives and for corporate surveillance. In the last couple of months the south east of England has had more than its fair share of operations on this frequency. Some transmissions are now being encrypted, but this channel can make interesting listening. Rumour has it that the DSS Fraud Investigators (that's the dole cheat teams) have used this one, but I'm by no means sure about this.

Financial Difficulty

The TETRA network operator Dolphin has gone into 'administration' which means that it's in financial difficulty. It seems that there will not, however, be a mass return to analogue communications for their clients as another company called Inquam

has formed a business calling itself Earthdive which are likely to take over the Dolphin licence and network.

Rumours also abound that the Lancashire police are not as happy with their Airwave system as they would like to be. I have heard that the entire system has crashed a few times so far and in addition there are problems with the Air Support Unit who are experiencing difficulties talking with the troops on the ground.

Yupiteru MVT-3300

An often overlooked scanning receiver is the Yupiteru MVT-3300. Advertised by the dealers as a scanner that covers 'most of the useful bands in the v.h.f. and u.h.f. spectrum' this radio has many devotees. As the adverts say, the radio covers many handy frequencies with the main exception of military aviation frequencies and the lower v.h.f. end of the spectrum.

A mate of mine who spends a fair bit of his day in a small company owned van has unofficially installed one of these radios in the vehicle. The audio is taken from the radio to a small extension speaker that nestles behind the driver's seat and the power comes from the vehicle's cigarette lighter to the set. The really intriguing bit is that to ensure that his employers do not realise that the scanner is fitted in the van, he has obtained a small magnetic mount antenna which he has stuck in the centre of the roof inside the back of the load area.

Andy says that the whole set up works a treat and that



while the antenna location is far from ideal, he manages to receive many more signals than he would have imagined with what would appear to be a highly inefficient antenna.

Anything Of Interest

The frequency of 446.950 f.m. has been listed as a channel used by the London Transport people in the past, but I know for certain that a government department were also using this channel at a location some miles west of London. The usage was hand-held sets on a single simplex frequency. Has anyone heard anything of interest on this one recently?

Back In Business

In the USA they call it the Hurricane Season and it makes big news. Where I live the weather forecasters call it an anti-cyclone and put big yellow arrows on the weather map right above my little house. The names are different, but the effect is the same. Winds to well over 112km/h and gusts of wind well over 160km/h. You can imagine the effect that it has on my antennas.

Last week after a period away from home I returned to find that a stainless steel whip antenna that was mounted outside on a bracket had actually snapped in a storm. The remainder of the whip section was so embedded in the 3/8th inch stub that it had to be discarded. I'd made the antenna some years ago from bits and pieces that I had lying around. What was the cheapest way to replace it? Bearing in mind that the antenna has a 3/8th inch stub fitting like an h.f. mobile antenna, I scratched my head and eventually ordered a cheapo CB mobile antenna with the 3/8th fitting. The cost including postage was under ten pounds.

When the thing arrived, I fitted it onto the bracket and base, but obviously found that it was unsuitable for frequencies in the high v.h.f. Hauling it down again I removed the material covering the loading coil at the base and removed the loading, shorting out the two sections of the antenna. Reassembling the unit and insulating it from the elements with self amalgamating tape, I popped it back on the bracket and the results are excellent with the antenna now being resonant at around 160MHz. Having re-erected the h.f. antenna, which had also been destroyed by the storms, I am now back in business.

SWM

Attention-123!

First a few clarifications. We received a letter from **GD of Portsmouth** concerning a comment I made about ENIGMA 2000, where I said that a more in-depth coverage of stations' habits would be useful. It's very difficult to explain what I mean in the space available, however, I did say that ENIGMA 2000 produced an **excellent** newsletter - and you can't get much better than that, yet the letter sadly overlooked this.

I welcome constructive criticism, after all uncritical praise alone never did much to further research! I still believe that ENIGMA 2000 carries on bravely from where ENIGMA (1st) left off, and I did say that I realised how **difficult** (such analysis) could be without numbers of experienced and dedicated monitors - another point that GD failed to notice. It was the sheer quantity of analysis needed which contributed in the ending of the old ENIGMA Newsletter - we'd set standards which were too demanding.

Nevertheless, I must emphasise that thorough familiarity with a station's habits is crucial to effective monitoring. Without this we are likely to miss 90% or more of its output. As different agencies often follow **very** different habits, varying from the very basic to the fiendishly complex, we must bear this in mind when we send in logs. It's all very well saying, for example, that S6 was logged on a particular frequency at a particular time, but one isolated log tells us very little. With many networks, such as Families I and II, it is the **schedule numbers** which are most important and the **schedule pattern**, i.e. monthly, weekly, etc., how often does the SN change, if at all? How often do the times/frequencies change within the same schedule, etc.? What about repeat sequences? Exact frequencies are often the least important of all the variables.

A prime example, taken from ENIGMA 2000's January 2002 Newsletter is the entry for M23, where one entry says simply "Wednesday 0802z 8307kHz". This appears to less experienced readers as perhaps an undated isolated transmission. On the other hand, it may suggest a weekly transmission. Yet in reality, this single example refers to a **twice daily** transmission on both 8.307 and **9.285MHz** (in parallel), and whose start times are both 0800 and 1400z. Furthermore, this should by now be one of the most well known schedules (of any station) in operation, for it has appeared twice daily ever since February **1997** - that's **six years** of endless operation. Even odder is its total lack of messages sent over all that time. M23 is a unique station in many ways, as it has numerous formats, however, this particular schedule uses one of its most familiar ones - a three figure SN sent repeatedly for 10 minutes, with no distinctive ending. This schedule uses the SN 579 (always) and will do so until one day a message may be sent, in which case the SN will change to one made up of three **even** numbers. This alerts the recipient to the long awaited prospect of an imminent message. I've mentioned this schedule several times in the pages of *SWM*, so finding such a misleading entry in the ENIGMA 2000 listing doesn't do it credit.

Listed under 'odd stations' is mention of a strong Morse station which sends repeated 555s (no time or day given). This too, is our old friend M23 sending a zero message, on one of two parallel frequencies (they, and time vary seasonally) - it's not really odd at all, and should be familiar to regular monitors. Over many years, I've often noticed that stations may be described as 'odd' or 'unknown' when really they aren't at all. I'd say that around 95% of 'UNID' numbers stations can be positively identified by using our ENIGMA booklets - (it's a bit like UFO reports!). Not only that, but their habits can often be ascertained, which helps enormously towards predicting where and when they'll pop up next, and most importantly, any surprising changes. If we really want to **find** numbers stations (apart from the obvious and rather boring E10s or E3s, etc.), rather than merely stumble across them, their habits must be understood.

Morse has always presented a problem where logs are concerned, because few monitors seem interested enough to learn the basics, or rather, perhaps they are interested, but imagine that Morse is something far more difficult than it really is! As the bulk of Numbers activity uses Morse, and as it is often more interesting in many ways than voice, it's a great shame that so little in the way of Morse logs is sent in. It's only really necessary to learn the Morse for the figures 1-0 and perhaps a few procedure codes (see our booklets). As the calls are far more important to us than message content, it is very easy to copy these as they are usually repeated many times (say from two minutes to 10 minutes). Any monitor who can remember the Morse for 10 figures (and the system is perfectly rational) should be able to copy a three figure group sent over and over again - even at high speeds.

These comments are not intended to belittle the efforts of well meaning contributors, I say all this merely to raise awareness of the possible pitfalls, which only greater experience can prevent. It is a specialist subject, not at all like logging broadcast or amateur stations, nor even utilities, and we must change our techniques if we wish to do more

than merely list logs at random. Even so, of course we welcome all logs, whatever form they take, but to keep on top of things, we desperately need more dedicated monitors with the time to spare.

Another letter, this time from **FJ of Southport**, makes a correction over my comments on RAF Pitreavie. Perhaps I wasn't clear enough last time. He says, correctly, that this site was a NATO Command and Control Centre and also the SAR (Northern) control centre. Actually, I was aware of this, and I wasn't suggesting at all that it was in any way linked with Numbers Stations - although mentioned in the same paragraph. It was, however, linked through 'Boxer' to the BT microwave network and controlled its main receiving site at Balado Bridge and transmitters at Milltown - still part of the Defence Communications Network. Other UK DCN sites are RAF Chelveston (h.f. TX, moved from Greatworth), Edlesborough (h.f. TX), Bampton Castle (h.f. RX), Rudloe Manor, Boddington, Stanbridge, etc. The Lincolnshire Poacher site, almost certainly at Akrotiri Lake (Cyprus) is also run by the RAF for DCN (which handles the FO's agent-running stations). 'Boxer' was probably the same system which **James of Dunfermline** (see February *SWM*) referred to as linking up with Laurencekirk, which certainly was involved in covert communications. Virtually all UK military sites are now linked by 'Boxer' or its successor. FJ also mentions having been brought up in the shadow of the receiving masts at Kinnaber (Montrose), then part of the 'Y' network and later part of GCHQ (I never realised this, but knew that it became a US Navy repeater site) - and he thinks that this is what got him interested in radio and subsequent career as RAF telegraphist.

Some Recent Station News

An odd **E10** call 'ABC' was noted on Friday 14th December at 1915 sending ABC for several hours. No parallel could be found and I wonder whether this was a test of some kind as the frequency 6.428MHz is new to me also. E10's rare 'HNC' network is still around on its usual 6.575 and the new 5.265MHz. This was on Friday 11th January at 1945 and Saturday 12th January at 2000 - sending 'HNC-Z' only. CIO-2 has another new frequency - 3.230MHz (//4.360//5.340) all noted at once. **E15** (Egypt) has been sending more messages lately. Try 5.530 at 200 daily.

E23 (successor to Swedish Rhapsody - and nothing like as interesting!) reported its 8.188MHz frequency to be strong in Poland - whereas years ago it was strong here. V8 (Arabic music - probably also Egypt) still erratically appears on 6.647MHz at 1900 on second Saturdays of the month. Several of us have heard Khartoum Radio weekly on its carrier. A characteristic buzz suggests that it comes from the same site as the Radio Cairo German transmission on 9.990MHz at 1900 - either Abis, Abu Zabaal or Mokattam. Unlike E15, V8 and E9 transmit from broadcast facilities.

A real oddity, 'The Crackle' has reappeared after a long absence, on the same frequency (5.495//5.505MHz) and can be heard for hours every evening. What is it? What's it doing? The so-called Backwards Music Station is still around too, it would seem, and has been logged by Chris from ENIGMA 1 at 2000 on 5.267 and 6.573MHz. Can anyone help with an f.s.k. teleprinter signal which operates on 4.710, 6.702, 9.000, 11.212 and 15.020MHz. The 4.710 outlet comes from USAF Barford St. John in Oxfordshire, which carries CIA communications from the US embassy in London. A steady carrier is sent when no printer is operating (much of the time the printer would seem to be idling).

Chris has also logged what appears to be a new style of polytone, not like the usual XP of the Russians. It seems to send slowly throughout its transmissions, but as it's only been heard twice we're not yet in a position to be very specific. It certainly has some kind of repeated calling cycle, consisting of just four frequency shifts. Unlike the a.m. used by the Russians, this one uses f.s.k. (i.e. the carrier is shifted in frequency to create the tone), so a stable, accurately tuned receiver would be necessary. (Any cheap domestic receiver can pick up XP, but of course, a small decoder placed by its speaker, or plugged into its earphone socket, would be needed to convert the tones into numbers). I'm surprised that polytone has only ever been widely used by the Russians as it seems a useful method of reception, especially when agents are unable to be present at their receivers a regular times.

Lastly, there's an odd 'pip' type signal on 2.200 and 3.250MHz (often starting around 2015 (and something similar on 4.095). Perhaps a navigational system, but it's new and we don't know what it is. Maybe somebody out there does.

■ GRAHAM TANNER, 64 ATTLEE ROAD, HAYES, MIDDLESEX UB4 9JE

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SSB Utilities

This month we start with a letter from **Tony Barrett** in Devon who writes to provide an update on his antennas. In the February 2002 issue he mentioned that he had just moved house into the country and was considering a better antenna. He writes to say that he now has a 'proper antenna' in his garden, and is now hearing many more signals. His new antenna is an "uneven leg inverted 'V' dipole" which he constructed from a design in *25 Simple Shortwave Broadcast Band Aerials* by E.M. Noll, (unfortunately out of print). Although I am not familiar with this particular book, I have seen similar books by the same author, and they are all well written with easy-to-follow instructions.

Tony's new antenna consists of a 5m vertical wooden mast which holds the centre of the antenna in the air. The coaxial cable from the antenna to the receiver is fixed to the mast. The wire 'legs' of the antenna are of different lengths - one is just under 5m long and the other is just under 8m long. At the lower ends of the 'legs', the wire is fixed to the garden fence via insulators. At the other end of the 'legs', at the top of the antenna, there are more insulators to isolate the wires from the wooden mast. The coaxial cable, which is fixed to the mast, is simply attached to the wire 'legs' of the antenna - the coaxial inner is attached to one wire, and the braided outer is attached to the other wire. This is an extremely simple construction, and as Tony has discovered, it gives very good results for such a simple design.

My only concern with this design is how to adequately seal the end of the coaxial cable at the top of the mast to prevent ingress of rainwater and moisture. The diagram which Tony sent me with his letter indicates that the end of the coaxial is pointing straight upwards and is open to the weather. With the amount of rain that we get in the United Kingdom (and January this year just proves my point!), it will not be very long before water starts to corrode the bare wires at the top of the coaxial. One day you might find that all the signals seem to have disappeared, or those that you can still hear are extremely weak. You will find that your feeder is no longer connected to your antenna.

There are a number of solutions to this problem, and some are better than others. My own recommendation would be to bend the final 100mm or so of feeder back on itself into a loop, and fix it so that this section is pointing downwards. Then, cover this section in self-amalgamating tape. This should stop almost all the rain and moisture getting into exposed cables. This is certainly sufficient for a temporary installation, and would probably be okay after a few weeks, depending upon the weather conditions.

For a more permanent installation, something longer-lasting is required. Other options include making the connections at the top of the mast inside a small waterproof box, making sure that the cable entry and exit holes are on the downward facing side of the box, and sealing these holes with silicon sealant.

Tony reports that the main difference between his old antenna and the new one is that there is much less noise, and very little interference gets through from the television, washing machine and other electrical appliances in the house. Tony reports hearing signals on **13.357MHz** from the SAT-1/2 network (South Atlantic) during early January when 'Springbok 206' was working 'Atlantic Centre' (?) with a position report of 30°S 30°W.

I have done some research into this flight on the Internet and on the SAA website -

<http://www.flysa.com> This flight is from Sao Paulo/Guarulhos International Airport to Johannesburg, departing in the evening from Brazil and arriving the following morning in South Africa. The flight currently

operates only three days each week, departing on Sunday, Tuesday and Thursday evenings. I have never heard of 'Atlantic Centre' working flights in this region, and I wonder if this is a new name, or a name used by one of the Centres. For the record, *Airwaves 2001*, also available from the *SWM* Book Store, shows Bissau, Canaries, Recife and Sal operating on this frequency.

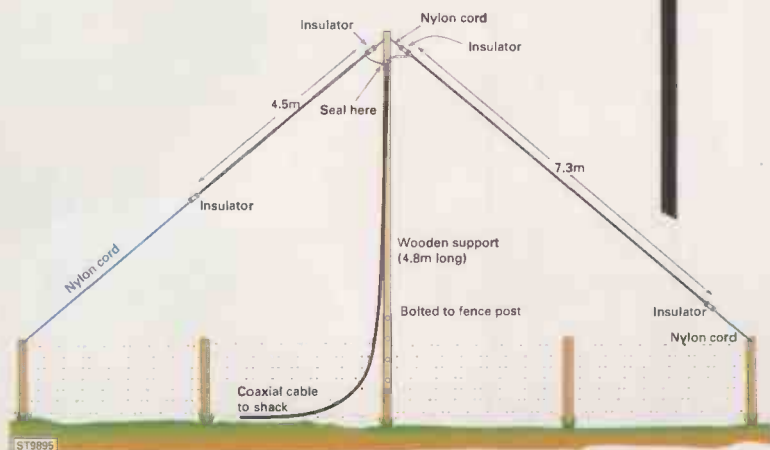
Letters & E-mails

Peter Wade sent an interesting question by E-mail a few weeks ago. Unfortunately it arrived while I was away on a course, so I didn't get to read it until it was too late to do anything about it. Peter wants to know of a source (via the Internet or a publication) that will give details of NDBs and VOR's in Africa, ideally with abbreviations and their full names so that he can track the flightpath of an aircraft on a map of Africa. One of Peter's friends was travelling back from South Africa; Peter knew the flight number and wanted to follow the progress of the flight.

My first thought on this question was the *RAF Supplement* covering Africa - it actually covers the South Atlantic and Africa - would be a good starting point. Peter says that he already has a copy for Europe, but wants to know about acquiring one for Africa. Well Peter, the *AIDU* do sell copies to the public, all that you have to do is to 'phone them or write to them - all the contact details are listed inside the front cover of every Supplement. At the back of each Supplement is a section covering 'Navigational Aids by Identification', but this only really covers NDBs, VOR/DMEs, TACANs and Locators, it does not cover the myriad other reporting points where airways cross or on FIR boundaries.

Another possible source of waypoint information is from Aerad, now known as Thales Avionics Ltd. When I did some filming for the BBC in 2001 I was given a 'Waypoint Directory' covering Europe, and it would seem likely that a similar book exists covering Africa (although I have not actually seen a copy). This book simply lists the Waypoint name, its latitude and longitude, and the country where the waypoint can be found. This book does not cover NDB's, VOR/DMEs, TACANs and Locators so you will need both books to get complete coverage. The copy of the Directory that I have has a 'phone number for Aerad Customer Services - **0208-971-5522**, but you would need to enquire directly with them if such a book exists.

In the February 2002 issue I mentioned a request from **Geoff Grundill** asking for h.f. frequencies for (amongst others) Boscombe Down. **Les Griffiths** wrote to say that 'MPD' (which is Boscombe Down) was active on 5.8078MHz during December 2001, and he also suggests that they may still use 6.754 and 11.178MHz.



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Satellite TV News

Following my report in the last column of the state visit to Kabul by Tony Blair (January 7), another Afghanistan visit took place six days later. Dan Rather, popular TV network news presenter for CBS, New York, appeared in the now somewhat more peaceful war zone meeting the boys from back home. Certainly Dan's a very popular guy, he was seen posing with groups of GIs, inspecting damaged buildings, meeting the higher ranks and generally conducting an extensive and seemingly successful PR expedition for his network. *Europe*Star-1* carried extensive video reportage of this latter visit over the 11.515GHz-V slot (SR 5632 + FEC 3/4), this service identifies as simply '514045'. News feeds out of Afghanistan now are minimal as most uplinking groups have withdrawn their mobile terminals.

The occasional news and feature feed appears out of Afghanistan as **Roy Carman** (Dorking) noted January 28th on *Europe*Star-1*, 45°E, checking at 11.685GHz-V, 5632+3/4, identifying - 'Qandahar'. Just for a change, I'll quote two log entries... "A Huey Cobra of the US Marine Corp on the pan. Ground crew swarming around it, checking airworthiness and re-arming. The focal point being the re-arming of the 20mm cannon, rounds could be seen in close-up being fed clip by clip into the rotary magazine. A missile arming key could clearly be seen dangling from one of the crew's necks. The fervour and urgency of war could be sensed. Also on the pan were several of the helicopters affectionately known as the 'Jolly Green Giant' ". Roy, being ex-army, takes a close interest in things military and can look at many news feeds and 'see' essential military intelligence info. that perhaps most other folk are unaware...on January 31st out of Qandahar on 45°E, 11.545GHz-V and...

"US Marines fully battle clad loading into helicopters. The camera is aboard the chopper, back ramp up and airborne. The orange nightlights come on to allow eyes to settle, these being dimmed later to total darkness, so that when the guys hit the ground, their eyes are accustomed to the dark. The feed later changes to in front of a part renovated Aandahar Interntional Airport, apparently the runway is being extended to allow the US high air freighters in, the build up of the 101 Airborne Division continues apace".

I'm scanning over *Europe*Star* on January 20th looking for any Kabul activity and up pops 'NEWSFORCE AFRICA' on colour bars, perhaps there's a live link upcoming out of the Congo from the volcanic eruption region, but the carrier cuts and nothing was seen again - typical of my luck! (11.512GHz-V, 5632+3/4).

Short Wave Magazine includes content of both the expected, the known and the mysterious! For satellite zappers we too have a most unusual signal that is certainly worth checking out before it encrypts. First alerted by **Dave Dyson** (Accrington) in mid-January I cranked the dish round to *Telstar 11* @ 37.5°W (formally called Orion) and tapped in the magic digits of 11.495GHz-horizontal, SR 19500 + FEC 2/3 data, and sat back in amazement! There's a couple of CNN channels here, one is the CNN USA version and the other - 'CNN Breaking News' - but there's more.

The first channel 'QUADUAV' shows a screen divided into four, three having UTC analogue clocks and the other black. Each of the following three channels has one of the clocks full screen and captioned 'AIRSCAN'; 'P-3' and C-12 MARS'. Dave however tells me that during daytime, usually before 1400, the clocks disappear and reveals air surveillance pictures, it being possible to see the aircraft's fuselage antennas and shots of the earth's surface, buildings, lorries, etc., usually overlaid with geographic co-ordinates confirming ground locations.

Roy Carman (Dorking) also confirms these sightings and both from the surveillance pictures and checking co-ordinates can advise that we are looking at the Balkans, Kosovo, Bosnia, etc. In late January however, the German magazine *Telesatellite International* English language edition* 02-03 came out with a remarkable insight into this 'activity', intended mainly for Albanian

mafia gun/drug running surveillance operations from several known aircraft (Cessna 337 Skymaster, C-12 King Air and a Lockheed WP-3D Orion) around the 30,000ft levels and capable of resolving people standing around cars, buildings, etc.

Aircraft signals are downlinked in S-Band (2.5GHz) to a ground base and uplinked onto *Telstar* and then Ku-band downlinked once more to a main intelligence HQ North of Skopje. This is a developing story deep in international smuggling and intrigue, both from the ground based activists and the background of the aircraft operators, much more detailed information can be gleaned from the *Telesatellite* article itself. (***PO Box 1124 Ascot, Berks SL5 0XH, Tel: (01344) 620799**).

Whilst the Americans are watching mafia crime from space, the French Gendarmes are marching, not against crime, but in an industrial dispute! *Intelsat 801* @ 31.5°W carried remarkable pictures of a large union inspired protest march, the police were seen marching, banners waving and whistles blowing through the streets of a large regional town. Pictures appeared at 11.005GHz-V (5632+3/4) with the service ident 'MONTPEILIER TF1', which perhaps was the town of the law enforcers protest.

Incidentally, both the Anglia and Meridian BT leased trucks are now encrypting their downlinks perhaps following my reporting of their signals in these pages! I checked both the 'BT TES-42' and 'BT TES-43' frequencies (Anglia (10.983GHz-V and Meridian 10.988GHz-V respectively) over several nights and although signals were present, the screen merely said 'SIGNAL ENCRYPTED'.

A couple of readers have commented on the apparent demise of the APTN news circuit on the *Hot Bird* 13°E slot and certainly it's been lacking in recent weeks. The news on the block from a Sutton reader that APTN LONDON has been seen running news feeds on *Eutelsat 2F4* @ 10°E, check on the 12.629GHz-V slot, they're still using SR5632+FEC 3/4 in the clear.

In years past, we all enjoyed pictures of Alpine skiing contests over the EBU circuits on 7°E, but now that's down the blackhole of MPEG 4:2:2, there has been a snowy relief of course in February with the opening of the Salt Lake City Olympic Winter Sports events. One popular and easily received sports feed ex Salt Lake has been found on the Globecast bouquet carried over *NSS-K*, 21.5°W - 11.590GHz-V, SR 20145 + FEC 3/4. Most evenings from about 1800, the test card 'GLOBECAST SLC' is carried with inserts, reports and recording playouts of action, sometimes with Fox Sports News, usually the Globecast channels 1 and 2 carry SLC with channel 3 featuring ESPN PGA golf from the many courses around the 'States.

The *Bob Hope Chrysler Classic PGA Tour* for example was linked evening of January 16th and the 'Phoenix Open PGA' on the 27th, both for ESPN. A little more interesting that the 'GE Lighting' annual world-wide corporate (live from Cleveland) on *NSS-K* Jan 31st and certainly beating the 'World Economic Forum' February 2nd....don't forget the Fox News channel package on *PAS-3R*, 43°W, 11.579GHz-H (19875+3/4) with breaking news and sports action.

So I'm talking on Feb 12th to **Edmund Spicer** (Littlehampton) bemoaning the lack of live BBC local news feeds and he pretty sounds chirpy, check out the *Telecom/Atlantic Gate* 8°W slot he cheerfully suggests, "that's where it's all happening". Last Sunday afternoon (10th) he found 23 sports and other feeds across this slot - the top end being the hottest - most being of European origin, e.g. RTL, RAI, French, Swiss, etc. - the Littlehampton Teleport uses a 650mm Amstrad dish so there must be hope for me...

Finally, can I stress that any satellite reception report within this 'enthusiast' column will originate on dishes ranging from 650mm up to 1.2m maximum, 900mm perhaps being the most commonly used sized dish and no planning permission needed!



'The Balkan Clocks' - airborne surveillance of the Albanian Mafia.



Dan Rather's visit to Afghanistan, via 45°E.



One for the family album, Dan Rather meets the boys from back home, via 45°E.



'Liberty TV' is produced at a London facility house and transmits anti-Iraqi propaganda over *Telstar-12*, 15°W.



NSS-K carries a news feed from the 'States back into Portugal.



The CEO for Apple demos iPhoto as part of the iMac Digital Hub, from the 2002 'Macworld Expo' in California, live over *NSS-K*.



Globecast carries a corporate presentation for General Motors.

■ PETER BOND, c/o EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: skyhigh@pwpublishing.ltd.uk

Sky High

Gales 6 - PB 0!

Well, I just had to tempt fate last month! Just as I'd sent in the finished copy, fate immediately conspired to alter the contents. In my comments last month, I mentioned I kept loosing long wire antennas to the weather because of my properties exposed position. I had moved on to an active antenna with a short wire antenna as a backup, which had been in place for over two years - wrong!

A week after my 'Sky High' copy was sent to the Editor, five or six low pressure systems followed each other in off the Atlantic and the country was subject to winds of 60 or 70m.p.h. with the North seeing wind speeds over a 100m.p.h. My antenna survived the first two storms, but not the third, although to be fair the antenna didn't actually snap, but the tree holding it up did!

A tremendous crash at 0830 one morning lead me to find my garden looking like a war zone, the tree and two antennas were in pieces all over the garden and patio and flying branches had made some very interesting modifications to my greenhouse - ho hum! As I type this on the 11th February, yet another depression is sweeping across the Southwest with winds once again ripping across the front of my house with gusts in excess of 60m.p.h. I'm glad I've got my active loop!

UK Air Defence

In the same vein, since I also mentioned last month that a modest re-armament of some air-arms may be necessary to cope with the increased mission capabilities of NATO, then the government made the perhaps strange decision to disband 5 Squadron at Coningsby, (Tornado F.3s). Perhaps disband is not the correct term, as the aircrew and aircraft are to be merged into other squadrons.

I read several reports that described 5 Squadron as one of the units that would defend London in an attack similar to those in New York and therefore challenged the need to close the unit. Quite often, alert aircraft can be based at a number of forward locations subject to the potential threat and therefore would not necessarily operate from their home base, but where can they operate from?

I would have thought that from the initial ATC response to a potential attack, the time needed to scramble aircraft from the nearest base at say Marham to be in an intercept position over London would be too long? If London was to be seriously protected, I would have thought two aircraft on alert status based on rotation at Northolt would be much more suitable for Fighter Interception duties over the capital? Especially in consideration of the close proximity of Heathrow Gatwick and Stansted, airfields from which a potential New York style attack may originate?

Unfortunately, with only a 1.6km runway, Northolt may not be practical, perhaps they ought to consider moving the Army out of Wattisham and re-open it as a frontline RAF base. Some hope!

ACARS

Firstly, I am grateful to **Terry P** and **Dave W** for feedback on my ACARS article. Terry points out that I should have mentioned that a good external antenna rather than the normal antenna provided with the radio, will greatly improve the quality of ACARS signal and consequently a much higher success rate of the decoded messages.

Dave points out that the ACARS frequencies are more widespread than I suggested and not tied to just to a specific area, such as UK or Europe. As an example, Dave gets good

reception in the North of England on 136.925 which I listed as a European frequency. A quick bit of research soon proved he was right and 136.925 does have one downlink site in the UK located near Glasgow. Next month I will include a listing of the ACARS transmitter sites and the associated frequencies for the UK and parts of Europe.

As promised two months back, I will now take a look at the contents of a basic ACARS message. The following message was received using an old version of Lowe Electronics *Air Master*, other types of software will present the data in differing formats, (see later).

```
[12/02/2002    10:16]
ACARS mode: X           Aircraft reg: .EC-HIT
Message label: Q0 Block id: 3  Msg. No: S03A
Flight id: IB3162
Message Content :-
```

There are five elements to the initial ACARS message. (1) The address field, this will be the aircraft's registration in this instance an Iberia Boeing 757, EC-HIT, for uplink messages it can also be the aircraft's flight number. (2) The Message Label, this is a two character code which identifies the type of message. Here it is Q0 which indicates a test of the data link, other example codes are, 5U a request for weather and 7A which is engine data. (3) This is the downlink/Uplink block identifier. This is a single number which circulates from 0 through to 9 and then starts back at 0. It is used to indicate a new block of information and to help the ground station identify duplicate messages. ACARS messages can often be sent several times to make sure that the integrity of the transmitted data is sound. (4) The message sequence number is a four digit code which can represent the time, (downlink made at 1118 = 11 minutes and 18 seconds past the current hour - not shown in the above example), but more often it can be represented as a message sequence number, in this case S03A with the next message being, S04A, S05A, etc. (5) This is the aircraft flight number in this case Iberia 3162.

The next part of the message is the operational content, which gives a wide variety of information regarding the flights status. There are many two digit codes for ACARS message types, (around 50), for the data sent or requested. For example, CL is cruising level, FX is an en-route fix and OP is oil pressure. In addition, there are then around eighty three letter codes such as, ALT which is altitude, EFC is expect final clearance and TIS which is ATIS information. A smaller number of five letter codes are also in use.

As you can see, some of the codes are fairly obvious, others are not so! The reader really needs to buy one of the in-depth books available on the subject to go into the complexities of this message section and most books will also give a breakdown of all the ACARS codes, available of course from the *SWM* Book Store.



Sky High

Having worked in the industry, understanding messages and codes was not too hard for me, but to anyone who is relatively new to ACARS it can initially be quite daunting! That said, it does not take long to learn the basics and once you have got the hang of it, can be quite rewarding. Of course, if you don't want to learn ACARS in depth, then there is the easier way out by using software, it does depend on how sophisticated the software is and how much of an ACARS message it can translate.

In the 'Sky High' February, I said I had not had much luck with software based ACARS decoders. At the insistence of a friend, he suggested that I try WACARS again, this is a freeware program which can be downloaded from several sites, including

<http://www.geocities.com/CapeCanaveral/Cockpit/9870/wacars/intro.html> not a big file and with my 56Kb modem it only took about three minutes. It is easy to install and the only connection needed is a phono lead (mono), from the 'line out' or 'record out' on your radio to the 'line in' input of your computer's sound card.

Tune the radio to one of the ACARS frequencies, say 131.725, turn the squelch off, fire up WACARS and you're in business. You may need to tweak the volume levels on the computer, I set my line and volume levels to about 70%, which seemed to work fine. Incidentally, to avoid any interference, it is best to get as much distance between the radio and computer as possible, so I suggest you buy a 2.0m audio lead.

The first download I did of WACARS was completed with no obvious problems, but did not seem to decode at all well, this is why I was rather sceptical, the second download was a revelation. Why this download should be any different is beyond me, but the new one worked very well with a high success rate of decoding. Here are a couple of examples:

10:14:11, 14/02/2002

PH-BUN B747-206B 21660/389 GLJK [Anthony H.G. Fokker]
ROYAL DUTCH AIRLINES KL0644 New York to Amsterdam
Using Ground Station X Birmingham (BHX)
.Message No. S93A
Message Type Q0 LINK TEST (Downlink)

10:14:41, 14/02/2002

C-GFAF A330-343X 277 931
AIR CANADA AC0875 Frankfurt Germany to Montreal
Mirabel In
Using Ground Station X Birmingham (BHX)
.Message No. M66A
Message Type B2 REQUEST OCEANIC READBACK
(Downlink)/PRESTWICK CLYA.OC1/CLA 1008 020214
Shanwick United Kingdom CLR NICE 299
ACA875 CLRD TO Montreal/Dorval International, Que
Canada VIA M WATERLOO T
NAT ALPHA M WATERLOO T 53/20 53/30 53/40 53/50 YAY
FM M WATERLOO T/1129 MNTN F370 M082
END OF M Stockholm/Arlanda Sweden GEA23E

It should be noted that this is WACARS version 0.7 dated March 1999, no updated version seems to be available. Whilst the software worked very well the aircraft and other databases which the software accesses are over two years out-of-date.

Raymond Callsigns

I have had a letter and an E-mail from **Jim** and **Ian S** respectively asking for information regarding the

RAYMOND callsigns heard on USAF h.f. frequencies. These callsigns originated with the bases of the former SAC, (Strategic Air Command), with many of the SAC bases having Raymond callsigns allocated to their respective Command Posts.

In the early Nineties, there was a major restructuring of the United States Air Force, with SAC becoming Air Combat Command (ACC) and Military Airlift Command (MAC), becoming Air Mobility Command AMC, both in June 1992. This restructuring meant that some bases changed Command with the changes not only affecting ACC and AMC, but also other commands such as the Air National Guard and the Air Force Reserve.

This meant that over a period of time the bases that were no longer SAC/ACC lost their Raymond callsigns and sadly a number of bases were closed, so the number of callsigns in use was greatly reduced. As far as my records show, the original callsigns were in the number range from 1 to 50 although it has been reported that numbers in the 80s and 90s have been used, but I have not seen or heard any evidence to prove this.

According to USAF documents from mid 2001, there are now just 19 bases allocated RAYMOND callsigns, all of which are ACC except for Luke AFB which is Air Education and Training Command and OTIS which is an Air National Guard base. Here is a list of what I believe are the current Raymond callsign allocations, as usual if you can amend the list please let me know. Those marked with *, are callsigns I have noted in the past year.

RAYMOND 06*	BARKSDALE
RAYMOND 07	CANNON
RAYMOND 08	DAVIS MONTHAN
RAYMOND 11	EGLIN
RAYMOND 12*	MINOT
RAYMOND 14	HOLLOMAN
RAYMOND 16	LANGLEY
RAYMOND 17	MOODY
RAYMOND 18	LUKE (AETC)
RAYMOND 19*	ROBINS
RAYMOND 21*	OFFUTT
RAYMOND 22	NELLIS
RAYMOND 23	HILL
RAYMOND 24*	TINKER
RAYMOND 26	SHAW
RAYMOND 27	MOUNTAIN HOME
RAYMOND 33	ELLSWORTH
RAYMOND 36	OTIS (ANGB)
RAYMOND 37	DYESS

This leaves four ACC bases with a question mark by them, they are:

RAYMOND 25	SEYMOUR JOHNSON
RAYMOND 31	BEALE
RAYMOND 32	POPE
RAYMOND 39	WHITEMAN

These callsigns are not listed officially and I have seen no reports of them, can anyone confirm if these callsigns are still in use?

For our photo this month and with the airshow season approaching. I thought we would have something unusual. Seen here on the approach the Paris Air Show at Le Bourget in 1993, is PK-XNC a Maritime Patrol version of the CASA 235.



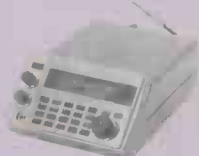




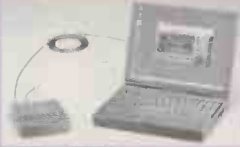
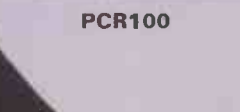


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The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

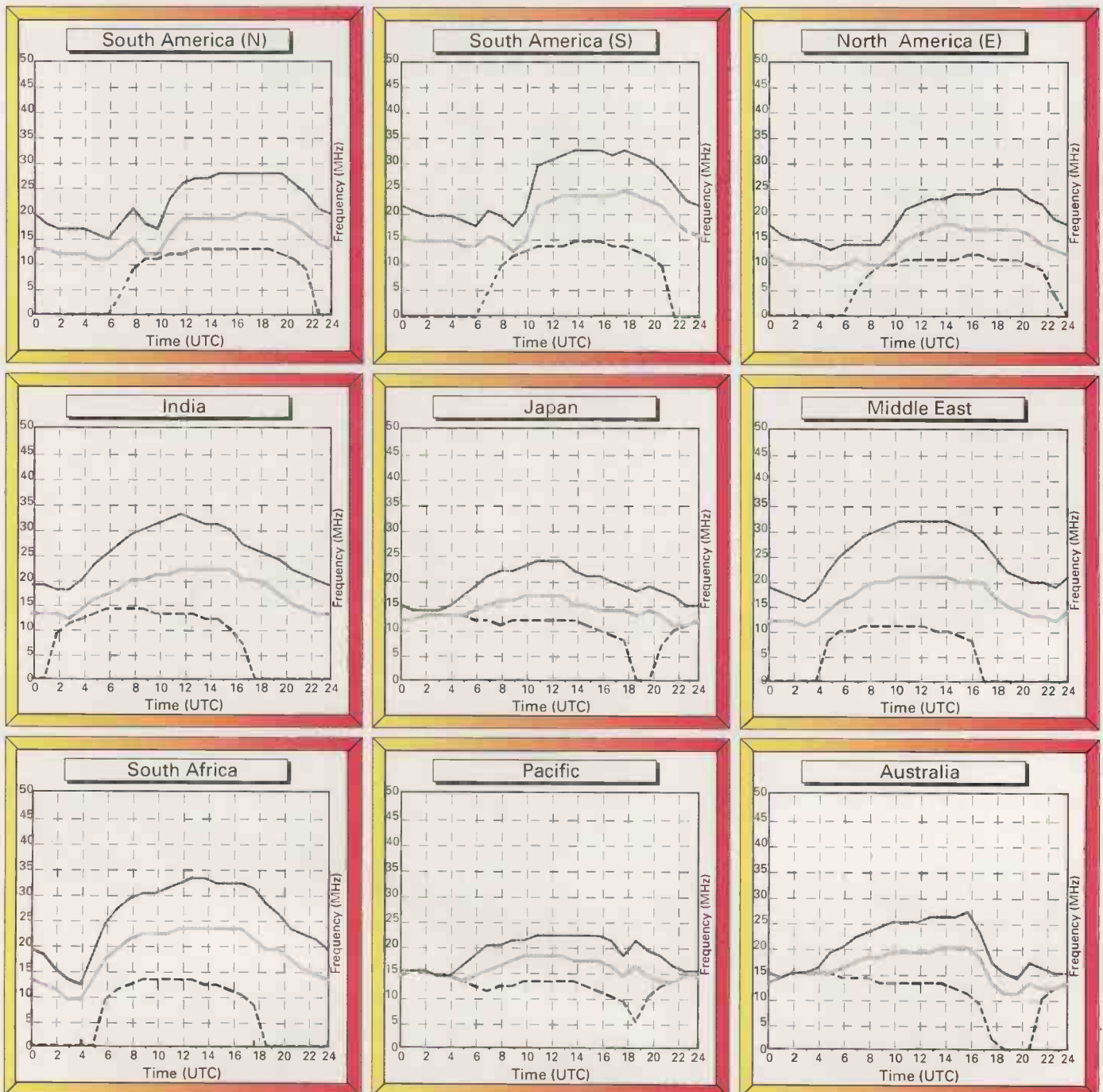
probability of success for the path and time.

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.

April 2002

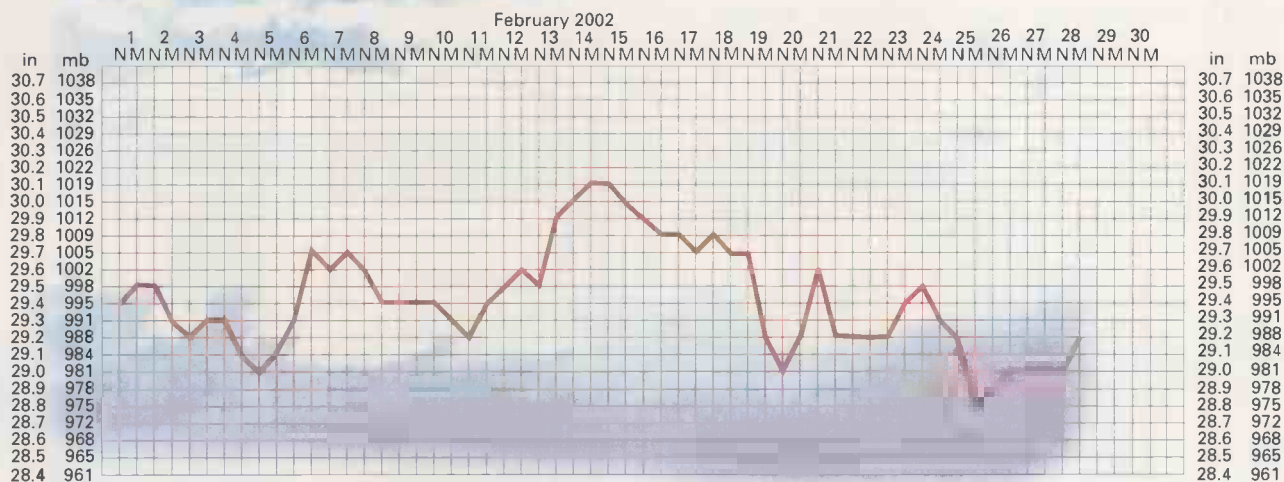
Circuits to London



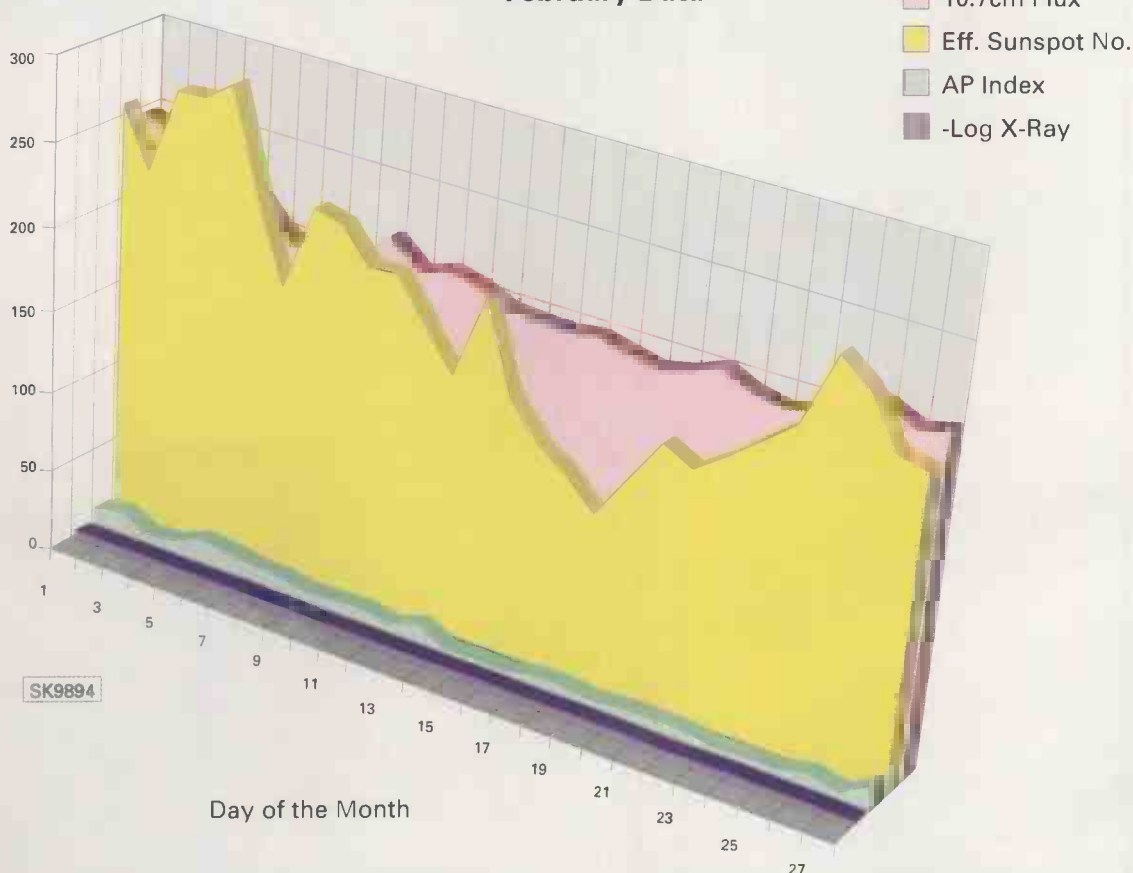
SK9893

Propagation Extra

Ron Ham's barometric pressure chart, taken at Storrington, W. Sussex, February 2001.



February Data



guide to the chart

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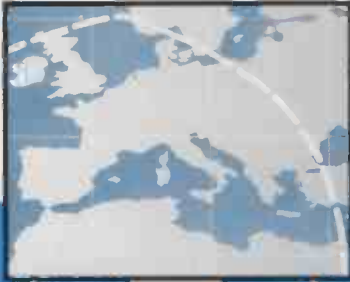
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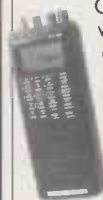
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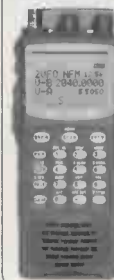
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Info in Orbit

I told a colleague that a high pressure area was coming over Britain in three days, and that settled weather should follow, hopefully allowing me to complete the concrete base for the observatory. She asked me if I used "astrology" to forecast this...so I told her "the word is astronomy", and explained that I had merely watched the BBC's Sunday forecast of weather for the week ahead!

The unsettled weather that plagued us from New Year, bringing gales and flooding, also brought problems with antenna stability. Whilst concentrating on concrete laying, the installation of new masts for the a.p.t. and h.r.p.t. antennas was postponed. Rarely do we see such strong winds forecast, but anything over 40m.p.h. causes me concern, so 65 to 70m.p.h. prompted me to remove both the h.r.p.t. dish and the crossed dipole - both already at ground level. It was

some days before they were re-installed. Throughout this period, my METEOSAT system behaved flawlessly, enabling me to monitor the rapid movement of systems across Britain and Europe.

METEOSAT is currently scheduled to continue transmitting WEFAX (weather facsimile) images until the end of 2003. Maybe it will continue for longer - its continuation depends on the final launch and operation of the METEOSAT Second Generation (*MSG-1*) spacecraft that will replace it.

EUMETSAT announced: "Primarily due to a significant further delay in the

development of the image processing element of the Ground Segment, the launch of *MSG-1* had to be postponed from the planned date of July 2001. Another factor contributing to the postponement of launch is the uncertainty about the selection and availability of an Ariane launcher as a result of the shock levels imposed on the satellite and its instruments by the *Ariane-5* launch vehicle. Until the availability of the Ground Segment (the equipment) can be assured and the launcher issues are resolved, *MSG-1* cannot be launched. The current planning date for the launch is in mid 2002".

To assure continuity of EUMETSAT satellite

services from geostationary orbit, parallel operations between the current METEOSAT and the MSG system are agreed until at least the end of 2003. "The on-board fuel of *METEOSAT-7*, which currently provides the operational service from 0° longitude, is sufficient for this period to be extended if necessary" says EUMETSAT.

Those considering purchasing a system to receive/decode METEOSAT WEFAX therefore face the possibility of the system being terminated at the end of next year. If you are a member of the Remote Imaging Group (see their advertisement in this magazine), such systems can currently be bought for under £200. For beginners with no equipment, this seems a reasonable entry-level price. There may sometimes be opportunities to buy on the second-hand market if you monitor the WXSAT forums on the Internet.

Watching The Weather

From a very large number of METEOSAT frames, I selected two to demonstrate the effectiveness

of monitoring the movement of clouds and weather features using the infra-red (D2) images. These are transmitted every 30 minutes on channel 1, but I am showing two images, separated by one hour where the movement is enough to show it on a small scale reproduction. When a weather front is passing across your locality, it becomes possible to estimate quite accurately the timing of the passage. Using these images, Marion (XYL) and I could see that the next stage of the concreting could be resumed a few hours later. Short periods of torrential rain did not seem to affect reception, and I was glad that at least

this mode of WXSAT imagery was available under difficult weather conditions.

Kevin Hughes of Tamworth was also concerned about the strong winds, but interference to his WXSAT signals made itself known in late January. He wrote: "After roof mounting my Paul Hayes QFH, replacing the coaxial cable with top grade stuff and connecting everything up to my primary RX2 unit (the WXSAT receiver kit marketed by the Remote Imaging Group - built for him by Paul Telco, a fellow member of RIG), I switched on and hoped for the best. Sadly, however, the interference was as bad as ever!".

Kevin noted that there was "an extremely strong and clear buzzing noise underneath the ping-ping sound of the satellites". After discussions with Paul, who advised that it was 50Hz electrical mains interference, Kevin did several tests using a portable a.m. radio, and wandered around the house. The noise was loud, and unfortunately he could not identify the

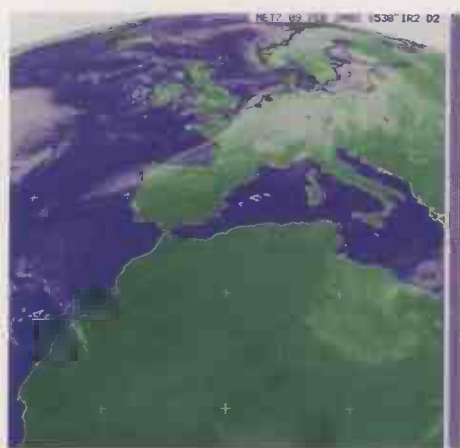


Fig. 1: WEFAX METEOSAT-7 infra-red D2 image 1530UTC 9 February 2002.



Fig. 2: WEFAX METEOSAT-7 infra-red D2 image 1630UTC 9 February 2002.



Fig. 3: METEOR 3-51124 31 January.



Fig. 4: *FENGYUN-1C* 0832
18 February 2002 from
Southampton.

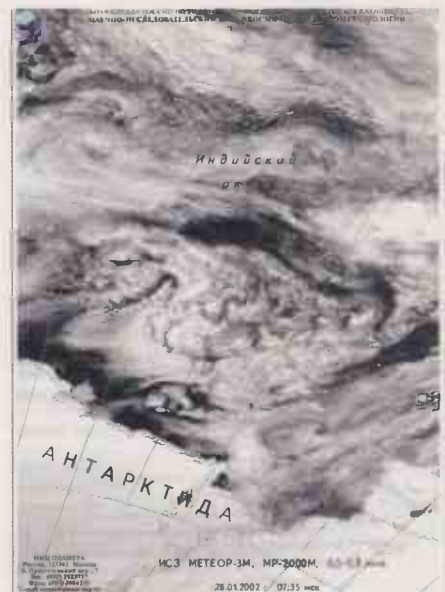


Fig. 5: *METEOR 3M-N1* on
28 January 2002.

Fig. 6: *NOAA-14* 0700
11 February 2002.

culprit. As a last resort, he powered the RX2 using a car battery, and then shut off all electrical power to the house from the mains itself - but the buzzing was as loud as ever. He reasonably concluded that it was not being generated by anything in his house. He then wrote to East Midlands Electricity asking if they could check it out for him.

Figure 3 shows one of Kevin's images with the characteristic mains interference seen as wavy lines spoiling an otherwise good quality transmission. This *METEOR 3-5* image shows that Kevin has good reception characteristics from his antenna; the WXSAT has been monitored from north Africa to beyond Iceland.

Whilst investigating the mains interference, Kevin became aware of the strength of the wind in early February. "When I got home from work I checked my three roof-mounted antennas (QFH, turnstile and discone) to see if they were OK in the severe winds. The discone and turnstile were just fine, but the QFH (the highest, and with the largest area offered to the wind) was swaying and already tilting badly. I just had to wait. Inevitably, about half an hour later, I heard a thump and went outside. The first aluminium mast section (angled to get the main mast away from the house) had given way and was now bent double. The QFH and main mast were lying on the lower roof - both still in absolutely perfect shape I'm very pleased to say!". Before they came down, Kevin found he had recorded an image showing the weather system that was causing the problems.

The saga of Kevin's interference continued, and an engineer from Powergen's 'Power Quality Department' arrived with a plethora of hi-tech gear, and proceeded to set up in the garage where the mains enters the house. Kevin showed him the problem, as seen in his recent images, and the engineer was able to hear the interference for himself during the early and late stages of a morning *METEOR 3-5* pass. Having run his equipment for an hour or so, he was fairly certain that the interference was 'airborne' and not a fault with the mains supply.

The next decision is a difficult one. Kevin has to consider contacting the Radiocommunications Agency and filling in one of their interference report forms. He

would then have to pay for one of their people to visit and find out exactly where the problem comes from. Kevin tells me "I understand that they are very thorough, and that if they find the cause, I will be refunded". Hopefully there will be a happy ending!

FENGYUN-1C - Backup Systems Operational

On 6 February, the winds eased and I gratefully re-installed the h.r.p.t. dish on its mount. This mount is still stabilised only by weights sitting on the four legs, but I plan to move it on to a steel mast as soon as time permits. The first *FENGYUN-1C* pass that I could take was at 1818 on 8 February, and to my concern, all the image bands were effectively empty.

I sent an E-mail to the 'wxsat-l' mailing list and Scott Gennari of Hawaii replied: "Channels 3, 4 and 5 appear to be inoperative for the last two passes over Hawaii (February 8, 1720 and 1900). Channels 1, 2, 6, 7, 8, 9 and 10 appear to be valid in the CHRPT stream". He added, "If I recall correctly, *FY-1C* has a backup channel bank, so this may not be the end of *FY-1C*. Channels 3, 4, 5 contained valid data for the pass at 0044 on February 8, so the problem developed sometime after this".

Another batch of poor weather here in Britain caused me to again dismantle the dish, but by the time I re-installed it, the first *FY-1C* pass that I took was at 0832 on 18 February - and it was a stunner!

METEOR 3M-N1 Image

Although not transmitting either h.r.p.t. or a.p.t., this latest in the *METEOR* line-up has been providing regular images to Russian ground stations. Tatayna Bourtseva is the Head of Informational Department where I contacted her through the Space Monitoring and Informational Support Laboratory, and she kindly gave permission for me to include a recent image from the satellite obtained while passing over Antarctica.

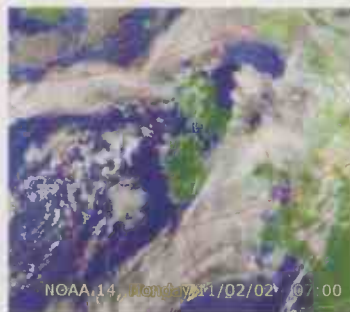
NOAA Operations

Regular day/night a.p.t. channel switching resumed on *NOAA-14* and *NOAA-15* on 12 February. From that date, channels 2 and 4 are transmitted during the daylight portions of each orbit, and channels 3 and 4 on the night portion. This process of changing channel operations (channels 2/4 or channels 3/4) is carried out by a command sent to the spacecraft by NOAA, and stored.

Wayne G. Winston is the Direct Readout Coordinator of the Direct Services Division, and he explained: "We can determine where the terminator is with respect to the spacecraft accurately.

However, since the command is not changed frequently, an 'average' time is used. So, at certain times of the year the visible frame will only have partial illumination, and drift into full illumination with the passage of time".

Visit <http://noaasis.noaa.gov/NOAASIS> for general information on NOAA operations.



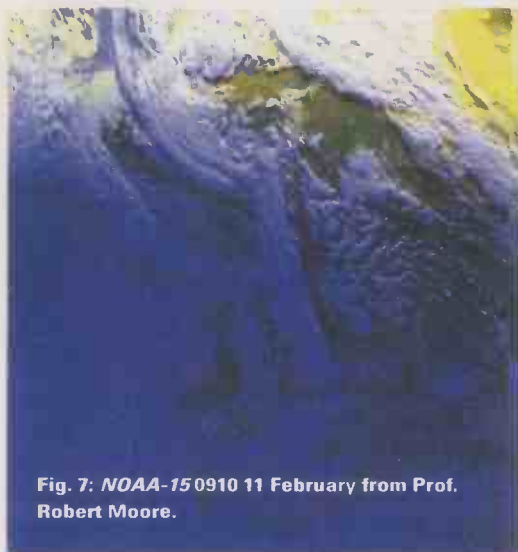


Fig. 7: NOAA-15 0910 11 February from Prof. Robert Moore.

NOAA-14 - The Revival

It was an unexpected bonus to find that NOAA-14 resumed normal high quality image transmissions in the New Year, following several weeks of unsynchronised pictures. NOAA personnel had instigated a routine daily re-synch pulse - as is now done with NOAA-15 - but initially without success. The AVHRR motor current then reduced, indicating that the motor was not fighting the probable bearing drag so much. Wayne Winston commented: "There is very little we can do from the ground to cure that, especially if (caused by) a lubricant failure".

George Newport E-mailed me Fig. 6, received and processed by Jeremy Rolye. This is the infra-red (channel 4) image from NOAA-14 showing the rain clouds sweeping across Britain that day. The image has had artificial colour added.

Professor Robert Moore of Holywell in Flintshire recently set up his new Timestep HRPT system in North Wales, on a north-facing hill. Of necessity, this limits his horizons such that satellites are not seen until they reach around 20° to 30° elevation, but to compensate for this, having the dish about 165m above sea level, and

having a clear view to the north enables him to receive good pictures down to below 5° elevation, and even a trace of signal at 1°.

Figure 7 shows his first view of the UK mainland, and is supplemented by a FAX transmission - see Fig. 9 - showing the surface analysis prepared at 0600UTC the same morning. Robert



Fig. 8: Simulation of NOAA-15 pass from David Taylor's WXtrack.

comments "By looking at the 0600UTC surface analysis alongside the satellite picture, we can see that there was a clearance behind a cold front. Ahead of the front and passing into the North Sea are the clouds which were the source of the floods in Yorkshire on the 10th. The remains of an occluded front may be seen to the north in both the weather FAX and the picture".

I ran a simulation of the NOAA-15 pass using David Taylor's WXtrack software to produce Fig. 8, showing the scene covered by Robert's picture, and helping to place the fronts. By coincidence, this time period follows that in Fig. 6, but it is viewed from a different perspective and different satellite.

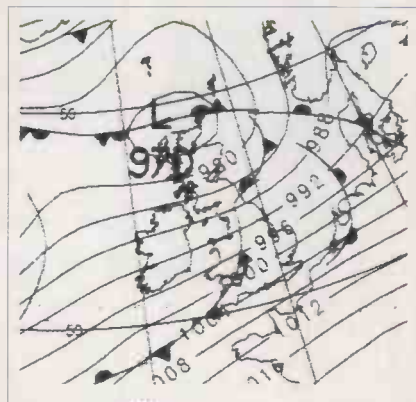


Fig. 9: Surface analysis for 0600 11 February.

Winter-time in Greenland

David Taylor made use of the Satellite Active Archive facility provided by NOAA to obtain an h.r.p.t. (high resolution) image file. I have mentioned the SAA web site - <http://www.saa.noaa.gov> - in a previous edition. Users register (at no cost) and can request a (possibly very large) recorded file obtained by a NOAA WXSAT while it was passing over a selected region.

This fantastic facility returns files that can then be processed using David's freeware program ReadHRPT - as David did to produce Fig. 10. Pack-ice off the east coast of Greenland is seen in this thermal-channel image, with Scoresby Sound visible on the Greenland coast about two-thirds down the image. You can also see the flow structures caused by the arctic winds and Iceland is at the bottom right of the image.



Fig. 10: NOAA-16 at 0513 on 25 January 2002 from David Taylor.

International Space Station - Component Launch Schedule

STS-110 shuttle *Atlantis* mission to the ISS scheduled for 4 April. Primary payloads: ISS thirteenth flight (8A)/Integrated Truss Structure S0, Mobile Transporter.

STS-111 shuttle *Endeavour* mission to the ISS scheduled for 2 May. Primary payloads: ISS fourteenth flight (UF2)/Multi-Purpose Logistics Module Leonardo-Mobile Base System, and crew rotation.

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 unresolved faults with a.p.t.
 NOAAs transmit beacon data on 137.77 or 136.77MHz.
 METEOR 3-5 uses 137.30MHz.
 OKEAN-4 and SICH-1 use 137.40MHz for brief transmissions.
 METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.
 GOES-8 (western horizon) uses 1691MHz for WEFAX.

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DX Television

The almost daily F2 ritual has been fairly predictable during January with strong F2 signals emerging on Channel E2 around 0730 with a drop-off in intensity around mid-morning. Activity on Channel R1 has appeared to increase when the E2 signals subside with reception continuing past 1300 some days. Occasionally, E2 activity has resumed towards noon, p.m.r. from the east has also been heard until late afternoon.

F2-Layer Reception

Brian Williams (Penarth) comments that signals on E2 (48.239, 48.250 and 48.260MHz) appear most days while those on R1 (49.740, 49.750 and 49.760MHz) only establish during 50% of the openings. Determined not to miss an opening while at work, Brian records the daily F2 event from 0715 with the tuner set to 'around E2'.

On the 3rd at 0934, **Stephen Michie** (Bristol) resolved sample text pages from, possibly, EDTV (Dubai). The lack of digital information within the sync-bar suggests that this station does not have a conventional teletext service.

F2 on the 13th provided exceptionally strong and clear pictures from Syria on E2 for Stephen. In fact, levels attained 61dBµV without amplification and its large L-shaped logo was easily readable. Incidentally, Stephen noticed Syria on the 29th without the logo!

At 1032, on the same day, **Peter Barclay** (Sunderland) saw programme previews with pictures sandwiched between two thin horizontal white lines with text below. Iran (IRIB-2) is the likely contender and the previews have been received during other openings.

Transatlantic TV

Conditions to the west have shown a definite improvement recently. At 1410 on the 17th, **Tim Bucknall** (Congleton) was confronted by a mass of co-channel signals on US TV Channel A2 (55.25MHz). At 1427, one of the stations became clear revealing a hospital drama before the screen became a co-channel mess once again. CKCW, Moncton, New Brunswick is the prime suspect, although one of the co-channel stations may have originated in New York, according to their zero offset frequencies. In Derby only the tail-end of the opening was captured between 1450 and 1505, with the signal peaking to the north-west. The signal was weak, but there was no mistake that it was a 525-line 60Hz picture.

On the 27th at 1310, **Peter Chalkley** (Luton) heard VE1YX on 6m followed at 1330 by strong signals from K3ZO, K2ZD, WW1Z and KB1HY. Unfortunately, the m.u.f. stayed below A2.

The 19th was quite a productive day with football from Syrian TV continuing until 1347 according to Peter Barclay (Sunderland) and **Simon Hockenull** (Bristol). By 1240, R1 was extremely active with exceptionally strong, but unidentified signals on 49.740, 49.745, 49.755 and 49.760MHz.

Possible Jamming Signal

On the 21st at 1120, there was a curious rolling effect among the pile-up of co-channel signals on R1. This could be steadied by adjusting the field frequency of the receiver, but nothing sensible could be seen due to the jumble of signals. Interestingly, European DXers have reported colour bars on this channel with an obscure frame rate of around 55Hz! The nominal frequency of the station has also been described as unstable. Many years ago in Korea a 60Hz cross-hatch pattern was generated on R1 to jam North Korean broadcasts. Could the strange colour-bar signal be a similar r.f. weapon?

New-Look DXTV Website

There is a brand-new look to our DXTV and Archive TV website. It's more 'user-friendly' and it can be updated much more easily than the old site which began on 2 November 2000. You can find it at the original website address: www.test-cards.fsnet.co.uk

Sporadic-E Reception

At 1645 on the 3rd, Spanish programmes with adverts were reported on E3 by **Simon Hockenull** and **Tom Crane** (Hawkwell). Italian broadcasts on A (RAI Uno) and E2 (TELE A+) also showed. The 8th was good too with TVE-1 again on E3 between 1636 and 1645, this time captured by **Peter Barber** (Coventry). A little later, RAI Uno on A was present between 1653 and 1716.

A strange combination of F2 and Sporadic-E was encountered on the 29th. At 0725, Stephen Michie identified Syria on E2, but by 0745 the German 'Morgen Magazin' from ARD had swamped it. Spanish pictures were later seen on E3 and E4.

Tropospheric Reception

On the 3rd from 2238, Stephen Michie discovered a subtitled English film followed by the Danish TV-2 PM5534 test card on E30 and E33. The next morning Stephen describes a 'rogue' signal between E8 and E9, consisting of colour bars with a logo in the lower-right of the screen. Initially local cable leakage was thought to be responsible, but a more plausible explanation is the reception of Channels R9 (Eastern Europe) or IG (Eire). A selection of Dutch captions, received at u.h.f. by Stephen, is featured this month.

FM Reports

While visiting Muir of Fowlis, a reception dead-spot in Aberdeenshire, **George Garden** (Edinburgh) was surprised to hear various Norwegian f.m. stations during a tropo lift on the 4th. Those identified using RDS included NRK P1 on 93.5 and 94.2MHz, NRK P3 on 91.8 and 95.0MHz, P4 Norge on 100.1 and 102.8MHz, P4 Riks on 101.9MHz and NRK Hord on 89.1MHz.

Patrick Wylie (Ballyclare, Northern Ireland) advises that Thunder 107 on 107.7MHz is a 12W relay also sharing the Energy and Magic site. In the north-west, WABC 103.9MHz from Donegal transmits to the Causeway and coastal areas.

Vincent Richardson (Dolgarrog) lives in a secluded valley running north to south and has recently discovered Dublin Country 106.8FM signals using an lcom receiver and pre-amp. The station does not seem to be listed and is the only Irish station identified in Dolgarrog.

While travelling through Europe recently, **Geoff Scott** (Blackpool) noticed a new Belgian radio network in Flanders called Q-Music. The RDS gave additional information such as transmitter locations. In the Netherlands, the RDS of Sky Radio (100.7MHz) airs not only the usual station identification, but also the name of the programme and the title of the music being played.

Now, isn't that supposed to be one of the special benefits of expensive DAB radios in the UK?



Fig. 1: Caption used by STER (Netherlands) to introduce commercials.



Fig. 2: Part of the NED-2 (Netherlands) identification graphics.



Fig. 3: Caption shown via NED-3 on Channel E30.



Fig. 4: The wide-screen BBC Test Card 'W'.

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.

Finally this month, don't forget our new-look DXTV and Archive TV website at www.test-cards.fsnet.co.uk

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Decode

Lots of goodies this month with the latest, all singing, version of *JVComm* plus a brand new beta version of *Digital Atmosphere*. But we'll start with some basics to help some of the new listeners get to grips with this aspect of our hobby.

Shane Begbie has written asking for some help with the basic connections to use when setting up a decoding system. Shane is using a sound card based decoding system so the set-up is quite simple. However, it's surprising how often Murphy's law (anything that can go wrong will go wrong!) comes along to make even the simplest tasks difficult. To try and overcome this, I'll start from the receiver and work through trying to cover off all the things you might need to consider.

Getting a suitable audio signal from most modern receivers is not usually a problem. By far the best connection to use is the 'line-out' or 'record-out' this will usually be either a 3.5mm jack or a phono socket. I prefer this connection because the signal is extracted before the receiver's volume control so the signal is a steady level. The other benefit is you can turn the receiver's volume up and down without having to

worry about losing the signal to your decoder. If you don't have a 'line-out' or 'record-out' jack then you will probably have to use the external speaker or headphone socket. This is really a second choice, but is still perfectly suitable for use with a decoder. There are two disadvantages with this connection 1) the signal to the decoder varies as you adjust the receiver's volume and 2) plugging into this socket usually mutes the internal speaker so you can't hear what's going on. There

are a couple of ways around this. The first is to get yourself what's called a 'Y' connector with the appropriate plug to fit your receiver.

This allows you to plug the 'Y' connector into the receiver so presenting two sockets one of which can be used to feed your decoder, whilst the other can be used for an external speaker or headphones. If you use this system you just need to be mindful that altering the receiver volume also changes the signal level going to your decoder. Fortunately, many of the modern, sound card based, decoding systems feature their own volume control and level meter, so it's quite easy to keep an eye on things and make

adjustments on the fly.

Having managed to extract a suitable signal out of the receiver, we now need to get it safely into the computer's sound card! This usually requires a lead with a 3.5mm jack for connection to the computer. Unless you're lucky enough to have one of the SoundBlaster cards with the remote front panel

connection, you will have to get to the back of your PC to make the connection. It's worth clearing a bit of space to make sure you have a clear view of the sound card connectors because they're not usually very clearly marked. You may even have to look out the paperwork for your computer to identify the sockets. You are now faced with a choice because most sound cards have at least two input connections 'mic' or 'line-in'. The 'line-in' is the one to choose because the 'mic' input is generally much too sensitive and you will probably run into overload problems. A word of warning at this point, never run your decoding program with the volume set too high - it's a dead-cert. for introducing decoding errors.

Ok, so we've got the signal into the computer we must be there now? Only one more point to check and that's your sound card's recording control. If you look at the bottom right of your computer screen you will usually see an icon showing a small slider, this is the control panel for the sound card where you can adjust the levels. In addition to adjusting the output volumes, you can also choose which input to use and set the input level. This is where many new listeners get in a muddle as many sound cards are set with the 'mic' as the default recording input whereas you really need it to be set to 'line' for utility work. If you don't have the slider icon in your systems tray, you can still get at the adjustment via the control panel. Assuming you're using *Windows 98* here's the sequence: START - Settings - Control Panel - Multimedia - Audio Tab - Recording options. This should give you a panel where you can see the available recording option. Just tick the box of the Line input and set the slider at about mid-point. If this doesn't supply enough signal to your software,

you can come back to this menu later and increase or decrease the slider as necessary. Now I think that's just about it, you should have a respectable signal being fed from your receiver to your decoding software. If you've come across some pitfalls that I haven't mentioned here, please drop me a line and I'll try report them back through this column.

JVComm32

Regular readers will note that I gave this program a short mention last month but there's now a more complete preview release available with some very interesting extras. Those of you who've been around a while will no doubt remember the days when *Hamcomm* was the number-one RTTY decoding package. In those days, one of the main attractions of the program was its built-in SYNOP and SHIP decoding routines. I probably ought to take a little time to explain this. Have you ever monitored the RTTY weather stations that are to be found scattered throughout the h.f. bands? If so you will have noted the almost continual transmission of groups of five digits. These are not some secret spy code, but encoded weather reports from stations all over the world. The reports from these stations follow an internationally agreed format that enables data from all manner of stations to be automatically processed by the world's most powerful weather prediction

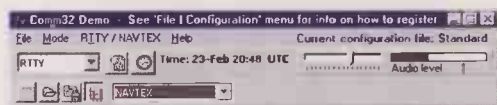


Fig. 1: Main Panel
JVComm32.

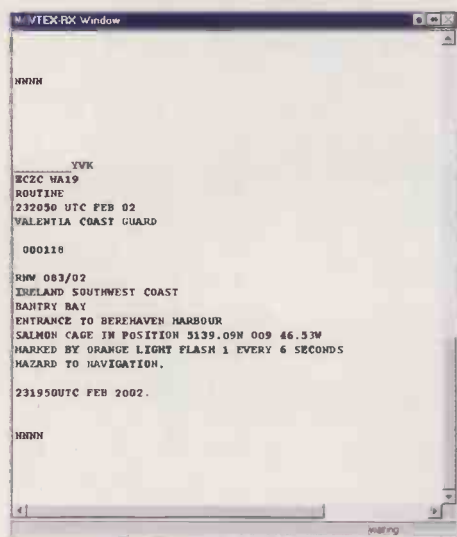


Fig. 2: Text Receive
Window *JVComm32*.

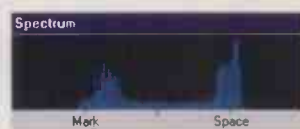


Fig. 3: Spectrum tuning display
JVComm32.

computers. What was so good about *Hamcomm* was the inclusion of some lookup tables and software routines to convert these coded transmissions back into plain text versions of the original weather reports. This facility really brought these stations to life and added an extra dimension to RTTY listening. The good news is the facility is back in the latest release of *JVComm32* (v1.21Pre) and it works just as well as the earlier systems. In fact the author, Eberhard Backeshoff DK8JV, has really made *JVComm32* a very attractive package for anyone wanting a decoding program to gather weather data from the h.f. bands. Featuring FAX (h.f. and Satellite), plus RTTY SYNOP and now it even has a pretty sophisticated NAVTEX system a really well thought out combination.

Let's just take a closer look at the new RTTY and NAVTEX systems. To make the system easy to use, the RTTY modes have been well chosen with 45/170Hz, 50/85Hz, 50/450Hz, 50/850Hz and 75/850Hz baud/shift options. There's also a normal/reverse button for those cases where the signal polarity is reversed. Tuning is simple thanks to a very clear spectrum display that automatically adjusts its scale to suit the mode you've chosen. There's also the ability to choose the RTTY audio frequency and to activate the automatic tuning control system. This is great if you can only tune in 100Hz steps, as altering the RTTY frequency or setting the a.g.c. will ensure perfect tuning. Alongside the spectrum display is a neat input level meter and volume control slider. As well as showing a conventional level display, the bar in the meter changes colour to aid adjustment. If the level is too low it turns a dark maroon, at the optimum level it turns green, whilst overload is indicated with a bright red. Bearing in mind what I said earlier about avoiding overload, this makes control of the audio level really easy. I tried the decoder under many different conditions and the decoding routine seemed to be very robust and give low error rates. As soon as decodable text is recognised it is displayed in raw format in the main receive window. This window has a sizeable buffer allowing you to scroll back to look at earlier parts of the signal without having to stop the decoding. The interesting bit though was the Selective Message Viewer. In this screen, the incoming messages are decoded into plain text in real time. This worked really well and used a neat system of breaking the messages up into their appropriate message numbers. This made looking through the received data a real breeze. You just use the message number scroll box to choose the message you want to view. Needless to say, you could choose to save message to disk or print them out. I also rather liked the facility to be able to pick-out specific stations from within a NAVAREA.

Receiving NAVTEX message was just as simple and used the same receive window and Selective Message Viewer. When receiving NAVTEX you were given additional choices to choose both the station to monitor and the message type. This was very similar to the range of options you would get with a professional NAVTEX system.

All-in all the new *JVComm32* looks to be a pretty impressive package and it's still in its preview version. If you would like to give it a try a visit to the Pervisell site at:

www.pervisell.com

Although most of the functions work without registration I would encourage you to register or we'll ultimately lose Eberhard's skill and expertise in the specialist hobby area. If you don't have Web access, you can contact Pervisell at: **8 Temple End, High Wycombe, Bucks, HP13 5DR Telephone: (01494) 443033.**



Fig. 4: Typical sound card inputs and outputs.

Weather Graphics

Having last month reported that a new *Digital Atmosphere* program is on the way I'm pleased to be able to report that a beta version is now available for download from the authors' Web site. The program is pretty hefty at 14.3MB but well worth the trouble. The graphics are excellent and being able to plot your raw RTTY data on such a sophisticated system is a real delight. If you want to try it out pay a visit to:

www.weathergraphics.com/beta.htm

Remember, this is just a beta version so there will inevitably be a few bugs but it's well worth a try. I'll give this package full coverage once the final release is available.

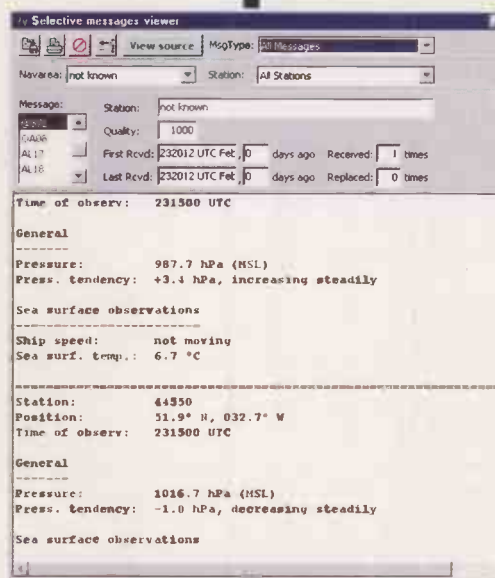


Fig. 5: *JVComm32*'s Selective Message Viewer window.

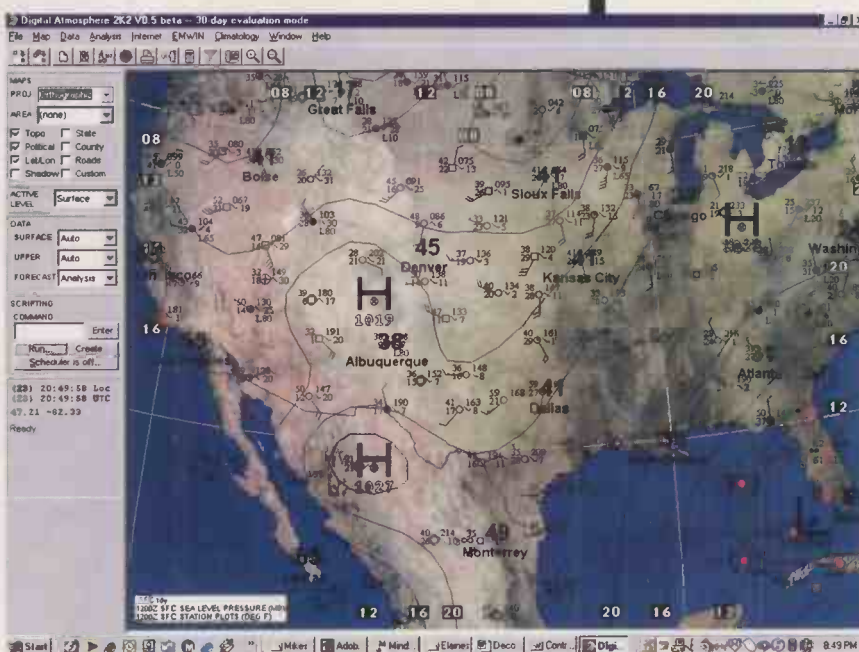


Fig. 6: New *Digital Atmosphere* graphics.

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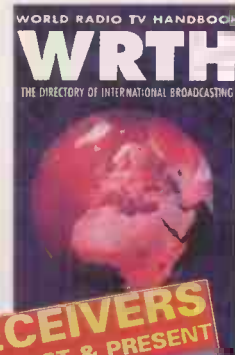
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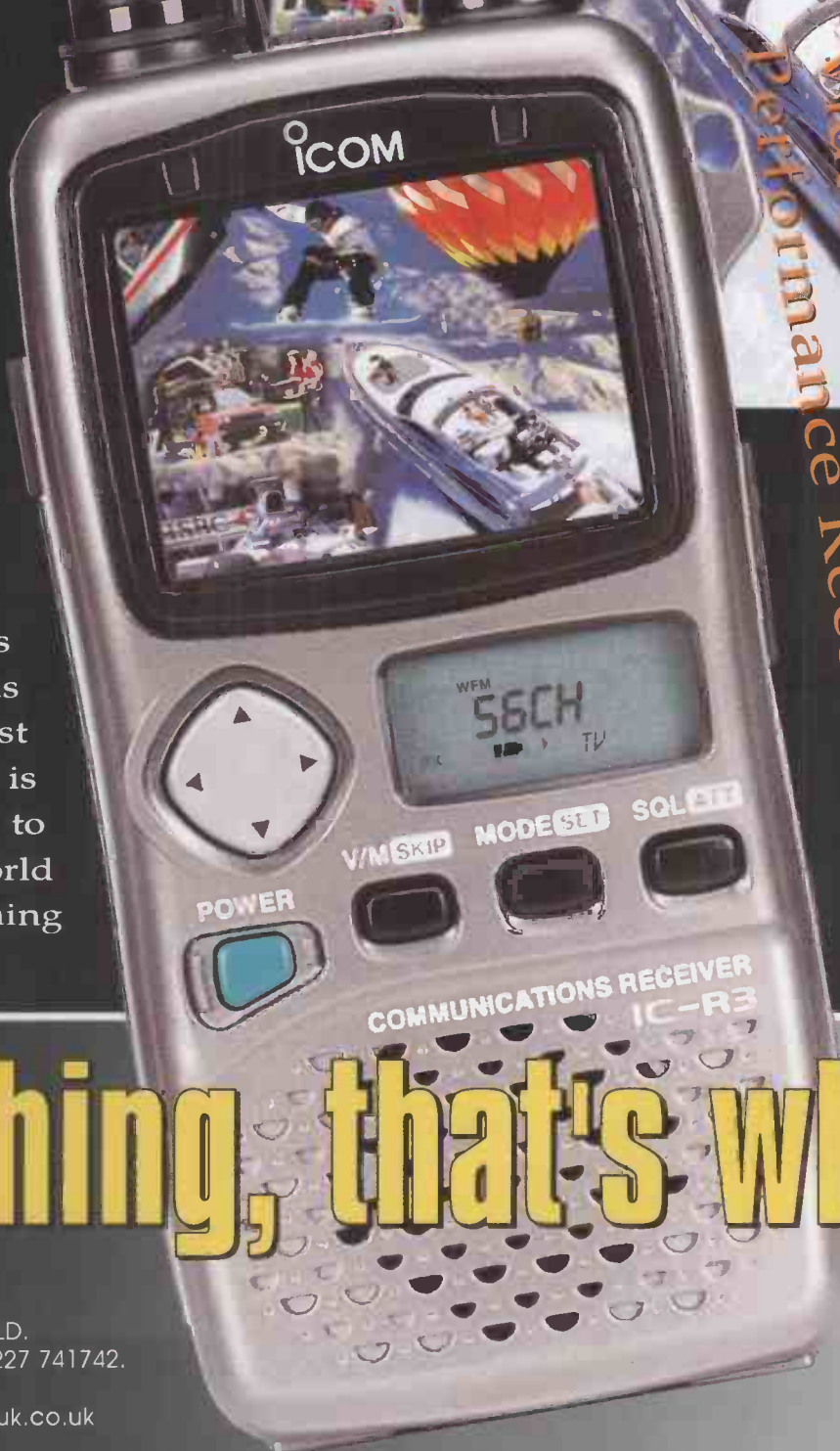
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