

& Scanning Scene



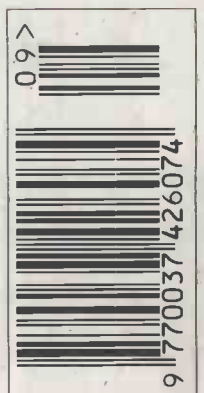
bhi d.s.p. noise reducing speaker reviewed

21-960
JW shakes down the RX-350



DECODE SPECIAL

- *Software Round-up*
- *Complex Mode Freqs*
- *Vital Decoding Tips*



the POWER to perform

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wideband scanning receivers



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- Channel scope
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- Frequency counter
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- S Meter
- FM Stereo receive
- Two level attenuator
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Includes FREE:

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- Battery saver cct
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- Weight: 14.5g (without batteries)
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- CTCSS/ DCS
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- Alpha-numeric display
- Turbo search 300 steps /sec
- Turbo Scan 100 ch/sec
- Supplied c/w Antenna, Earphone, Belt Clip, Nicad battery, 240V UK Mains adaptor

£179.95
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NEW!

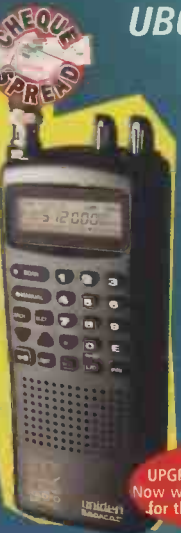
UBC 9000xlt

- 25 - 1300 MHz (with gaps)
- 500 memory channels
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- Selectable Attenuator
- Selectable Delay
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£269.00
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- Channel or Freq display
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NEW UPGRADED MODEL
Now with 80 memories for the same price!

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- AM/FM/WFM
- 100 memory channels
- TURBO SCAN 100 Channel/Second
- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Programmable Search
- Channel Lockout Key

£129.95
Bearcat Scanners



UBC 220xlt

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

£149.95
Bearcat Scanners



UBC 3000xlt

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

£199.95
Bearcat Scanners



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The SHORT WAVE Magazine contents

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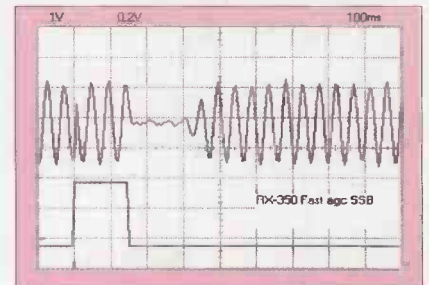
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cover subject:
Ten Tec RX-350
under scrutiny
this month.

Broadcast

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- 12 LM&S



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- 17 **BHi DSP Speaker Review**
Kevin Nice G7TZC looks at a brand new product from a brand new British company. The self-contained noise reducing speaker represents a new approach to noise reduction.
- 38 **Dancing DSP - Ten Tec RX-350**
Another d.s.p. based short wave receiver is the centre of John Wilson's attention this month. The Ten Tec RX-350, having recently gained CE approval, is all set to appear in many shacks around the country.
- 43 **What Does It All Mean?**
Our guide to abbreviations and acronyms.



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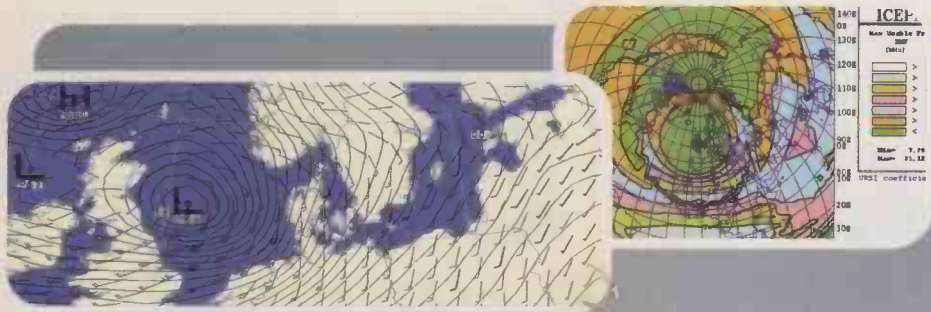
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To provide you with a ready reference here are the contact details of all our regular authors.



Decode

Special



Pinneberg B (RTTY 147.3 kHz)
 11.0 Pinneberg B (RTTY 11039 kHz)
 14.4 Pinneberg B (RTTY 14467.3 kHz)
 1 Halifax CFH (RTTY 122.5 kHz)
 1.2 Halifax CFH (RTTY 4271 kHz)
 4 Halifax CFH (RTTY 6400.4 kHz)

23 Software Round-up
 In this year's 'Decode Special', Mike Richards starts off with a selection of tried and tested packages to help you select the right program to match your interests.

26 Frequency Listing
 Mike treats us to two versions of Day Watson's *Complex Frequency List* - one sorted by mode and one by frequency. Most useful!

30 Decoding Tips
 Finally, to end this 'Decode Special', Mike shares with us some of his vast experience gained through many years of radio operating and decoding data signals.

34 Decode - The Column
 Mike's regular monthly column.

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Coming Next Month

in SWM Oct 2002

- **Broadcast Special with Martin Peters**
- **JW examines an amazing steerable wire antenna, the K9AY from Wellbrook Communications.**
- **Win a bhi NES10-2 d.s.p. speaker**
- **PRO-89 Scanner - reviewed**

**contents subject to change*

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Share your thoughts

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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.**

Photocopies & Back Issues

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

Binders are also available (each binder takes one volume) for £6.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

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

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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

Our recent competition which was featured in the *Scanning Scene Extra* supplement presented free with the July issue of SWM, is proving to be very popular. We have masses of entries pouring in daily. One entrant was so keen he has sent a total of 21 entries, only one of which is valid on the original entry form complete with printed corner flash. The other entries were all photocopies of the original.

Sadly, our keen entrant has not got all the answers correct so his one valid entry will not count when we make the draw. Just for the record, we are happy to accept copies of entry forms, so as not to damage your copy of SWM, providing they are accompanied by the corner flash.

Cambridge

I'm back this week from a short break in Cambridge on my annual pilgrimage to the Cambridge Folk Festival. The recent foul weather made for a very interesting long weekend camping in the mud. The resulting chaos made for much v.h.f. radio activity around the Cherry Hinton site. A quick search through the *PROMA Scanning Scene CD* that we included on the cover of the January 2001 SWM will provide some of the frequencies in use.

I was fortunate enough to have on loan a pair of Meade Instruments mini binoculars which allowed a good view of the stage from the various vantage points our party adopted. This very useful optical aid, which not only provides 8x magnification, also includes a built-in 640x480 pixel, 400mm equivalent digital camera, great for capturing those zoomed images. If like me you are an antenna spotter, these Meade 'capture view' integrated binocular and digital camera are a must. I must thank **RuSk Limited** of Cannock for the loan. For more information call (01543) 468855 - the Meade 'capture view' cost £99.99.

Sustenance

Whilst we cooked most of our meals at the Festival, albeit in the rain, it could have been much simpler. I have just received some samples of some self heating cans of food known as Hotcans. These 420g tins which are available in seven different flavours, heat themselves after activation in about 15 minutes, producing a piping hot meal. I could certainly have done with one of these a few years ago when I ventured up to the summit of Snowdon with a couple of radios to work some DX on v.h.f./u.h.f. As is so often the case with mountains, it was a warm pleasant day at the bottom. At the summit, however there was high wind which lowered the temperature close to freezing. I recall that after only a short while I had to visually check that my thumb was still pressing the p.t.t. button on my TR-2300,



my hand was so cold I had lost the feeling. About 30 metres lower it was much warmer, but a quick Hotcan meal would have prolonged my operating session significantly. It strikes me that Hotcan ready meals provide the ideal food for DXpeditions and radio field days where operating and not cooking is the priority, they also feature ring pull opening so you just need a fork or spoon. There are seven different flavours available and each meal costs as little as £3.35 - details of **Hotcan Ready Meals** can be obtained by phoning (01246) 268988 or from their website: www.hotcan.com



A Plea

I have recently resurrected my Trio TR-2300 which had enabled me to make contact with several EI stations using 1W on 2m from the summit of Snowdon. I intend using the rig mobile, but unfortunately, since it is a couple of decades old, I'm having trouble finding a mobile bracket for the radio. I wonder if anyone reading this has, or knows of, a TR-2300 mobile bracket that is no longer required. If so I'd be very interested in purchasing it. Trio also made a specific power amplifier to help the TR-2300 become more effective for mobile use. The PA raised the power from 1W to a more usable 10W - I'm looking for one of these too.

Fresher Look

As you flip the pages of this issue of SWM, you'll notice some of the regular pages have had a face lift, Bob Kemp our designer has been giving the magazine a fresher look. I'm very pleased with the results. What do you think? Let me know.

Morse Assistant

I've had a few readers drop me a line regarding the Morse Assistant project. Two of them have requested that we supply p.c.b. artwork for the project. It wasn't our intention to supply artwork for this project as none was supplied by the author. I am however prepared to reconsider this if there is enough demand as I do take the point that it would open up the building of the project to less experienced constructors. I must apologise for not having published the parts list for the Morse Assistant, this will appear in next month's SWM. I will also attempt to place it on the SWM website before that issue is published to satisfy those of you that can't wait.

Enjoy the brighter look.

AWM 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

Re: Letter from Jason Bowler, Leicestershire, 'QSL' July SWM.

I also am a beginner to s.w. radio and subscribe to your excellent magazine, a lot of which is not understandable, technical data, etc., and like Jason, I would like to know more about improving my set (Yupiteru MVT-7100) and look forward to a future article on my hand-held radio. I hook mine up to a Royal discone and have recently had some good results on I.s.b., picking up people from all over Britain and further. My shack is nothing more than a space in the attic of my garage, enough for two sunchairs and a shelf for writing and my desk-top holder for my rig, a few mains outlets for plugging in rechargeables, mini TV, radio, etc. It's a place to find a bit of peace away from my main house and listen in. I look forward to the next edition of SWM.

**Mike Luxton
Powys**

Dear Sir

I have just picked up a copy of SWM off the newsagents shelf, something I find myself doing every few months and I read it for everything it contains. Now, after reading Brian Oddy's excellent 'LM&S' column, I have been reminded of something I have often tried to find answers for. And that is why do no broadcasters take advantage of the 25MHz band? In all my years I've only come across three broadcasters on here (RFI, DW and BBC). OK, so if its only useful during the sunspot peak, well, that's a good three or four years of activity on a band that's devoid of other transmissions, works well on low power and puny antennas when compared to the vast curtain type arrays used elsewhere. Three or four years is a lot longer than the three or four month annual changes broadcasters make, so I can't believe its a scheduling problem. These days, even the cheapest of receivers, even analogue ones, come with the 25MHz, so there's no excuse here either.

Maybe SWM could do some 'investigative' journalism by asking broadcasters why or maybe even the EBU? Unless your readers know better?

**Andy Foad
via E-mail**

We will endeavour to discover the reasons for the reluctance of broadcasters to use 25MHz. I

guess Andy, you'll need to read SWM more frequently too as not to miss the answer... - Ed.

Dear Sir

Getting hold of SWM (and PW) is becoming a major problem. Many WH Smith stores no longer stock the magazines. The store at Waterloo Station gave up ages ago. Last night I could not find either magazine at the huge store at Victoria Station. The only radio magazines displayed were *Elector* and *Electronics World* and believe me, I searched carefully. The staff, as usual, were not helpful or interested. They 'only work there', an attitude which in the USA would lead to instant dismissal. None of my local agents are interested in taking any of these publications, yet illiterate computer magazines are two a penny.

It is surely in your interest to apply some pressure on WHS to stock you magazine, at least at their major outlets.

**Michael O'Beirne G8MOB
Surrey**

Michael, I have written many lines on this subject in the past. Getting your magazine on newsagents shelves is one of the major priorities for any publisher of specialist titles such as SWM. We constantly strive (battle) to maintain/grow our presence in all stores. I have highlighted the specific stores you mention to our publishers. We will continue to do everything possible to ensure a good supply of SWM in stores. - Ed.

topqsl

Referring to the letter from Rab Thompson shown in July's SWM, my 30 years experience as both a radio listener and engineer means that I am very aware of the failings of the super heterodyne system and very familiar with cross modulation or overload problems, neither which applies to the effect that I am observing on the RMC 216kHz long wave signal after dusk on most evenings.

First of all, the small difference in frequency of the signals rules out any image and 2nd image problems. You can play about with the figures all day, the outcome is still the same.

Cross modulation can also be ruled out as I am only using indoor antennas without any amplification and when I have noticed the signals from either Allouis on 162kHz or Saarlouis on 183kHz appearing in the background of RMC on 216kHz, the tuned signals from either Allouis or Saarlouis are often weakened due to sky wave interference. Also, if it was to overload or cross modulate, I would be hearing the usual noises and interference associated with cross modulation across the band, effecting all the other weaker long wave stations that appear during the evening. I do not think the engineers or designers at AKD, ITT, Marconi, Rank Bush Murphy, Roberts or Sangean, would be very happy to hear Rab Thompson's criticism of their receiver's inability to cope with the level and number of signals found on the long wave band. In fact, I think they would be quite upset.

I am thinking about putting a few words together about the Luxembourg effect for a possible future short article for SWM, if the Editor is interested!

Finally, in reply to Arthur Grainger's letter, also in July SWM, the experience gained through analogue DX propagation, by most people, should be very useful for any future digital DX reception. I have already experienced some of the effects on Digital Terrestrial Television (DTTV) and Nicam digital stereo reception under enhanced tropo lift conditions on the u.h.f. TV bands. I think DRM will offer the best possibilities for any future DX possibilities, but there will be problems for any long distance DTTV and DAB (Digital Audio Broadcasts) reception. In some locations, it will be impossible to pick up anything more than your local digital multiplexes due to the design of the receiving boxes and transmission network.

Unfortunately, with a young family and a job, I am both financially and time strapped, which means I will be sticking with my existing analogue receivers for as long as I can. If, in the meantime, all analogue transmissions end, well, there's always spherics or solar flares to listen to!

The way things are going, I will not have the money or time to re-equip for digital until I retire, which these days means when you reach 60 years old or more. This, for me, is a long 18 years or so away!

**Simon Hockenhill
Bristol
Via E-mail**

Radio Caroline Back On Radio Waves

Latest news from WorldSpace - they have recently signed Radio Caroline to their list of broadcasters. Radio Caroline (like another of WorldSpace's new broadcasters NPR) is going to be a subscription service. At the moment, both of these stations are free-to-air, while WorldSpace complete final testing and allow existing listeners a sample of the quality that these stations offer. Radio Caroline will be a subscription service at £4.99 per month, paid annually.

Also, Radio Caroline, WorldSpace and Nevada have teamed up to offer advance subscribers a special discount on the package of a WorldSpace receiver and 12 months subscription (valid from the date of encryption) of £20 off! This works out to four months free! All customers need to do is telephone Nevada on 0239 231 3090 and ask for the Radio Caroline Promotion (ref: RC 1964). This means that customers will be able to buy the Joyear DAR-VS2000 plus a full year's subscription to Radio Caroline for only £169.87! (other models are also available). There is also a promotion for existing WorldSpace listeners, all you have to do is contact WorldSpace Customer Services on 0207-494 8222 for more details. More information at www.worldspace.com

Farewell to Fearless

Scarborough Special Events Group will end their 2002 season of special event stations with GB5FF over the weekend of 12-13th October. Activity will be on 40m s.s.b. and c.w., 2m s.s.b. and f.m., 70cm s.s.b. and h.f. PSK31.

The amphibious assault ship HMS *Fearless*, the Royal Navy's last steam driven warship, was built in 1965 and has had a long and distinguished career. Her finest hour came in 1982 when she acted as command ship during the Falklands War, leading the British taskforce into San Carlos Water. She was adopted by the resort of Scarborough in 1991.

HMS *Fearless* returned to Portsmouth earlier this year after anti-terrorism duties off Afghanistan. She was de-commissioned and taken out of service in August, when the ship's bell and battle honours were presented to the Borough of Scarborough. The white Ensign will be hauled down for the last time on 31st October and there are plans to turn her into a Falklands War Museum.

A special souvenir QSL of HMS *Fearless* at anchor in Scarborough's south bay during her last visit will be issued to commemorate the occasion and QSLs can be sent via the Bureau or direct to club call G0000.



Hot Off The Press

Just available, 18th edition of *Radio Stations In The United Kingdom* is hot off the press and available now from the British DX Club. This edition is a comprehensive 56 page directory of medium wave and f.m. radio stations in the UK, covering all BBC, independent, access and long term restricted service broadcasters, and is a must for anyone interested in UK domestic radio, either as a casual radio listener or specialised DXer. This edition also includes, again, a free supplementary guide to radio stations in the Republic of Ireland. More information (and price details) from the British DX Club at 126 Bargery Road, Catford, London SE6 2LR or visit <http://www.bdx.org.uk>

New Award

The 'Chelmsford The Birthplace of Radio' Award is sponsored by the Chelmsford Amateur Radio Society and is issued to commemorate the Centenary of Marconi's first Trans-Atlantic Radio Transmission on the 12th of December, 1901. Marconi's first radio factory for design and production of equipment was in Chelmsford, England.

To obtain this Award, which is open to all radio amateurs and s.w.l.s, use any one letter from the suffix of a callsign of a station worked or heard to spell CHELMSFORD THE BIRTHPLACE OF RADIO. Only one callsign shall be used per letter, a total of 30 callsigns will be required. One callsign used shall be from a station located in the Chelmsford, UK, Postal District, (the Chelmsford Postcode is CM). For example: The 'R' from G1QRT could be used to represent the 'R' in RADIO.

Any band or mode or a mix will be eligible, no repeater contacts. All QSOs shall be on or after 12th December 2001. No QSLs are required, a log extract certified by another amateur will be accepted.

The Award costs 10 IRCs or \$10 or £6. Sterling only cheques can be made payable to the Chelmsford Amateur Radio Society. For every award issued, a donation will be made to Essex Air Ambulance, which is an emergency helicopter completely funded by sponsorship and fund raising events.

Send all applications to Martyn Medcalf M3VAM/G1EFL, 47 Paddock Drive, Chelmsford CM1 6UX or visit <http://www.g0mwt.org.uk>



College Classes

City College Coventry are running amateur radio classes from September 2002 for the Foundation Licence/Intermediate (Novice) Licence/Full Licence (RAE)/Morse Class (5/12w.p.m.) Amateur Radio Constructional Class. The City College Coventry are located at Tile Hill Centre, Tile Hill Lane, Coventry CV4 9SE. Contact Michael G4GHJ via E-mail: m.dixon@staff.covcollege.ac.uk or from the Course Enquiry Team on 0247-679 1000.

rallies

70 Years Of Sound

This year marks a great achievement for **Roberts Radio** as the company celebrates 70 years in the portable radio industry and 70 years of service and commitment to the independent dealer. From humble beginnings in 1932, when Harry Roberts and Leslie Bidmead founded the business, the company has grown steadily to become a leading player in not only the portable radio market, but also in British manufacturing with an enviable reputation in commitment, quality and ability to react quickly to market and product evolution.



The Roberts' team are delighted to be part of the business at this exciting time in the company's history. Roberts' radios are as much seen as objects of desire, synonymous with stylish design, durability and superior sound clarity, as they were in the 50s. The Roberts' portfolio offers something for everyone. 'Revivals' for the style gurus, short wave for the travellers, sports' products for sports' fans and the Classic and Lifetime ranges for those who simply want a high quality product.

August 25: The MKARS 16th Rally is to be held at St. Paul's School, Phoenix Drive, Leaden Hall. Doors open at 0700 for traders, 0900 for buyers. Talk-in on 145.550. More information about bookings from **Dave** on (01908) 501310 or www.qsl.net/g3hiu/rally.html or rally@bletchley.net

August 25: The Coleraine & District Amateur Radio Society are holding their annual radio & computer rally at the Bohill Hotel, Cloyfin Road, Coleraine. Doors open at 1200, 1130 for disabled visitors. **Peter M10CIB** on (02870) 351335 or **Jim G14ORI** on (02870) 352393.

August 26: The Huntingdonshire Amateur Radio Society are holding their annual Bank Holiday Monday Rally at Ernulf Community School, St. Neots, Cambridgeshire (near Tesco Superstore on A428). Doors open from 1000 till 1400 and admission is £1.50. Hot and cold refreshments will be available. There will also be a hall and car boot on hard standing. Talk-in on S22. **Peter Herbert M5ABN** on (01480) 457347 (between 1800 and 2200) or E-mail: peteherbert@aol.com

September 1: The Telford Rally takes place at the Aerospace Museum RAF Cosford, Nr. Wolverhampton. On A41, one mile south Junction 3 - M54. There will be all the usual traders, big boot sale and a flea market. Telephone (01952) 299677 or E-mail: mstreet@g3jxk.freeserve.co.uk for details.

September 8: The Anglian 5 Essex Rally - The Suffolk Data Group are holding their Rally & Surplus Sale on the Raceway Centre Green at the Foxhall Stadium, near to Ipswich, Suffolk. There will be Amateur Radio, Computer, Electronics, Computer Jumble and Surplus Equipment, Car Boot and lots more. There will be a huge, free car park and mouth watering refreshments. Traders and Booters admission from 0800 at £5. Visitors admission from 0930 and is still only £1. Everybody welcome, no need to book, just turn up on the day. Talk-in on S22. More information from www.antrina.net/hamradio/sdg-rally-2002-info.htm or from Rally Manager **Peter G8HUE** on (01473) 631313.

September 8: Lincoln Short Wave Club Hamfest takes place at the

Lincolnshire Showground situated on the A15 five miles North of Lincoln. Doors open 1030, admission is £2, under 14s free. There will be free parking, Bring & Buy, trade stands, flea market and catering. Contact **Dave** on (01522) 878481 or (07961) 961494.

September 15: The Waterside (New Forest) Amateur Radio Society are holding their Radio & Computer Rally at Applemore College, near Hythe, Hampshire, off the A326 Southampton to Fawley Road, at Tesco Superstore (follow the yellow signs from M27 or A35. Doors open 1000 and entrance is just £2. Talk-in on 2m, free parking, two indoor halls and field traders, refreshments and special interest groups. More information from **Bill Simmons G0XAZ** on 0238-078 3170 or E-mail: bill.slimmons@southernwater.co.uk

September 20/21: The 31st Leicester Amateur Radio Show is being held at Castle Donington International Exhibition Centre, near junction 23A, M1 motorway. Doors open Friday 0930 till 1730 and till 1700 on Saturday. More information from **Geoff Dover G4AFJ** on (01455) 823344, FAX: (01455) 828273.

Something In The Air

Recently landed on the SWM Newsdesk was a copy of *Something In The Air - A Guide To The Rugby Radio Masts* written by Pete Chambers (as seen on ITV's *Heart Of The Country*). This little booklet, as the title conveys, covers Pete's interest in Rugby radio masts, along with a little history of the masts and quite a bit more. Available for £1, this fascinating little booklet can be obtained from Pete Chambers at 110 Richmond Street, Coventry CV2 4HY, Tel: (0773) 6845616 or visit masts@tencton.com



Solar-Powered light could be a life-saver

Lives could be saved in developing countries around the world, thanks to a bright idea from a young, London-based designer. His invention 'Re-light' is an alternative light source for rural communities where thousands of children are killed or maimed each year by fires started by oil lamps or candles. Re-light is the brainchild of Sylvain Willenz, a Design Products student at the Royal College of Art, received a special environmental design award of £2000 back at the beginning of July from the British Standards Institution.

Sylvain says: "Re-light is solar-powered and environmentally friendly and can continue to be used at the end of its natural life as a photo-frame. In addition to being useful in rural communities in developing countries, Re-lights could be used by people on the move like motorists, cyclists and campers who need a lightweight, convenient source of illumination".

The design takes advantage of state-of-the-art light emitting diode (l.e.d.) technology which outperforms many other kinds of light by lasting up to a hundred hours in use while using significantly less power. To protect the Re-

light from exposure to dust or water, it has been designed without external moving parts like switches or buttons. Instead, the light is activated by an internal tilt switch. This enables the entire circuitry (solar panel, l.e.d.s, batteries and tilt switch) to be completely encased in clear resin.

When the solar panel faces upwards, the light is off and can charge in the sunlight. Turning the light into any other position will switch it on automatically. The Re-light will give up to ten hours light per day and is designed to last for four years. Although the Re-light's ability to be used as a picture-frame means that recycling or disposal are not necessary after the light function stops working, the inventor has still made sure that the tilt-switch and rechargeable batteries are free of cadmium and mercury.

Sylvain has sent a Re-light to Angola for field testing by *Medicins Sans Frontieres*. He is also talking to the Intermediate Technology Development Group, a charity which specialises in helping people use technology for practical answers to poverty. To contact Sylvain Willenz please send an E-mail to: swillenz@hotmail.com



AR8600 Mark2 RECEIVER

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



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

A strong twin metal case with die cast front panel characterises the multi-purpose role. All mode receive capability is provided including Single Side Band with programmable tuning steps down to a resolution of 50Hz with the frequency established by a highly accurate Temperature Compensated Crystal Oscillator (TCXO). An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites. The all important 8.33 kHz airband channel step is correctly implemented.

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

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

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



AR5000 ★★★★★ AR5000+3 awarded four stars by both the authoritative Passport To World Band Radio and World Radio & TV Handbook

True base receivers are few and far between, some have simply evolved from the hand held equivalents with little tangible improvement in performance or facilities over their smaller counterparts - the AR5000 is not like this! High performance, top quality build and true wide coverage all mode receive. The "+3" version offers even more with synchronous AM, AFC and Noise Blanker. Popular with government agencies throughout the world. AR5000c Frequency coherent version for commercial applications, special order.



Commercial & government operators have selected the AR5000, AR5000+3 and AR5000c in great numbers over recent years resulting in the model being recognised within their organisations in the same manner as many household brand names & products. For counterintelligence surveillance, the AR5000 (often partnered with the SDU5500) forms the cornerstone of modern day monitoring. System training often revolves around the AR5000 which leads to even wider implementation across departments. Transform your hobby to a commercial grade listening post with the AR5000, the professional choice.

AR5000+3 - Sync AM, AFC, NB

The "+3" version offers even more with synchronous AM (upper side band, lower side band and double side band with excellent lock range), AFC (Automatic Frequency Control for accurately tracking moving transmissions or unusual band plans) and Noise Blanker.

SDU5500 The SDU5500 is a Spectrum Display Unit providing practical and cost effective spectral monitoring for band occupancy and identification of new transmissions.

AR7030 - the professional choice

The AR7030 is a tremendously popular short wave all mode receiver (0 - 32MHz). Excellent strong signal handling, low noise local oscillator (producing extremely low reciprocal mixing figures) and excellent audio fidelity. Many innovative features such as self-calibrating IF filter routine, self-tuning Synchronous AM detector, auto-attenuator and much more. Supplied with infrared remote hand control, mains power supply and comprehensive operating manual. Receiver of the Year 1996/97 WRTH, 5-star award and editors choice Passport to World Band Radio for several successive years.



AOR (UK) LTD 4E East Mill, Bridgefoot,
Belper, Derbyshire, DE56 2UA England
AOR Tel: 01773 880788 Fax: 01773 880780
info@aoruk.com www.aoruk.com E&OE

■ GREG BAKER, PO BOX 3307, MANUKA, ACT 2603, AUSTRALIA

■ E-MAIL: greg@pcug.org.au

Bandscan Australia

Readers may recall that last time I wrote I was heading out for a solo six days walking the Alpine Walking Track straddling the New South Wales - Victoria border. I am pleased to say that I did not use the EPIRB, but my GPS receiver had a few outings. As predicted, there was no (digital) mobile phone coverage, but if I had taken a CDMA set, there would have been some coverage in northern Victoria towards the end of my walk.

Pay TV

The Australian Competition and Consumer Commission has opposed the alliance between pay television providers Foxtel and Optus, claiming that it breaches Australia's Trade Practices Act. Optus is keen to get rid of its \$A600 million (about £210 million) of programming liabilities and Foxtel is keen to stop losses which look like being hundreds of millions of dollars. Each of these players is doing a lot of weaving and ducking to try to get the deal through in shape or form.

Meanwhile, the government has proclaimed support for the anti-siphoning list which ensures that free to air television retains its access to major sporting events. However, Australia's Productivity Commission and the Australian Broadcasting Authority (ABA) have both recommended that the list be shortened and that the criteria for inclusion be rationalised.

The government has declared that it wants to see a balance between commercial television interests, whether pay or free to air, and the interests of viewers of these events. The industry has floated the possibility of a dual rights system whereby other operators can pick up rights to broadcast if the primary rights-holder was unable or unwilling to broadcast.

Sale Of Telstra

The braying for the privatisation of the remaining 50.1% of the once wholly-owned government telecommunications company, Telstra, has reached a crescendo in this country. The final sticking point has been the twin concern that telecommunications services throughout rural, regional and remote Australia were inadequate and that a fully privatised Telstra would neglect these areas to concentrate on more profitable city services.

With these concerns in mind, the government has been pressing on with ensuring that services to the bush are satisfactory. Recent endeavours along this line have been trying to get CDMA mobile telephone coverage into towns of less than 500 people and along more remote sections of highway.

In addition, the government has announced that it is aware of the need to 'future-proof' these areas to ensure that the bush participates in the roll-out of new technologies in coming years. And as a carrot to these areas to support the government's desire to sell the rest of Telstra, the government is continuing to fund television black spot elimination using proceeds from the sale of the first 49.9% of the company. The Labour opposition is steadfastly opposed to the sale, saying that Australians all know that service levels will only get worse if Telstra is fully privatised. No doubt we will find out in due course.

Loud Advertisements

The ABA has signalled a change to the Commercial Television Industry Codes of Practice to ensure that advertisements do not seem louder than the programmes they accompany. ABA investigations found concern among viewers about the loudness of advertisements and an acceptance from the broadcasting and production industries that this needed to be addressed. It seems that there are techniques that can be used in the production of advertisements to make

advertisements sound louder. Readers can find the investigation at http://www.aba.gov.au/tv/investigations/projects/loud_advertisements/report.htm

Commercial Radio

Long time representative of commercial radio in Australia, the Federation of Australian Radio Broadcasters has been given a new name, a new image and a new direction. Now known as Commercial Radio Australia, the organisation has presided over an increase in advertising revenues going to commercial radio stations when there have been large declines in advertising revenues going to television, magazines and newspapers. The organisation is also about to revamp the way in which it measures ratings, throwing open for tender its rating supplier.

The current supplier says it may soon test electronic devices to measure listening audience alongside the conventional diary system. The test will include the Steinmann watch meter which people wear like a wristwatch. The difficulty with these devices is, however, that they cost in the vicinity of \$A1,200 (about £420) and a decent trial would involve quite a few devices.

Another possible tenderer is allied with US-based Orbiton which proposes to use pager sized portable people meters that users wear all day. Commercial Radio Australia is at <http://www.commercialradio.com.au>

Reports

John J. Parry 5B4AFR has E-mailed a couple of times, once during his holiday in Cyprus, reporting reception of a new station called Voice International on 13.685MHz in the afternoons until about 1400. Voice International Limited (VIL) is a Christian multilingual short wave broadcaster operating from the Sunshine Coast north of Brisbane. VIL broadcasts in English, Indonesian, Mandarin Chinese and Hindi. The address for the station is **PO Box 1104, Buderim, Queensland 4556, Australia.**

According to their web site, VIL is part of a large non-profit charitable international organisation whose parent company, Christian Vision, began operations in December 1988 in the United Kingdom. The company has its head office in West Bromwich in England; Christian Vision has facilities in the USA, Chile, Zambia, Mozambique, Angola, East Timor and now in Australia.

VIL advertises its English on-air schedule as 13.685MHz from 0900 to 1500 and 11.930MHz from 1500 to 1700. Target area is Indonesia-India. For the Internet connected VIL are at <http://www.vil.com.au> and Christian Vision at <http://www.christianvision.com> Christian Vision bought the Radio Australia (RA) transmission facilities on the Cox Peninsula near Darwin a couple of years ago.

'Mike L' has reported hearing RA on 13.620MHz at S9+, 17.717MHz at S7, 17.795MHz at S5 and 21.740MHz at S3. He says that the three higher frequencies faded by 2240 with 13.620MHz coming in until 2330.

Martyn Gardner has sent more reports of RA. His first report is of receiving 11.660MHz with his Icom receiver at 1600. The second is of receiving the news on 9.500MHz at around 2100 with his Icom switched to receive just u.s.b. to remove some interference and a transmission on 15.240MHz at 0820 which was not a strong signal, but nonetheless readable.

Martyn's third report is of RA coming through clearly on 15.415MHz using a long wire antenna and his Icom at 0715; at the same time 15.240MHz was readable and 17.750MHz was a poorer signal. Martyn remarks that it has been nice to hear RA presenters welcoming listeners from Western Europe. He says that obviously the message has got through to RA that they don't just have a Pacific Area Audience.



Other News

Bougainville After a four year silence, the clandestine radio station Radio Free Bougainville is reported to have resumed broadcasting during the Papua New Guinea elections. Bougainville and Solomon Islands sources date the return to air at 17 June 17 two days after the start of national polling. I haven't heard these myself and have no frequencies to pass on to readers.

Interactive television One of the first companies to trial interactive television in Australia has been wound up. One trial had 150 households in a central west New South Wales town accessing interactive television program guides and on-line shopping through their television sets and set-top boxes.

Another trial let 300 Sydney residents access rugby union match statistics through their televisions. The withdrawal came because the backers felt that lead times were too long to the general acceptance of these technologies. As an aside, the program *Walking with Beasts*, available in the United Kingdom is being run here without its interactive components.

ABC MD The government has announced the appointment of Russell Balding as Managing Director of the Australian Broadcasting Corporation (ABC). Mr Balding has been at the ABC for six years at the ABC principally as Director of Finance, Funding and Support and more recently as acting Director.

Nova The Daily Mail Group (DMG) owned radio station Nova 100, Melbourne's newest f.m. station, has slumped to fourth place in ratings. Nova made radio history in this country by shooting to first spot in March 2002 after only 15 weeks on air. Nonetheless commentators are saying that the DMG Nova network is here to stay in metropolitan markets.

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

LM&S



Recently, there have been a number of references in the media concerning new ways of receiving the programmes from some international broadcasters; also those from nearer home. Some involve satellites and dedicated microwave receiving equipment, while others require a computer, software and a telephone line. Digital systems are being evolved which it is claimed will not only greatly enhance the reception of sound radio and television broadcasts in the home, but will also do so when travelling by car/coach or on board a ship. All are complex and involve expensive equipment.

In contrast, only two items of relatively inexpensive equipment are required to listen to the broadcasts in the long, medium and short wave bands. The first is a receiver capable of selecting and demodulating the electromagnetic waves radiated by the distant transmitting stations. The second item, which is equally important, is a suitable antenna. As the electromagnetic waves pass over an antenna they induce tiny electrical signals into it, which are exact replicas of those generated by the transmitting stations. They have to be conveyed to the receiver for processing with as little loss as possible.

A popular type of short wave antenna is a 'Dipole'. It is self-tuned to the frequency of reception, i.e. resonant and consists of a wire one half the wavelength long that is cut at the centre to allow a 'twin feeder' or 'coaxial cable' of any length to be inserted to convey the signals to the receiver. A dipole erected horizontally and as high as possible above the ground is likely to perform well in the chosen band. For multiband use extra wires of the correct length could be connected to the centre point to form a 'Fan-dipole' or additional lengths of wire separated by parallel tuned circuits called 'traps' could be installed in each arm of the dipole. These techniques and more are fully explained in some of the excellent antenna books available from the SWM Book Store.

From the foregoing, it will be realised that the receiver and antenna work together as a team - in fact one is of little use without the other. To obtain good results both must be performing well. Some of the new receivers advertised in this magazine are highly

complex and therefore expensive, however a relatively inexpensive receiver plus a suitable antenna will enable a listener to search the broadcast bands and derive endless hours of pleasure.

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 June.

The broadcasts from Rikisutvarpid (RUV) in Reykjavik via their outlets at Gufuskalar, W.Iceland (300kW) on **189kHz** and Eidar, E.Iceland (100kW) on **207kHz** are often used by listeners in the UK as pointers to propagation conditions at night in this band. During the whole of June they were found to be inaudible by **Simon Hockenhuil** in E.Bristol. Over in N.Ireland **Eddie McKeown** (Newry, Co.Down) noticed that reception from Gufuskalar on **189** was very poor compared to winter/spring conditions - at best their transmission rated SINPO 11421 at

0103UTC. He says "There was no hope whatever of hearing Eidar on 207kHz".

The band was searched well into the night by **Jim Edwards** in Wigan, but there was no mention of the RUV outlets in his report. At 2220 he received a broadcast from Radiotelevisione Italiana (RAI) via their 10kW outlet at Caltanissetta, Italy on **189kHz**, which implied enhanced propagation conditions from a southerly direction. A broadcast from Romania via Bod on **153kHz** was heard at 0030 under the co-channel 500kW outlet of DLF at Donebach. Much later, he picked up the sky waves from Medi-1 Nador, Morocco on **171** at 0350UTC.

At 2225 on the 27th **Sheila Hughes** (Morden) heard for the first time in a long while Tipaza, Algeria under Team Talk in Clarkestown, Eire on **252kHz**. The transmission rated 22222. Next morning she much enjoyed listening at 0610 to a broadcast from Denmark via Kalundborg on **243kHz**, with "beautiful church bells, organ and singing" during a church service in Danish.

Medium Wave Reports

After dark the sky waves from the many m.w. stations in the Middle East, N.Africa, Europe and Scandinavia attracted the attention of some listeners and they compiled quite extensive logs - see chart. The 1600kW transmission from the BSKSA outlet at Dammam, Saudi Arabia on **1440kHz** was rated 33222 at 2215 in Morden & 25122 at 2250 in Newry. Their 1000kW outlet Jeddah on **1512** was also heard and rated 15221 at 2309 in Newry.

During daylight the ground waves from quite a few of the m.w. stations in the Netherlands were received by Rhoderick Illman in Oxted - see m.w. chart. Some listeners enjoyed searching for the broadcasts from distant UK local radio stations - see chart. In Scunthorpe **Michael Wasley** logged BBC R.Essex via Chelmsford (0.5kW) on **765** as 23222 at 1924.

Short Wave Reports

In the **25MHz (11m)** band Radio France International (RFI) has continued to broadcast daily to E/C.Africa on **25.820** (Fr, Eng 0830-1300). Just how well their transmissions are being received in those areas is not known here. Reports from listeners located in Africa and other areas too would be very welcome here for inclusion in this series - please post them to me at the above address. Please note that the full addresses of all contributors to 'LM&S' are treated here as confidential.

In the UK the reception of the RFI transmissions is unreliable because they are beamed away from here and reach us via back scatter and other modes. During June reception tended to be poor. In E.Bristol their transmission was barely audible most days, except on June 3 when it rated 25532 at 1020. Over in Newry it was noted as poor except on the 30th, when it peaked 45243 at 0910, but one and a half hours later it was down in the noise! The ratings quoted in other reports were 22222 at 0935 by **Thomas Williams** in Truro; 25232 at 1030 by **Fred Pallant** in Storrington; 34333 at 1225 by **Bernard Curtis** in Stalbridge. No other official broadcasters are known to be using this band.

Quite a few broadcasters are taking advantage of the propagation conditions in the **21MHz (13m)** band and good reception over long distances has been reported. R.Australia's early morning broadcast to Pacific areas via Shepparton on **21.725** (Eng 0200-0900) has often reached the UK. It was rated 24432 at 0836 in Oxted. From 0900 their broadcast to Asia via Shepparton on **21.820** (Eng

Long Wave Chart

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

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

Listeners:-

- (A) Jim Edwards, Wigan
- (B) Simon Hockenhuil, E.Bristol.
- (C) Sheila Hughes, Morden.
- (D) Eddie McKeown, Newry.
- (E) Fred Pallant, Storrington.
- (F) Michael Wasley, Scunthorpe.

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London		0.80	A,B,C
603	C.G. Litlbrne		0.10	B
630	R.Bedfordshire(3CR)	B	0.20	A,B,C
666	Cl Gold 666, Exeter		0.34	A
666	R.York	B	0.80	C
729	BBC Essex	B	0.20	B
738	Hereford/Worcester	B	0.037	A
765	BBC Essex	B	0.50	B,C
774	R.Kent	B	0.70	B
774	Asian Net via ?	B	?	C
774	Cl Gold 774, Glos		0.14	A,C
792	Cl Gold 792, Bedford		0.27	B
801	R.Devon	B	2.00	A
828	Magic 828, Leeds		0.12	C
828	Cl G 828 Bourne'm'th		0.27	A
837	Asian Net Leicester	B	0.45	A,C
855	R.Norfolk, Postwick	B	1.50	B
855	Sunshine 855,Ludlow		0.15	A
873	R.Norfolk, W.Lynn	B	0.30	C
936	Fresh AM, Hawes		1.00	C
945	Cl Gold GEM, Derby		0.20	C
954	Cl Gold 954, H'ford		0.16	A
963	Asian Sd, E.Lancs		0.80	C
972	Liberty R, Southall		1.00	A,B,C
990	R.Devon, E.Devon	B	1.00	A
990	Magic AM Doncaster		0.25	C
999	C.Gold GEM Nott'ham		0.25	C
999	Valley R, Aberdare		0.300	A
1026	R.Cambridgeshire	B	0.50	C
1026	R.Jersey	B	1.00	A
1035	RTL C'try(Ritz)1035		1.00	B*
1035	R.Sheffield	B	1.00	C
1116	Asian Net Derby	B	?	C
1116	Valley R, Ebbw.Vale		0.50	A

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
1152	LBC 1152 AM		23.50	B*
1161	Magic 1B, Goxhill		0.35	C
1161	Southern Counties R	B	1.00	B*
1170	Swansea Snd,Swansea		0.58	A
1242	Capital G, Maidstone		0.32	B
1296	Radio XL, Birmingham		5.00	C
1305	Magic AM, Bamsley		0.15	C
1305	Premier via ?		0.50	B
1323	Capital G, Southwick		0.50	B
1323	SomersetSnd,Bristol	B	0.63	A
1332	Premier, Battersea		1.00	B
1368	R.Lincolnshire	B	2.00	C
1368	Southern Counties R	B	0.50	B
1413	Premier via ?		0.50	B,C
1431	Breeze, Southend		0.35	B
1458	Sunrise, London		50.00	B
1485	Cl Gold, Newbury		1.00	A
1485	R.Humberside (Hull)	B	1.00	C
1485	Southern Counties R	B	1.00	B
1521	Breeze, Reigate		0.64	B
1530	Big AM, W.Yorks		0.74	C
1530	Cl Gold Worcester		0.52	A
1548	Capital G, London		97.50	B
1548	Magic8B,Liverpool		4.40	C
1566	CountySnd,Guildford		0.50	B
1584	London Turkish R		0.20	B
1602	R.Kent	B	0.25	B

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

Listeners:-

- (A) Simon Hockenhill, E.Bristol.
(B) Rhoderick Illman, Oxted.
(C) Michael Wasley, Scunthorpe.

0900-1400) can usually be received here. It was rated 24232 at 0933 in Newry.

Some of the other broadcasts in this band that may be received here originated from Swiss R.Int via Sottens **21.750** (Fr, Ger, It, Eng to Near East, Africa 0600-0800), rated 44333 at 0730 in Morden; R.Pakistan, Islamabad **21.465** (Ur, Eng to Eur 0700?-1010) 45344 at 1000 in Newry; R.Finland via Pori **21.800** (Fin to SE.Asia 1000?-1200?) 44444 at 1005 in Truro; VOIRI Tehran, Iran **21.470** (Eng to Asia 1100-1230) 54544 at 1140 by **Stan Evans** in Herstmonceux; BSKSA Riyadh, Saudi Arabia **21.505** (Ar to N.Africa 0600-1500) 44444 at 1212 by **David Hall** in Morpeth; R.Sweden, Stockholm **21.530** (Eng to Asia, Far East 1230-1300) 45544 at 1257 in E.Bristol; Channel Africa via Meyerton, S.Africa **21.725** (Eng to W.Africa 1300-1455, Sat/Sun) 44444 at 1313 by **Vera Brindley** in Woodhall Spa; BBC via Ascension Is **21.470** (Eng to S.Africa 1300-1900) 24332 at 1730 by **Peter Pollard** in Rugby; Swiss R.Int via Sottens **21.720** (It,

Ar, Eng, Fr to Near East, Africa 1630-1815) 45344 at 1734 in Newry; HCJB Quito, Ecuador **21.455** (Eng [u.s.b.]) 22222 at 2030 by **Clare Pinder** in Appleby; Family Radio WYFR via Okeechobee, USA **21.525** (Fr to Eur, Africa 2000-2100?) 44434 at 2030 in Stalbridge.

A few broadcasters are using the **18MHz (15m)** band to reach listeners in selected areas. They include R.Sweden **18.960** (Eng to N.America 1230-1300, 1330-1400, 1430-1500), rated 33333 at 1335 in Herstmonceux; Family R, WYFR via Okeechobee FL, USA **18.980** (Eng to Eur, Africa 1600-2200) 34333 at 1600 in Morden, 44334 at 1735 in Rugby & 44334 at 1810 in Stalbridge; Christian Science Herald via WSHB Cypress Creek **18.910** (Fr, Eng to E/S.Africa 1600-2200?) 34333 1635 in Woodhall Spa & 44444 at 1957 by **Bill Griffith** in W.London.

R.Australia also uses the **17MHz (16m)** band to reach listeners in Asia during the morning. Their transmission from Shepparton on **17.750** (Eng 0000-0500,

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer
3.240	TWR Shona	Swaziland	0340	B
3.255	BBC via Meyerton	S.Africa	2125	B
3.318	SUBS Goderich	Sierra Leone	2150	B
3.320	SABC (RSG) Meyerton	S.Africa	2011	B,F
3.365	GBC R-2	Ghana	2011	F
3.915	BBC via Kranji	Singapore	2115	B,F
3.955	R.Korea via Skelton	England	2100	A,C,G
3.955	R.Taipei via Skelton	England	1900	C,E,G
3.975	R.Budapest	Hungary	2120	A,C
3.985	China R.Int via SRI	Switzerland	2205	B
3.995	DW via Julich?	Germany	0030	E
4.750	Xizang BS, Lhasa	China	2320	B
4.760	AIR Port Blair	India	0115	B
4.765	R.Rural, Santarem	Brazil	2355	B
4.770	FRCN Kaduna	Nigeria	1937	B,F
4.775	R.Liberal, Belem	Brazil	0100	D
4.783	RTM Bamako	Mali	1940	F
4.790	Azad Kashmir R.	Pakistan	0125	B
4.800	CPBS 2 Beijing	China	2150	B
4.800	AIR Hyderabad	India	0130	B
4.805	R.Nac Amazonas	Brazil	2355	B
4.820	R.Botswana, Gaborone	Botswana	1936	B,D,F
4.820	Xizang, Lhasa	China	2140	B
4.820	La Voz Evangelica	Honduras	0350	B
4.825	R.Cancao Nova	Brazil	0345	D
4.830	R.Tachira	Venezuela	0112	D
4.832	R.Litoral, La Ceiba	Honduras	0405	B
4.835	RTM Bamako	Mali	1940	B,F
4.840	AIR Bombay	India	0105	B
4.845	ORTM Nouakchott	Mauritania	1931	B,F
4.850	AIR Kohima	India	0115	B
4.860	AIR Delhi	India	1930	B,F
4.865	R.Alvorada, Londrina	Brazil	0350	B

Freq (MHz)	Station	Country	UTC	DXer
4.875	R.Roraima, Boa Vista	Brazil	0015	B
4.885	R.Clube do Para	Brazil	2355	B,D
4.885	KBC East Soc Nairobi	Kenya	1841	F
4.905	CPBS 1, Beijing	China	0005	B
4.915	R.Anhanguera	Brazil	0115	B,D
4.915	GBC-1, Accra	Ghana	2016	B,F
4.915	KBC Cent Soc Nairobi	Kenya	1841	F
4.920	R.Quito, Quito	Ecuador	0255	B
4.930	R.Costena Ebenezer	Honduras	0115	D
4.945	R.Difusora	Brazil	0045	B
4.950	VOA via Sao Tome	Sao Tome	2145	B,F
4.955	R.Cultura, Campos	Brazil	0125	B
4.965	Christian Voice	Zambia	1837	B,F
4.975	R.Uganda, Kampala	Uganda	2018	F
4.980	Ecos del Torbes	Venezuela	0425	B
4.985	R.Brazil Central	Brazil	0025	B,D,E
5.009	R.TV Malagasy	Madagascar	1836	B,F
5.010	Guangxi 2, Nanning	China	2150	B
5.025	R.Parakou	Benin	2016	F
5.025	R.Rebelde, Bauta	Cuba	0240	B
5.025	R.Uganda, Kampala	Uganda	1835	B,F
5.030	RTM Kuching	Sarawak	2145	B
5.035	R.Aparecida	Brazil	0135	B
5.035	R.Bangui	C.Africa	2018	F
5.050	R.Tanzania	Tanzania	1936	F

DXers:-

- (A) Bernard Curtis, Stalbridge.
(B) Jim Edwards, Wigan.
(C) Stan Evans, Herstmonceux.
(D) David Hall, Morpeth.
(E) Simon Hockenhill, E.Bristol.
(F) Fred Pallant, Storrington.
(G) Clare Pinder, Appleby.

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★ Conn: N-type

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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).

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Freq. Range 25-2000MHz Length 720mm

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0600-1100) may be received in the UK. It was rated 34433 at 0835 in Oxted.

Many broadcasters are active in this band during the day. They include Adventist World Radio (AWR) via Moosbrunn, Austria **17.780** (Eng to W.Africa 0830-0930), rated 34243 at 0830 in Newry; R.Pakistan, Islamabad **17.520** (Ur, Eng to Eur 0700?-1010) 33333 at 0950 in Truro; Voice of Turkey **17.830** (Eng to Eur, Asia, Australia 1230-1300) 54554 at 1255 in Herstmonceux; BBC via Ascension Is **17.830** (Eng to W.Africa 0700-2100) 24121 at 1410 in Newry & 24232 at 1845 in Storrington; WBCQ Montecello ME, USA **17.495** (Eng to N.America 1300?-0200?) 33333 at 1626 in Woodhall Spa; Voice of America (VOA) via Morocco? **17.895** (Eng to Africa ?-1900) 55545 at 1650 in Stalbridge; R.Romania Int **17.805** (Eng to Eur 1700-1800) 44444 at 1740 in Rugby; Channel Africa via Meyerton, S.Africa **17.870** (Eng to W.Africa 1800-1830) 43333 at 1800 in Morden; Swiss R.Int (SRI) via Monsinry, Fr.Guiana **17.735** (It, Ar, Eng, Ger, Fr to Nr East, Africa 1830-2130) 44344 at 1930 in Appleby; Deutsche Welle (DW) via Sri Lanka **17.810** (Eng to Africa 1900-1945 in Storrington; HCJB Quito, Ecuador **17.660** (Eng to Eur 2000-2200) 24122 at 2004 in Newry; R.Canada Int (RCI) via Sackville **17.870** (Eng to Eur 2000-?) 45534 at 2054 in E.Bristol; World Harvest R. (WHRI) via Maine, USA **17.650** (Eng to Eur, M.East, Africa 1600-2300?) 44444 at 2210 in Morpeth; VOA via Philippines **17.740** (Eng to Asia 2100-0000) 44333 at 2229 in Scunthorpe.

In the **15MHz (19m)** band R.Australia's broadcasts have been reaching the UK well on three frequencies from Shepparton: **15.515** (Eng to Pacific, N.America 0200-0700), rated 44333 at 0620 in Herstmonceux; **15.415** (Eng

to E/SE.Asia 0600-0900) 22222 at 0845 in Truro; **15.240** (Eng to Pacific, E.Asia 0000-1000) 44444 at 0450 in Morpeth. Much later, R.New Zealand's 100kW transmission to Pacific areas on **15.160** (Eng 1851-2215) was rated 24122 at 1917 in Newry.

Other broadcasters using this band include the Voice of Nigeria via Ikorodu **15.120** (Eng), rated 54433 at 0615 in Herstmonceux & 54554 at 0645 by **Bill Griffith** while in Prague, Czech. Rep; R.France Int (RFI) via Gabon **15.605** (Eng to Africa 0700-0800 Mon-Fri) 44444 at 0700 in Morden; BBC via Skelton, UK **15.485** (Eng to W/SW.Europe 0700-1600) 44433 at 0825 in Oxted; WWCR Nashville, USA **15.825** (Eng to N.America, Eur 1000?-2200) 44434 at 1325 in Woodhall Spa; WEWN Vandiver, USA **15.745** (Eng to Eur, Africa 1000-2100?) 55445 at 1335 in Stalbridge; Vatican R. Italy **15.570** (Eng to Africa 1730-1800) 44333 at 1745 in Rugby; BBC via Rampisham, UK **15.180** (Fr to Africa 1800-1830) 54445 at 1810 in Stalbridge; BBC via Ascension Is **15.400** (Eng to Africa 1700?-2300) 33343 at 1848 in Storrington & 45454 at 2233 in Newry; R.Philippines, Philippines **15.190** (Filip, Eng 1730?-1930?) 34233 at 1915 in Newry; SRI via Julich, Germany **15.220** (It, Ar, Eng, Ger, Fr to Nr East, Africa 1830-2130) 44344 at 1930 in Appleby; RCI via Sackville **15.325** (Eng to Eur, M.East, Africa 2000-2200) 44444 at 2000 by **Gerald Guest** in Dudley; Voice of Indonesia, Jakarta **15.150** (Eng to Eur, M.East 2000-2100) 45333 at 2047 in E.Bristol; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 34323 at 2222 in Scunthorpe.

The occupants of the **13MHz (22m)** band include Vatican R, Italy **13.765** (Eng to Africa 0630-0700), rated 44444 at 0630 in Morden;

Medium Wave Chart

FreqStation (kHz)	Country	Power (kW)	Listener	FreqStation (kHz)	Country	Power (kW)	Listener
531 Berg	Germany	20		837 Nancy	France	200	A*,D*
531 Beromunster	Switzerland	500	D*	846 Rome	Italy	1200	D*
540 Wavre-Overyse(VRT)	Belgium	150/50	C,D*,E	855 RNE1 via ?	Spain	?	D*
540 Sidi Benngur	Morocco	600	D*	864 Paris	France	300	A,D*,E
556 Espoo	Finland	50	D*	873 Frankfurt(AFN)	Germany	150	C*,D*
567 Tullamore(RTE1)	Eire	500	A,B,D,E	873 Zaragoza(SER)	Spain	20	D*
576 Muhlacker(SDR)	Germany	500	D*	873 Enniskillen(R.U.I.)	UK	?	D*
576 Barcelona(RNE5)	Spain	50	D*	882 COPE via ?	Spain	?	D*
585 Paris(FIP)	France	8	A*	882 Washford(BBCWales)	UK	100	B,C*,D*,E
585 Madrid(RNE1)	Spain	200	A*,D*	891 Algiers	Algeria	600/300	A*
585 Dumfries(BBCScott)	UK	2	D*,E	891 Hulsberg	Netherlands	20	D*
594 Frankfurt(HR)	Germany	1000/400	D*	900 Brno(CRo2)	Czech Rep.	25	D*
603 Lyon	France	300	A*,D*	900 Milan	Italy	600	A*,D*
603 Sevilla(RNE5)	Spain	50	D*	900 COPE via ?	Spain	?	D*
603 Newcastle(BBC)	UK	2	D*,E	909 B.mans PK(BBCS)	UK	140	E*
612 Athlone(RTE2)	Eire	100	B,D	918 Domzale	Slovenia	600/100	D*
621 Wavre (RTBF)	Belgium	80	C,D*	927 Wolvertem	Belgium	300	A*,D*,E
621 Barcelona(OCR)	Spain	50	D*	936 Bremen	Germany	100	D*
630 Vigra	Norway	100	A*,D*	945 Toulouse	France	300	A*,D*
630 Tunis-Djedeida	Tunisia	600	D*	954 Brno (Cro2)	Czech Rep.	200	D*
639 Praha(Liblice)	Czech	1500	D*	963 Porl	Finland	600	A*,D*
639 RNE1 via ?	Spain	?	D*	972 Hamburg(NDR)	Germany	100	C*,D*
648 RNE1 via ?	Spain	10	D*	981 Alger	Algeria	600/300	D*
648 Orfordness(BBC)	UK	500	B,C,D*,E	990 Berlin	Germany	100	D*
657 Wrexham(BBCWales)	UK	2	B,D*,E	990 Tywyn(BBC)	UK	?	D*
666 Messkirch(Rohrd(SWF)	Germany	150	D*	999 Madrid(COPE)	Spain	50	D*
666 Lisboa	Portugal	135	D*	1008 Flevu(NOS-5)	Holland	400	A*,C*,D*,E
675 R10 FM	Holland	120	A,C,D*,E	1017 Rheinsender(SWF)	Germany	600	C*,D*
684 Sevilla(RNE1)	Spain	500	D*	1017 RNE5 via ?	Spain	?	D*
693 Tortosa(RNE1)	Spain	2	D*	1035 Lisbon	Portugal	120	D*
693 Droitwich(BBC)	UK	150	E*	1044 Dresden(MDR)	Germany	20	D*
702 Flensburg(NDR)	Germany	5	D*	1044 S.Sebastian(SER)	Spain	10	D*
711 Rennes (R.Bleu)	France	300	A,C,D*	1053 Talk Sport via ?	UK	?	C*,D*,E
720 Langenberg	Germany	200	A*	1062 Kalundborg	Denmark	250	A*,D*
720 Crystal Palace BBC4	UK	0.75	B	1062 R.Uno via ?	Italy	?	D*
729 Cork(RTE1)	Eire	10	A*,D*	1071 Bilbao(EI)	Spain	5	D*
729 RNE1 via ?	Spain	?	D*	1071 Talk Sport via ?	UK	?	D*,E
738 Paris	France	4	D*	1080 SER via ?	Spain	?	D*
738 Barcelona(RNE1)	Spain	500	D*	1089 Talk Sport via ?	UK	?	C*,D*,E
747 Flevu(NOS-1)	Holland	400	A,C,D*,E	1098 Nitra(Jarok)	Slovakia	1500	A*,D*
756 Braunschweig(DLF)	Germany	800/200	A*,D*,E	1107 AFN via ?	Germany	10	A*,D*
756 Redruth(BBC)	UK	2	A*,D*	1107 Talk Sport via ?	UK	?	C*,D*,E
765 Sottens	Switzerland	500	A*,D*	1125 La Louviere	Belgium	20	A*,D*
774 Enniskillen(BBC)	N.Ireland	1	D*	1134 Zadar(Croatian R)	Croatia	600/1200	A*,D*,E
774 RNE1 via ?	Spain	?	D*	1143 AFN via ?	Germany	1	D*
783 Leipzig(MDR)	Germany	100	D*	1143 COPE via ?	Spain	?	D*
792 Limoges	France	300	A*,D*	1179 Sofvesborg	Sweden	600	A*,C*,D*,E
801 Munchen-Ismaning	Germany	300	D*	1188 Kuumre	Belgium	5	D*
810 Westerglen(BBCScott)	UK	100	A*,B*,D,E	1197 Munich(VOA)	Germany	300	D*
819 Batra	Egypt	450	A*	1197 Virgin via ?	UK	?	D*,E
819 S.Sebastian(EI)	Spain	5	D*	1206 Bordeaux	France	100	A*,D*,E
828 Hanover(NDR)	Germany	100/5	D*	1215 Virgin via ?	UK	?	D*,E
828 Heinencord(CI.Rock)	Holland	20	C,D*	1224 Leystad(Othe beat)	Holland	50	A*,C,D*
				1233 Nitra	Slovakia	40	D*
				1233 Virgin via ?	UK	?	C,D*,E
				1242 Marseille	France	150	A*,D*

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

Listeners:-

- (A) Simon Hockenhill, E.Bristol.
- (B) Sheila Hughes, Morden.
- (C) Rhoderick Illman, Oxted.
- (D) Eddie McKeown, Newry.
- (E) Michael Waley, Scunthorpe.
- (F) Thomas Williams, Truro.

R.Prague, Czech Rep. **13.580** (Eng to Eur, Asia 1300-1329) 55555 at 1315 in Herstmonceux; R.Austria Int via Moosbrunn **13.730** (Eng to Eur, M.East, Africa 1330-1400) 44344 at 1335 in Woodhall Spa; R.Austria Int via Moosbrunn **13.730** (Ger to Eur, N.Africa, M.East 15007-1800) 34333 at 1719 in Rugby; BBC via Rampisham, UK **13.745** (Russ to Russia) 55555 at 1825 in Stalbridge; Voice of Vietnam, Hanoi **13.740** (Fr, Eng to Eur 1900-2100) 44444 at 1906 in Newry & 55445 at 2030 in Stalbridge; R.Nederlands via Flevo **13.700** (Eng to Africa 1830-2025) 44434 at 1912 in Truro; China R.Int via ? **13.790** (Eng to N.Africa, W.Asia 1900-2000) 35433 at 1922 in E.Bristol; RCI via Sackville? **13.670** (Eng to N/C.America) 24222 at 2203 in Newry; R.Australia via Darwin **13.620** (Eng to SE.Asia 2200*-0000 [* often starts late]) 34434 at 2208 in Scunthorpe; All India R. (AIR) via ? **13.605** (Eng to Far East 2245-0045) 34222 at 2249 in Newry.

Good reception of R.New Zealand's early morning broadcast to Pacific areas in the **11MHz (25m)** band has been reported by listeners in the UK. Their 100kW transmission from Rangitai, N.Island on **11.820** (Eng 0459-0658) was 33433 at 0555 in Morpeth. Later, they broadcast a special programme to NZ forces in Bougainville, the Solomon Is and E.Timor on **11.675** (Eng 1100-1300), rated 33222 at 1220 in Truro.

R.Australia's broadcasts have also been reaching the UK in this band. Their transmission from Shepparton on **11.660** (Eng to Asia 1430-1700) was logged as 24422 at 1544 in E.Bristol.

Also mentioned in the reports were World Harvest R. (WHRI) via Maine, USA **11.730** (Eng to Africa?), rated 55545 at 0600 in Scunthorpe; HCJB Quito, Ecuador **11.680** (Eng to Eur 0600-0800), rated 54533 at 0710 in Herstmonceux; BBC via Woofferton, UK **12.095** (Eng to Eur 0600-1900) 34333 at 0823 in Oxted; FEBA via Seychelles **11.600** (Eng to Asia 1515-1600) 23222 at 1515 in Morden; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1300-1730) 44344 at 1600 in Appleby; Voice of Mediterranean, Malta via Russia? **12.060** (Eng to Eur, N.Africa 1900-2000) 44343 at 1900 in Newry; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1900-1930) 55455 at 1925 in Rugby; Voice of Russia **12.070** (Eng) 55545 at 1925 in Stalbridge; R.Canada Int (RCI) via ? **11.965** (Eng to Eur 2000-2100) 34434 at 2000 in Dudley; R.Damascus, Syria **12.085** (Eng to Eur 2005-2105) 24322 at 2008 in Newry; All India R. (AIR) via Bangalore **11.620** (Eng to Eur 2045-2230) 43443 at 2045 in Prague, Czech. Rep; China R.Int via ? **11.790** (Eng to Eur 2000-2200) 34333 at 2149 in Woodhall Spa; R.Prague, Czech Rep **11.600** (Eng to Eur 2230-2257) SIO 444 at 2253 by Francis Hearne in N.Bristol; R.Havana, Cuba **11.705** (Eng [u.s.b.] to Eur 0100-0500) 34222 at 0126 in Newry; Voz Cristiana, Chile **11.745** (Sp to S.America 2100-1100) 32333 at 0200 in W.London.

Noted in the **9MHz (31m)** band during the morning were WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs), rated 54454 at 0440 in Morpeth; R.Havana Cuba **9.820** (Eng to C/N.America 01007-0700) 44333 at 0500 in Appleby; TWR Monaco **9.870** (Eng to Eur 0700-0900) 55555 at 0800 in Morden; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 33333 at 0935 in Truro; R.Nederlands via Bonaire, Ned.Antilles **9.790** (Eng to Asia, Far East, Pacific 0930-1130) 24122 at 0937 in Newry; R.Nederlands via Wertachtal, Germany **9.860** (Eng to Eur 1030-1225) 55555 at 1050 in Herstmonceux.

Later, the BBC via Cyprus **9.410** (Eng to W/SW.Eur, N.Africa 1600-2200) was 55445 at 1705 in Stalbridge; R.Bulgaria, Sofia **9.400** (Eng to Eur 1900-2000) SIO 444 at 1929 in N.Bristol; R.Vlaanderen, Belgium **9.925** (Eng to Eur 1930-2000) 55455 at 1935 in Rugby; Voice of Armenia, Yerevan **9.960** (Eng to Eur 1940-2000) 44444 at 1941 in Newry; R.Australia via Shepparton **9.500** (Eng to Asia, Eur 1900-2130) 32333 at 2000 in

Dudley; Voice of Russia **9.480** (Eng ?-2100) 44444 at 2035 in Stalbridge; R.Tirana, Albania **9.540** (Eng to Eur 2130-2200) 32322 at 2137 in Scunthorpe & 54554 at 2157 in Prague, Czech.Rep; R.Bulgaria, Sofia **9.400** (Eng to Eur 2100-2200) SIO 333 at 2143 in N.Bristol; R.Romania Int **9.725** (Eng to Eur 2100-2155) 45343 at 2155 in E.Bristol; R.Ext.Espana **9.840** (Eng to Eur, Africa 2100-2200, Sat/Sun) 34333 at 2157 in Woodhall Spa; WBCQ Monticello, Maine USA **9.335** (Eng to N.America 21007-1100?) 35232 at 2243 in Newry.

In the congested **7MHz (41m)** band there are a number of broadcasts to Europe during the day. Those noted in the reports came from R.Japan via Woofferton, UK **7.230** (Eng 0500-0700), rated 55544 at 0550 in Herstmonceux; DW via Julich? **7.190** (Macedonian) 44434 at 0820 in Oxted; R.Slovakia Int. **7.345** (Eng 1630-1700) 44444 at 1639 in Woodhall Spa; AIR via Bangalore **7.410** (Eng, Hind 1745-2230) 43434 at 1805 in Stalbridge; R.Budapest, Hungary **7.130** (Eng 1900-1930) 44344 at 1900 in Appleby; R.Thailand, Udon Thani **7.155** (Eng 1900-2000) 42532 at 1918 in E.Bristol; R.Polonia (Polish R), Warsaw **7.165** (Eng 1930-2030) 24222 at 1936 in Newry; Voice of Russia **7.440** (Eng - News 1930) 44434 at 1945 in Truro; R.Minsk, Belarus **7.210** (Eng 1930-2030) 33333 at 1950 in Rugby; RCI via Skelton, UK **7.235** (Eng 2100-2130) 44434 at 2119 in Scunthorpe.

Some intended for listeners in others areas may also be received here. Those noted in the reports came from R.Nederlands via Madagascar **7.120** (Eng to Africa 1730-2025), rated 43333 at 1730 in Morden; China Nat.R-1 via Lingshi, China **7.935** (Chin) 54554 at 2000 in W.London; R.Miami Int (WRMI), Florida, USA **7.385** (Eng to N.America) 24222 at 0011 in Newry; Family R. (WYFR) via Okeechobee FL, USA **7.355** (Eng to N.America) 44343 at 0039 in Newry; WBCQ Monticello, USA **7.415** (Eng to N.America 2100-1100) 34333 at 0414 in Morpeth.

Quite a few broadcasters use the **6MHz (49m)** band to reach listeners in Europe. Some are direct transmissions but others involve relay stations. Mentioned in the reports were R.Vlaanderen Int, Belgium via Julich, Germany **5.985** (Eng 0700-0730), rated 44333 at 0700 in Appleby; R.Finland via Pori **6.120** (Fin) 43333 at 0940 in Truro; R.Nederlands via Julich, Germany **6.045** (Eng 1030-1225) 35444 at 1040 in E.Bristol; Deutsch Welle (DW) via Julich **6.140** (Eng Service) 55555 at 1500 in Morden & 44434 at 2045 in Stalbridge; BBC via Rampisham, UK **6.195** (Eng 1700-0000) 55555 at 1705 in Stalbridge & 44444 at 2200 in Prague, Czech.Rep; RAI Rome **5.970** (Eng 1935-1955) 44444 at 1940 in Rugby; Vatican R, Italy **5.890** (Various, Eng 1950-2010) 35343 at 1951 in Newry; R.Prague, Cz.Rep **5.930** (Eng 2000-2030) 44444 at 2000 in Dudley; R.Canada Int via UK? **5.995** (Fr, Eng 1900-2100) 44444 at 2002 in Truro; R.Ukraine Int **5.905** (Eng 2100-2200) 44333 at 2100 in Appleby; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 54334 at 2102 in Scunthorpe; R.Canada Int via Horby, Sweden **5.850** (Eng 2000-2130, Fr 2130-2200) 54544 at 2110 in Herstmonceux; R.Budapest, Hungary **6.025** (Eng 2100-2130) 43333 at 2127 in Newry; R.Austria Int, via Moosbrunn **6.155** (Various) SIO 333 at 2132 in N.Bristol; R.Sweden **6.065** (Eng 2130-2200?) SIO 444 at 2152 in N.Bristol; R.Japan via Skelton, UK **6.180** (Eng 2100-2200) SIO 433 at 2158 in N.Bristol; Deutschland R, Berlin **6.005** (Ger 24hrs) 54554 at 0000 in W.London.

While beaming to other areas the Voice of America (VOA) via Sao Tome **6.035** (Eng to W.Africa 2000-2300) was rated 34433 at 2220 in E.Bristol; BBC via Antigua, W.Indies **5.975** (Eng to Caribbean, C/S.America 2200-0600?) 44444 at 2300 in Morden; R.Nederlands via Bonaire, Ned.Antilles **6.165** (Eng to N.America 2330-0125) 24322 at 2343 in Newry; American Forces Network (AFN) via Puerto Rico **6.458** (Eng [u.s.b.]) 44444 at 0345 in Morpeth.



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

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

Interference
5 nil
4 slight
3 moderate
2 severe
1 extreme

Noise
5 nil
4 slight
3 moderate
2 severe
1 extreme

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

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

NES10-2

NOISE ELIMINATING SPEAKER

Want to add d.s.p. noise reduction to your receiver? Here's a competitively priced add-on unit that is housed in a mobile speaker enclosure that could well be the answer. Kevin Nice investigates.

The inclusion of d.s.p. techniques in modern radios is increasingly becoming the norm.

As a solution for receiver manufacturers, d.s.p. has many advantages, not least of which is the cost effectiveness of the method. Implemented in the final i.f. stages of a receiver digital signal processing allows features to be included that were previously very difficult or impossible with earlier conventional filter techniques. If you have been following John Wilson's investigations of d.s.p. based receivers over the past few years, then you will know what is possible. The likes of variable bandwidth at the turn of a knob, removal of extraneous heterodynes in the passband and general improvements of signal to noise performance by reducing the random noise element.

Effective Reduction

Whilst the NES10-2 is not a full-blown adjustable d.s.p.

unit, nor is it an integrated i.f. module, it therefore doesn't offer the tone killing and variable bandwidth possibilities of these approaches. What it does offer though, is the effective removal of random noise from difficult communications channels such as noisy amateur and packed broadcast bands. The NES10-2 indeed seems to be very effective at the job it is designed for.

I checked out the review unit with three different radios, my IC-R8500, TS-520 and my Yaesu VR-500 hand-held. All sets benefited by having the bhi speaker connected on noisy signals.

My v.h.f. antenna is very close to the road at the front of the property and since I live on an unmade road, we seem to be plagued by riders of trail motorcycles, most of which have butchered ignition systems. This results in high levels of impulse noise on weak signals - and all the interesting signals are of course weak. It is in this situation that the NES10-2 excels itself. Where it does help is in a scanning situation, where you're scanning for activity across many channels. The problem here is that there is a finite delay for the d.s.p. electronics to adapt to the signal presented. This results in 'snatches' of audio, such as those when the squelch opens on a busy channel, followed by the traffic stopping and the squelch closing again, being missed as the NES10-2 doesn't have time to respond. I discussed this with bhi and they confirm that this is not an application they have really catered for.

Although I didn't use the unit in a vehicle, this is the kind of environment in which it will be of major benefit. You only have to examine the construction of the Noise Eliminating Speaker to realise that this is the origins of the product. Cleverly, bhi have built the d.s.p. electronics into the enclosure of a mobile speaker. The unit mounts in the same way as any small standard loudspeaker. Power can be provided by any external 12 to 28V d.c. unregulated source, so it can be used in commercial vehicles and boats using 24V too.

The internal d.s.p. circuitry is fully adaptive to changes in noise levels and interference and it



Reduce those background noise problems - the NES10-2 Noise Eliminating Speaker.

requires no adjustment in operation. In use the noise cancelling can be switched on or off, and there are eight levels of noise cancellation which can be selected by the operator by using d.i.l. switches on the rear of the speaker. The review unit was set to level six on delivery.

The NES10-2 is supplied with a 2m length of audio lead terminated with a 3.5mm, jack plug ready for immediate use.

Specifications

Number of attenuation levels:	8
Noise attenuation:	20dB (typical)
Audio input power:	5W r.m.s. max.
Power:	12-28V d.c.
Size:	110 x 65 x 55mm
Weight:	200g

There's an optional (supplied with the review unit) external 13A plug type ('Wall Wart') adapter which provides 12V at 500mA and a vehicle 'cigar lead' for powering the unit in a vehicle.

Finally

All in all, the bhi NES10-2 noise eliminator offers an



The DIP switch at the rear is used to select one of the eight preset levels.

effective, easy to install solution to those wishing to remove noise on difficult signals. My thanks to bhi Ltd., for the loan of the review unit. You can contact bhi Ltd. by 'phone: (01293) 530147 or take a wander around their website:

www.bhinstrumentation.co.uk
The normal price is £118.45, but bhi are kindly offering the NES10-2 to SWM readers at the special price of £99.95 inc. VAT & P&P valid until September 19 2002.

Also look out for SWM next month when you can enter our free competition to win an NES10-2.

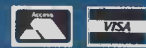
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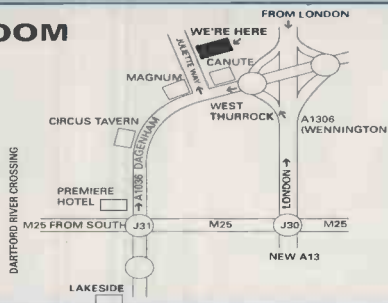
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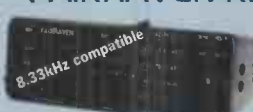


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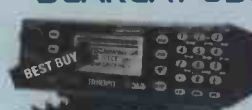
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AR-8200 MkII as new.....	£329.95	FRG-100 as new + FM + PSU.....	£339.95
Alinco X-3 as new.....	£89.95	PRO-63 (66-512MHz) as new.....	£59.95
Welz WA-1000 as new.....	£129.95	ICR3 as new - boxed.....	£339.95
PRO-2042 (25-1300MHz).....	£199.95	UBC-780XLT as new - boxed.....	£259.95
DX-394 as new.....	£119.95	UBC-9000XLT as new - boxed.....	£199.95

HAYDON

Communications



Mail order: 01708 862524



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Q-TEK D.C. 2000 DISCONE

SIMPLY THE BEST

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

OUR PRICE **£54.95** P&P £10.00

Comments from John Griffiths

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

NEXT DAY DELIVERY TO MOST AREAS, £10.00.

ROYAL DISCONE

(Stainless steel)

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

OUR PRICE **£44.95** P&P £10.00

NEW Q-TEK INTREPID 2000



An amazing vertical (glass fibre) colinear antenna. Quality construction with incredible performance. For the serious scanner enthusiast.

Freq range: 0.5-2GHz. PL-259 fitting (not supplied). Length 3m. Mast clamps supplied. (Gain up to 9dB is easily obtained). SO-239 fitting. Requires PL-259 plug (not supplied).

ONLY **£89.95** P&P £10.00

THE VERTICAL CYCLOPSE



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

£79.95 P&P £10.00

DX-10 (R.F. SYSTEMS)

SEND SAE FOR DATA SHEET



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

£169.95 DEL £10.00

DX-1 PRO (R.F. SYSTEMS)

SEND SAE FOR DATA SHEET



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

£329.95 DEL £15.00

AIR-44

(Airband base)

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

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

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

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

Q-TEK WIRE CYCLOPSE



A unique ready to go antenna system that works from 0-30MHz. The antenna is centre fed with coax (not 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). Fitting PL-259 (not supplied).

£69.95 P&P £10.00

MLBA (R.F. SYSTEMS)

SEND SAE FOR DATA SHEET



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

£59.95 POST £5.00

PL-259 to PL-259 4mtr patch lead.....£8.99

GLOBAL AT-2000



Deluxe SW ATU 0-30MHz. SO239 fittings.

ONLY **£89.00** P&P £5

(Probably the best ATU around)

PATCH LEADS AVAILABLE IF REQUIRED.

PL-259 to PL-259 patch lead£5.99

BNC to PL-259 patch lead£9.99

Q-TEK SKY-WIRE MKII

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

ONLY **£32.95** P&P £3.00



SO239 BALUN 8 METRES

E.M.F. ANTENNA

SEND SAE FOR DATA SHEET



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

ONLY **£59.95** P&P £4.00

WA-50 'AMPLIFIER'

SEND SAE FOR DATA SHEET



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

OUR PRICE **£99.95** P&P £7.50

Optional AC adapter.....£16.99

MLB (R.F. SYSTEMS)

SEND SAE FOR DATA SHEET



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

£39.95 POST £3.00

DPX-30 ANTENNA DUPLXER/COMBINER

SEND SAE FOR DATA SHEET



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** P&P £3.50

QS-300



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

OUR PRICE **£10.00** P&P £3.00

SP-3 (PROFESSIONAL)

SEND SAE FOR DATA SHEET



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

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

SP-1 TWO WAY COMBINER (PROFESSIONAL)

SEND SAE FOR DATA SHEET



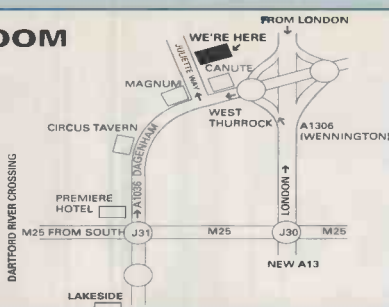
Very high quality combiner allows two short wave receivers to be connected to one antenna without interaction. 50kHz-30MHz (SO-239 fitting).

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

THURROCK, ESSEX SHOWROOM & MAIL ORDER:

Unit 1, Thurrock Commercial Center,
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Sat 8am - 1.00pm.

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Sat 9.30-1pm
Tel: 01384 481681
NO MAIL ORDER TO MIDLANDS BRANCH

SANGEAN ATS-505

DUAL CONVERSION



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

BEST BUY

OUR PRICE **£89.00** P&P £10

Optional power supply.....£16.95

SANGEAN ATS-909



A superb performance portable/base synthesized world receiver with true SSB and 40Hz tuning for ultra clean reception. The same radio is sold under the

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

OUR PRICE **£139.00** P&P £10

Optional power supply.....£16.95 ACE-30
HD-1010 mono/stereo headphones.....£9.99 AN-100

SONY SW-30



The Ideal holiday partner!
★ Fully digital world receiver
★ FM/MW/SW ★ Covers all short wave broadcast/MW plus FM stereo (on h/phones)
★ Programmable memories
★ Sleep timer + alarm function
★ 1kHz tuning for

short wave. RRP £79.95.

HALF PRICE **£39.95** P&P £7.50

SONY SW-100E



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

OUR PRICE **£159.95** P&P £10

Power supply unit for above£24.95
Active antenna.....£64.95

REALISTIC DX-394



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

OUR PRICE **£149.95** P&P £10

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

JRC NRD-545 DSP



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

OUR PRICE **£1299.00** Del £10.00

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

NOW IN STOCK:- Kenwood TS-570GDE "Rx" + PSU £899.00 Grundig Satellit 800 (EU version) £525.00

MICRO MAG ANTENNA MM-1

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

OUR PRICE **£24.95** P&P £5.00

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

Q-TEK PL-25



0.2-2GHz.

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

OUR PRICE **£19.95** P&P £2.50

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

MAST HEAD PULLEY



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

£8.95 + P&P £2.50

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

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

REGULAR-GAINER RH-770



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

OUR PRICE **£16.95** P&P £1.50

SUPER-GAINER RH-9000



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

OUR PRICE **£21.95** P&P £1.50

DB-2000



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

OUR PRICE **£14.99** P&P £1.50

REDUCED PRICE

QS-200



Superb quick fit dash mount for handhelds. £9.99.

OUR PRICE **£4.99** each
P&P £2.00

3 for **£10.00** P&P £3.50

Accessory items

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

ALKALINE STARTER KIT



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.

BA-888U

WEATHER/RADIO CONTROLLED CLOCK.



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

SALE PRICE **£59.95** P&P £4.00

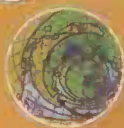
BT FREEWAY TWIN



Up to 3Km range. Call alert/low battery warning. Ideal for business or pleasure. 2 radios + 2 batteries and charger.

ALL FOR **£89.99**

P&P £10.00



DECODE SPECIAL

Software Round-up

In this year's 'Decode' Special, Mike Richards starts off with a selection of tried and tested packages to help you select the right program to match your interests.

With so many decode related software packages available, the following list of tried and tested packages should help you select the right program to match your particular range of interests. As you will see, there's a huge range of decoding systems available and all the programs mentioned here are either freeware or available in demo form for you to try out. This is a great opportunity to try your hand at decoding with absolutely nothing to pay - must be worth a go?

Multimode Decoders

Here I've captured a few of the most popular decoding systems that can handle a wide variety of different transmission modes. These are all pretty sophisticated programs so the user interface can take some time to get used to. However, it's well worth investing the time for the convenience of being able to receive most of the modes from within one program.

Skysweeper

Modes: ACARS, c.w., HF DL, HF-FAX, HELL, MFSK16, MIL-ALE, PACTOR-1, PSK, RTTY, SITOR-A, SITOR-B, SKYB, SSTV, WEFAX.

Operating System: Windows 95 up to and including Windows 2000.

Processor: Pentium 200MHz or better.

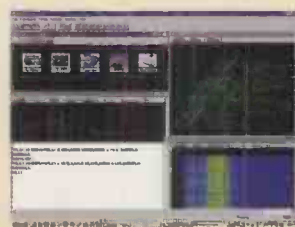
Interface: Soundcard.

What's so good: As you can see from the modes list, Skysweeper has an excellent selection of built-in modes.

However, this is only part of the story as this package has just

about the most comprehensive set of analysis tools for a sub £1000 package. The real gem is the way in which the operator can use the graphic panel to connect all the various decoding, filtering and analysis modules in just about any configuration.

Download Site: www.pervisell.com



JVComm32

Modes: SSTV, WEFAX (h.f. & v.h.f.), RTTY, SYNOP, NAVTEX.

Operating System: Windows 95/8 & NT.

Processor: Pentium 100MHz or better.

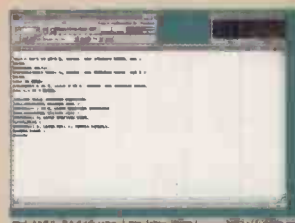
Interface: Soundcard or PTC II-multimode PACTOR decoder by SCS.

What's so good: JVComm32 has an unrivalled pedigree in the decoding world. The author Eberhard Backeshoff was responsible for the original JV FAX software that has

served amateurs and listeners alike for many years.

JVComm32 builds on the experience gained from JV FAX bringing the program bang up-to-date with some excellent additional features. Particularly impressive is the inclusion of full SYNOP decoding to bring those RTTY weather broadcasts to life. The NAVTEX implementation is also very well thought through with a full range of message and area filters included.

Download Site: www.pervisell.com



RadioRaft

Modes: ACARS-VHF, ARQ-E, ARQ-E3, ARQ-M2 (+si-fec), ARQ-M4, ARQ-N, ARQ-6/90, ARQ-6/98, ASCII, AUTOSPEC, BAUDOT, CIS11, c.w. Morse, DGPS, DUP-ARQ (Artrac), FEC-A (FEC-1000), GMDSS-DSC (1), HNG-FEC, PACKET (AX25), PACTOR-I, POCSSAG (2), POL-ARQ, RUM-FEC, SI-ARQ (Arq-s), SITOR-A (Amator-A), SITOR-B (Amator-B), SPREAD (11, 21, 51), SWED-ARQ, UOSAT Oscar-11, 1382, BaudMeter, DIGIT.

Operating System: MSDOS 6.2 or later Windows 95/8 only.

Processor: 486 or later.

Interface: External Comparator.

What's so good: RadioRaft has a huge range of decoding modes and has particular attraction for those that don't have access to the latest

Windows PCs. The program will run happily on a cheap 486 based PC primarily because the application is DOS based and is generally much happier running in a pure DOS environment. RadioRaft will run within Windows, but I would strongly recommend sticking to DOS. One of the big attractions of RadioRaft is its automatic mode detection. This is particularly valued by new listeners as the program does most of the hard work.

Download Site: www.pervisell.com



MixW

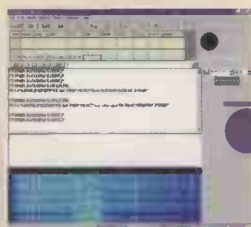
Modes: s.s.b., a.m., f.m., c.w., BPSK31, QPSK31, FSK31, RTTY, Packet (h.f./v.h.f.), Pactor, (RX only), AMTOR (FEC), MFSK, Hellschreiber, Throb, FAX, SSTV, MT63.

Operating System: Windows 9x, ME, NT4, 2000, XP.

Processor: 486 CPU, 100MHz minimum - Pentium 166MHz or higher is recommended.

Interface: Soundcard.

What's so good: *MixW* is primarily aimed at the amateur radio market hence the inclusion of amateur modes with no specialist utility modes. The program works particularly effectively and has a very clear interface with a spectrogram display for tuning ease. For those with suitable receivers (most Icom and a few others) a big attraction will be *MixW*'s ability to remotely control the receiver through the COM port. This makes decoding extremely easy and provides for great integration of the receive and decoding environment.



Download Site: www.mlxw.net

Single Mode Decoders

Now for a selection of largely single mode decoders. One of the benefits of using a single mode program can be improved overall performance as all features of the program from the design of the interface through to the decoding algorithms will have been purpose designed for the particular mode.

W1SQLPSK

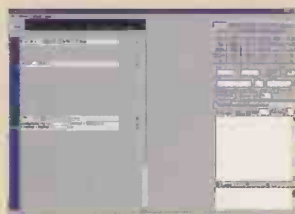
Modes: PK31.

Operating System: Windows 95 or later.

Processor: Pentium 90 or better.

Interface: Soundcard.

What's so good: A specialist, but very interesting, *PSK31* only program that, like many of the amateur products, includes the facility to generate a transmit signal as well. *PSK* is becoming



increasingly popular amongst the amateur radio fraternity and will doubtless find its way into commercial use as well. One of the attractions is the very narrow band nature of the signal that means lots of signals can fit into the typical s.s.b. passband of a modern communications receiver. *W1SQLPSK* capitalises on this fact and allows the simultaneous reception of up to 20 signals at a time! This is great for the short wave listener as you just tune to one frequency and use the software to decide which signal to monitor. The receive screen is based around a vertical spectrum display that makes it very easy to spot the neat horizontal lines of an active signal. Once spotted you just double click the mouse on the signal and the decoder locks-on and starts displaying the decoded signal in ticker-tape format next to the display. If you want to see more, you just right-click on the window and choose expand window. You can then see the decoded signal in a much larger window. Not only is the facility to receive an entire bands worth of signals attractive, but the decoding algorithms seem very robust and the decoder can pull signals out of the noise remarkably well.

Download Site: <http://www.faria.net/w1sql/>

DigiPan

Modes: PSK31.

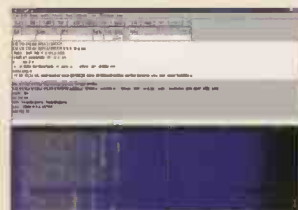
Operating System: Windows 95 or later.

Processor: 486 100MHz or better.

Interface: Soundcard.

What's so good: Another specialist *PSK31* soundcard decoder that includes the facility to receive two stations simultaneously. Unlike *W1SQLPSK*, *DigiPan* uses a conventional horizontal

waterfall display to provide the tuning indication. The display is a very good size and spotting active signals is really easy. I found this program a bit easier to use than



W1SQLPSK thanks to the combined clear display and ease of channel setting. Once the program is running you just left click on a signal for channel 1 or right click for channel 2. If a signal closes down and another starts you just left or right click as appropriate. Both channels are displayed with the full decoded text in the receive buffer. *DigiPan* copes well with noisy signals and seems to decode very reliably.

Download Site: <http://www.digipan.net/>

MMSSTV

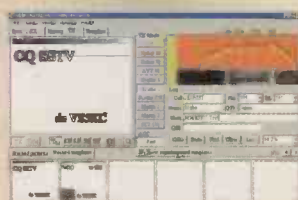
Modes: Slow Scan TV.

Operating System: Windows 95, 98, 98SE, ME, NT, 2000.

Processor: Pentium 100MHz or better.

Interface: 16-bit soundcard.

What's so good: This is a classic example of a well thought through specialist decoder. The decoding algorithms work very well and the picture storage makes the recovery of receive images simple.



Download Site: <http://www.qsl.net/mmhamsoft/mmsstv/>

MTTY

Modes: RTTY.

Operating System: Windows 95/98/ME/NT/2000/XP.

Processor: Pentium 100MHz or better.

Interface: 16-bit soundcard.

What's so good: This is really the star of RTTY decoders the main decoding engine is very capable and includes



a host of d.s.p. features to maximise effectiveness. Added to this is a software emulation of the x-y tuning scope which makes for extremely accurate tuning. The latest version now includes additional d.s.p. filtering including a new notch filter.

Download Site: <http://www.qsl.net/mmhamsoft/mmtty>

Mscan

Modes: SSTV.

Operating System: Windows 95/98/ME.

Processor: Pentium 100MHz or better.

Interface: 16-bit soundcard.

What's so good: One of the original SSTV programs that has evolved over the years and fine tuned into an excellent performer.



Download Site: <http://www.mscan.com/>

Mscan Meteo Pro 1.2

Modes: FAX, RTTY, NAVTEX.

Operating System: Windows 95 or later.

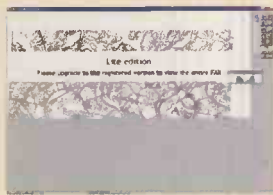
Processor: Pentium 100MHz or better.

Interface: 16-bit Soundcard.

What's so good: This latest incarnation of *Mscan Meteo* is designed very much with the mariner in mind. The included modes provide access to all the weather and navigational information that the small boat owner would need. This

has now been enhanced with a built-in frequency and schedule database with control software to drive most modern receivers. The combination of this software a laptop PC and a suitable receiver makes a top rate maritime installation with fully automated reception of navigational and weather in formation.

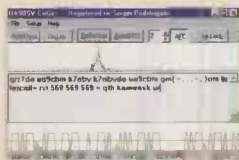
Download Site: <http://www.mscan.com/>



CWGet v1.25

Modes: c.w. only.
Operating System: Windows 9x/NT/2000/XP.
Processor: Pentium 133MHz or better.
Interface: 16-bit soundcard.
What's so good: One of the best c.w. decoding system thanks to the excellent tuning display complete with adjustable noise threshold.

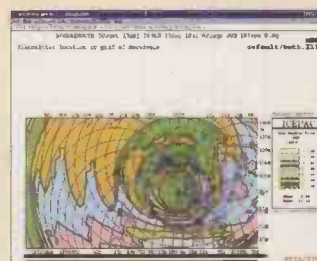
Download Site: <http://www.dxsoft.com/micwget.htm>



HFWin32

Mode: h.f. propagation predictor.
Operating System: Windows 95/98/ME/NT/2000/XP.
Processor: Pentium 100MHz or better.
What's so good: This is a really sophisticated h.f. propagation predictor that's been developed for the US telecomms industry. Not only is the package really comprehensive, but its free. The only point to beware is that the program has been designed for professionals so the help files can be a bit cryptic.

Download Site: http://elbert.its.bldrdoc.gov/pc_hf/hfwin32.html



Spectrogram

Mode: Spectrum Analysis Tool.
Operating System: Windows 95/98/ME/NT/2000/XP.
Processor: Pentium 100MHz or better.

One of the first and still one of the best soundcard based audio spectrum analysers for data work. This wonderful freeware program provides a detailed spectrum analysis of just about any audio signal. Its strengths are its simple, but very clear display and ease of operation. The only area that needs a bit of experimentation is the powerful FFT configuration options. Fortunately the provision of a reset facility to knock all the setting back to their default value means you can experiment without having to worry about getting in pickle. If you do get in a mess, you just hit the reset button and all the settings return to the start value. As well as using the *Spectrogram* display as a sophisticated tuning display, you can configure the program to show you the individual data bits in the signal. This makes spectrogram a very powerful tool for more experienced listeners trying to identify new signals.

Download Site: <http://www.visualizationsoftware.com/gram.html>



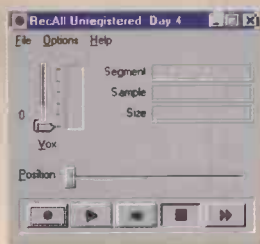
Decoding Tools

In this section I've gathered together a few of the tools you may find helpful to get the most from your decoding.

RecAll

Modes: Signal activated .wav recorder.
Operating System: Windows 98/95/NT 4.0/2000/ME.
Processor: 486DX 100MHz or better.
Interface: 16-bit soundcard.
What's so good: Very effective automated recording software. Main use is capturing signals from stations that transmit intermittently. By using *RecAll* you can capture a wav file over an extended period of time that can then be processed by your decoding software much better than staying up all night!

Download Site: www.sagebrush.com/recall.htm



Special Interest

Here are a couple of packages that 'Decode' readers have found particularly good for really bring parts of the hobby to life.

AirNav Systems Suite 4

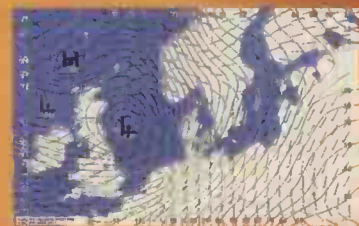
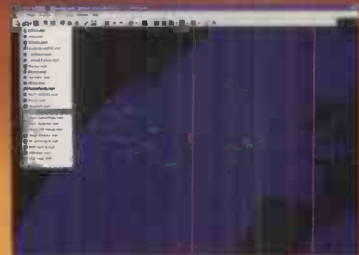
This is the latest release of this highly developed package for tracking aircraft movements. The package can take data from ACARS programs or directly from files loaded onto the Internet. The result can be a really impressive tracking map showing how aircraft are moving around the globe. Demo versions are available and if you're interested in aircraft, you should give this a try.

Download Site: <http://www.airnavsystems.com>

Digital Atmosphere

If you enjoy using radio for receiving weather data, then *Digital Atmosphere* is probably the most sophisticated display package currently available. The program takes SYNOP data from stations such as Hamburg Meteo and turns them into full colour plots on detailed maps. The results are truly stunning and well worth the effort required to become familiar with the software. The program also includes the facility to automatically download SYNOP and other weather data from the Internet so you can cheat and not even use the radio!

Download Site: <http://www.weathergraphics.com/da/index.htm>



DECODE SPECIAL



DECODE SPECIAL



Decode Frequency Listing

Complex Modes Sorted by Frequency

MHz	Mode	Call	Station Name
2.1770	DSC//100E/170	—	IRISH NAVY SHIP
2.1875	DSC//100E/170	—	GMDS5 ALERT CHANNEL
3.2885	ARQ/E/85.7//170	—	GAFF ? ZLOC
3.3810	MILSTD 188-141A	a25	LATVIAN MIL ?ZLOC
3.6670	ARQ/E/46.2E/170	—	EGYPTIAN AIRFIELD NET ?
3.8500	MILSTD 188-141A	berlin	GERMAN FED POLICE BERLIN
4.2075	DSC//100E/170	—	GMDS5 ALERT CHANNEL
4.5375	MILSTD 188-141A	berlin	GERMAN FED POLICE BERLIN
4.7210	MILSTD 188-141A	cro	USAF CROUGHTON
4.8410	MILSTD 188-141A	QVD	DAF VAERLOESE
4.8795	MILSTD 188-141A	muenche	GERMAN FED POLICE MUNICH
5.0190	MILSTD 188-141A	hsp	UK MIL/DIPLO HANSLOPE PARK
5.1150	MILSTD 188-141A	bu1	ROMANIAN MIL/MOI BUCHAREST
5.1200	MILSTD 188-141A	OWP	DAF ?ZLOC
5.3790	MILSTD 188-141A	shqipon	ROMANIAN MIL/MOI ?ZLOC
5.5470	HFDL//	007	ARINC SHANNON
5.7080	MILSTD 188-141A	cro	USAF CROUGHTON
5.8520	MILSTD 188-141A	cro	UK MIL/DIPLO HANSLOPE PARK
6.3120	DSC//100E/170	—	GMDS5 ALERT CHANNEL
6.5320	HFDL//	007	ARINC SHANNON
6.6432	ARQ/E/192E/170	—	UNID
6.7120	HFDL//	003	ARINC REYKAVIK
6.7210	MILSTD 188-141A	cro	USAF CROUGHTON
6.7785	MILSTD 188-141A	bu1	NORWEGIAN MIL?
6.8900	MILSTD 188-141A	muenche	GERMAN FED POLICE MUNICH
6.9150	MILSTD 188-141A	bu3c3	ROMANIAN MIL/MOI BUCHAREST
6.9335	ARQ/RS/240E/-	—	UNID
7.3750	MILSTD 188-141A	ukb	UNID
7.5970	MILSTD 188-141A	muenche	GERMAN FED POLICE MUNICH
7.6610	MILSTD 188-141A	vfp	SWISS DIPLO ?ZLOC
7.8100	MILSTD 188-141A	t	UNID
7.8850	MILSTD 188-141A	115	CHINESE DIPLO
8.0100	MILSTD 188-141A	alk	ROMANIAN MIL/MOI ALEXANDRIA
8.0210	MILSTD 188-141A	bmv2	AUSTRIAN MOD
8.0280	FEC/A/164.6/R/400	y5g	MFA BUCHAREST
8.0600	MILSTD 188-141A	par	ROCKWELL-COLLINS PARIS
8.1000	MILSTD 188-141A	bb2	ISRAELI AF ?ZLOC
8.1320	MILSTD 188-141A	muenche	GERMAN FED POLICE MUNICH
8.1650	MILSTD 188-141A	4000	UNID
8.3340	MILSTD 188-141A	2222	MOROCCAN ARMY ?ZLOC
8.4145	DSC//100E/170	—	GMDS5 ALERT CHANNEL
8.7110	MILSTD 188-141A	cyp	UK MIL/DIPLO CYPRUS
8.8340	HFDL//	008	ARINC JOHANNESBURG
8.8850	HFDL//	015	ARINC BAHRAIN
8.9120	MILSTD 188-141A	cs1	US CUSTOMS ?ZLOC
8.9420	HFDL//	007	ARINC SHANNON
8.9650	MILSTD 188-141A	cronpr	USAF CROUGHTON
8.9770	HFDL//	003	ARINC REYKAVIK
9.0250	MILSTD 188-141A	jnr	USAF ROOSEVELT ROADS
9.0500	MILSTD 188-141A	par	ROCKWELL-COLLINS PARIS
9.0570	MILSTD 188-141A	2000183	USAF AIRCRAFT C-17
9.0700	MILSTD 188-141A	055	E ASIA NET ?
9.0800	MILSTD 188-141A	ts2	ISRAELI AF ?ZLOC
9.0900	MILSTD 188-141A	bric1	ROMANIAN MIL/MOI BRAILIA
9.1170	MILSTD 188-141A	ptf	FBI OR BRASILIAN NAVY ?
9.1210	MILSTD 188-141A	a25	LATVIAN MIL
9.1850	MILSTD 188-110A	—	SWISS DIPLO ?
9.1870	MILSTD 188-141A	—	UNID SWISS DIPLO ?
9.2120	MILSTD 188-141A	nomade2	R-5 NET
9.2270	MILSTD 188-141A	aa1	ISRAELI AF ?ZLOC
9.2590	MILSTD 188-141A	mboingou	GABON RAILWAYS MBOINGOU
9.2860	MILSTD 188-141A	ukb	UNID
10.0870	HFDL//	014	ARINC KRASNOYARSK
10.1900	MILSTD 188-110A	—	UNID
10.2000	MILSTD 188-141A	par	ROCKWELL-COLLINS PARIS
10.2410	35C/150/R/200	—	UNID UKRAINIAN?
10.2725	MILSTD 188-141A	berlin	GERMAN FED POLICE BERLIN

MHz	Mode	Call	Station Name
10.2850	MILSTD 188-141A	sp130p	ALG O-4G ?ZLOC
10.3060	MILSTD 188-110A	—	CZECH DIPLO ?ZLOC
10.3080	MILSTD 188-110A	—	MFA PRAGUE ?
10.3600	MILSTD 188-141A	0004444	TURKISH NET
10.3920	MILSTD 188-141A	kuw	UK MIL KUWAIT
10.6260	ARQ/E/184.5/R/400	rffid	FF NAQOURA
10.6580	MILSTD 188-141A	2020	TURKISH RED CRESCENT ?ZLOC
10.7150	MILSTD 188-110A	—	CHINESE DIPLO
10.8017	ARQ/E/192E/400	—	FF UNID
10.8200	MILSTD 188-110A	bu5cs	BULGARIAN MIL/MOI BUCHAREST
10.8650	MILSTD 188-110A	BDA21	CHINESE DIPLO
10.9235	MILSTD 188-141A	na1es	UNID
10.9480	ARQ/RS/228E/170	—	UNID
10.9950	MILSTD 188-141A	tns	ALGERIAN EMB TUNIS
11.0437	ARQ/E/192E/400	rffid	FF LIBREVILLE ?
11.0800	ARABIC/50/R/850	YKP28	SANA DAMASCUS
11.1260	ARQ/RS/228.5E/170	—	MFA ROMEO ?
11.1300	MILSTD 188-141A	g15	ALGERIAN MOI ?ZLOC
11.1450	MILSTD 188-141A	C03	UNID
11.1602	ARQ/E/200E/400	—	FF ISTRES ?
11.1686	MILSTD 188-141A	KWN	US DOS ?ZLOC
11.1810	MILSTD 188-141A	cropr	USAF CROUGHTON
11.1840	HFDL//	—	AIRCRAFT FLIGHT SV7595
11.2260	MILSTD 188-141A	adh	USAF ANDREWS
11.3120	HFDL//	15	ARINC BAHRAIN
11.3150	HFDL//	04	ARINC RIVERHEAD
11.3180	HFDL//	N329U	AIRCRAFT FLIGHT UP6199
11.3840	HFDL//	07	ARINC SHANNON
11.4167	ARQ/342//200E/400	rffivay	FF SARAJEVO
11.4250	MILSTD 188-141A	zup	ROMANIAN EMB ?ZLOC
11.4280	MILSTD 188-141A	7dd	UNID
11.4430	MILSTD 188-141A	s97	SWEDISH EMB ABIDJAN
11.4660	MILSTD 188-141A	alg	AO+G ALGIERS
11.4750	MILSTD 188-141A	mae	MFA ALGIERS
11.4830	STANAG 4285//	rfgw	MFA PARIS
11.4890	MILSTD 188-141A	dg	MOROCCAN MOI ?ZLOC
11.4918	MILSTD 188-141A	rsmunic	ROHDE + SWARZ MUNICH
11.4920	MILSTD 188-141A	0006138	UNID
11.4950	MILSTD 188-141A	0001262	IRANIAN NET ?
11.5182	ARQ/342//200E/400	—	FF PARIS ?
11.5230	MILSTD 188-141A	cyp	UK MIL/DIPLO EPISKOPI
11.5300	MILSTD 188-141A	br1	BN BRASILIA ?
11.5500	MILSTD 188-141A	par	ROCKWELL-COLLINS PARIS
11.6370	MILSTD 188-141A	faazmp	FAA MINNEAPOLIS
11.6420	MILSTD 188-141A	hsp	UK MIL/DIPLO HANSLOPE PARK
11.8900	MILSTD 188-141A	dg	MOROCCAN MOI ?ZLOC
12.2160	MILSTD 188-110A	—	UNID ITALIAN?
12.2160	MILSTD 188-141A	68	DANISH ARMY ?ZLOC
12.2170	ARQ/RS/240E/-	-	MFA ROMEO
12.2250	MILSTD 188-141A	s94	SWEDISH EMB GUATEMALA CITY
12.3700	MILSTD 188-141A	na1es	UNID
12.5660	35C/150/R/170	UOROK	SHIP BMRT FOROS
12.5665	35C/150/R/170	—	SHIP UNID
12.5680	35C/150/R/170	—	SHIP UNID
12.5770	DSC//100E/170	—	GMDS5 ALERT CHANNEL
13.1490	MILSTD 188-141A	asi	UK MIL ASCENSION
13.2150	MILSTD 188-141A	jty	USAF YOKOTA
13.3150	HFDL//	O13	ARINC SANTA CRUZ
13.3210	HFDL//	—	FLIGHT UP6753
13.3390	HFDL//	—	FLIGHT CO9091
13.4570	MILSTD 188-141A	faazla	FAA LOS ANGELES
13.5500	MILSTD 188-141A	centr5	MFA BUCHAREST
13.8467	ARQ/E/100E/400	rvi	FF LE PORT
13.8790	MILSTD 188-141A	dept	MOROCCAN MOI ?ZLOC
13.9000	MILSTD 188-141A	dept	MOROCCAN MOI ?ZLOC
13.9070	MILSTD 188-141A	cs9	US CUSTOMS ?ZLOC
14.3535	MILSTD 188-141A	s94	SWEDISH EMB GUATEMALA CITY
14.3600	MILSTD 188-141A	bgd	SLOVAKIAN EMB BAGHDAD
14.4000	MILSTD 188-141A	kah	SLOVAKIAN EMB CAIRO
14.4400	MILSTD 188-141A	11111	AUSTRIAN MIL ?ZLOC

MHz	Mode	Call	Station Name
14.4617	ARQ/E/192E/400	rffid	FF PORT BOUET ?
14.4700	MILSTD 188-141A	vrc	ROMANIAN EMB ?ZLOC
14.4817	ARQ/E/148E/400	rffj	FF DAKAR
14.4860	FEC/A/192E/400	rfgw	MFA PARIS
14.4900	MILSTD 188-141A	OL265	CZECH EMB ?ZLOC
14.5500	MILSTD 188-141A	x5	ALGERIAN MIL/MOI ?
14.5590	MILSTD 188-141A	101	UNID CHINESE ?
14.5600	MILSTD 188-141A	sta7	UNID CHINESE ?
14.5750	FEC/A/192E/400	rfgw	MFA PARIS
14.5800	MILSTD 188-141A	cyp	UK MIL/DIPLO EPISKOPI
14.6367	ARQ/E/192E/400	rffid	FF FT DE FRANCE
14.6707	ARQ/E/192E/400	—	FF UNID
14.6890	MILSTD 188-141A	centr6	MFA BUCHAREST
14.7310	MILSTD 188-141A	055	E ASIAN NET ?
14.8100	MILSTD 188-141A	bra	MFA BRATISLAVA
14.8120	MILSTD 188-141A	kah	SLOVAKIAN EMB CAIRO
14.8140	MILSTD 188-141A	hsp	UK MIL/DIPLO HANSLOPE PARK
14.8480	MILSTD 188-141A	base4	TURKISH MIL ?ZLOC
14.9130	MILSTD 188-141A	369	E ASIAN NET?
15.6000	MILSTD 188-141A	ccda	VENEZUELAN NAVY CUIDAD GUAY
15.9610	ARQ/E/192E/400	rffid	FF FT DE FRANCE
16.0142	ARQ/E/3100E/400	rvi	SWEDISH EMB WASHINGTON
16.1050	MILSTD 188-141A	s84	FF UNID ?
16.1477	ARQ/342//200E/400	—	FF UNID
16.1852	ARQ/342//200E/400	—	FF UNID
16.2099	TWINPLEX/1100E/-	OZU25	MFA COPENHAGEN
16.2600	FEC/A/192E/140	rfgw	MFA PARIS
16.2752	COQ/8//13/	—	MFA ALGIERS
16.2788	COQ/8	—	MFA ALGIERS ?
16.2849	TWINPLEX/1100E/-	OZU25	MFA COPENHAGEN
16.2910	ARQ/E/1184.7//400	rffx	FF PARIS
16.3369	COQ/8//27/-	—	MFA ALGIERS
16.3414	COQ/8//27/-	—	MFA ALGIERS
16.3517	ARQ/E/192E/800	—	FF PARIS ?
16.6400	MILSTD 188-141A	pr	UK MIL/DIPLO PRISTINA
16.8010	35C/150/R/170	—	SHIP UNID
16.8015	35C/150/R/170	UEMP	SHIP RIMS MALTA
16.8025	35C/150/R/170	—	SHIP ZWEZDA
16.8040	35C/150/R/170	—	SHIP UNID
16.8045	DSC//100E/170	—	GMDS5 ALERT CHANNEL
17.2300	MILSTD 188-141A	28	DANISH ARMY ?ZLOC
17.4140	FEC/A/192E/400	rfgw	MFA PARIS
17.4150	MILSTD 188-110A	s00	MFA STOCKHOLM
17.4627	ARQ/E/3100E/400	rffcccs	FF PARIS
17.4900	MILSTD 188-141A	dki	UK MIL/DIPLO DHEKELIA
17.4957	ARQ/E/3100E/400	—	FF UNID
17.5509	ARQ/E/192E/400	rffj	FF DAKAR
17.9280	HFDL//	06	ARINC HAT YAI
17.9670	HFDL//	—	AIRCRAFT FLIGHT KE0502
17.9850	HFDL//	03	ARINC REYKAVIK
18.0030	MILSTD 188-141A	jdj	USAF DIEGO GARCIA
18.0350	MILSTD 188-141A	—	UNID
18.0400	ARTRAC//VF	HGZ21	MFA BUAPREST
18.0427	ARQ/E/192E/400	rffid	FF LIBREVILLE
18.1834	COQ/8//	—	MFA ALGIERS
18.2300	MILSTD 188-141A	45	DANISH ARMY ?ZLOC
18.2700	MILSTD 188-141A	bra	MFA BRATISLAVA
18.2967	ARQ/E/3100E/400	rftp	FF DJIBOUTI
18.3200	MILSTD 188-141A	bra	MFA BRATISLAVA
18.3208	ARQ/E/192E/400	rffj	FF DAKAR
18.3500	MILSTD 188-141A	ALG	SLOVAKIAN EMB ALGIERS ?
18.4004	ARTRAC/1125/N/170	HGX55	HUNGARIAN EMB ALGIERS
18.4445	ARQ/E/1184.6//400	rffid	FF NAQOURA
18.4477	ARQ/E/3100E/400	rftpa	FF NDIAMENA ?
18.4800	MILSTD 188-141A	OL269	CZECH EMB CAIRO ?
18.5139	TWINPLEX/1100E/-	OZU25	MFA COPENHAGEN
18.5537	ARQ/E/192E/400	rffj	FF DAKAR
18.5940	MILSTD 188-141A	tsf	US CUSTOMS ALBEQUERQUE
18.6350	MILSTD 188-141A	nkt	ALGERIAN EMB NOUAKCHOTT
18.6860	MILSTD 188-110A	—	SWEDISH DIPLO ?

For this 'Decode Special' I've treated you to two versions of Day Watsons' Complex Frequency List. Many readers have said that its useful to have frequency lists sorted by mode and frequency. The mode list is useful if you want to try a particular mode as you can quickly find all the occurrences and try your luck at some decoding. The frequency sorted list is great if you're just tuning around as you can use the list to help identify signals and to guide you to some of the more interesting ones.

MHz	Mode	Call	Station Name	MHz	Mode	Call	Station Name	MHz	Mode	Call	Station Name
18.7200	MIL STD 188-141A	kah	SLOVAKIAN EMB CAIRO	18.9667	ARQ/E3/196/E/400	rthj	FF PAPAETE	10.2725	MIL STD 188-141A	berlin	GERMAN FED POLICE BERLIN
18.7560	MIL STD 188-141A	s00	MFA STOCKHOLM	11.2167	ARQ/E3/196/E/400	rfl	FF FT DE FRANCE	10.2850	MIL STD 188-141A	sp130p	ALG O +G ZLOC
18.9450	MIL STD 188-141A	s97	SWEDISH EMB ABIDJAN	11.1260	ARQ/R5/228.5/E/170	---	MFA ROME?	10.3600	MIL STD 188-141A	0004444	UKISH NET
18.9667	ARQ/E3/196/E/400	rthj	FF PAPAETE	10.9480	ARQ/R5/228.5/E/170	---	UNID	10.3920	MIL STD 188-141A	kuw	UK MIL KUWAIT
18.9740	MIL STD 188-141A	dki	UK MIL/DIPLO DHEKELIA	6.9335	ARQ/R5/240/E/-	---	UNID	10.6580	MIL STD 188-141A	2020	TURKISH RED CRESCENT ZLOC
19.0364	COQ/B/-/I/-	---	ALGERIAN EMB ABIDJAN	12.2170	ARQ/R5/240/E/-	---	MFA ROME	10.9235	MIL STD 188-141A	na1es	UNID
19.0430	MIL STD 188-141A	055	E ASIAN NET ?	18.4004	ARTRAC/125/N/170	HGX55	HUNGARIAN EMB ALGIERS	10.9950	MIL STD 188-141A	gms	ALGERIAN EMB TUNIS
19.0488	ARQ/E3/192/E/400	---	FF PARIS ?	20.0350	ARTRAC/125/N/170	HGX21	MFA BUDAPEST	11.3000	MIL STD 188-141A	t15	ALGERIAN MOI ZLOC
19.1017	ARQ/E3/192/E/400	rthj	FF FT DE FRANCE	18.0400	ARTRAC/125/N/170	HGX21	MFA BUDAPEST	11.1450	MIL STD 188-141A	C03	UNID
19.2047	ARQ/E3/192/E/400	rthj	FF FT DE FRANCE	16.2788	COQ/B/	---	MFA ALGIERS ?	11.1686	MIL STD 188-141A	KMN	US DOS ZLOC
19.2162	MIL STD 188-141A	s00	MFA STOCKHOLM	18.1834	COQ/B/	---	MFA ALGIERS	11.1810	MIL STD 188-141A	compr	USAF CROUGHTON
19.2167	ARQ/E3/196/E/400	rthj	FF FT DE FRANCE	19.4144	COQ/B/	---	ALGERIAN DIPLO ?	11.2260	MIL STD 188-141A	adv	USAF ANDREWS
19.3090	MIL STD 188-141A	055	E ASIAN NET ?	19.0364	COQ/B/-/I/-	---	ALGERIAN EMB ABIDJAN	11.4250	MIL STD 188-141A	zup	ROMANIAN EMB ZLOC
19.4144	COQ/B/	---	ALGERIAN DIPLO ?	16.2752	COQ/B/13/	---	MFA ALGIERS	11.4280	MIL STD 188-141A	7dd	UNID
19.4640	MIL STD 188-141A	kuw	UK MIL/DIPLO KUWAIT	16.3369	COQ/B/27/	---	MFA ALGIERS	11.4430	MIL STD 188-141A	s97	SWEDISH EMB ABIDJAN
19.5540	MIL STD 188-141A	055	E ASIAN NET ?	16.3414	COQ/B/27/	---	MFA ALGIERS	11.4660	MIL STD 188-141A	alg	AQ+G ALGIERS
19.6219	TWINPLEX/100E/-	OZU25	MFA COPENHAGEN	2.1770	DSC/1100E/170	---	IRISH NAVY SHIP	11.4750	MIL STD 188-141A	mae	MFA ALGIERS
19.9450	MIL STD 188-141A	mae	MFA ALGIERS	2.1875	DSC/1100E/170	---	GMDS ALERT CHANNEL	11.4890	MIL STD 188-141A	dg	MOROCCAN MOI ZLOC
19.9770	MIL STD 188-141A	prl	UK MIL/DIPLO PRISTINA	4.2075	DSC/1100E/170	---	GMDS ALERT CHANNEL	11.4918	MIL STD 188-141A	rsunic	ROHDE + SWARZ MUNICH
20.0350	ARTRAC/125/N/170	HGX21	MFA BUDAPEST	6.3120	DSC/1100E/170	---	GMDS ALERT CHANNEL	11.4920	MIL STD 188-141A	0006138	UNID
20.1070	MIL STD 188-141A	055	E ASIAN NET ?	8.4145	DSC/1100E/170	---	GMDS ALERT CHANNEL	11.4950	MIL STD 188-141A	001262	IRANIAN NET ?
20.3400	MIL STD 188-141A	adz	ALGERIAN EMB AGADEZ	12.5770	DSC/1100E/170	---	GMDS ALERT CHANNEL	11.5230	MIL STD 188-141A	cy	UK MIL/DIPLO EPIKOPI
20.4520	MIL STD 188-141A	mae	MFA ALGIERS	16.8045	DSC/1100E/170	---	GMDS ALERT CHANNEL	11.5300	MIL STD 188-141A	br1	BN BRASILIA ?
20.4550	MIL STD 188-141A	OLZ84	CZECH EMB ZLOC	16.2600	FECA/1192/E/400	rfgw	MFA PARIS	11.5500	MIL STD 188-141A	par	ROCKWELL-COLLINS PARIS
20.5030	MIL STD 188-141A	prl	ROMANIAN DIPLO	14.4860	FECA/1192/E/400	rfgw	MFA PARIS	11.6370	MIL STD 188-141A	faazmp	FAA MINNEAPOLIS
20.6020	MIL STD 188-141A	wrl	UK MIL/DIPLO PRISTINA	14.5750	FECA/1192/E/400	rfgw	MFA PARIS	11.6420	MIL STD 188-141A	hsp	UK MIL/DIPLO HANSDLOPE PARK
20.6310	MIL STD 188-141A	wrl	USAF ROBINS	17.4140	FECA/1192/E/400	rfgw	MFA PARIS	11.8900	MIL STD 188-141A	dg	MOROCCAN MOI ZLOC
20.6980	MIL STD 188-141A	s53	SWEDISH EMB AMMAN	22.8870	FEC/ROU/164.5/R/400	v5g	MFA BUCHAREST	12.2160	MIL STD 188-141A	68	DANISH ARMY ZLOC
20.7150	ARQ/E3/184.6/N/400	rfl	FF NAQAURA	8.0280	FEC/ROU/164.6/R/400	v5g	MFA BUCHAREST	12.2250	MIL STD 188-141A	s94	SWEDISH EMB GUATEMALA CITY
20.7167	ARQ/E3/192/E/400	---	FF PARIS ?	11.3180	HFDL/	007	ARIN SHANNON	12.3700	MIL STD 188-141A	na1es	UNID
20.8052	ARQ/342/200/E/400	rftap	FF DJIBOUTI	6.5320	HFDL/	007	ARIN SHANNON	13.1490	MIL STD 188-141A	asi	UK MIL ASCENSION
20.8477	ARQ/E3/200/E/400	---	FF PARIS ?	6.7120	HFDL/	003	ARIN REYKJAVIK	13.2150	MIL STD 188-141A	jty	USAF YOKOTA
20.8822	ARQ/342/200/E/400	---	FF UNID	8.8340	HFDL/	008	ARIN JOHANNESBURG	13.4570	MIL STD 188-141A	faazla	FAA LOS ANGELES
20.8900	MIL STD 188-141A	d07	US MIL ?	8.8850	HFDL/	015	ARIN BHRAIN	13.5500	MIL STD 188-141A	cent5	MFA BUCHAREST
20.9000	MIL STD 188-141A	alg	SLOVAKIAN EMB ALGIERS	8.9420	HFDL/	007	ARIN SHANNON	13.8790	MIL STD 188-141A	dept	MOROCCAN MOI ZLOC
20.9175	MIL STD 188-141A	s73	SWEDISH EMB KINSHASA	8.9770	HFDL/	003	ARIN REYKJAVIK	13.9000	MIL STD 188-141A	dept	MOROCCAN MOI ZLOC
20.9420	MIL STD 188-141A	s00	MFA STOCKHOLM	10.0870	HFDL/	014	ARIN KRASNOPYRSK	13.9070	MIL STD 188-141A	cs9	US CUSTOMS ZLOC
20.9580	MIL STD 188-141A	s84	SWEDISH EMB WASHINGTON	11.1840	HFDL/	---	AIRCRAFT FLIGHT SV7595	14.3535	MIL STD 188-141A	s94	SWEDISH EMB GUATEMALA CITY
20.9635	MIL STD 188-141A	kr154	POLISH MIL	11.3120	HFDL/	15	ARIN BHRAIN	14.3600	MIL STD 188-141A	bgd	SLOVAKIAN EMB BAGHDAD
20.9900	MIL STD 188-141A	bgd	SLOVAKIAN EMB BAGHDAD	11.3150	HFDL/	04	ARIN RIVERHEAD	14.4000	MIL STD 188-141A	kah	SLOVAKIAN EMB CAIRO
20.9950	MIL STD 188-141A	alg	SLOVAKIAN EMB ALGIERS	11.3180	HFDL/	N329U	AIRCRAFT FLIGHT UP6199	14.4400	MIL STD 188-141A	11111	AUSTRIAN MIL ZLOC
21.9310	HFDL/	04	ARIN RIVERHEAD	11.3840	HFDL/	07	ARIN SHANNON	14.4700	MIL STD 188-141A	vto	ROMANIAN EMB ZLOC
21.9340	HFDL/	---	FLIGHT TZ0535	13.3150	HFDL/	013	ARIN SANTA CRUZ	14.4900	MIL STD 188-141A	OLZ65	CZECH EMB ZLOC
21.9490	HFDL/	---	AIRCRAFT FLIGHT UP6803	13.3210	HFDL/	---	FLIGHT UP6753	14.5500	MIL STD 188-141A	x5	ALGERIAN MIL/MOI ?
21.9820	HFDL/	15	ARIN BHRAIN	13.3390	HFDL/	---	FLIGHT CO0901	14.5590	MIL STD 188-141A	101	UNID CHINESE ?
21.9970	HFDL/	13	ARIN SANTA CRUZ	17.9280	HFDL/	06	ARIN HAT YAI	14.5600	MIL STD 188-141A	sta7	UNID CHINESE ?
22.7690	MIL STD 188-141A	005	E ASIAN NET ?	17.9670	HFDL/	---	AIRCRAFT FLIGHT KEDS02	14.5800	MIL STD 188-141A	cyp	UK MIL/DIPLO EPIKOPI
22.8270	FEC/ROU/164.5/R/400	v5g	MFA BUCHAREST	17.9850	HFDL/	03	ARIN REYKJAVIK	14.6890	MIL STD 188-141A	cent6	MFA BUCHAREST
22.9127	ARQ/E3/100/E/400	---	FF NOUMEA ?	21.9310	HFDL/	04	ARIN RIVERHEAD	14.7310	MIL STD 188-141A	055	E ASIAN NET ?
22.9286	MIL STD 188-110A	---	MFA STOCKHOLM	21.9340	HFDL/	---	FLIGHT TZ0535	14.8100	MIL STD 188-141A	bra	MFA BRATISLAVA
23.0300	MIL STD 188-141A	djibout	R-45 NET	21.9490	HFDL/	---	AIRCRAFT FLIGHT UP6803	14.8120	MIL STD 188-141A	kah	SLOVAKIAN EMB CAIRO
23.2140	MIL STD 188-141A	prl	US CUSTOMS ?	21.9820	HFDL/	15	ARIN BHRAIN	14.8140	MIL STD 188-141A	hsp	UK MIL/DIPLO HANSDLOPE PARK
23.2260	MIL STD 188-110A	---	SWEDISH DIPLO ZLOC	21.9970	HFDL/	13	ARIN SANTA CRUZ	14.8480	MIL STD 188-141A	base4	TURKISH MIL ZLOC
24.2680	MIL STD 188-141A	kuw	UK MIL/DIPLO KUWAIT	9.1850	MIL STD 188-110A	---	SWISS DIPLO ?	14.9130	MIL STD 188-141A	369	E ASIAN NET ?
24.7117	ARQ/E3/192/E/400	---	FF DAKAR ?	10.1900	MIL STD 188-110A	---	UNID	15.6000	MIL STD 188-141A	cdad	VENEZUELAN NAVY CUIJAD GUYA
26.2417	ARQ/E3/100/E/400	rvi	FF LE PORT	10.3060	MIL STD 188-110A	---	CZECH DIPLO ZLOC	16.1050	MIL STD 188-141A	s84	SWEDISH EMB WASHINGTON

Complex Modes Sorted By Mode

MHz	Mode	Call	Station Name
12.5660	3SC/50/R/170	UROK	SHIP BMRT FOROS
12.5665	3SC/50/R/170	---	SHIP UNID
12.5680	3SC/50/R/170	---	SHIP UNID
16.8010	3SC/50/R/170	---	SHIP UNID
16.8015	3SC/50/R/170	UEMP	SHIP RIMS MALTA
16.8025	3SC/50/R/170	---	SHIP ZWEDZA
16.8040	3SC/50/R/170	---	SHIP UNID
10.2410	3SC/50/R/200	---	UNID UKRAINIAN ?
11.0800	ARABIC/150/R/850	YKP28	SANA DAMASCUS
11.4167	ARQ/342/200/E/400	rftay	FF SARAJEVO
11.5182	ARQ/342/200/E/400	---	FF PARIS ?
16.1852	ARQ/342/200/E/400	---	FF UNID
20.8052	ARQ/342/200/E/400	rftap	FF DJIBOUTI
20.8822	ARQ/342/200/E/400	---	FF UNID
10.6260	ARQ/E1/184.5/N/400	rftbl	FF NAQAURA
18.4445	ARQ/E1/184.6/N/400	rftbl	FF NAQAURA
20.7150	ARQ/E1/184.6/N/400	rftbl	FF NAQAURA
16.2910	ARQ/E1/184.7/N/400	rftx	FF PARIS
6.6432	ARQ/E1/192/E/170	---	FF UNID
10.8017	ARQ/E1/192/E/400	---	EGYPTIAN AIRFIELD NET ?
3.6670	ARQ/E1/185.2/E/170	---	GAFF ZLOC
3.2885	ARQ/E1/185.7/E/170	---	FF LE PORT
18.8467	ARQ/E3/1100/E/400	rvi	FF LE PORT
16.0142	ARQ/E3/1100/E/400	rvi	FF LE PORT
18.2967	ARQ/E3/1100/E/400	rftap	FF DJIBOUTI
22.9127	ARQ/E3/1100/E/400	rthi	FF NOUMEA ?
26.2417	ARQ/E3/1100/E/400	rvi	FF LE PORT
11.0437	ARQ/E3/1192/E/400	rthj	FF LIBREVILLE ?
14.4617	ARQ/E3/1192/E/400	rthj	FF PORT BOUET ?
14.6367	ARQ/E3/1192/E/400	rthi	FF FT DE FRANCE
14.6707	ARQ/E3/1192/E/400	---	FF UNID
15.9610	ARQ/E3/1192/E/400	rthi	FF FT DE FRANCE
17.5509	ARQ/E3/1192/E/400	rthj	FF DAKAR
18.0427	ARQ/E3/1192/E/400	rthj	FF LIBREVILLE
18.3208	ARQ/E3/1192/E/400	rthj	FF DAKAR
18.5537	ARQ/E3/1192/E/400	rthj	FF DAKAR
19.0488	ARQ/E3/1192/E/400	---	FF PARIS ?
19.1017	ARQ/E3/1192/E/400	rthi	FF FT DE FRANCE
19.2047	ARQ/E3/1192/E/400	rthi	FF FT DE FRANCE
20.7167	ARQ/E3/1192/E/400	---	FF PARIS ?
24.7117	ARQ/E3/1192/E/400	---	FF DAKAR ?
16.3517	ARQ/E3/1192/E/800	---	FF PARIS ?
11.1602	ARQ/E3/200/E/400	---	FF ISTRES ?
16.1477	ARQ/E3/200/E/400	---	FF UNID ?
17.4627	ARQ/E3/200/E/400	rftxcs	FF PARIS
17.4957	ARQ/E3/200/E/400	---	FF UNID
18.4477	ARQ/E3/200/E/400	rftpa	FF NOJAMENA ?
20.8477	ARQ/E3/200/E/400	---	FF PARIS ?
14.4817	ARQ/E3/148/E/400	rthj	FF DAKAR



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 • ORDER LINE: 08000 73 73 88 • E-MAIL: sales@wsplc.com • WEB: www.wsplc.com • HOURS: MON - SAT 9am - 5.30pm

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MIDLANDS STORE OPEN SAT 7th SEPTEMBER 2002

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08000 73 73 88

carriage charges: A=£2.75, B=£6, C=£9

TIVOLI AUDIO MODEL ONE CONSOLE RADIO RECEIVER

NEW

VARIOUS WOOD FINISHES

Top class compact AM/FM broadcast radio. Superb audio/great sensitivity.

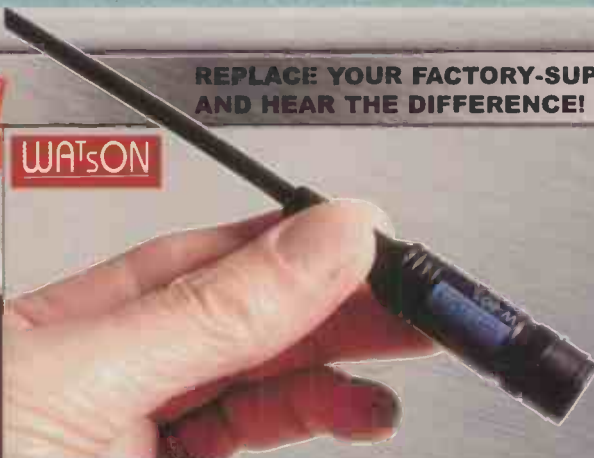
***** in WHAT HIFI magazine

£99
Plus £9.00 Carr.

ONLY FROM HOCKLEY STORE



WATSON



REPLACE YOUR FACTORY-SUPPLIED ANTENNA AND HEAR THE DIFFERENCE!

• **W-801 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

• **W-881 Super Gainer**
 Watson have engineered this flexible antenna to give you wide gain over the range 25-1900MHz. Optimised matching brings in those weak signals and the BNC fitting matches most popular scanners. £19.95 A

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

Uniden-Bearcat UBC-220XLT

MVT-3300EU SCANNER SPECIAL OFFER

VR-120D RECEIVER NEW MODEL

YUPITERU MVT-7100EX 100kHz - 1.65GHz



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.



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

£129
Plus £6.00 Carr.

- 100kHz - 1300MHz
- AM, FM, WFM
- 12 Channel steps
- 640 Memory Channels
- 64 frequency skip channels
- 21 Smart Search
- B Search bands
- 1 Priority channel
- Dual watch
- 8-Character Alpha-tag
- Preprogrammed broadcast frequencies
- VFO search feature - PC programmable with optional ADM5-G kit.
- Antenna: BNC • Supply 9.0-13.8V DC • 2 x AA cells • Battery voltage: 2.2-3.5V DC (nominal 3V)



£159
Plus £6.00 Carr.



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

AOR AR-8600 II NEW

Fairhaven RD500VX Radio Database Receiver

Yupiteru MVT-7300

- 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 58 x 88 x 38mm
- Weight 368g



£189
Plus £9.00 Carr.

AOR's exciting new scanner.

- 530kHz - 2040MHz
- 1000 Memories
- 37ch sec scan
- RS232 PC interface fitted
- 10.7MHz IF for SOU5500
- 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.

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

£749
Plus £9.00 Carr.

- 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

AOR-7030 RECEIVER 0kHz - 32MHz

YAESU VR-5000

YAESU VR-500



£249
Plus £9.00 Carr.

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



£749
Plus £9.00 Carr.

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

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

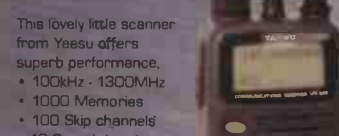
AR-7030+ £879 C



£599
Plus £9.00 Carr.

Yaesu's exciting new scanner.

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



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

STREET PILOT III

GARMIN GPS-V

8.5m long!



£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 shortwave bands. Unlike random noise, it reduces the background noise and pulls in the signals. And its small size means it will fit most gardens. Absolutely no adjustment required.

NEW FROM GARMIN
IT TALKS TO YOU

"TURN LEFT
W 2 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 30ft." These are in stock now.

£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

BAR-888U RADIO CONTROLLED WEATHER CENTRE

GLOBAL AT-2000 ANTENNA TUNER

ICOM IC-R8500 "EDITORS CHOICE"



£599
Plus £9.00 Carr.

The IC-R75 has many features including in the Americas Radio Pro... short wave receiver... up to the exciting 6m Ham Band... 16B, 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 Noise Filter • 101 Alphanumeric Memory Channels • Squelch • Clock • Numeric Keypad • 2 Level Pre-Amp • Scanning



£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



£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.



£1199
Plus £9.00 Carr.

The IC-R8500 has a wide frequency range continuously from D1 to 2000MHz. It's ideal for the radio amateur or shortwave listener. The IC-R8500's all mode capability allows reception of a variety of different modes, from the world over: SSB (USB, LSB), CW AM, FM and WFM are included, along with several 'specialty' modes, CW narrow, AM wide, AM narrow and FM narrow are available (Requires optional FL-52A).

ICOM IC-R10E

500KHZ - 1300MHZ

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

OPTOELECTRONICS DS-1000 DIGITAL COUNTER

AOR-8200 SERIES 2

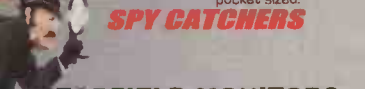
500KHZ - 2040MHZ

- USB, LSB, CW, AM, FM, WFM
- 1000 Memory
- Bandscope
- Wide range of traps
- Squelch
- Digital Frequency Display
- Auto Tune Band Scope
- Memory Scan feature
- Large output part
- Programmable scanning
- Ni-cad pack, AC charger and helical antenna



£279
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.



£59.95
Plus £6.00 Carr.

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 CAV port for reaction tuning Icom and AOR receivers fitted with this feature. These monitor receivers are designed for nearfield use and the range is from a few hundred metres to around 1km, depending on frequency and power of the transmitter.

WR-5001 £99.95 WR-5002 £159.95

PROMOTION SAVE £100

- Frequency range: 10MHz - 2.6GHz
- Resolution 100Hz
- Signal strength -45dBm to -5dBm
- 1,000 memories 65,000 hits per memory
- Captures Digital & Analogue signals
- Minimum 500uS RF pulse required
- Reaction tones (requires lead)
- Display: 2x15 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



£499
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.



£379
Plus £6.00 Carr.

PCR-1000 10kHz - 1300MHz

COMPUTER CONTROLLED RECEIVER

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



£299
Plus £6.00 Carr.

USB, LSB, CW, AM, FM, WFM

ICOM IC-R2

500kHz - 1309MHz

This palm size handy offers great performance. Offers

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



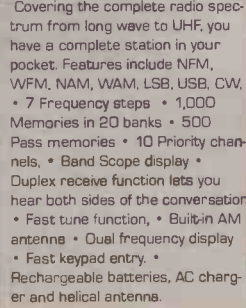
£139
Plus £6.00 Carr.

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.



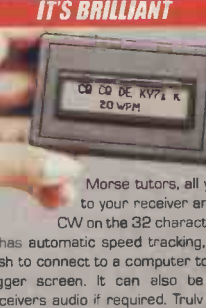
£69.95
Plus £6.00 Carr.

MFJ-461

MORSE CODE READER

IT'S BRILLIANT

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



£84.95
Plus £9.00 Carr.

HITACHI KH-WS1 WORLD SPACE DIGITAL RECEIVER

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

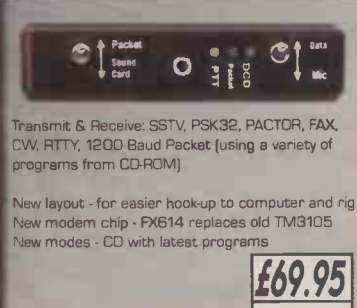


£149
Plus £6.00 Carr.

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.

£369
Plus £9.00 Carr.

DECODE SPECIAL

Decoding Tips

Finally, in this 'Decode Special', Mike shares with us some of his vast experience gained through many years of radio operating and decoding data signals.

I thought it might be useful to gather together a few decoding tips that I have picked up over the years. For convenience, I've arranged the tips around the main decoding modes where appropriate.

Antennas

With virtually all decoding now being based around the PC, we are all faced with a basic problem of how to listen to weak radio signals whilst using a computer that behaves like an r.f. noise generator! Anyone who's been around in this hobby for a few years will know that modern PCs and peripherals are generally very much quieter than earlier models, but they still emit vast amounts of r.f. noise relative to the weak signals we are trying to receive.

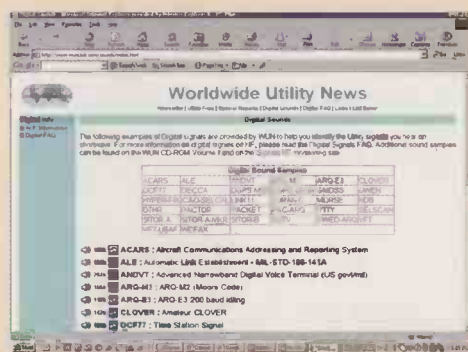
The first rule is to make sure that you capture those weak signals from a point as far away from the PC as possible, e.g. shift your antenna. In doing this, you need to make sure you keep the antenna well away from other sources of noise like power cables and TV antennas/downloads. Whilst simple wire antennas are fine, the modern magnetic loop antenna has the combined advantage of being very compact and has inherent rejection of local noise. One of the best examples of a magnetic loop is the ALA1530 from Wellbrook Communications - www.wellbrook.uk.com

PC Interference Reduction

Whilst the PC is usually blamed for interference problems, it is often the peripherals that are the source

of the noise. If you happen to be using a laptop model, you will usually find that the levels of interference are very much lower when you use battery power instead of mains. This is because most laptops use external switch-mode power units that are notoriously noisy.

You can also try disconnecting your printer, scanner, etc. one at a time to see if they are causing a problem. If they are, you can try some additional ferrite rings in the connecting lead or just leave it disconnected whilst you're listening.



WUN Club's excellent digital sounds web page.

Tune-up Your Ears

Your ears are by far your most powerful decoding tool and a well trained ear can save hours of failed decoding. As you build-up listening experience, you will soon find that you are able to recognise most of the main data modes. Certainly all the main groupings of signals have very characteristic

sounds that can quite easily be recognised.

The problem for new listeners is how gain that knowledge quickly. One useful technique is to take advantage of the recordings stored on the World Utility Network -

<http://www.wunclub.com/sounds/index.html> They have samples of a huge range of data signals in .wav files that can either be listened to on-line or downloaded for later use. If you are new to decoding, download the following signals/files and see if you can tell the difference.

RTTY
SITOR-A
SITOR-B
WEFAX

If you can spot the difference, and I'm sure you will, these are some of the main signal groupings so familiarity with these will enable you to set the basic mode of your decoder straightaway. Once you have the main groupings, try the following more advanced systems.

PACKET
ARQ-E3
ARQ-M2
ACARS

What Frequency?

Many new readers are understandably confused by the fact that they have to tune their receiver to a different frequency than that published in the frequency lists or even in my 'Decode' column! Why should this be?

The answer lies in the fact that most of us use an s.s.b.

receiver for utility signals. The letters s.s.b. are an acronym for single sideband suppressed carrier and the frequency shown on your receiver's display is the frequency of that suppressed carrier that was used to generate the s.s.b. signal.

Now when it comes to receiving a utility signal, we're trying to produce a beat tone for each of the two parts of the utility signal. In order to do this with a receiver using s.s.b. mode, we need to offset our tuning by the frequency of the tone we want.

If, for example, you are receiving a RTTY signal with a quoted (mark) frequency of 12.000MHz and you wanted a 1.7kHz audio tone for your decoder, then you would need to tune the receiver 1.7kHz lower, i.e. 11.9983MHz. I've given this

particular example because this is just about the most common offset that suits most decoders. Should your receiver have a RTTY demodulator mode, then you need to tune to the suppressed carrier frequency.

Filters & Bandwidth

If you read the sales leaflets for modern receivers, you could well get the impression that narrow bandwidths are the holy grail of communications receivers - not so. Like so many things, it's having the right bandwidth that's most important. With utility signals, the choice of too narrow a bandwidth will increase the errors in the received signal rather than reduce them. It's also worth noting that many of the newer decoding programs for PSK31 signals rely on the receiver having a wide bandwidth in order to be able to receive a number of signals simultaneously.

If you are just listening to RTTY weather reports, then a fairly tight 2.2kHz bandwidth will be fine and there's no risk of increased errors. Don't be tempted to use narrow c.w. filters because they are generally configured to produce audio tones of around 800Hz to 1kHz. If you try and tune up to the 1.7kHz, you will either find the signal disappears completely or you will be operating right on the edge of the filter.

Use of the filter edge always leads to problems and produces all manner of phase distortions that will increase the number of received errors. With FAX pictures, you really need to open-up the receiver's bandwidth as much as possible because a narrow bandwidth will strip the fine detail from the received image.

Slant Correction

When starting a FAX program for the first time after installation you will often find that the received picture appears with a marked slant. Each of the software packages has a system to correct this, but it is sometimes difficult to find a good FAX signal to use as a calibration source. If this applies to you, an excellent alternative is to use the 60kHz MSF signal. This produces a very accurate one second signal that is ideal for calibration - it doesn't get much more accurate than this!

To use this source, set your FAX program to 60r.p.m. with an IOC of 576 or preferably 288. Tune your receiver to around 57.6kHz and you should hear the regular (slightly hesitant) sound of MSF. Just fine tune until the FAX program tuning indicator shows the tone on full white and you can sit back and watch a noise line start to appear on the display.



ALA1530 loop antenna - low noise reception.

Once you have a full screen of this, you can use your software's slant correction routine to calibrate your system.

FAX Smearing

Another common disappointment for new FAX listeners is a phenomenon called smearing that looks just as though the ink has been smeared on your printer. In some cases, the effect shows up as a ghost image next to the original. It's this artefact that gives the clue as to the cause - multi-path propagation.

Put simply, this means the FAX signal is getting to you by more than one route. If signals get to you via different routes, they will also have had to travel further, hence there will be a delay between the main signal arriving and the alternative slower signals. Because there's a delay, the signal arrives late and appears in a slightly different position on your FAX image - hence the ghost.

In bad cases, you can get the signal travelling to you via a host of similar, but different, paths - this is what causes the smeared effect. The solution is simple tune to a different frequency! If you have a directional receive antenna, you may be able to make some improvements by nulling-out the interfering signal, but in most cases the only answer is to change frequency. You will find that all the main FAX stations transmit on a wide range of frequencies specifically to give the receiving station the option to choose the frequency that gives the cleanest reception.

Audio Levels

If, like most people these days, you're using a PC soundcard to handle your decoding, you need to be very careful with the signal feed from your receiver to the soundcard. Where possible, always use a 'line-in' socket as this is usually designed to handle higher signals levels. The 'mic.' input is usually very sensitive and prone to overload. Many systems also feature a boost facility on the 'mic.' input, which makes it even more prone to overload.

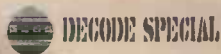
Where you have the choice, you should also use the 'line' or 'tape' output from your receiver. Not only is this generally the right level for a soundcard, but the signal level is independent of the volume control setting. Even with these basic precautions, you need to keep a watch on the levels. Most decoding programmes include some form of bargraph or similar showing the audio level. Make sure you keep the level in the green or below, don't stray into the red.

When you overload a computer soundcard, the signal will limit very quickly and become severely distorted. This will lead to a rapid increase in the number of errors in the received signal. I've had problem cases in the past where listeners appear to have set-up their program properly, found a good strong signal and still get either no decoding or an unusually high error rate. There are two common causes: audio overload or over filtering.

Morse Decoding

These signals are notoriously difficult to receive error free. This particularly applies to hand sent Morse where the speed and inter-character spacing can vary from letter to letter. One of the best programs for Morse is CWGet and I've covered this elsewhere in this issue.

There are a few tricks to getting the best from your decoder. First is to present as clean a signal as possible and you can do this using the receiver's narrow c.w. filter if you are lucky enough to have one. Another trick if you have a strong signal is to either turn-down the r.f. gain or use the attenuator. Although this will reduce the level of your wanted signal, it will also significantly reduce the level of the noise and its the noise between the Morse characters that often confuses the decoder. Another trick is to lock the decoding speed once you have a signal captured this stops the decoder trying to recalculate the speed if there are any long gaps. **SWM**



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

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GRUNDIG Product sheet 2002

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SCANMASTER Product sheet 2002

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<http://www.pervisell.com/ham/powerman.htm>

Or checkout the Microsoft Knowledgebase article:

<http://support.microsoft.com/default.aspx?scid=KB;EN-US;Q252184&>

I would strongly recommend avoiding *Windows XP, NT and 2000* for decoding via the COM ports. These operating systems do not include the necessary vxd support so will not work. If you have one of these systems as your main operating system, it would be worth using a utility like *Powerquests Partition Magic* to install *Windows 98SE* into a new partition on your hard drive. That way you can use *Windows 98* for your decoding and switch back to the other system for other work.

HF Propagation

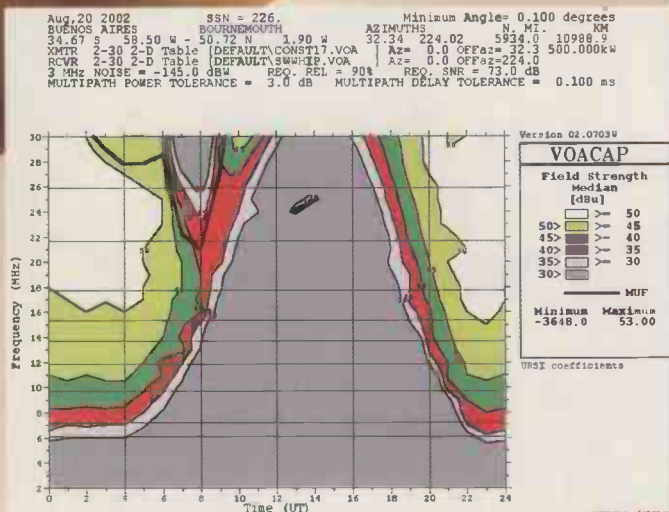
Anyone spending time on the h.f. bands will no doubt have developed a fascination for the vagaries of radio propagation. One of the tricks is learning the frequencies and times you should be using if you want to reach a station in a particular location.

One tool that can aid this and add a useful level of science is a propagation program. There are many of these around, but probably one of the most comprehensive is the suite of programs that are packaged as *HFWin32*. This amazing group of radio prediction programs has been developed for the US Department of Commerce, but is now available for free download on the Internet at the following site:

<http://elbert.its.bldrdoc.gov>

When you download and install the software you are actually installing a suite of utilities to carry out a range of detailed propagation calculations. As these have been designed for the professional, the help files are pretty vague and there's lots of jargon used throughout the program.

However, it really is worth fighting your way through this, as there are some real gems in the package. If we start with the



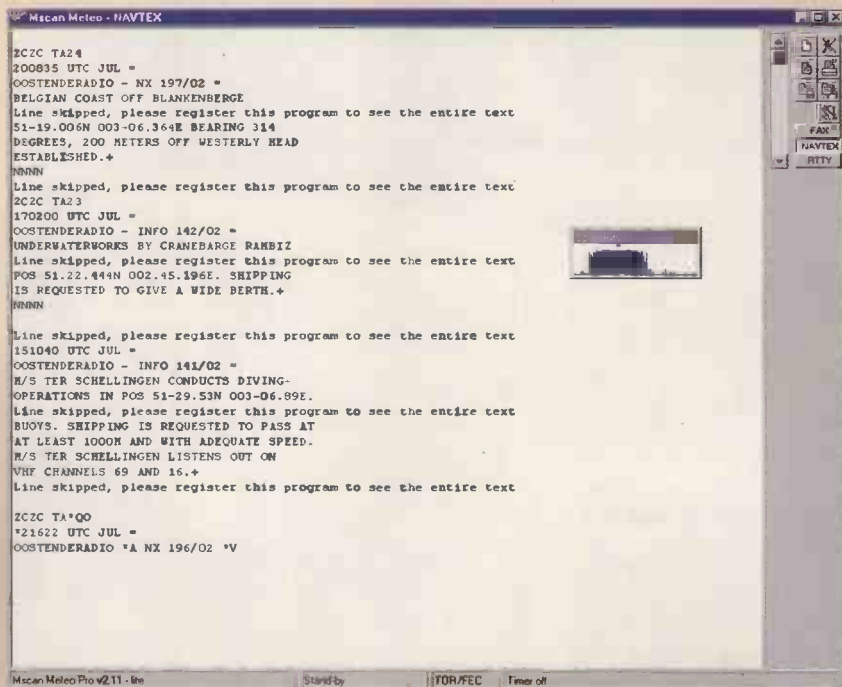
HFWin 32 sophisticated propagation prediction for free!

Following on from my 'Quickstart' series of articles, a few readers have written with some basic installation and first time running problems that are worth discussing here. First of all, a few tips on how to install new programs. My preference is to install radio and other trial programs to my second hard disk rather than the main C: drive. If you don't have a second drive, it may well be worth getting one for the increased security it affords as well as the additional storage space.

In my set-up, I use Drive Image from Powerquest so that I can store an image of the C: drive on D: and vice versa. The images that this backup system produces allow you to extract individual files or completely re-create your disk in the case of a major failure. When you come to removing unwanted radio programs or demos, you really ought to do this using the add/remove programs icon in the Control Panel as this makes for a fairly tidy removal.

When this has finished, you can then check to see if there are any odd files left in the directories where the program resided, then you can safely delete these. Another frustrating error can occur if you are using *Windows 98* or *ME* and a program that utilises the COM ports. There is a bug in both programs that can cause a power-down of the COM ports on initialisation.

Fortunately, Microsoft are aware and a kindly sole has put together a short program to fix the problem. You can get full details and download the fix from:



Meteor Pro NAXTEX receive.

example I quoted where we wanted to find the best time and frequency to hear a particular station. For this, the program to use is called *VOACAP* and calculates a wide range of parameters for point-to-point communications between two stations. The first thing you have to do is complete the input screen, so here's a quick run through the parameters you need to set:

Year: just hit the current year button for this year.

Groups: you need to decide which months to plot and enter the sunspot number. If its just this month, enter the month number followed by .00, you can also enter a day number instead of the .00. If you don't know the sunspot number, take a look at <http://www.sunspotcycle.com/> for today's number.

Transmitter: Use this to select the location of the station you're trying to receive. This is helped by the very comprehensive city index.

Receiver: set this to the town nearest to your home. That's all you have to enter and you can now move to the run menu. Choose Run then graph for a graphical representation of the path between the transmitter and receiver locations.

You will probably be presented with a panel asking you what parameter you want to plot, choose LOSS or DBUs this gives a view of the signal strength at the receive site. I've shown an example in the column. Not only does this program show a wonderful display of the propagation characteristics, but you can also use the cursor to take precise measurements anywhere on the display.

Mscan Meteo Pro

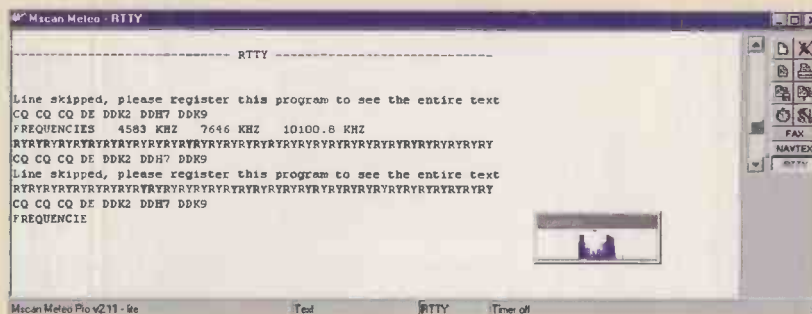
I've not mentioned the Mscan range of decoders for a while, so its timely that they've recently released version 2.11 with a host of new features. *Mscan Meteo Pro* is very clearly designed with the mariner in mind as its set-up to be able to receive FAX, NAVTEX and RTTY weather broadcasts. With modest laptops starting to become quite affordable, the ideal weather station for the small boat owner is a compact receiver such as the Lowe HF-150 combined with a laptop and specialised software such as *Meteo Pro*.

Whilst the functionality of being able to receive FAX and RTTY/NAVTEX with a PC and radio has been about for a while now, the *Mscan* developers have put some thought into making the system more user friendly. They've done a very good job of this. The first big bonus is the inclusion of receiver control routines via the receivers COM port. This has been enhanced with a built-in frequency database containing all the popular sources of met data. If you have a compatible receiver setting-up the remote control is really simple.

You just open the configuration menu, choose the

receiver tab and select your receiver and the appropriate COM port, that's it! When you want to remote tune your receiver, you just right click and choose show receiver control and you get a really neat pop-up control panel. This has been kept very simple, but still provides everything you need.

You can tune up or down in 10Hz increments, punch-



Meteo Pro RTTY reception.

in a new frequency or select a station from the drop-down frequency. I thought the level of control offered was excellent and very well suited to its intended maritime use. The other rather special addition is the built-in programmable timer. Not only can you use this to start the decoding at a particular time, (catch that late night FAX), but you can program frequencies into the timer. That means you can set up a whole sequence of frequency and mode changes to get all the information you need while you sit up on deck sipping champagne!

This is a really powerful combination of features that the mariner could use to gather all the weather data necessary for a weekend sail across the channel. For

listeners, these features still offer terrific convenience when it comes to picking-up rare FAX charts at unsociable times.

We know the gizmos are good, but what about the decoders technical performance. Its no good having an easy to use system if it doesn't deliver the goods. There's no worries on this score as *MeteoPro* has a strong development pedigree and its decoding algorithms are very good indeed.

When used for NAVTEX, the decoder was able to extract an error free printout even when the signal was competing with a very strong TV timebase buzz. This performance was reflected on the other modes. FAX performance was very good indeed and

the level of detail recorded was up with the best systems (providing you don't restrict the receiver bandwidth).

If you want to try it for yourselves you can download a demo version from www.mscan.com The demo version has most of the functionality, the only limitations being suppression of the NAVTEX & RTTY message choices plus every fourth line of text is suppressed and replaced with a fixed message.



Meteo Pro receiver control system.



DECODE SPECIAL



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To: sales@hamradio.co.uk Subject: Thanks

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UK Scanning Directory

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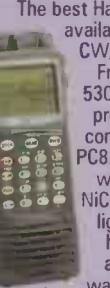
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PC Programmable

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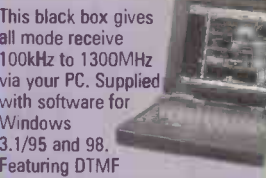
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YAESU FRG-100

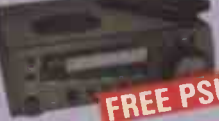


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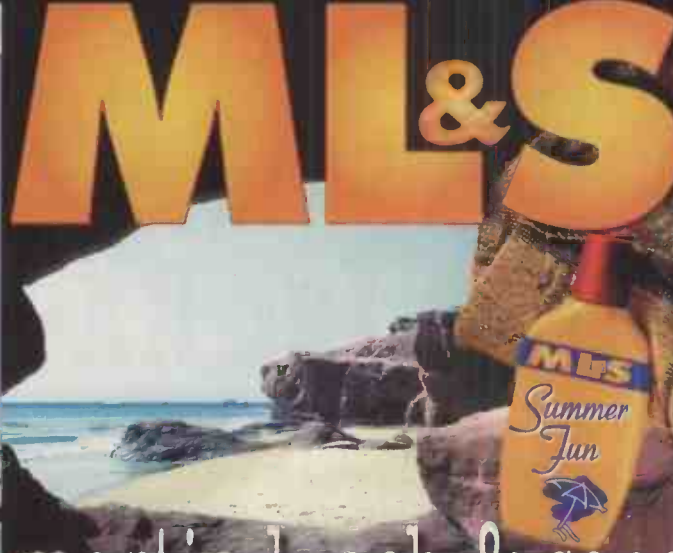
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Dancing DSP - Ten Tec RX-350



Another d.s.p. based short wave receiver is the centre of John Wilson's attention this month. The Ten Tec RX-350, having recently gained CE approval, is all set to appear in many shacks around the country.

Do three TenTecs in a sequence make a Tennessee Waltz? Oh, never mind, I'm showing my age again. Having been impressed by the RX-340 and beguiled by the RX-320, what was I expecting to find in the RX-350 which is the middle rank (in price terms) of the three Ten Tec receivers currently in their production range? I certainly expected excellent d.s.p. performance after the experience of the other two models, but didn't know how this 'receiver-looking' receiver would measure up to its big brother costing about four times as much as the '350.

Classic Looks

The RX-350 has a classic receiver look about it, and there is nothing wrong with a rectangular front panel and a well proportioned enclosure, together with knobs which fit a human hand and enough space between them to obviate the use of a ball point pen to poke

little buttons - have you tried to use some calculators or so-called 'palm-top' computers? The receiver itself is very well proportioned, measuring 310 x 130mm (front panel) x 330mm front-to-back, including the control knob projections. It's easy to pick up and carry around because it weighs only about 5.5kg. The light weight is achieved largely by the use of a switched mode power supply rather than a heavy conventional transformer fed linear supply, and the switched mode supply does give multi-voltage capabilities without the need for primary mains switching, so you can use your RX-350 anywhere. Further versatility is provided by the ability to power the receiver from an external 12V d.c. source, the receiver needing about 1.5A. The front panel layout is very clear and easy to understand, with all controls clearly labelled with their function. Although the rotary controls look as though they are dual concentric with two knobs, they are in fact single

shaft controls, and achieve dual functions via the receiver firmware. For example, the a.f./r.f. gain control is a shaft encoder which rotates continuously, with its function selected by the two buttons immediately above it, and its setting shown at the bottom of the main display. The variable bandwidth and the passband tuning controls are each single function with their settings also contained in the main display. Regular readers will know of my fondness for fully adjustable bandwidth as a necessary feature, and Ten Tec have provided this in exactly the same way that they did with the professional RX-340. Excellent!

Mighty Weapon

The pass band tuning range is a very wide $\pm 8\text{kHz}$ (actually 8.192kHz according to the manual) and is available in all modes and in all bandwidths, thereby making the RX-350 a mighty weapon for digging signals of any mode out of the

noise, and helping eliminate adjacent channel interference. For on-channel interference the armoury is further enhanced by an automatic notch and adaptive noise reduction system implemented by the d.s.p., this seeming to be the same design as that used in the RX-340 and therefore very competent (as are the design team at Ten Tec). Both features are available in all modes which makes the whole package very comprehensive indeed. However, there are more features provided with this receiver which are not instantly obvious from the front panel, but which all add up to a very competent specification which should satisfy every listener I have encountered. Let's take a closer look at the front panel.

The main tuning knob is a tried and tested Ten Tec size and weight, and is perfectly placed. My first impression was that the control felt 'dead', which is often the case with American radios, but I then discovered (and not from the

The external tuning control, the 302.



handbook) that pulling the knob outwards past a click stop released the inbuilt drag and gave me a really British style weighted spin-wheel tuning control which I could use in the 'spin and catch' method so familiar to RA1792 owners. Tuning rate (as far as I could tell) did not have automatic speed-up, which to me is the right decision, but an easily accessed series of tuning increments ranging from 1Hz to 9kHz (note the provision of European tuning steps) allows the user to tune in whatever steps suit the mode in use. What's more, the selected tuning step in any mode remains attached to that mode so that as you change modes the correct tuning increment is automatically selected. Ingenious and well thought out. A further refinement for the broadcast listener is the provision of 'band' keys which select the major international broadcast bands from medium wave right through to the 11 metre band, with the band designation appearing on the main display below the frequency readout. Further sophistication lies in the receiver remembering the last frequency you used on any band, so when you prod the button to go to the

41 metre band, there you are right on the station to which you last listened. The broadcast band designation also appears when you cross a band edge, during free tuning. As a final tuning feature there are 'up' and 'down' fast tuning keys, and you have the option of setting the fast step size in seven values from 9, 10, 50, 100, 200, 500kHz and 1MHz. Can't think of anything else anyone could want in this area, except that Ten Tec provided me with an external tuning/keypad box Model 302 and this was the icing on the cake. Simply plugged into the rear panel, the 302 was neat enough to sit alongside my computer keyboard, and with three programmable function keys which I set to mode, step and sweep functions, I could type this review and play radio

at the same time. Actually, I found the almost horizontal tuning knob on the 302 control unit very comfortable to use, and I began to use the remote tuning box in preference to the knob on the RX-350 itself.

Huge Readout

The main display unit on the RX-350 is very impressive because it is so easy to read and yet contains full information on what the receiver is doing. The frequency readout is huge, and can be read at extreme distances (even with my eyesight). To the left of the frequency readout are three legends showing the settings of the a.g.c. (fast, medium and slow), the mode in use, and the i.f. (d.s.p.) bandwidth. All modes are provided, including

synchronous a.m. with double sideband, upper sideband and lower sideband, which is really comprehensive, conventional u.s.b. and l.s.b., c.w. and a Digital mode, and a.m. or f.m. modes. It is worth mentioning that when in f.m. mode the i.f. bandwidth is fixed at 15kHz but the variable bandwidth control still drives the display with incorrect information in that the variable bandwidth legend changes even though the bandwidth is actually fixed. Alongside the bandwidth readout is shown the setting of the pass band tuning offset (when in use), and this function is so easy to use it once again demonstrates that the guys at Ten Tec are real operators who use receivers as part of their daily lives. It's hard to recall another receiver apart from the RX-340 which is so intuitive to use and which shows all its control settings at a glance. Lower down the display is shown the date and time, together with the signal strength meter which is a horizontal bar graph with the readings given also as 'S' units. The alpha-numeric signal strength readout is extremely accurate at all frequencies but the bar graph is rather small and not over-useful. Below that again comes the sweep display which can, at the press of a button, carry out a spectrum sweep around the tuned frequency and show you what signals exist on either side of the receiver frequency. The sweep width can be selected between 2.4MHz and a very narrow 240Hz, and the



Comprehensive collection of antennas.

resolution bandwidth appears to be that selected by the variable bandwidth control. At the centre of the sweep display is a vertical cursor showing the frequency to which the receiver is tuned and which follows tuning changes from the main knob. This is a very useful feature for checking band activity and then tuning the receiver to adjacent signals which are shown on the display, and is so simple to use that it becomes second nature to press the 'sweep' button and take a look around.

The d.s.p. implemented variable bandwidth is as impressive as it is in the RX-340 professional receiver, and I commented in the RX-340 review how marvellous it is to have a knob which you simply turn to vary the effective i.f. bandwidth from 300Hz to 8kHz, and in all modes (except f.m.). Until you have used a receiver with this facility, it's hard to imagine how magical it can be, and the RX-350 shows the feature off to its full advantage. When reception conditions get really difficult, particularly on s.s.b. utility frequencies, the adaptive noise reduction function seems to lift the speech right out of the noise, and although such systems do introduce occasionally odd-sounding audio it doesn't detract from the receiver's ability to make sense out of what would otherwise be nonsense and noise. The noise reduction works in all modes including a.m., and my measurements will show you what an improvement can be realised. I could go on and on describing every single function, but a glance at the front panel photographs will show that the RX-350 has been fitted with just about every facility that a keen listener would require, and every function is clearly and instantly accessible without too much reference to the manual.

Substantial Storage

Memory storage is substantial with eight banks of 128 channels being provided inside the RX-350, with remote control of course adding whatever a PC will hold. As is

now the norm, each memory channel contains a full receiver set-up and you can either have the channels as a straight recall of the settings or make the memories tunable. Memory scanning is available, together with channel skipping, and the scan function can also be used as a receiver sweep between start and stop frequencies stored as the VFO-A and VFO-B settings. I discovered to my dismay when trying out the alternate functions of the minor keys that pressing 'ALT' followed by 'CLEAR' promptly removed all my previous memory channels entries - I should know better, but I'm sure that other folk will discover this little trick, accompanied by loud swearing. Re-filling the memories was made infinitely easier by using the 302 remote control keypad, and I was glad I had it to hand. Speaking of remote control by PC, an RS-232 serial interface is included, and Ten Tec have issued a programmer's reference manual for those who want to roll their own, but you can also download free software from the Ten Tec web site, as well as firmware upgrades which ensure that your receiver is always up to date, and at no cost to the owner. What excellent support service.

For those who want to record programmes when they are away from the receiver, the RX-350 has a very versatile timer system (actually systems) built-in. There are eight timers, each programmable with full date and time, 'on' time duration and the memory channel to be used as the source information for the receiver settings. This means that you can have the receiver coming on and off at any day or time, for any length of time you choose and on any frequency and mode you have previously stored in any of the hundreds of memory channels. Needless to say, relay contacts are provided for switching an external recorder on and off to

coincide with the timer, so all in all this is an excellent facility and well thought through by the designer. A smart touch is provided in that the external recorder can be activated all the time the receiver is switched on,

or set to record only when the squelch opens. This is perfect for recording utility services and is the first time I have encountered this option.

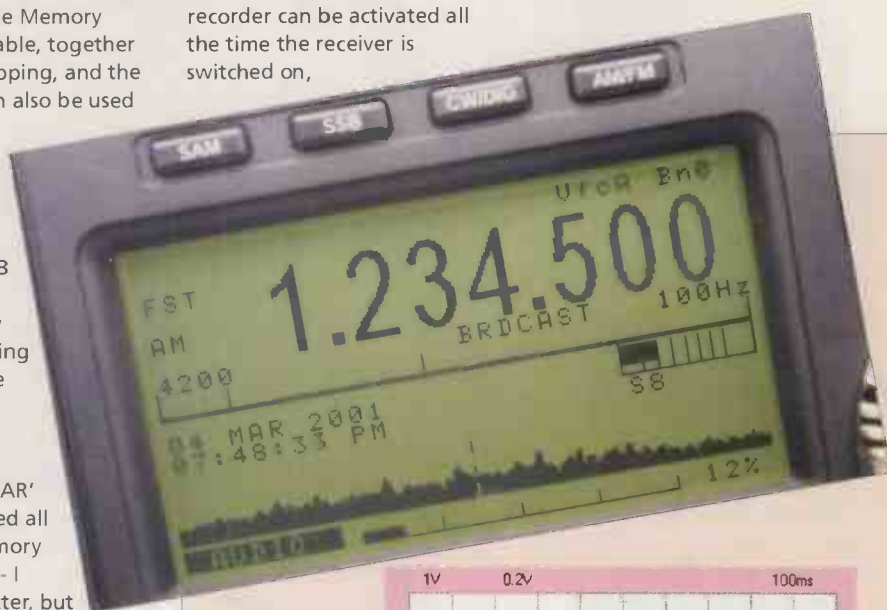


Fig. 1: The RX-350 response to a 60dB input signal step.

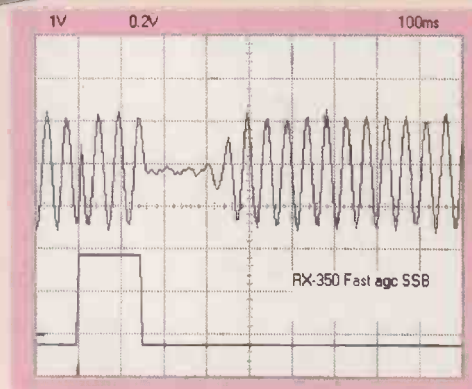


Fig. 2: Near perfect signal recovery of the RX-350.

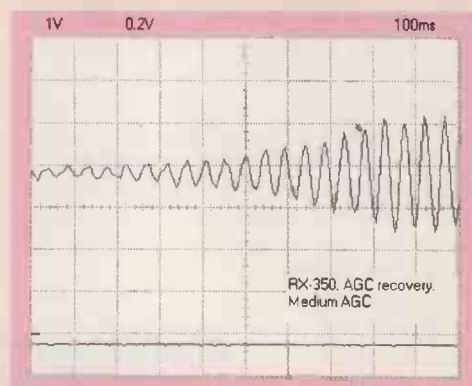
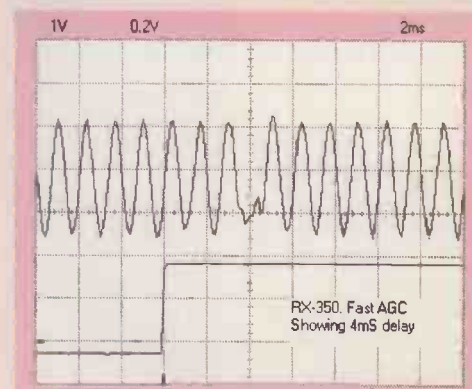


Fig. 3: The RX-350 has a 4ms delay in application of a.g.c.



Comprehensive isn't it?

You may assume that I was impressed so far with the RX-350, so how did it measure up on the bench?

Usual Checks

I ran my usual performance checks and compared them

with the Ten Tec specification given in the manual, and the receiver under test easily met the specification. Sensitivity in s.s.b. with a 2.4kHz bandwidth varied between -117 and -118dBm from 2 to 30MHz, with a.m. sensitivity in a 6kHz bandwidth (60% modulation)

turning in at about -108dBm down to 2MHz but then beginning to fall off through the medium wave band. This fall off was quite marked by the time I got down to 200kHz and I think that long wave listening enthusiasts might be a bit disappointed. I have located

one comment on the Internet regarding this problem, and suggests that the r.f. input transformer feeding the first mixer needs re-design. I'm sure that this is being addressed by Ten Tec, and of course in normal use, signals in this frequency range are so huge that a user probably wouldn't notice - but my signal generator whispered the truth to me.

I checked out the effect of the noise reduction facility and noted that in a.m. I obtained a 10dB increase in signal to noise ratio at low input levels, whilst in s.s.b. the improvement was between 5 and 6dB. To have this kind of enhancement available at the touch of a button is a great help when digging out weak signals, and it worked equally well on all types of signals from c.w. to s.s.b. to a.m. Ten Tec quote the third order intercept point at a modest +10dBm at 50kHz spacing, and this was confirmed in the test receiver. Dynamic range measured at 93dB compared to quoted 90dB, and the second order intercept point using 6.5 and 7MHz input signals came out at +66dBm, which tells you right away that the RX-350 has no front-end selectivity provision. Second order dynamic range was 99dB. These are good performance figures for a receiver of this type and better than the little brother RX-320, as are the results for reciprocal mixing ranging from

-112dBc/Hz at 5kHz offset up to -139dBc/Hz at 100kHz offset from carrier, more than 10dB better than the RX-320. So the r.f. performance will not disappoint you, and some of the other tests I carried out might positively impress you. Take, for example, the a.g.c. system which is derived from the d.s.p. back-end. If you take a look at the performance of the Racal RA3791 which I reviewed recently you will see the typical digital delay and signal distortion often resulting from this type of a.g.c. system. Now study Fig.1 which shows the RX-350 response to a 60dB input signal step. The audio output from the receiver doesn't change at all and the recovery is ideally controlled. This is tip-top performance,

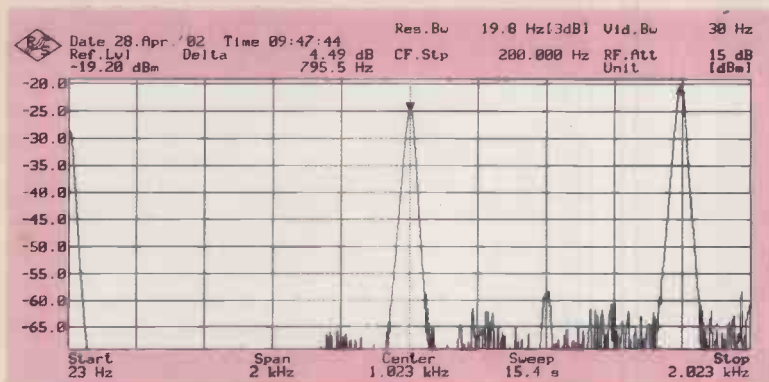


Fig. 4: Two very strong heterodynes ready for the RX-350 auto notch.

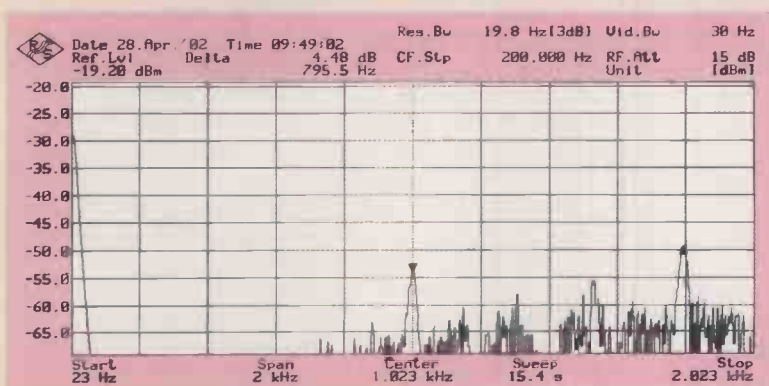


Fig. 5: The same signals duly dealt with by the seek and destroy filter.

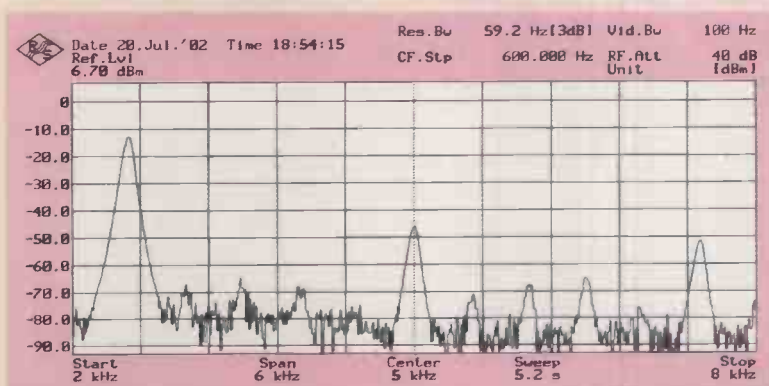


Fig. 6: RX-350 audio output tuned to 909kHz.

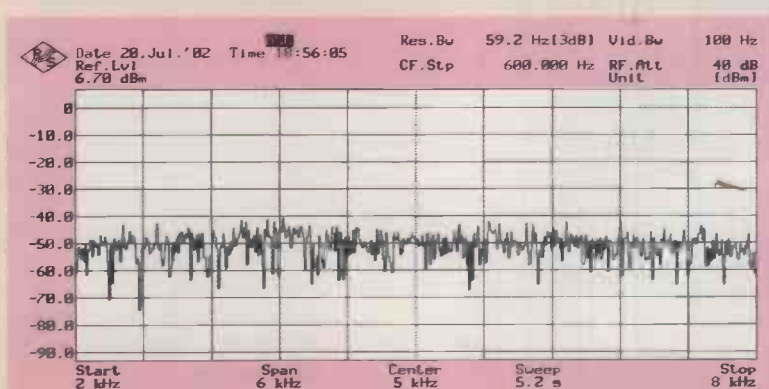
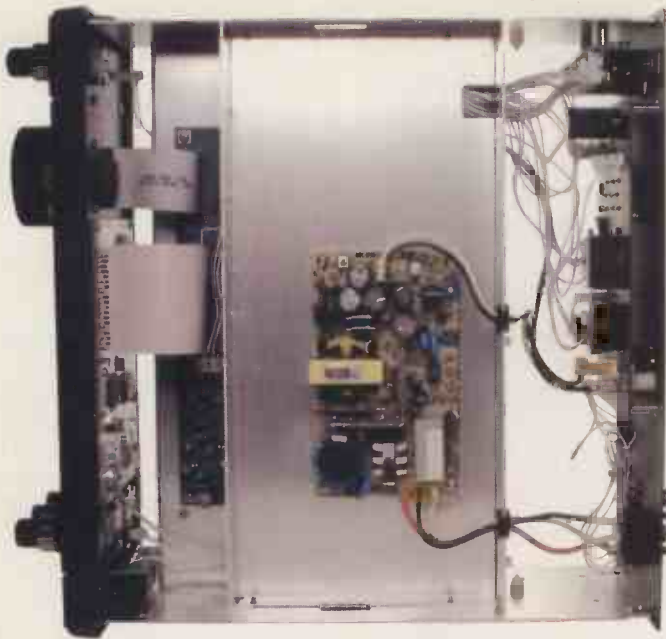


Fig. 7: Lack of 'crunching' with the RX-350 tuned to 922kHz.



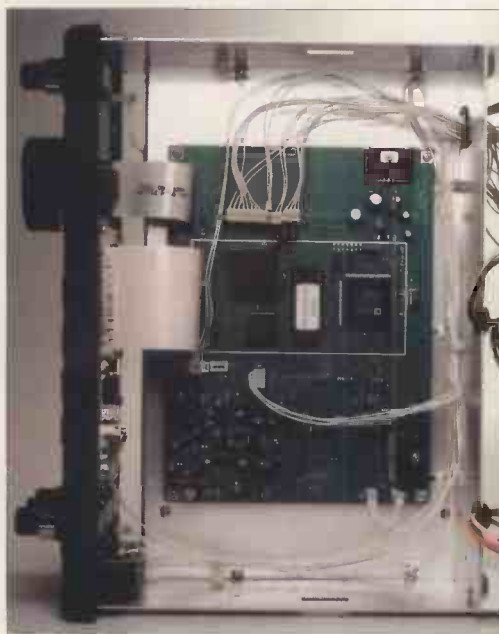
and Fig. 2 shows the near perfect signal recovery. Yes, there is a 4ms delay in application of a.g.c. as can be seen in Fig. 3, but there is virtually no sign of the 'squawk' which was present in the RA-3791 and in the Collins 955-1 d.s.p. receivers, and the a.g.c. control is near perfect in the RX-350.

Seek & Destroy

One other feature which impressed me was the automatic notch filter. This is the 'seek and destroy' type of filter and I checked it by feeding in two r.f. signals which were 1kHz apart and tuning the RX-350 until they showed up in the audio output as two very strong heterodynes as you can see in Fig. 4. I then simply pressed the 'AN' button and instantly the S9 signals were virtually wiped out as you will see in Fig. 5. In real hard use on crowded amateur bands the auto notch was immensely effective in disposing of strong heterodyne whistles and even came into its own in broadcast bands where the 5kHz whistle between adjacent stations could be removed.

Having just investigated the d.s.p. 'crunching' noises off channel in the RA3791 it was clear that I had to do the same test with the RX-350, because my audible impression was that the RX-350 didn't suffer quite so badly as the RA3791. I repeated the identical test with a wanted signal at S9 on

909kHz, modulated to a depth of 80% at 2.5kHz. The audio output from the RX-350 with the 2.5kHz modulation together with second and third harmonic distortion products can be examined in Fig. 6. I then tuned the RX-350 to 922kHz as with the RA3791 and again measured the audio output. The result is shown in Fig. 7 and you can see immediately that apart from a noise level rise due to a.g.c. action bringing up the receiver gain in the absence of the 909kHz signal, there is no trace of the distortion products exhibited by the RA3791, and my ears had been telling me the truth. As with the RX-320 reviewed earlier, the Ten Tec d.s.p. in the RX-350 does not



show the 'monkey chatter' so evident in other d.s.p. receivers and it is quite surprising that there can be these differences between equipment. Only Ten Tec know how they achieved this performance, and they are to be congratulated for making it all work so well.

Conclusions

I have enjoyed using the RX-350 because I was impressed by the professional RX-340 and taken by surprise at the tiny but very able RX-320 and I wanted to see just where the RX-350 fitted in. I liked the fact that it is a real receiver with a recognisable front panel and a knob for every function. Using the RX-350 is very easy, even though it contains some very advanced features, and the on-air performance is very pleasing. For weak signal chasing on 10 metres it could perhaps do with a little more front-end gain, but with an m.d.s. of -132dBm it's not insensitive to weak signals on a quiet band. I actually found it difficult to write the review because the receiver was so satisfactory as to make commenting almost impossible, and that is why, in its market position, the RX-350 makes a worthy contender if you are thinking of something around the £1000 mark. Since having the RX-350 delivered to me from Ten Tec in the USA, we have seen the announcement of Ten Tec

Direct as the official UK source, and backed by the undoubted honesty and straight dealing for which Richard Hillier and his team have come to be respected, together with the unmatched support offered by the technical team, UK buyers should feel comfortable when

choosing to buy the RX-350 (or any other Ten Tec product). It's a real radio, even if it doesn't glow in the dark, and it was a pleasure to have it on my bench.

On To Other Things

I read the letter from Gordon Rennie in the last issue of *Short Wave Magazine* which stated that "John Wilson made a mistake about the Sony Earth Orbiter short wave radio". Well, John Wilson did not make a mistake since the radio on John Wilson's shelf is a Model CRF-5100 Earth Orbiter as stated in the original article. There were two models of this particular radio, one having nine bands and known as the CRF-5090, and an up market version having ten bands and known as the - wait for it - CRF-5100. I've since also obtained a very nice example of the Zenith H-600 so the collection is growing. I don't quite know what I'm going to do with these Trans-Oceanics, but they do make a pleasant looking line-up, and they all work very nicely. My Collins 75A-1 restoration is proceeding slowly, but it's now back to original state with all the amateur modifications removed, and I have had a fun time trying to dig out some of the historical background to this rather nice receiver. One day I will put together an article for this magazine, but in the meantime if you want to gossip about the 75A series I'm always ready to listen. Future scribbles include my findings on a steerable low frequency antenna from Wellbrook, and a look at the latest desk-top loop antenna system from AOR, so there will be some relief for you from the receiver reviews.

If you have a burning desire to have me look at anything else, do let the Editor know and he will do his best to get the equipment together for me. In the meantime, happy listening and keep subscribing to the only real short wave magazine in publication.

SWM

What does it all mean?

Part 1

Short Wave Magazine's Guide to Abbreviations and Acronyms

Welcome to the first in a series of 'cut and keep' reference pages explaining the terms used within the pages of your favourite radio magazine.

To start off, we are bringing you an A-Z of terms, in subsequent months we'll bring a more detailed explanation of some of the less straightforward terms.

A

A	amperes - unit of electrical current
a.c.	alternating current
a.d.f.	automatic direction finder
a.f.	audio frequency
a.f.c.	automatic frequency control
a.f.s.k.	automatic frequency shift keying
a.g.c.	automatic gain control
a.g.l.	above ground level
a.m.	amplitude modulation
a.o.s.	acquisition of signal
a.p.t.	automatic picture transmission
a.s.i.	airspeed indicator
a.s.l.	above sea level
a.t.c.	air traffic control
a.t.i.s.	automatic terminal information service
a.t.s.o.r.a.	air traffic services outside regulated airspace
a.t.u.	antenna tuning unit
a.t.z.	aerodrome traffic zone
a.v.c.	automatic volume control
a/d	analogue to digital
AIC	Aeronautical Information Circular
ALINS	AMSAT Live Information Network System
AMSAT	Amateur SATellite Organisation
AMTOR	Amateur Teleprinter Over Radio
An	Antonov
Ar	Arabic
ARC	Amateur Radio Club
ARQ	Automatic ReQuest Repeat
ARRL	Amateur Radio Relay League
ARS	Amateur Radio Society
ASCII	American Standard Code For Information Interchange
ATP	British Aerospace Advanced Turbo Prop
ATV	Amateur Television
AWACS	Airborne Warning & Control System

B

B	Bel
Byte	Byte
b.f.o.	beat frequency oscillator
BAEC	British Amateur Electronics Club
Band I	45-68MHz
Band II	87-108MHz
Band III	E5-E12 (175-230MHz)
Band IV	471-608MHz
Band V	615-856MHz
BARTG	British Amateur Radio Teledata Group
BASIC	Beginners All-purpose Symbolic Instruction Code - computer language
BBC	British Broadcasting Corporation
BEA	British European Airways
BNC	coaxial connector type
bps	bits per second
BST	British Summer Time
Bur	Burmese

C

c.i.o.	carrier insertion oscillator (see b.f.o.)
c.m.o.s.	complimentary metal oxide Silicon
c.p.l.	commercial pilot's licence
c.p.u.	central processing unit
c.r.o.	cathode ray oscilloscope
c.r.t.	cathode ray tube
c.t.s.s.	continuous tone signalling system
c.v.r.	cockpit voice recorder
c.w.	continuous wave (Morse)
CAA	Civil Aviation Authority
Cat	weather minima Category
CB	Citizens' Band
CCIR	International Radio Consultative Committee
CD	compact disc

CGA	Colour Graphics Adapter
CGU	City & Guilds of London Institute
Ch.	channel
Ch/s	channels per second
Chin	Chinese
cm	centimetre
com	communications

D

D & D	distress & diversion
d.a.m.	dynamic amplitude modulation
d.b.s.	direct broadcast satellite
d.c.	direct current
d.f.	direction finder
d.i.l.	dual in line
d.i.y.	do it yourself
d.m.e.	distance measuring equipment
d.m.m.	digital multi-meter
d.s.b.	double sideband
d.s.p.	digital signal processing
d.v.o.r.	Doppler very high omni-directional radio range
d/a	digital to analogue conversion
Da	Danish
DAB	Digital Audio Broadcasting
DACS	Danger Area Crossing Service
dB	decibel (logarithmic ratio)
dBd	decibel referenced to a dipole
dB _i	decibel referenced to an imaginary isotropic radiator (one dimensional antenna)
dBm	decibel referenced to 1mW into a 50Ω load (standard units for radio measurement)
DBS	direct broadcast satellite
dBW	decibels reference one watt
DDS	Digital Digital Synthesiser
DH	de Havilland
DIN	German Standard Institute
DRM	Digital Radio Mondiale - h.f. digital radio system
DTI	Department of Trade & Industry
Du	Dutch
DX	'long distance'
DXer	listener who looks for 'long distance' stations
DXTV	'long distance' television

E

E	east
e.g.	example
e.i.r.p.	effective indicated radiated power
e.m.e.	earth, moon, earth
e.m.f.	electromotive forces (volts)
e.r.p.	effected radiated power
e.t.a.	estimated time of arrival
EBU	European Broadcasting Union
ECD	Enhanced Colour Display
EGA	Extended Graphics Adapter
Eng	English
ESA	European Space Agency

F

f.d.r.	flight data recorder
f.e.t.	field effect transistor
f.f.t.	fast fourier transform (mathematical function used by d.s.p.)
f.i.r.	flight information region
f.i.s.	flight information service
f.m.	frequency modulation
f.o.d.	foreign objects & debris
f.s.d.	full scale deflection
f.s.k.	frequency shift keying
Fa	Farsi
FAX	facsimile
FEC	Forward Error Correction
Fin	Finnish
FL	Florida
fl	flight level (altimeter set to 1013mb)
fls	Filaments
f	frequency
f _o	fundamental frequency
Fr	French
ft	feet

G

g.c.	general coverage
g.c.c.s.	global command and control system
g.w.o.	good working order
GASIL	General Aviation Safety Information Leaflet
Ger	German
GHz	gigahertz 1000,000,000Hz
GMT	Greenwich Mean Time (=UTC)
GPS	Global Positioning Satellite
gps	groups

H

h.f.	high frequency (3-30MHz)
h.g.	harmonic generator
h.r.p.t.	high resolution picture transmission
h.s.i.	horizontal situation indicator
h.t.	high tension (high voltage)
H24	Available 24 hours a day
HDTV	High Definition TV
Heb	Hebrew
Hi	Hindi
hrs	hours
Hz	Hertz (cycles per second) unit of frequency

I

i.a.s.	indicated air speed
i.c.	integrated circuit
i.c.w.	interrupted continuous wave
i.f.	intermediate frequency (in a superhet receiver)
i.f.f.	identification friend or foe
i.f.r.	instrument flight rules
i.f.t.	internal frequency transformer
i.l.s.	instrument landing system
i.n.s.	internal navigation system
i.o.c.	Index of Co-operation
i.s.b.	independent side band
IBA	Independent Broadcasting Authority
ic	Icelandic
IM	intermodulation
in	inch
INMARSAT	International MARitime SATellite
IP	intercept point
IP2	second order intercept point
IP3	third order intercept point
IRC	International Reply Coupon
ISWL	International Short Wave League
It	Italian
ITV	Independent TeleVision

J

Jap	Japanese
JW	SWM reviewer of phenomenal expertise

K

k	Decimal multiplier x1000
K	Binary multiplier x1024
kHz	kilohertz
kg	kilogram
kHz	kilohertz
km	kilometre
Kor	Korean
kW	kilowatts

L

λ	lambda - symbol for wavelength
L-band	1370-1730MHz
l.c.d.	liquid crystal display
l.e.d.	light emitting diode
l.f.	low frequency
l.o.	local oscillator
l.o.m.	locator outer marker
l.o.s.	loss of signal
l.s.b.	lower side band
l.t.	low tension
l.w.	long wave (153 - 280kHz)
lang	language
lat	latitude
LATCC	London Air Traffic Control Centre
LNA	low noise amplifier
LNB	low noise block converter
long	longitude

M

M	mega x1,000,000
m	metres
m	milli (one thousandth)
m.a.t.z.	military air traffic zone
m.c.w.	modulated continuous wave
m.d.a.	minimum descent altitude
m.d.h.	minimum decision height
m.d.s.	minimum discernible signal
m.f.	medium frequency
m.p.u.	microprocessor unit
m.u.f.	maximum usable frequency
m.w.	medium wave (531-1611kHz)
mA	milliamps
MARS	Military Affiliate Radio System
MB	mega byte
mb	millibars
mH	millhenry
MHz	megahertz



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Satellite TV News

July was a bad month for flying. Over the Swiss/German border a night-time collision on July 1st between a Russian Tupolev TU-154 - full of children - and a DHL Boeing 757-200 cargo plane scattered aircraft and human debris over a wide area near Lake Constance. The next day, **Roy Carman** reported live on-site satellite uplinks reporting the unfolding tragedy at 10, 13, 16, 23.5 and 28.5°E as the extent of the disaster became known.

On July 4th, American Independence Day and late afternoon at LA airport near to the El-Al flight check-in desk, an Egyptian gunman opens up, killing two and wounding others, the assailant is wrestled to the floor by security and as he stabs them an El-Al official shoots the gunman - dead. The LA media are very rapidly on site with live TV cameras, at least five 2.5GHz microwave news links (terrestrial) are visible in background, TV pictures plus a selection of SNG trucks. Live helicopter pictures add to the breaking news, this carried live over the Reuters 11.462GHz-V (SR 5632 + FEC 3/4) lease on *NSS-7* @ 21.5°W from about 2100.

Apart from a selection of news breaking pictures, live reporting and interviews are taken from the KNBC channel 4 studio feed, both locally and into the NBC network, this included movement of the wounded, police cars and general activity at the LA terminal, followed in due course by official press statements from the LA Chiefs of Police and Fire, the local FBI Bureau head, the mayor and the governor of California. The press fallout continued into July 5th.

Also on July 4th, a light aircraft fell from the sky and crashed into holiday makers by a lake some 56km to the North of LA killing one person and injuring others. Heli pix of this accident were also carried over Reuters 11.462 and produced an Independence Day of gloom over the Golden State. 'Things' haven't been too good across to the East either with the Americans bombing a wedding party in Afghanistan back on July 1st, a flurry of satellite news feeds switched on over *Europe*Star-1* @ 45°E. A couple of BBC channels appeared, 'BBC UKI-302 Bagram' (airfield) - 11.661GHz-V and on 11.553GHz-V 'Taridan Scopus Globecast UKI-579 BBC' (Kabul) and the usual 'Fox News Kabul' 11.675GHz-V running 525-lines NTSC.

The UKI-579 on several occasions recently have been running wide screen as pictures on a 4:3 TV have produced tall narrow people! The Americans wheeled out a Col. King at Bagram to give the official account which detailed coalition aircraft coming under fire from heavy ground based anti-aircraft armaments. Five days later and the satellite news feeds switched on again following the assassination of the vice president of Afghanistan Abdul Qadir - shot in Kabul July 6th.

The Balkans, a European hot spot in past years and an uneasy peace across that region. Until recently, satellite enthusiasts could view aircraft surveillance pictures downlinked from *Telstar-11* @ 37.5°W (11.495GHz-V, 19500+2/3) - pictures have been shown in this column in recent months. Unfortunate media publicity both printed and the BBC's *Newsnight* suggested these available pictures as a threat to security, helping war criminals on the run, coalition troops safety, etc.

End June, a scrolling caption over the CNN programme channels in the downlinked package advised of "Important Broadcast Information.... the transmission would change...." and indeed July 1st all the air surveillance channel downlinks (or clocks in downtime) went into encryption, sorry, no more US intelligence air pictures of the Yugoslavian countryside! In the scrolling caption over the CNN programming were various advisory sources to contact such as gbstim@eucom.smil.mil - which didn't react on an Internet search using the work's computer, but another word <SIPRNET> produced an interesting listing. SIPRNET = 'secret Internet protocol router network' - and checking down the listings that

appeared included various US military/security data entries.

One interesting detail included an American listing of devices including GSMs (mobiles) that in theory were secure, but by using certain bit rates, could be accessed. I recall also noting a NIPRNET! Being 'digital and computer unaware' I didn't understand much, but certain of our readers will I'm sure...

Hugh Cocks (Algarve, Portugal) asked (for commercial reasons) if anyone knew the future of the **analogue** downlinks from the *Telecom 2c* slot at 5°W, here are found the TV channels M6 12.522GHz-V; France-2 12.564-V; TV5-France (for Belgium) 12.585GHz-H **PAL**; La Cinquieme 12.606GHz-V; Canal Plus France 12.648-V; TF1 12.690-V; France 3 12.732-V. Note all use SECAM-V except TV5.

The French spot beam illuminates the French mainland, the South UK coast and NE Spain at high levels, but signal strengths rapidly fall off. It's therefore simplicity itself to enjoy both French TV and radio services using perhaps a 0.6-0.8m dish* into the UK midlands and French exiles, schools and parents seeking everyday French language tuition for their children to install a basic satellite system. The SECAM colour can be 'transverted' to PAL for a UK standard colour TV.

Help from another *SWM* reader - **Edmund Spicer** (Littlehampton) - suggests that although the Telecom TV downlinks had been intended for terrestrial transmitter links, about 3/4 million residents are thought to access quality TV via Telecom and as such it's likely that the French analogue TV via Telecom or a recently launched replacement will continue for some years.

Quite by co-incidence, Canal Plus appeared on Telecom/Atlantic Bird 8°W 8th July in analogue SECAM -12.606GHz-V. Mention of *Telecom 2C*, 5°W and **Dave Dyson** (Warrington) comments on the Globecast bouquet at 12.711GHz-H (SR 27500+3/4) viewing outside broadcast links from the Ascot race course, which cut away to take sporting action from a motorcross event and then colour bars.

This is a busy bird, more sporting action on the Belgium BRT bouquet - 12.543GHz-V (27500+3/4) - where up to eight channels can be found, 'Equida Pro 1' has been showing French horse racing, paddock viewing and nationwide French nag racing results. Dave also located a new TV channel on *Arabsat 2A/3A*, 26°E with many English language programmes and Arabic subtitles 'including free films' - check 11.785GHz-V 27500+3/4.

Check out Eutelsat's *Hotbird* 13°E @ 11.216GHz-H (SR 6160 + 3/4) for Israeli TV. The IBA Israeli TV service has been lacking as a programme source for the UK Jewish community and I thought this will be a popular arrival. I found three TV channels - 'ARIRANG-TV', this a Korean offering for their exiles living overseas in part English and Korean language and subtitling; 'Channel 3 Arabic - IBA TV', this has mainly dubbed Arabic programming with Hebrew subtitles plus the occasional English language film with Arabic titling; and 'BK-TV', a Yugoslavian commercial TV channel.

All channels are 24-hours and three associated radio programme channels are '+ Swiss Music Radio'; 'Radio Greece' and 'R.R. Radio 3', rather an odd gathering of entertainment - but still no dedicated TV channel for the Hebrew speakers. More luck for Turkish speakers if unable to receive Turksat, 42°E - *Eutelsat W3* at 7°E now downlinks the TRT1, 2, 3, 4 and 'TRT-Gap' in the clear at 11.492GHz-V (SR30,000 + 3/4) advised by Stefan Hagedorn.

The Ku-band satellite *NSS-K* together with the C-Band *Intelsat-803* both operating from 21.5°W have been replaced mid June by the new kid on the block - *NSS-7* - that carries high level transponders in both Ku-band (36 up to 51dBW) and C-Band (36 up to 45dBW) - so look forward to strong signals!

* typically 52dBW at Brighton equivalent to Astra (Sky) analogue from 19°E.



PGA (Professional Golf Association) action is a regular sporting feature of the Globecast *NSS-7* Ku-band bouquet.

Another PGA (golfing tournament) often these such events are carried over *NSS-7* the same night.

Jubilee celebrations outside Buck House, 290 is my receiver memory, UKI-704 C1 4.22 in the service bit for the transmission which is contained within the data package - this was not an MPEG 4.22 transmission! Via Eutelsat WZ, 10°E.

Test card from NASA-TV during a Shuttle/International Space Station (ISS) transmission ex Johnson Space Centre - on *NSS-7*.

Note the 'helmet-dam' in this space astronaut view.

Globecast channel 1, *NSS-7* showing the high quality images now transmitted from ISS during construction.

Alas these *Telstar-11*, 37.5°W, Balkans air surveillance pictures are for the time hidden from view due to encryption.

Another 'NEP' test card from the 'States' after the final (toss) race for the day.

■ KEITH HAMER & GARRY SMITH, 17 COLLINGHAM GARDENS, DERBY DE22 4FS

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

DX Television

June was a very unpredictable month for Sporadic-E reception. Openings were typically shorter and weaker than usual with Scandinavia and Central European countries predominating. However, a few lucky enthusiasts equipped with scanners managed to sniff out some impressive transatlantic exotics three times in one week!

Reception Reports

John Lees (Cheltenham) comments on the lack of prolonged activity with only June 8th resembling old times. **Simon Hockenhull** (Bristol) felt the openings were fewer and noticeably weaker than past seasons while **Ian Milton** (Ryton) was convinced his antenna system needed attention. As a newcomer to the hobby, **Kevin Hughes** (Tamworth) found the lack of signals somewhat frustrating, especially after installing a gleaming set of crossed dipoles above the roof!

Martin Dale (Stockport) reports lots of Band I activity on the 8th including colour pictures on R2 from RTL Klub (Hungary). At 1803, Simon Hockenhull (Bristol) saw Albania (RTSH) on Channel C (82.25MHz). Earlier in the day, at 0635 and at 1718, **Vincent Richardson** (Dolgarrog) had seen RAI Uno on this channel with football and motor racing. **George Garden** (Edinburgh) attempted Band I DXing on the 10th, successfully identifying German and Spanish news programmes, namely Tagesschau and Telediario, on E2.

On the 29th, **Paul Farley** (Newhaven) identified a host of signals, including Ukraine (YT-1 and YT-2) R2, Lithuania (LRT) R2, Sweden (SVT-1) E2 (Örebro and Vännäs), Russia R1 (Moscow and Globokoye), Russia (RTR) R2, Estonia (ETV) R2, Norway (NRK-1) E2 and E3, Belarus (BT-1) R1 (Minsk), Italy (Tele A+) E2 and Hungary (MT-1) R1 (Budapest). Paul uses a D-100 converter feeding a Panasonic 14in monochrome portable, a five-element 50MHz antenna and an HS Band I notch filter to remove troublesome baby alarm interference. Also, a 5/8λ vertical antenna feeds an Icom 706 MkIIIG transceiver for offset measurements.

Middle East DX

On June 1st between 1453 and 1540, **Peter Barclay** (Sunderland) resolved scenes on E2 which included Arabic titles and credits. A logo in the top-left resembled a chunky dark '1' encompassing a smaller white '1'. Other DXers witnessed a battle between two other Arabic stations. The likely candidates appear to be Iran (IRIB-1 and IRIB-2) and Syria. The following day at 1635, Ian Milton (Ryton) noticed Arabic pictures from Jordan (JTV-1) co-channelling with Slovenia on E3. Ian identified Syria E2 on the 20th at 1900. Iran (IRIB-2) E2 was received in the Netherlands on the 29th.

Transatlantic DX

We have heard via Skywaves that the first transatlantic encounter took place on June 14th between 2110 and 2115 when **John Faulkner** (Sutton-in-Ashfield) discovered transatlantic video carriers on USA Channel A4 at 67.247 and 67.250MHz, the former being the strongest. Both signals were choppy and fading. John captured the carriers using an Icom PCR1000 scanner fed from an HS VF-1004 four-element antenna beaming north-west.

In addition, **Frank Taylor** (Chesterfield) received an A4 signal and, even more remarkably, A6 at 83.259MHz. One of the A4 signals is likely to be CJCN-TV (Grand Falls, Newfoundland) with 100kW e.r.p. During the same opening, Channel A2 at 55.25MHz was received in The Netherlands.

On June 17th, from 2015, stronger A4 vision carriers were present accompanied by distorted audio. These were also received by **Tim Bucknall** (Congleton). A repeat performance occurred on the 21st during 6m transatlantic opening.

Mysteries

On the 1st and 2nd, Peter Barclay resolved what could be a new Italian private station operating just below Channel C (82.25MHz). **Tom Crane** (Hawkswell) saw possibly the same station on the 8th at 1800, without a logo, but with scrolling text along the bottom of the screen.

On the 6th at 2140 on R1, Tom discovered an American film with a Polish-sounding voice-over. However, Poland no longer uses Band I.

Logo Changes

Portugal keeps changing its logo, advises **Peter Barber** (Coventry). The large railway signal-style '1' in the top-left of the screen appeared for about one week only to shrink into the top-right corner at the beginning of June. By the end of the month it had migrated into the lower-left of the screen!

Stephen Michie (Bristol) tells us that the new TVM logo of Moldova now incorporates a flag. Also, the new Russian RTR logo is now located in the lower right of the screen.

FM Reports

The f.m. band became active on many days with lots of Italian reception. On the 2nd from 1430, **Arthur Grainger** (Carstairs Junction) identified various Italian networks using a Pioneer F502RDS hi-fi tuner and a rotatable 5-element Yagi.

These included Kiss network on 87.8 and 96.6MHz, Centouno 101 on 96.6MHz, RENE Italiano Network 104.1MHz, Radio Norba on 106.6MHz and Radio 24 on 107.9MHz (RDS display: 'Radio 24' with scrolling Radiotext: 'Bologna Italy TE...'). An old faithful, Rete 105, popped up as well, but without an RDS signal.

On the 8th, Tunisia, Croatia, Slovenia and Greece were identified. One spectacular catch was Cadena Cien Las Palmas on 91.8MHz on the 12th.

Now that the USA Channel A6 video has been received in the UK, periodically check out 87.75MHz for its audio channel. The USA f.m. band starts at 88.1MHz, so check that too.

Service Information

Belarus: There is a private station operating on R2 called 'TV2-Dion'. The transmitter is located at Mahilioú in the eastern part of the country. Its e.r.p. is about 2kW.

Lithuania: The State broadcaster LRT has changed from SECAM to PAL colour.

Keep On Writing!

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



Fig. 1: An unusual test card used by Fönix in Budapest (Hungary).



Fig. 2: An identification caption radiated in Hungary by X-TV.



Fig. 3: One of the eight new BBC-1 Identification Symbols (which replaced the series featuring the hot-air balloon), introduced on March 29th 2002. This one is called 'Acrobats'.



Fig. 4: The final transmission of the BBC-1 Identification Symbol features the hot-air balloon coming to rest in a dockyard. It was shown at 0216 on March 29th, 2002.

Figs. 1 & 2 were kindly supplied by Laszlo Kozari (Hungary).

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Amateur Bands

I thought that this month I'd continue the series of aide-memoires with a selection of commonly used Q codes and their meanings. They started their days when Morse was king and were used as shorthand to reduce the time to send routine message components and many can be used as statements or questions.

A Few Q-Codes For Easy Reference

QRM	Man made interference
QRN	Interference from natural sources
QRO	High power
QRP	Low power
QRT	Closing down
QRZ	Who is calling me?
QSB	Fading signal
QSL	Confirm
QSO	Contact via radio
QSY	Change frequency
QTH	Location

Some of the codes have developed slightly different meanings in amateur usage from the original commercial ones, and there are many more Q codes still in use on the maritime and aeronautical bands. One I found that might have amateur radio possibilities was QBE - I am about to wind in my antenna.

To find out more visit

<http://www.kloth.net/informations/qcodes.htm> which has a very extensive listing. Also **Richard G2DYM** in Devon has published a 24-page booklet containing a comprehensive list of those in use by Combined Operations during World War 2 up to 1944. He is QTHR and can be contacted on **(01398) 361215**.

The M3

It seems the Foundation licence, or M3 licence as it's popularly known, is becoming a resounding success. So many people in one family locally wanted to take the course that the instructor visited their home rather than have two or three car loads of people travel to him! I know the various arguments and comments that have been aired concerning the Foundation licence and the motives behind its inception, but on balance I'd say that the licence is a good sound idea. At the very least it should breathe some new life and informality into the hobby. If you're one of those wondering about getting an M3, then I would urge you to have a go.

Antennas Again

There's been a bit of an antenna rehash at my station. Up until recently I was using a Top band horizontal quarter wave fed directly by coaxial feeder, with the bungalow's cold water system as the counterpoise. A straight antenna 40m long sounds good, but most of it is only about 3m above the ground.

The latest addition to the h.f. antenna collection is a balun fed 20m long wire with the coaxial feed point 7m above ground. Both antennas run west to east. So far it seems that the extra height does give the end-fed an edge. But I wouldn't make bold statements about one antenna being 'better' than the other. The trials continue. The endless antenna quest goes on.

And just to show that a super antenna isn't essential, **Chris Butterfield** in Lincolnshire has an old Lowe SRX-30 receiver connected to less than 6m of wire in an

inverted 'L' configuration, and the whole of the antenna is inside the room with the radio! Even so, in one period of listening on 14MHz he picked up JY5HX in Amman, Jordan and W2ONV in Newark, USA in QSO and later JT1Y in Mongolia.

Still making good use of his NRD-345 and a 20m balun end fed antenna similar to the one I've just put up, **Alan Barker** in Leicester picked up HS1NGR in Thailand, 8J2C, a special event call in Japan and YC0KTO in Jakarta, Indonesia, all on 21MHz.

On 14MHz Alan heard FR5HA on Reunion Island, east of Madagascar and XM9WGS in Canada using the special prefix allowed for the Golden Jubilee celebrations. A QRP station on Iceland, TF3EE was also a nice one to out in the log, plus ZB2JS/M on Gibraltar using 18MHz. During the latter part of June, Alan swapped his end fed antenna for a 'half size' version of the classic G5RV. So far he's pleased with the results.

Only a handful of stations in his log since making the change, so it's too soon to make any judgements between the antennas. One entry in the log that was nice to see was VK6MV in Australia, giving M3PRL a 5 and 5 report on 14MHz. Just goes to show what 10W can do!

Alan's making moves to get M3 licence himself and he's looking to buy a transceiver. He asked about temporarily disabling the TX before he gets his callsign, presumably so that there's no danger of falling foul of the RA. Personally, I don't think it's worth the effort. If you don't transmit, you won't attract the RA's or any one else's attention. Just keep your thumb off that p.t.t. button!

WAB

Listen out for UK stations exchanging locators consisting of one or two letters and two numbers. They are collecting squares for the Worked All Britain awards. The labelling of the squares is taken from the Ordnance Survey grid system, and each reference signifies a 10km square. The place for more information is

<http://home.freeuk.com/wab/> WAB is open to listeners as well as amateurs, and life membership comes with the purchase of the WAB book in which to keep a record of contacts. There are over 4000 WAB areas in the UK, so it'll take a while to fill a book! There are various certificates that can be obtained by participants. If you're interested, but don't have access to the 'net, then contact the membership secretary **Kate Wragg G0FEZ** at **11A Fall Road, Heanor, Derbyshire DE75 7PQ**.

The h.f. frequencies to listen (s.s.b.) for WAB activity.

Band	MHz
160m	1.933
80m	3.76
40m	7.06
20m	14.35
15m	21.32
10m	28.66

Whilst WAB activity is going on all the time there are also special operating days. The next one is on Sunday 15th September from 0900 to 1700 and will be for 'phone contacts on the 144MHz band.













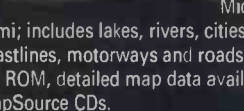
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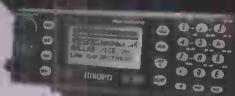
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SSB Utilities

Last month I wrote about the 'Revco Angler' portable antenna which I used while in India, in response to a letter from **Mr C.W. Baker** from Surrey. I mentioned that they were available from **Garex at PO Box 52, Exeter EX4 5FD**. This should also answer the question from **David Mitchell** in Aberdeen who also wrote to me last month asking where he could get one of these antennas.

Garex are still trading, but on a smaller scale, and they are now only attending the smaller radio rallies, mainly in the south and south-west of the UK. I caught up with **Peter Longhurst** on the Garex stand at the Longleat rally at the end of June and found out what happened to them. I also confirmed that Peter is still manufacturing and selling the 'Revco Angler' antenna, although it is now called the 'Garex Angler'.

There is now a web site with full details of the product range offered by Garex, and this includes the 'Angler' antenna and also a very interesting looking simple short wave long wire antenna. For those of you with web access, these antennas are listed under the v.h.f./u.h.f. accessories' section of the web page, and each item in the list expands to a further web page with full details of each individual product.

At Longleat I also noticed the simple portable long wire mentioned above. This is a much simpler and cheaper version of the 'Angler', and consists of simply the

45m coil of antenna wire connected to a length of coaxial terminated with a BNC plug. It also has another wire attached to the coaxial feeder, which I suspect is either a counterpoise or an earth wire. Now, a few weeks after the event, I wish that I had bought one there and then so that I could try some comparative tests.

The Revco/Garex Angler costs just under £20, while the short wave long wire costs just under £5. They are available from **Garex at PO Box 52, Exeter EX4 5FD**.

At Longleat I also came across the stand of **Solid State Electronics (UK)** (SSE). I had heard of this company before, as they are a regular advertiser in *SWM*, but I had never seen their entire product range. I was aware of their range of regulated scanner power supplies, but I was most interested to see a combined h.f. long wire and v.h.f./u.h.f. scanner antenna - so interested that I bought one! The antenna is the 'JIM WIA-SW2in1+', and when I have had a chance to test it, I will report back with details.

Concorde Update

Once again the subject of Concorde crops up again in this column. **Peter Hillier** has been in touch so say that his web page devoted to this

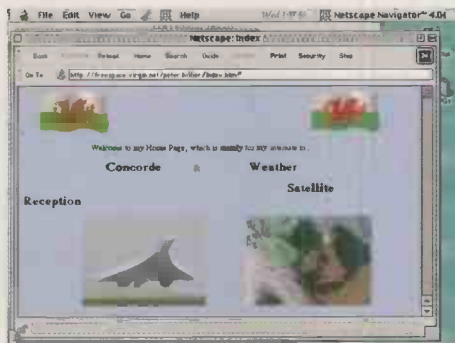
aircraft has been updated to reflect the new summer timetable. This new timetable came into effect at the end of March and runs through until the end of September. It now contains details of a typical Concorde flight including all its UK v.h.f. frequencies and transatlantic frequencies.

Those of you who have the opportunity to see the flights will be

Table 1.

Channel	C/S	Shore	Ship
408	HEB14	4.378	4.086
422	HEB34	4.420	4.128
424	HEB24	4.426	4.134
805	HEB48	8.725	8.201
822	HEB18	8.782	8.258
824	HEB28	8.788	8.264
831	HEB38	8.809	8.285
835	HEB58	8.710	on request
1202	HEB13	13.080	12.233
1210	HEB43	13.104	12.257
1227	HEB23	13.155	12.308
1230	HEB33	13.164	12.317
1237	HEB53	13.185	12.338
1611	HEB17	17.272	16.390
1615	HEB27	17.284	16.402
1622	HEB47	17.305	16.423
1631	HEB37	17.332	16.450
1656	HEB57	17.407	16.525
1809	HEB19	19.779	18.804
2214	HEB52	22.735	22.039
2220	HEB72	22.753	22.057
2232	HEB62	22.789	22.093
2246	HEB82	22.831	22.135
2503	HEB25	26.151	25.076

(all freqs are MHz upper side band).



able to work out what time to be at the airport, and those of you who want to listen to the flights will be able to work out the best time to listen. The frequencies used by Concorde do not change very often, so those listed on Peter's web page should prove to be useful.

Letters

W. Semmens from Cornwall wrote to ask about Berne Radio, and wants to know if they are still operational. Their aeronautical service was discontinued several years ago (sometime in the mid 1990s), but they still have a minor presence in the h.f. spectrum. Their web page was last updated in January 2001, but it does show that they continue to use the callsign 'Bern Radio' and 'HEB'. They are now only active on the various maritime bands, with several 'ship' and 'shore' paired frequencies available in each band. As far as I can tell they are still no longer active on the aeronautical bands, even though their web page implies that they are. **Table 1** lists their maritime h.f. frequencies, lifted directly from their web page.

Web Watch

Garex - <http://www.garex.co.uk>

Peter Hillier's

Concorde web page - <http://freespace.virgin.net/peter.hillier/index.htm>

Berne Radio - <http://www.bernradio.ch>

■ PETER BOND, c/o EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: skyhigh@pwpublishing.ltd.uk

Sky High

RIAT 2002 - Fairford

The much-heralded return of the Air Tattoo to Fairford will be remembered by many for a variety of reasons, not least of which was the disappointing military aircraft participation. (Perhaps we were all spoilt too much in the past). Don't get me wrong, there were still some very nice aircraft present, but numbers seemed to be noticeably down on the heyday years. Perhaps it's a sign of the times?

As for my trip, it was not so much *Four Weddings and a Funeral* as *Four Disasters and a Good Time* - let me explain. The plan was to head for Fairford on Tuesday evening, meet up with friends, camp for three nights and return home on the Friday afternoon.

On Tuesday afternoon, one of those household disasters took place which always seems to happen just before you are due to go somewhere - our departure was delayed until Wednesday so that repairs could take place. On Tuesday evening, our friends 'phoned from Fairford to say that they had left two corner poles of the frame tent behind and so our planned accommodation was now non-existent!

As a result, we decided to leave very early on Thursday morning and find bed and breakfast for that night. Having 'phoned many places, who unsurprisingly were full and having laughably been quoted £85 for a double room in one pub, we eventually found a very nice pub south of Brize Norton for £40 a night.

We left home at 0600 on Thursday in glorious sunshine with high hopes of some good pictures. As we passed Bristol a few clouds started appearing and as we routed through Tetbury and Cirencester the clouds darkened. By the time we reached Fairford, the light had dropped by about four f-stops and it had started raining - ho hum.

The decision was whether we paid £24 for the two of us to sit in the Park and View car park and watch the rain come down or watch the movements from a farmers field for £4? We elected for Park and View on the basis that it could only get better!

Runway 09 was in use so we headed to the Western end of the airfield and parked up just as an F-15 emerged from the gathering gloom. We had just started to unload the kit when they changed runways! Do you ever get the feeling that it's going to be one of those days?

Fortunately we were still by the vehicle so we were assured of a quick departure. The word quickly got round and soon numerous enthusiasts were rushing to their cars to make the trip to the eastern end of the airfield. As we left the scene, it reminded me of the start of the Le Mans 24 hour race in the old days!

By the time we had parked, had something to eat, trudged the half a mile to the security checks, had a full body search and met our friends, the rain had stopped and it looked a bit brighter. In the typical tradition of great British airshow weather, within an hour the sun was out and it was glorious once again. I am pleased to say that the weather then stayed like that until we left on Friday afternoon and hopefully a few good pictures should be in the can.

Fairford Frequencies

Fairford Tower	128.975	337.575
Fairford Approach	123.550	277.350
Fairford Ground	119.150	259.975
Fairford Delivery	130.500	
Fairford Ops	129.700	
Fairford Weather	254.475 (Brize ATIS)	

The Approach into Fairford was controlled by Brize Radar with the additional frequency 133.75 also reported in use. The u.h.f. n.b.f.m. Air/Ground frequencies in use by the Tower were 406.625



Italian Air Force AMX arrives at Fairford wearing Special 75th Anniversary markings.

and 432.9. Aerobatic Team frequencies noted by SWM readers were as follows:

128.75	Italian G.222
135.175	Chilean Halcones
340.525	Danish F-16s
337.975	Team Aquilla
388.75	Patrouille Suisse

Having missed the Wednesday arrivals, all was not lost as there were only about 30 inbound and people described it as the quietest arrivals day they could ever remember at an Air Tattoo. Callsigns of note on the Wednesday were:

BOXER 38	C-38A	201 ATS
CHILEAN 902	B707	Gruppo 10
DOOM 60	B-52H	2 BW
GATOR 01	T-43A	12 FTW
POLISH	AF 055	AN-28

The two F-117s came in as TREND 61/62 and were refuelled by KC-10A, CACTI 11 using the Air to Air frequency 343.1. According to my records, this is one of the Primary USAF Coronet deployment frequencies

Traffic & Security

There is little doubt that this year's RIAT will be remembered by many for the long traffic queues and the 'Security' arrangements. It says a lot when more of my E-mails were moaning about the traffic/security problems than were about the aircraft callsigns and frequencies!

The location of the entrance to the Park and View and the staff camp site so close together plus the poorly managed traffic lights meant chaos on the Whelford to Kempford road on the Friday morning. From 0930 to about 1230 there were extensive tailbacks in both directions and some people took an hour to get into Park and View car park.

The less said about the Saturday the better with traffic queues down the A419 almost to the M4 and the worst report sent to me was of one group who took an hour and seventeen minutes to get through the security check. It was made all the more annoying

Sky High

that by mid morning at the gate near me they appeared to have given up and were just making random checks, thereby negating the whole system - and then the G.222 blocked the runway for almost four hours!

Final Disaster

The final disaster of my trip happened on the way home, a bottle of fizzy water blew its lid off in the boot and soaked my notebook with all the callsigns in it. It was written in fibre-tip and so by the time we got home my notes were completely illegible, (at least my camera was safe). My thanks therefore go to **Garry, Keith, Steve and Dougie** who all helped to pass on information for the report. Incidentally, the pub accommodation, breakfast and Real Ale were all excellent and no I'm not going to tell you where it is! I will compile the callsign reports for Thursday to Saturday and include them next month.

Airband and the Law

One item I left out of the 'Airband Special' last month due to lack of space was some comments regarding the legal aspect of airband/wideband receivers. An anonymous reader tells me that recently, three enthusiasts were detained for four hours at Landivisiau in France and their radios confiscated - this coupled with the on-going appeal of the enthusiasts arrested in Greece made me think that it may be time to re-state the legal position.

As I mentioned last month, when the AOR AR2001 first appeared in 1984 some people were originally of the opinion that to own such a set was in fact against the law, this wasn't the case then and nor is it now. It is not illegal to buy or own a wideband radio, but it is illegal to listen to any transmissions for which you are not licensed or authorised.

As a consequence, if you use your radio to listen to anything other than broadcast radio, amateur radio or weather and navigational information at sea, you are in breach of the *Wireless Telegraphy Act 1949/1967*. This was then followed by the *Interception of Communications Act 1985*. With this in mind, it was perhaps fortunate that the government took no action back in 1984 to ban the ownership of radios capable of receiving such things as the u.h.f. airband, Police, Fire, Government Agencies, etc.

In the modern era, if you visit the average airshow you will see literally hundreds, possibly thousands, of scanners in regular use. The operation of wideband radios has now been tolerated for many years and few prosecutions have taken place regarding their operation. It was therefore regrettable that in the not too recent past, a few ill-advised people have chosen to breach the Status Quo by attempting to sell conversations illegally monitored on their scanners to the media.

Fortunately, these events were relatively short lived and thank goodness, did not give way to a knee-jerk reaction from the government by rushing through disabling legislation. The advent of the digital mobile 'phone has meant that this type of monitoring has now been made impossible with the average scanner.

My comments obviously only apply to the law in the UK, remember if you do take your scanner abroad you are subject to the laws of another country who may take a very different view to that at home. As a consequence you may not be bringing your radio back with you, or worse still you may be making an unplanned extension to your stay abroad! Take care.

8.33kHz Spacing

Very briefly, some initial information has reached me regarding the new 8.33kHz spacing, is that the start date will probably be in November, (date to be confirmed), and that just one or possibly two upper airspace channels will be introduced to start with. Further information as soon as I get it - thanks Richard.

Airband Special

My thanks go to the readers who kindly sent in favourable comments about last month's 'Airband Special'. Also our eagle eyed readers spotted a glitch which unfortunately occurred in Part 1 - 'In the Beginning'. On pages 34 and 35, I referred to the flying display listing for the Biggin Hill, Battle of Britain Shows in 1963 and 1964. Unfortunately, the scan of these lists was accidentally omitted from the text and so to

redress the balance, I have listed below selected parts of the September 1963 flying programme. It makes for interesting reading, looking at the very precise timings of some of the 'Demonstrations', it must have been one quick flypast!



The superbly restored Sea Vixen D.3 lands at RIAT 2002. Its arrival on the Friday prompted a round of applause from the Park and View crowd!

1409 - 1419	No. 56 Squadron 'Firebirds'	Formation Aerobatics
1420 - 1423	Victor 2	Demonstration
1424 - 1428	4 Sea Vixens	Demonstration
1441 - 1444	Vulcan Mk.1	Demonstration
1503 - 1508	3 Mosquitos	Formation Demonstration
1509 - 1512	Britannia	Demonstration
1513 - 1520	Skeeter, Whirlwind, Belvedere	Helicopter
1521 - 1526	Lightning	Aerobatics
1527 - 1531	Scimitar	Aerobatics
1532 - 1535	4 Canberras	Demonstration
1540 - 1543	Hunter F.R.10	Photo runs
1543 - 1546	Valiant Mk.2	Demonstration
1612 - 1620	Argosy	Parachutists
1622 - 1626	Gnat	Aerobatics
1632 - 1635	Buccaneer	Low level Demonstration
1646 - 1651	4 Javelins	Formation Demonstration
1652 - 1700	5 Jet Provosts (Red Pelicans)	Formation Aerobatics

Lastly, what's happened to all you v.h.f. airband listeners - only four pieces of correspondence in the last two months and two of those queries had already been answered in the column - don't forget to drop me a line.

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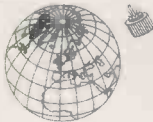
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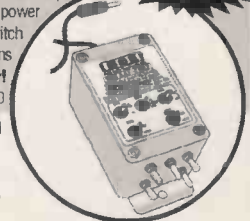
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Scanning Scene

The 25th of June 2002 was what is known as a 'slack news day'. It must have been because a BBC radio producer, who wasn't actually a stickler when it came to digging out real news, decided to dust off a tape recording that had been made some weeks earlier of scanning enthusiast Paul Wey. Paul was talking about what can be overheard on a scanning radio receiver. He also told of a scanning list that he runs on the Internet. Any newshound worth a penny would have known about the list already.

It being such a quiet news day, however, the BBC decided to run the 'story' for all it was worth. They dug up someone who they described as an 'intelligence source' who said that Paul was a "menace" and that he and the website (it's a list actually, Moneypenny) are a "severe danger to the public and to national security" and called for scanners to be banned. It is, of course, more than possible that the source was as false as the hysteria that the BBC and tabloid papers attempted to foment.

As for banning radio receivers that pick up signals other than official broadcasts, that idea was trialled over a period of a few years in Europe during the forties. It wasn't a resounding success over there.

Anyway, we are all menaces. While armed gangs engage in shootings in the streets and dangerous individuals are released from custody on a daily basis. While criminals burgle and rob innocent people at will with no fear of meaningful punishment, a few people with radio receivers are labelled **menace**. The reality is that those of us that tune the airwaves are possessed of an enquiring nature and don't necessarily believe the 'news' that we are spoon fed by organisations like the BBC. So next time that you are listening to the weather broadcast on marine band, be thankful that you are labelled a menace and not a mushroom that relies on the BBC for 'news'.

The one thing that does come out of publicity of this type is the necessity for anyone involved in the scanning hobby to act with maximum discretion. It seems that scanning hobbyists have no friends

in the mainstream media and press organisations. It may be that in the next few months some of you will be approached by representatives of the press or media for information about your pastime. Deny everything!

A regular correspondent writes of a music concert that was held at Morfa Road Playing Fields in Swansea on the 16th June. The event was broadcast live on Radio 1 between 1300 and 1600 and featured some well known artists. The frequency list that was collated gives an indication of the amount of organisation and hard work that goes into staging an event of this size.

The event organisers had a repeater on site with an output on 163.2875 f.m. with talkthrough on. The stewards and riggers were using simplex on 164.050 and 169.0875 respectively. The security staff were using a repeater outputting on 456.8625 again with talkthrough enabled. Other simplex frequencies included 456.925, 456.9875, 461.375, 461.2875, 460.375 and 462.4875. These were in use by staff including the local council and engineers. The broadcast people were on 457.2625, 457.270, 457.305 and 457.330 which were all simulcasted. Radio 1 talkback was on 455.395 and TV controllers were found on 455.280MHz.

Usual UHF Bands

Swansea police were also in evidence on the usual u.h.f. bands as was the Dyfed Powys helicopter, X-Ray99, which had been loaned to South Wales for the event. Swansea Police 'Bronze Ground' were using a simplex short term hire frequency in the high end of the 150MHz band. This was certainly a new frequency as far as my correspondent was

concerned. Again many thanks for the information, Sir.

Second-Hand Gear

Nothing ever changes does it. Some years ago I can remember that dealers in second-hand radio gear were selling ex police Pye Pocketfone sets at rallies that still had the police channel crystals fitted. The police had replaced their Pocketfones with Burndep sets and the disposal people couldn't be bothered to crush the crystals in the radios. Loads were sold and punters at rallies were buying receivers with their local police channel installed.

The same thing happened when

the Burndep sets were replaced and I remember buying four units that I found to be working on police channels. I purchased new crystals and converted them to the 70cm amateur band for friends. Well folks, it will be of no surprise to you to learn that history is repeating itself again.

This time the police in Basildon and Southend have encountered difficulties on some of their u.h.f. channels. I'm not too sure what has been going on in Basildon, but in Southend, the police have discovered some business operation using their frequencies. This obviously coincides with the large scale disposal of Philips PFX and Motorola HT600 sets by the police. I have seen both types of set on sale with the Home Office channels still programmed. Now if anyone has a Cougar set that they don't want...

Take Over

It seems that the European Union may wish to take over radio

spectrum licensing from individual European governments. Their argument appears to be that this would end the variation in fees paid by businesses in different EC countries and would allow businesses to plan ahead with more confidence.

For some years, there has apparently been little or no liaison between governments in the region as regards spectrum use. Many monitors will have overheard British u.h.f. systems suffering interference from European mobile telephone services. This usually occurs when radio conditions at these frequencies are lively.

As a prime example of this, the police in Brussels have recently been allocated 155.575 f.m. for operations. This could cause interference to several police forces here in the UK from Devon and Cornwall to Scotland and doesn't necessarily indicate particularly joined up thinking. It will be interesting to see what else is proposed by the EC in respect of radio licensing.

Ever wondered why most cars look the same these days. Well, if you ask a computer to design a car that's energy efficient with a number of doors, a low drag coefficient and a defined level of performance then, whatever type of computer you use, it's going to come up with the same answer. That's why most new cars all look the same. Radio equipment is now designed by computer too.

Here's a glimpse of a TETRA hand portable for you. This was made by Simoco but, trust me, they are all going to look similar. When the thing is powered up it will show talk groups available and, when it receives a signal, the originator's identifier will be displayed. Other information can also be called up. Soon coming to a police station near you, these radios will replace the local police radio operator with an annoying buzz.

All designed by computer you see... Try this at home. Lock five town planners in a room for six months and they'll come up with High Wycombe every time.

I shall be at the Leicester show this month looking for b.c.d. switches for my FT-70G. I shall be as scruffy as usual.



Propagation Forecasts

How to use the Propagation Charts

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

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

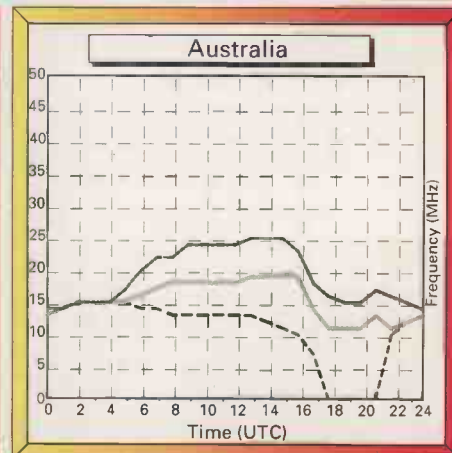
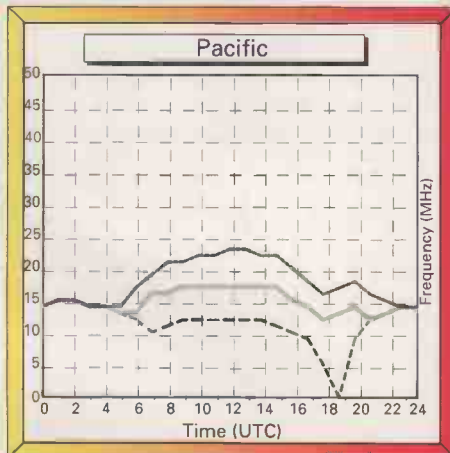
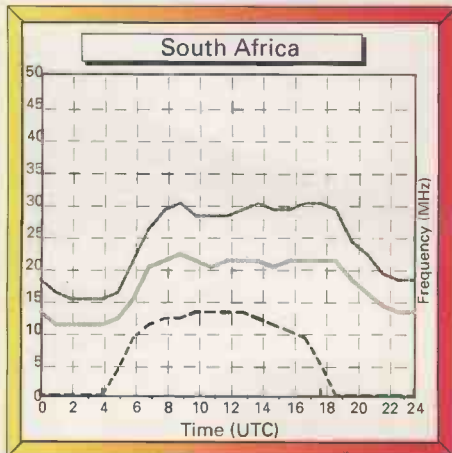
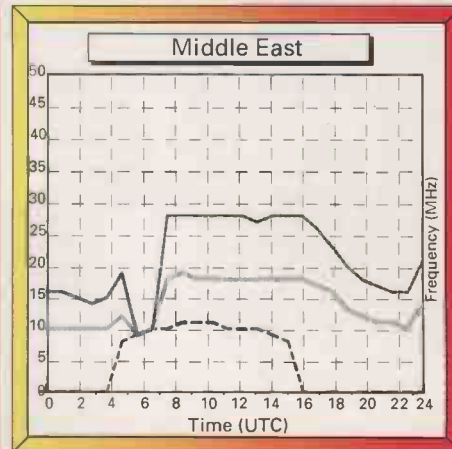
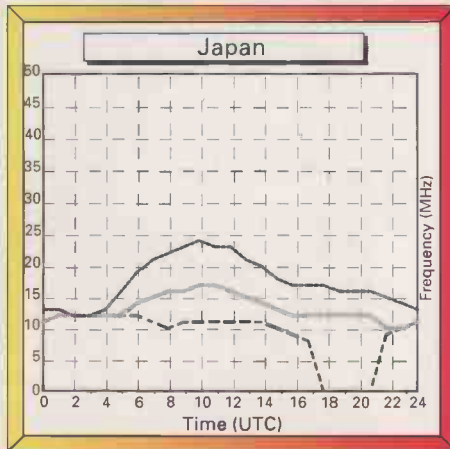
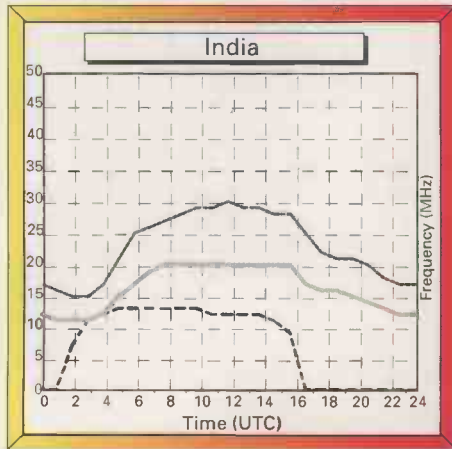
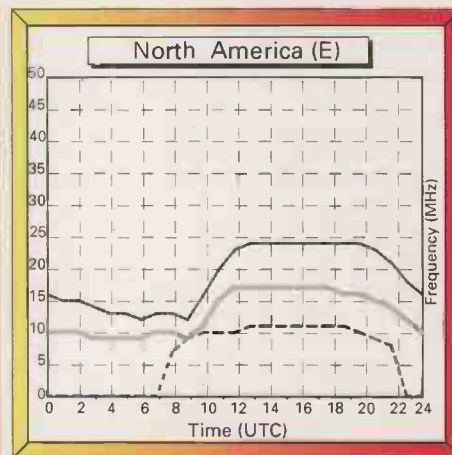
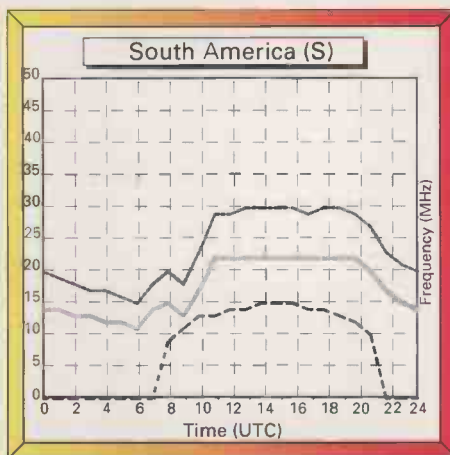
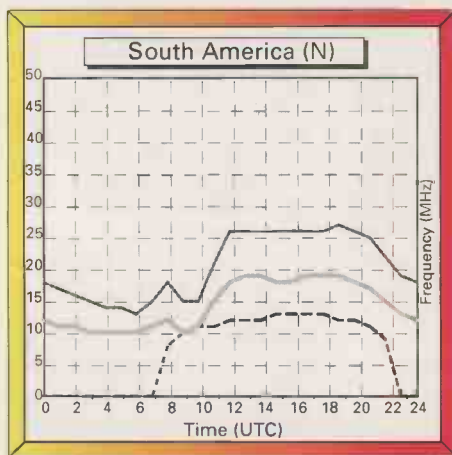
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

probability of success for the path and time.

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

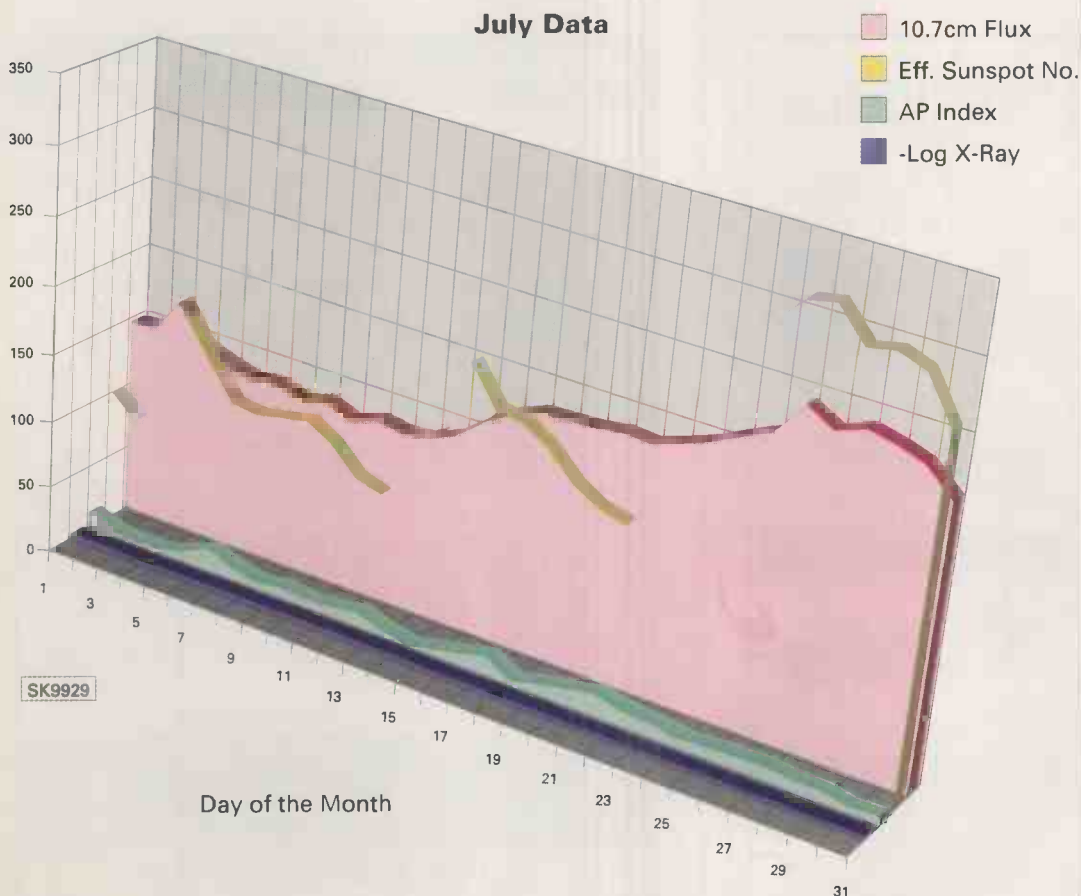
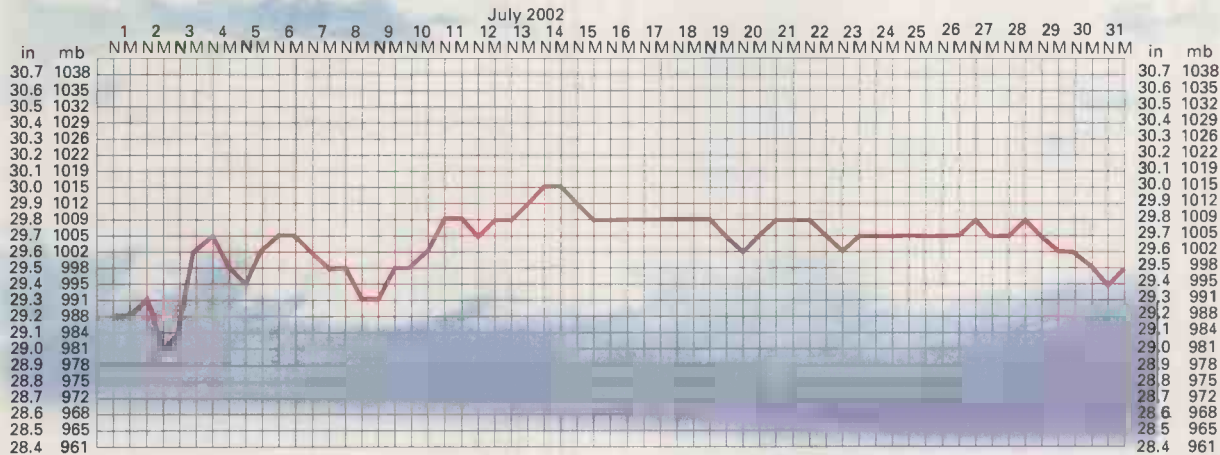
Good luck and happy listening.

September 2002
Circuits to London



Propagation Extra

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



guide to the chart

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Info in Orbit

This June-July-August period is seeing unprecedented WXSAT activity. New Chinese, then American polar WXSATs orbited in June and July and the first satellite of the METEOSAT Second Generation scheduled for launch 27 August. If you are looking for a hobby - stop here a while!

In all the years that I have been receiving WXSAT imagery, I do not recall a time when there were more opportunities to receive pristine images. Although I have h.r.p.t. (high resolution picture transmission) capability, I have monitored nearly as many a.p.t. (automatic picture transmission) images, particularly from NOAA-17. We have an 'image bonanza' and long may it continue.

The launch of NOAA-M on 24 June was shown, via the Internet, by several sources including NASA television. Using a conventional V90 modem, I connected about one hour early, having forgotten that the rest of Britain was on BST! Launch was precise and the commentator noted afterwards that the actual lift-off of the Titan rocket was 0.1 seconds 'late'. A nominal orbit

was quickly achieved, and I watched the 'action replay' of the launch.

Considering that my modem could only manage 48Kb/s on the line, I was impressed. Expressions, jackets coming off and going back on in the Launch Control Centre could clearly be seen. The sequence of events (summarised) included:

1829 - spacecraft separation confirmed. The NOAA-M weather satellite was released from the Titan 2 rocket.

1839 - NOAA-M's solid-fuelled kick motor burned as expected. The motor is a critical part of the launch because it places the satellite into circular orbit around Earth.

1840 - The spacecraft team reports it is pleased with the orbit achieved. By 2000UTC officials said "Everything has gone extremely well with the launch and delivery into space of the newest polar-orbiting weather satellite".

Figure 2 shows the orbit of the WXSAT in relation to the sun and terminator. Travelling south-bound at about 1000, means that daytime images will be well illuminated, but night-time images will be virtually 'dark' throughout the year. High resolution (h.r.p.t.)

images include channels 1 and 2, and when passing over Britain, these remain dark in summer, except for the last few minutes that show northern polar daylight.

An hour after launch, I checked in at the Celestrak web site, hoping to find Kepler elements for the new satellite. There were none. I visited NASA's OIG (Orbital Information Group) site, where I am a registered user, but again there were none - at least, I could not locate any. I repeated the search after 2100, but without success. The satellite's transmission schedule was known in advance. Americans were able to receive a.p.t. later that evening during an early easterly, north-bound pass - but in darkness. Australia and New Zealand had a corresponding early opportunity.

NOAA-17 was launched early evening in Britain and was activated before midnight on 24 June. **Sangat Singh** reported a.p.t. received at 0245 on 25 July over Malaysia. **Jean-Paul Hoarau** observed a.p.t. from Reunion Island (in southwest Indian Ocean), and - like me - was waiting for Kepler elements to be issued to aid h.r.p.t. reception.

The first image that I saw on the Internet was from **David Brooks** of Worthing, Christ Church, Barbados, in the West Indies, reporting reception of NOAA-17 (as it then was after orbital re-christening) at 0210 - of the totally dark image. **Milan Konecny** received his first NOAA-17 image in Canada, and posted it on the web. It almost became a 'race to be first', with many monitors reporting good reception and posting results for others to see. Pity that I didn't think about that when I received my first FENGYUN-1D image, belatedly posting it following a request to do so.

NOAA-17 passed over Australia during local daytime. **Lyndsay Vincent** lives in Melbourne and reported early reception of a daytime pass - possibly the first confirmation of reception by an amateur.

Mike Kenny received his a.p.t. image seconds later - see Fig. 5.

John Morgan in Auckland, New Zealand, reported hearing the first low elevation pass there at 2347. **Bernard Welford** who lives in mid-South Island, New Zealand, reported the a.p.t. transmissions received at 2248 on 24 June - a "slightly fuzzy picture showing the south-east corner of Australia".

Britain had to wait until after sunrise on the 25 June for a first pass - a moderately low one reaching 25° elevation. Having set my tracking software to 1698.0MHz, the published frequency, I was puzzled to not see any data, although I heard the a.p.t. clearly on 137.62MHz. When

the pass was half-way through, with the sound of a.p.t. still loud, I changed frequency settings and found h.r.p.t. on 1702.5MHz - a testing channel used during early-orbit phase. The next pass was much better and I received good data.

During the first two weeks or so, the infra-red



Fig. 1: Last inspection of NOAA-Ms AVHRR before launch.

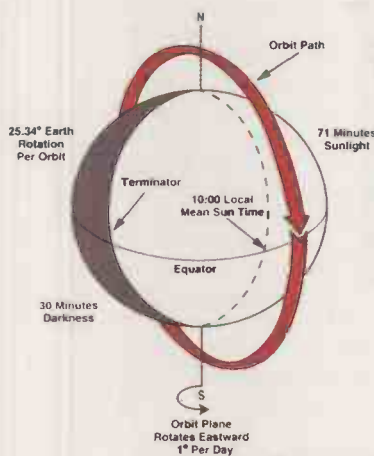


Fig. 2: Orbit of NOAA-17.



Fig. 3: First official NOAA image was obtained at 1608 on 25 July.

sensors undergo out-gassing of impurities, after which they can be cooled without the problem of impurities precipitating on the cold surfaces. Consequently, the three infra-red channels are empty during the early orbit phase, so a.p.t. imagery includes channels 1 and 2 - visible-light.

Peter Schoen of Helmbrechts in Germany made a welcome return to imaging, commenting "After a long time of absence I am glad to be back again. I restored my

receiving station and enclose a NOAA-17 h.r.p.t. channel 4 image. It shows Finland and Baltic Sea at the top left and Russia with Moscow at bottom right".

Regarding the overlapping of transmissions from NOAA-14 and NOAA-17, **Wayne Winston** of NOAA



Fig. 4: NOAA-17 1045 25 June from David Brooks in Barbados.

commented: "Keep in mind that NOAA-M, although launched and apparently working at the moment, is not an operational satellite. It will not even be formally handed over to NOAA from NASA until the 'shakedown' is complete, on or about August 8. Thereafter, NOAA will ingest data and be testing operational product production for (an) additional time. Only after that, will the spacecraft be added to the operational constellation. Until then, the

operational spacecraft will take precedence for many of the decisions".

Other WXSATs

The switching off of *METEOR* 3-5, reported by **Douglas Deans** via the WXSAT forums on 21 June, meant that no WXSATs of the CIS (Commonwealth of Independent States - formerly Russia) were transmitting a.p.t. during the latter part of June, and much (if not all) of July. Although we might have expected *METEOR* 2-21 to have been re-activated, no messages about this were

posted. Using a satellite tracking program to 'jump forwards' a few weeks, we can estimate that *METEOR* 3-5 may be back in operation around late July or early August.

MSG-1 Scheduled For Launch

METEOSAT SECOND GENERATION (*MSG-1*), the new technology replacement for *METEOSAT-7*, is in Kourou, French Guiana, from where it is scheduled to be launched on 27 August 2002 on an *Ariane-5* launcher. The latest news on launch preparation was released in mid-July. It was noted that by 29 June there had been a review of activities, including the

assembly of solar panels, batteries, antennas, integrated satellite tests and confirmation of readiness.

In parallel with these satellite activities, the following ground-based work was underway. Formal validation of the Ground Segment and rehearsals of operational scenarios were planned to be completed in mid-July. Simulations of Launch and Early Orbit Phase (LEOP), both nominal and contingency operations, were scheduled to be completed in early August. An upgrade of Image Quality Ground Support Equipment (IQGSE) was due to be completed in early July.

Like the present generation of METEOSAT satellites, MSG will be spin-stabilised. When operating in geo-stationary orbit, the satellite will spin counter-clockwise at 100r.p.m. around its longitudinal axis, the latter being aligned with the Earth's rotational axis. MSG satellites will be placed in orbit at 0° longitude, like first generation METEOSATs, but could be moved to 50° east or west if required.

The blunt question "What does *MSG-1* give us that *METEOSAT-7* does not?", noting the cost of setting up a new reception system, is not an easy one for amateur hobbyists to answer. There will be new, expensive equipment to buy for both the 'low resolution' or the 'high resolution' systems. I don't really believe that this is the right question to ask.

Think back to the months following the launch of *METEOSAT-1*. Did any amateur have WEFAX or PDUS equipment ready to routinely monitor images every 30 minutes from space? I vividly remember seeing launch announcements about the first METEOSAT on television. There was no such thing as a domestic personal computer. My professional computing activities involved my writing and then typing programs on to a punch card and leaving the stack of cards for an operator to load and run on the ICL 1950 (was it?) mainframe - up to about four runs in a day.

Now that I/we have relatively low cost home PCs, and thanks to years of advancement in electronics, we have been able to set-up receiving systems costing within a hundred pounds or so to receive (low resolution) WEFAX. Even high resolution (PDUS) imagery came within a cat's whisker of being affordable to the dedicated hobbyist.

During all these years, we have to remember that the satellite has been providing images for professionals to use, with the added bonus that technology gradually enabled amateurs to enter the field. Surely this will happen with *MSG-1* data streams during future months and years? I remain amazed that the METEOSAT First Generation satellites remained virtually unchanged during the years, enabling hobbyists to join in the fun.

The one big mistake that I believe EUMETSAT has made, is the encryption of data. In my discussions with various manufacturers of METEOSAT Primary Data reception hardware, everyone confirms that encryption killed the market. I believe that this was a very bad, quite unjustifiable thing for EUMETSAT to do, and has had a very bad effect on manufacturers in the European countries. When I put this point to EUMETSAT, they declined to respond, although certain people within the organisation commented privately that they did not disagree with my views! EUMETSAT of course, carry out orders from above.

My thanks (however!) to EUMETSAT and ESA (European Space Agency) for providing information about launch and operations.

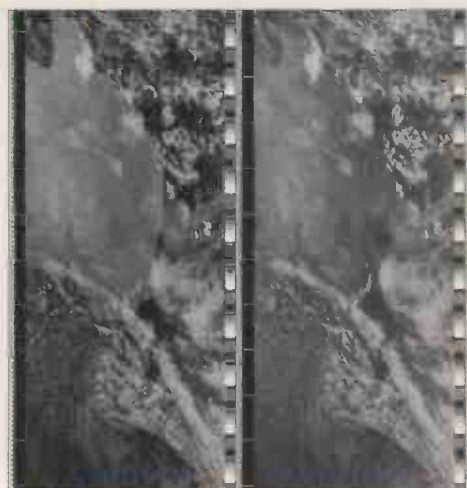


Fig. 5: NOAA-17 a.p.t. received late on 25 June by Mike Kenny in Australia.



Fig. 6: NOAA-17 1631 29 June from John Hartsell.



Fig. 7: NOAA-17 h.r.p.t. channel 4 (infra-red) pass 19.35 on July 12, 2002.

My WXSAT Station

What a difference two metres makes. I moved my h.r.p.t mount/dish just two metres further from the house, and now get good reception from my ground-mounted system. Sadly, the crossed dipole bit the dust when - after its 15 years of operation - it finally succumbed to corrosion. My QFH was quickly fitted in place and has produced excellent images - see **Fig. 9** - and may now visit the roof for optimum reception.

Yes, I took the plunge and upgraded my Internet account to broadband (always on) in mid-July - but not without problems! After logging my request with my ISP, I waited. The advice in these circumstances is "Do not buy the necessary hardware until your line is tested and activated, in case you end up with hardware that cannot be used on your line".

My telephone was suddenly activated on a Thursday - but no-one told me. Unable to connect to the web, and unable to contact my ISP, I was in a quandary. I used my work's connection to enquire,



Fig. 8: MSG-1 22 May 2002, first electrical tests. The satellite in cleanroom with technicians doing electrical testing.

and discovered that my ISP had forgotten to let me know about successful line activation! At the time of writing, I await delivery of an ADSL modem and fittings. Meanwhile, my ISP re-configured my connection to permit the E-mailing of articles!

Launch Delays

NASA managers temporarily suspended launch preparations on 24 June for Space Shuttle Columbia until they have a better understanding of several small cracks found in metal liners used to direct the flow inside main propulsion-system propellant lines on other orbiters in the fleet. The STS-107 launch is being delayed to allow inspections of its flow liners as part of an intensive analysis that is under way.

Recent inspections of Space Shuttle *Atlantis* and Space Shuttle *Discovery's* Main Propulsion System (MPS) flow liners, found cracks, measuring 2.4-7.2mm, in one flow liner on each of those vehicles. Some of the cracks were not identifiable using standard visual inspections and were only discovered using more intensive inspection techniques.

The following missions are now pending: STS-107 - Columbia/OV-102 Spacehab/ Freestar microgravity research mission, 150 nautical miles, 39° inclination. STS-112 - Atlantis/OV-104 ISS flight (9A). Launch date: August 22 (under review), 122 nautical miles, 51.6°.

WXSAT Frequencies

a.p.t.

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

NOAA-14 and NOAA-17 transmit a.p.t. on 137.62MHz.

(during overlap periods, the secondary WXSAT a.p.t. may be switched off).

METEOR 3-5 usually transmits on 137.30MHz when in sunlight.

METEOR 2-21 may transmit on 137.40MHz when METEOR 3-5 is switched off.

h.r.p.t.

Note that the frequencies for *FY-1C* and *FY-1D* given last month were slightly out.

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

NOAA-14 transmits on 1707MHz.

NOAA-15 transmits on 1702.5MHz.

NOAA-17 transmits on 1707MHz (from 0100UTC on 16 July).

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

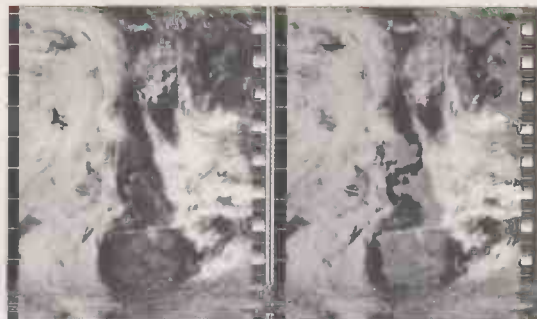


Fig. 9: NOAA-17 a.p.t. 1046 on 14 July from Southampton.



Fig. 10: NOAA-17 h.r.p.t. channel 2 from same pass.

All times quoted in *SWM* are in UTC.

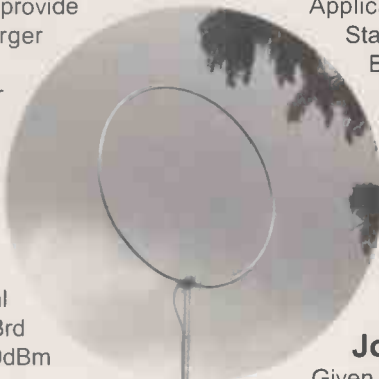
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John Wilson; Nov 2000 SWM:

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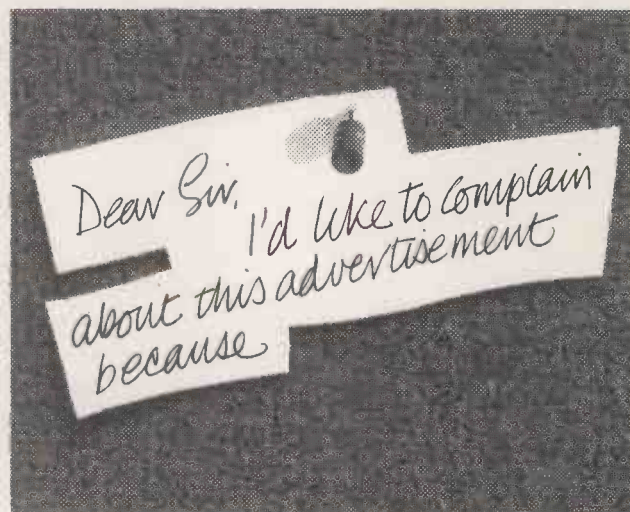
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Shackware

Hello and welcome to 'ShackWare', the bi-monthly rummage in the battered boxes beneath the tables at computer rallies (so to speak!). Last time, I waffled at length about my affection for old Apple computers and related a bit of detail about the Amiga - the Atari computer that never was. I did it at the expense of your letters, so this time, let's get straight into some queries without further ado!

Mailbag

First up is a man who is fast becoming a regular contributor to 'ShackWare', **David Haigh** of Great Yarmouth in Norfolk. Take it away, David...

"I've just been given six Acorn A3000 computers and monitors in working condition and complete with leads and plugs, but without software. Some of them look like they have modems inside. What I want to know is where I can get software so I can use one or two for decoding SSTV, c.w., RTTY, packet and so on. All the monitors are colour and in fair condition as are the keyboards, but some of the leads are a bit rough. I've also got 12 printers, but no leads to connect them to the computers".

What a haul David! I'm assuming they came from a local school which has upgraded to PCs? The good old A3000 has been a stalwart of the classrooms for a decade, but is now being surpassed by the mighty PC. For those who don't know, the A3000 was Acorn's attempt to make a popular second generation home micro like the ST and Amiga, but based on the company's own RiSC architecture - very advanced at the time.

Unfortunately, without software support (principally games), the machine was destined for a utilitarian life in the classroom where it performed exceedingly well. I had one of the first A3000s in the UK as a long-term review machine when I worked as a journalist on *New Computer Express* and it was a pleasure to use.

But back to your letter. The last of your questions is probably the easiest to answer. The machines are equipped with a 'standard' Centronics parallel printer port and leads to suit are widely available even today. Try Maplin or one of the many high street computer stores (or even somewhere like PC World). Some outlets will have these leads for a pound or two while others will try to charge you up to £20 for one! What you pay depends upon how desperate you are to print, but my advice is shop around.

Alternatively, buy suitable connectors from Maplin (one 25-pin D-type plug, one Centronics and a length of ribbon cable and make your own. Soldering a parallel cable is laborious, but not difficult. Restrict the length of ribbon cable to around a metre or you'll have problems with loss of data. As for software, a rummage on the web turned up lots of sites devoted to supporting Acorn's school favourite, but not much in the way of radio-oriented software.

Here's a selection of web sites that will get you started using the machine. First, point your browser at www.ee.ed.ac.uk/~pmh/ART/Vital.html which offers a comprehensive selection of useful utilities from setting the machine's clock to coding in C++. To receive and decode the Teletext service on an A3000, point your browser at www.octosys.co.uk - a company which supplies the necessary hard and software. Visit physics.mmu.ac.uk/Acorn/articles/RTR1996/RTR18 for details of how to connect a radio card meant for a PC to a RiSC-equipped Acorn machine. Software is available to drive the card. A huge collection of files can be found at arcade.demon.co.uk/filepages/ including

a Morse tutor.

Finally to those 'modems'. I can't say I have ever seen an internal modem for the A3000 though that doesn't mean they don't exist. If I remember rightly, the A3000 has an internal power transformer though which could be dangerous if you come into contact with it when the machine is plugged in to the mains. If you're poking about under the hood, ensure the A3000 is unplugged. Anyone who has software they can pass on to David can write to him at **11 Star Farm Close, Bradwell, Great Yarmouth, Norfolk NR31 8VZ, Tel: (01493) 667735**.

Next up is an E-mail communication from **Ray Walker** from near Wakefield in Yorkshire. Ray writes "Hello Jerry, remember the Amstrad 1640? Well I have one to give away. It is complete and in good order and has the user's handbook and a full set of system disks for the *GEM* system, *GEM Paint*, *BASIC* and so on. The outfit is free to anyone who will collect it (six miles south of Wakefield). There are a couple of hundred 5.25in floppy disks too which need formatting. I can be contacted on **(01226) 722623**".

A very generous offer, Ray and one which I would dearly like to take up myself! The Amstrad 1640 was a landmark machine in the middle-1980s when it was launched. Always keen to undercut the consumer electronics market, Amstrad's Alan Sugar saw what was happening with the demise of home micros such as the BBC B, Spectrum, Commodore 64 et al with the rise of the PC as the pre-eminent computer. Fine for the American market where disposable incomes were much larger, the PC was still an exotic, but much sought-after affair here in the UK.

Sugar capitalised on the desires of hobbyists by launching a spectacular PC-clone computer sporting a mono or colour CGA screen, one or two 5.25in disk drives and a fast V30 8086 Intel-clone processor. What's more, the 1640 came with a new-fangled mouse previously available only on high-end machines (!) such as the Apple Lisa and Mac, and a copy of the pre-*Windows* graphical operating system *GEM*. This latter was developed by Gary Kildal's company Digital Research, the people responsible for *CP/M* and is platform-independent - it overlays the native operating system (in this case *MS-DOS*).

Whereas other PCs were selling for thousands of pounds, 1640s had a price tag of a few hundred. It sold in vast quantities and for years afterwards, Amstrad was the leading computer manufacturer. So much so, in fact, that Amstrad more or less put Sinclair out of business and Clive Sinclair was forced to give up the rights to his own name which Amstrad took. Ah, the heady days of the home micro!

Though little more than an interesting museum piece now, the Amstrad 1640 could still be put to good use as a word processor or for maintaining a database of your favourite frequencies or QSLs. That said, I still use my Amstrad PPC640 (portable version of the 1640 desktop) for decoding from time to time using a home-brew comparator interface with *JVFax* and *Hamcomm* and there's no reason why you couldn't do the same with the 1640. Do give Ray a ring if you think you can give the machine a good home.

Finally

Well that's it for this time. Will we see a bit of sun this summer I wonder? Seems doubtful as I write this in mid-July, but who knows? At least the rain is a good reason for staying indoors and wandering into the shack! Until next time then, good listening.

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

Maritime Beacons

Listeners who enjoy searching this band after dark for the sky waves from distant maritime radiobeacons were hampered by the increasing hours of daylight during April, May and June. Nevertheless, they compiled some interesting logs - see chart.

During early dusk **Fred Pallant** (Storrington) heard the beacons at Cabo Mayor, N.Spain (MY) on **283.5** and Castellon, S.Spain (AS) on **285.5**, but apart from aero beacons, no others were audible at that time. He says "The problem is that I am going to bed too early! I like to be up around 0630 as normally it is (except for winter) the best time of the day".

The long wait for darkness proved to be worthwhile for **Fred Wilmshurst** in Northampton. From a southerly direction he received after dark the sky waves from four beacons along the northern coastline of Spain at Cabo Mayor (MY) on **283.5**, Cabo Machicharo (MA) **284.5**, Estaca Bares (BA) **292.5** and Cabo Finisterre (FI) **296.5**. From a northerly direction he heard the Faeroe Is beacons at Myggenaes (MY) **337.0**, Akraberg (AB) **381.0** and Nolso (NL) **404.0**, but the Prins Christian Sund beacon (OZN) on **372.0**, which is located on the southern most tip of Greenland, was notably absent.

The band was often searched until well into the night by **Jim Edwards** in Wigan. Among his entries in the chart are several beacons not mentioned so far: Mahon, Minorca (MA) **293.5**, heard at 0110UTC; Cabo Penas, N.Spain (PS) **295.5** at 0105; Klaipeda Rear, Lithuania (KA) **305.0** at 0010; Mys Taran, Baltic Russia (BT) **312.5** at 0330; Cabo San Sebastian (SN) **314.0** at 0150; Punta de Penna, Italy (TL) **314.5** at 0055.

Over in N.Ireland **Victor Robb** (Belfast) searched the band during some nights in June. He heard the beacons at Carla Figuera, Majorca (FI) on **294.0** and Cabo Salou, S.Spain (UD) **290.5**; also four others (MY **283.5**, MA **284.5**, BA **292.5** & FI **296.5**) along the north coast of Spain. From the opposite direction he picked up the ident (DA) from Dalatangi Lt, Iceland on **305.7**; also (OZN) on **372.0** from S.Greenland. The three beacons on the Faeroe Is (MY **337.0**, AB **381.0** & NL **404.0**) were received during daylight/dusk.

In Co.Down, **Robert Connolly** (Kilkeel) encountered some surprises during his searches at night! He says "After months of just regulars, late April saw the start of a major change. With low pressure

extending across Europe and a high pressure system over the Black Sea the Ukrainian chain on **312.5kHz** appeared. The same night, while checking the band, a very strong signal (BS) was heard on **300.5**, which was identified as Belosarayskiy in the Ukraine and over the next number of minutes I heard the rest of that chain, NB, TK, EN, IO. I had only previously heard IO here and to receive four first timers in this day and age of maritime beacons was very satisfying and has done a lot to re-new my interest in marine beacons".

During the last weekend in May he checked the band around mid-day and logged three beacons along the northern coastline of Spain (MY **283.5**, MA **284.5** & BA **292.5**). He also picked up a weak signal (CX) on **287.0** from a beacon at Ras Caxine, Algeria which he had not heard before. A similar check around the same time the following day revealed MY, MA and BA again but much weaker, as was CX.

At midnight on June 15 Robert heard the beacon at Llanes, NW.Spain (IA) on **287.0** for the first time since the frequency changes last September - previously it was on **303.5**. During his checks he noticed that the Spanish beacons use three different types of transmission format - some (MY or MA style) use two idents followed by about 55 seconds of carrier, leaving the cycle at a fixed minute; others (BA style) key the ident twice followed by a 30 second carrier leaving at no fixed timing; the third type (IA) gives a single ident followed by about 18 seconds of carrier before it starts again. Robert is wondering if the idents at shorter intervals are given as a safety measure along dangerous stretches of the coast.

Long Wave Maritime Radiobeacon Chart

Freq (kHz)	C/S	Station Name	Location	DXer
283.5	MY	Cabo Mayor Lt	N.Spain	A,B*,C,D*,E*
284.5	MA	Cabo Machicharo	NE.Spain	A,B*,D*,E*
285.5	AS	Castellon	S.Spain	A*,C
287.0	CX	Ras Caxine	Algeria	A
287.0	IA	Llanes Lt	N.Spain	A*,B*
290.5	UD	Cabo Salou	S.Spain	A*,D*
292.5	BA	Punta Estaca Bares	N.Spain	A,B*,D*,E*
293.5	MH	Mahon, Minorca	Balearic Is	A*,B*
294.0	FI	Cala Figuera	Majorca	A*,B*,D*
295.5	PS	Cabo Penas Lt	N.Spain	B*
296.5	FI	Cabo Finisterre Lt	NW.Spain	A*,B*,D*,E*
300.5	BS	Belosarayskiy	Ukraine	A*
300.5	EN	Yenikalskiy Lt	Ukraine	A*
300.5	IO	Ilichevsk	Ukraine	A*
300.5	NB	Berdianskiy	Ukraine	A*
300.5	TK	Temryukskiy	Ukraine	A*
305.0	KA	Klaipeda Rear Lt	Lithuania	A*,B*
305.7	DA	Dalatangi Lt	Iceland	D*
310.0	IP	Capo Sandalo Lt	Sardinia	A*
311.5	SA	Senigallia	Italy	A*
312.5	AT	Mys Aytodorskiy	Ukraine	A*
312.5	BK	Baltiysk	Russia	A*
312.5	BT	Mys Taran Lt	Russia	A*,B*
312.5	DB	Doobskiy	Ukraine	A*
312.5	IL	Iliinskiy	Ukraine	A*
312.5	KA	Mys Kyz-Aul	Ukraine	A*
314.0	SN	Cabo San Sebastian	S.Spain	A*,B*
314.5	TL	Punta D.Penna	Italy	A*,B*
337.0	MY	Myggenaes	Faeroe Is	A*,B*,D*,E*
372.0	OZN	Prins Chris's Sund	Greenland	A*,B*,D*
381.0	AB	Akraberg	Faeroe Is	A*,B*,D*,E*
404.0	NL	Nolso	Faeroe Is	A*,B*,D*,E*

Note:

Entries marked * were logged during darkness.

All other entries were logged during daylight or at dawn/dusk.

DXers:-

- (A) Robert Connolly, Kilkeel.
- (B) Jim Edwards, Wigan.
- (C) Fred Pallant, Storrington.
- (D) Victor Robb, Belfast.
- (E) Fred Wilmshurst, Northampton.

List of equipment used:-

Robert Connolly, Kilkeel: JRC NRD-525 + Timewave DSP9+ filter + Datong AD-370 active antenna.

Jim Edwards, Wigan: JRC NRD-535 or Drake R8E + 60m wire or indoor active antennas.

Fred Pallant, Storrington: Trio R-2000 + Howes CTU-9 a.t.u. + random wire antenna.

Victor Robb, Belfast: Lowe HF-150 + home built loop - for guidance he referred to the loop article in *SWM* April '89 and modified it using the ideas in the October '93 issue.

Fred Wilmshurst, Northampton: Icom IC-R70 + Global AT-1000 a.t.u. + random wire antenna in loft.

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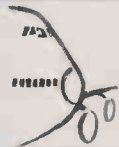
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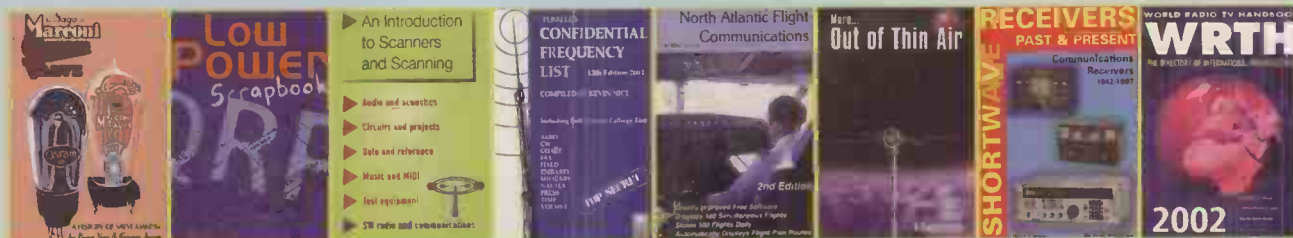
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