Britain's Premier Radio Magazine

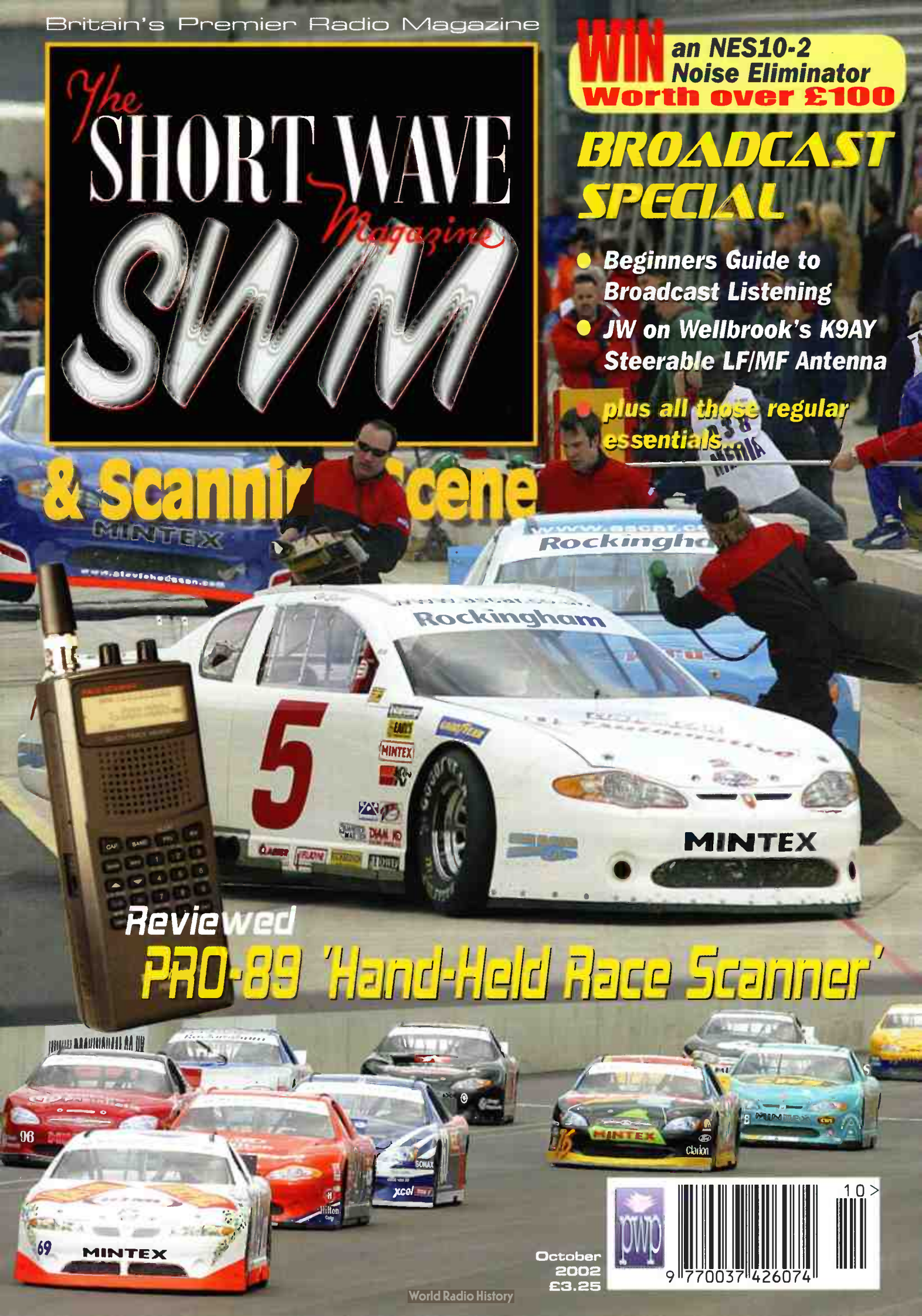
The SHORT WAVE Magazine SWM

WIN an NES10-2 Noise Eliminator Worth over £100

BROADCAST SPECIAL

- Beginners Guide to Broadcast Listening
- JW on Wellbrook's K9AY Steerable LF/MF Antenna
- plus all those regular essentials...

& Scanning Scene



Reviewed PRO-89 'Hand-Held Race Scanner'

October 2002
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wideband scanning receivers

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DJ-X10E

ADVANCED FEATURED SCANNING RECEIVER

- Receives: 100kHz - 2000MHz
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- 1200 memory channels
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- Advanced scanning features: Programmed scan (up to 10 groups) Programmed memory scan
  - Any memory scan
  - Mode scan (not found on many scanners!)
  - VFO search
  - Dual VFO search
  - Band encursion scan
  - Priority scan
  - Any channel ship scan
- Battery save facility
- Facilities for cloning another set
- Built-in 24 hour clock
- Switchable attenuator

£299.95

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New LOW Price

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THE ULTIMATE LIGHTWEIGHT SCANNER

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- Receives: 522kHz - 999.995MHz
- AM WFM NFM
- Selectable scan modes
- 700 memories
- Audio descrambler
- Bug detector - detects presence and frequency of bug giving audible warning
- Selectable internal / external antenna
- Internal or external supply
- Program Search banks
- Illuminated backlight display
- 2 performance mode, easy and expert
- RX attenuator
- Auto power off mode
- Priority channel monitoring
- Squelch control
- Volume control

£169.95

DJ-X2000

THE 'INTELLIGENT' SCANNING RECEIVER

- Covers 100kHz - 2,149.99MHz
- 2000 channel memory
- Modes: AM/NFM/WFM/LSB/USB/CW auto mode position
- 'Flashtune' reads the frequency of a nearby transmitter and instantly takes your receiver to it
- Transweeper - Instantly locates hidden transmitters that may be used for eavesdropping
- Record - Up to 160 seconds with the digital memory of audio direct from the receiver or voice via the built in microphone
- Descrambler
- Channel scope
- Bug detector
- CTCSS decoder built in
- CTCSS - Search facility
- Frequency counter
- Field strength meter
- S Meter
- FM Stereo receive
- Two level attenuator
- PC programmable
- 24 hour timer

£499

Includes FREE:

- Multi voltage 110V to 240VAC mains charger for easy use anywhere in the world
- 4.8V DC 700mAH NiCad battery pack
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- Flexible low profile antenna

ALINCO products are available from our dealers throughout the UK or direct

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DJ-X3

ULTRA MODERN SCANNING RECEIVER

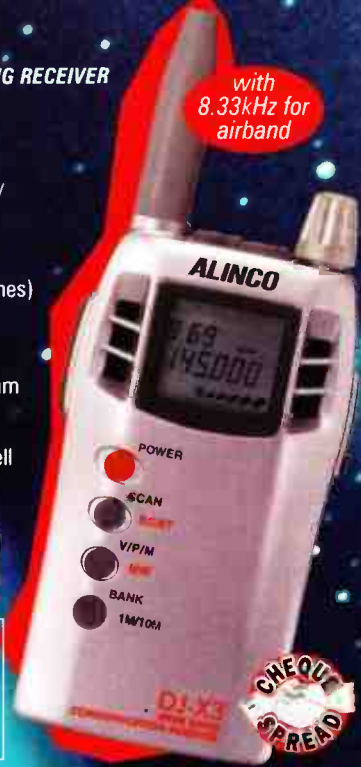
with 8.33kHz for airband

- 100kHz - 1300MHz
- AM/FM/WFM
- 700 memory channels
- Steps: 5/6.5/8.33/10/12.5/ 15/20/25/ 30/50/100kHz
- Auto descrambler
- Bug detector
- Stereo FM (with headphones)
- Attenuator
- SMA Antenna
- Battery saver cct
- Size: 56w x 102h x 23d mm
- Weight: 14.5g (without batteries)
- Supplied c/w. 3 AA dry cell battery case carrying strap

£129.95

Optional extras

- Lithium ion battery pack
- Ni-Mh battery pack
- Drop in mains charger
- Earphone



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The NEW BC 780XLT offers almost continuous band coverage from 25 - 1300 MHz. It's Bearcats most comprehensive "feature packed" model including Trunktracking, a 2 line display, full backlit controls, SmartScanner, PC Control cloning, CTCSS/DCS, record and attenuate.
This model is a "***must have***" for the enthusiasts !

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

£349.00 Bearcat Scanners

UBC 278CLT

NEW BASE SCANNER WITH MW/FM RADIO & ALARM CLOCK

A stylish base Scanner that can sit by the bedside and double as an Alarm clock radio - keep the wife happy!

NEW!

- Freq: 25 to 956 MHz *(with gaps)*
- VHF Radio : 88 to 108 MHZ
- 100 Memories
- 20 Radio Presets
- Full frequency LCD readout
- Fully Programmable
- Channel Lockout
- Priority Channel
- Scan Delay
- Alarm Clock

£159.00 Bearcat Scanners

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SPORTCAT TWIN TURBO HANDHELD

Get inside the action with this NEW smaller and easier to programme Handheld. Jump from car to car at a race meeting, hear the cockpit action at an air show, or use the Sportscat as a traditional scanner

- Triple conversion Receiver
- 25 - 956 MHz *(with gaps)*
- 200 memories
- CTCSS/DCS Tone Search facility
- CTCSS/DCS receive
- Alpha-numeric display
- Turbo search 300 steps /sec
- Turbo Scan 100 ch/sec
- Supplied c/w Antenna, Earphone, Belt Clip, Nicad battery, 240V UK Mains adaptor

NEW!

£179.95 Bearcat Scanners

UBC 9000xlt

- 25 - 1300 MHz *(with gaps)*
- 500 memory channels
- VFO Control
- Selectable Attenuator
- Selectable Delay
- Selectable Mode AM/WFM/NFM
- TURBO SCAN 100 Ch/Sec
- TURBO SEARCH 300 St/Second
- Alpha Numeric Display
- Automatic Store • Frequency Transfer
- Auto Tape Record • Data Skip facility
- Programmable Search

£269.00 Bearcat Scanners

Bearcat Scanners

UBC 60xlt-2

A BRAND NEW LOW COST SCANNER THAT COVERS MARINE, LAND MOBILE AND MORE!

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

NEW UPGRADED MODEL Now with 80 memories for the same price!

£79.95 Bearcat Scanners

UBC 120xlt

- 66 - 512 MHz *(with gaps)*
- AM/FM/WFM
- 100 memory channels
- TURBO SCAN 100 Channel/Second
- TURBO SEARCH 300 St/Second
- Data Skip facility
- 10 Priority Channels
- Programmable Search
- Channel Lockout Key

£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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65th year of publication

The SHORT WAVE Magazine

contents

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Cover subject: **Rockingham Motor Speedway, Northants. A PRO-89 would come in handy here!**

Photos courtesy Kingpin Media.

Broadcast

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Regular Columns

ED's Comments

North Atlantic Problem

Our subscription department have recently uncovered a problem relating to the shipment of the August issue of *SWM*. It seems that many of our readers in Northern America and Iceland have not received their magazines. We are working on discovering the cause of the problem, which we will obviously fix. Our apologies are in order to those of you who are missing the August *SWM*. Everyone who has made contact has been sent a replacement so rest assured you'll be able to catch up soon. One thing that has become obvious to me is that those who have reported the lack of their *SWM* have perhaps been just a little too tolerant of the delay. Please, if you think your subscription copy is late, then contact us so that we can investigate. Thanks.

Radio Clubs

I often receive requests from readers, both old and new, for information as to where they can contact others with interests similar to there own. One such request come from Bob Norman on page 8 of this issue. You'll note my reply consists of a list of radio clubs in the county where Bob lives. It occurs to me that we should be publishing a regular list of all the radio clubs in the UK. Clubs are after all, the life blood of the hobby. Therefore, from next month, *Short Wave Magazine* will be listing details of all the clubs of which we are aware. If you are involved in a local club and believe we may not have up-to-date information about that club, please send me contact details and meeting times. Together we can create an invaluable resource for our specialist community.

73 Kevin

SWM Services

Subscriptions
Subscriptions are available at £36 per annum to UK addresses, £43 in Europe and £48 (Airsaver), £54 (Airmail) overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £80 (UK) £73 (Europe) and £81 (rest of world), £93 (airmail).

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

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

Placing An Order
Orders for back numbers, binders and items from our Book Store should be sent to: **PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone Dorset BH18 8PW**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone **(01202) 659930**. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone **(01202) 659950**.
The E-mail address is **bookstore@pwpublishing.ltd.uk**

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.

Check out the SWM web site
www.pwpublishing.ltd.uk/swm

Join in with the on-line action on the SWM Readers' E-mail Forum - send an E-mail to swm_readers-subscribe@yahoogroups.com to subscribe - don't miss the on-line action!

Share your thoughts

Coming Next Month
in SWM Nov 2002

- *Lawrence Harris with his 'Info In Orbit Special'.*
- *JW reviews an antenna from AOR, the LA-350 Loop.*
- *The Decca Navigator System by Jon Trowsdale*
- *and much more...*

**contents subject to change*

EVOKE-1 - The Future of Radio?

Over the last few years, most DAB receivers have been priced around the £500 mark, putting only but a few off the idea of investing in one. However, **Haydon Communications** have informed the *SWM* Newsdesk that they will shortly be taking delivery of a portable DAB receiver, with a price tag of only £99.95!

EVOKE-1 features a digital display showing the scrolling track titles, artists' names and programme details provided by broadcasters. Being a DAB digital radio, it also provides a wide variety of stations to suit every taste and mood.

The stylish, mains-powered EVOKE-1 is the perfect addition to any home or office, delivering amazing highly detailed, digital quality sound without the hiss, crackle and fade of a.m./f.m. broadcasts. Unlike other systems, this unit works from a telescopic antenna and in most cases will not require any additional antenna.

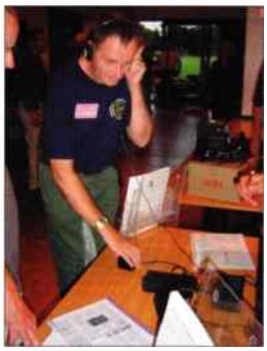
Limited stocks of EVOKE-1 should be with Haydon Communications by the end of October, just in time for Christmas. So, why not transform your radio listening and place an advance order for EVOKE-1 as soon as possible, as initial stocks are expected to be limited. Order now, direct from Haydon Communications, on **(01708) 862524**.

Table Top Sale

Although this year's **Chelmsford Amateur Radio Society**'s table top sale was held during the height of summer, the attendance was an all time record. Waters & Stanton were represented by Mike 'Zippy' Wheaton G4ZPE who came up with the usual abundance of worthwhile goodies which were eagerly snapped up.

Another visitor was Eric Hayes from bhi Ltd. who was showing the new, fully adaptive electronic noise eliminator, which members were keen to test out. Dave Penny G3PEN brought along an engraving machine and the many new amateurs in the club kept him busy all evening making callsign badges.

Dave Penny G3PEN engraving a callsign badge.



Martyn M3VAM tests the NES10-2 noise eliminating speaker.

Club meetings are held on the 1st Tuesday of each month at 1915 in the Marconi Sports & Social Club, Beehive Lane, Chelmsford. The club are also running Foundation evening courses, starting Thursday 24th October and 9th January. Both courses will run for six weeks.

Further information from secretary **David Bradley M0BQC** on **(01245) 602838**, E-mail: **cars@g0mwt.org.uk** or visit **http://www.g0mwt.org.uk/**

Competition Winners

Congratulations to the following July Scanning Scene Extra competition winners who all won the prizes donated by AOR (UK) Ltd., Icom UK Ltd., Kenwood Electronics UK Ltd., Nevada and Yaesu UK Ltd. The seven winners are: John Restall, Staffs; Simon Smith, Leicester; Drew Patton, Belfast; D.A. Hooper, Somerset; Simon Kennedy, Surrey; William Dillon, Ireland and M.C. White of Kent. Well done everyone - prizes are on their way.

Site Up & Running

W.H. Westlake Electronics have now been established for over 30 years and are recognised as one of the leading specialist suppliers of cables and connectors in the UK. Their web site is now up and running, visit **www.whwestlake.co.uk** On the site you will find a copy of the main price list, along with the technical spec of Westlake's popular Westflex 103.

Of special interest to radio amateurs will be the interactive coaxial feeder loss calculator, which will calculate the loss of four popular coaxial cables for 144, 432 and 1296MHz - all you do is enter in the length of cable and the programme will display the losses for all four types.

The web site has actually been designed by Sarah Hilleard, daughter of local amateur Derek Hilleard G4CQM, as work experience for Devon students from Holsworthy Community College in association with The Devon Education Business Partnership.

W.H. Westlake Electronics are based at **West Park, Clawton, Holsworthy, Devon EX22 6QN, Tel: (01409) 253758, FAX: (01409) 253458.**

JOTA Station M5CDS

The **Chelmsford Scout Amateur Radio Fellowship** will be active on most h.f. bands for Jamboree On The Air during the 19th and 20th October using the callsign M5CDS. So far, 18 Chelmsford Scouts have got their Intermediate license with a further 15 hoping to take the Foundation course in September, so there should be no shortage of operators.

Working this station counts towards the Chelmsford Award - full details on **http://www.g0mwt.org.uk/** Scout groups wishing to arrange a sked should E-mail: **jota@chelmsford-scarf.co.uk** Visit **http://www.chelmsford-scarf.co.uk/** for more information.

SCARF members operating M5CDS at last year's JOTA.

W&S At Donington

Waters & Stanton PLC will be manning their usual large stand against the back wall at Donington opposite the main entrance with many new products this year. Bob Heil, boss of Heil Sound in the USA, the world famous microphone manufacturer, will be attending this year - demonstrating his latest range of mics and headsets on the W&S booth and both days he will be presenting his Audio Workshop in the Convention Area.

Waters & Stanton will also have new products from Yaesu, Hustler, Optoelectronics, MFJ and Watson, so be sure to visit their stand and maybe pick up a bargain. Waters & Stanton PLC are based at **Spa House, 22 Main Road, Hockley, Essex SS5 4QS, Tel: (01702) 205835/204965, FAX: (01702) 205843, www.wsplc.com**

Oops

Apologies to Pete Chambers, whose booklet ***Something In The Air*** we mentioned in September's *SWM*. The price of the booklet, inc. P&P, should have read £1.50 - not £1. We apologise for any inconvenience this may have caused to Pete Chambers and readers of *SWM*. You can obtain your copy from **Pete Chambers, 110 Richmond Street, Coventry CV2 4HY, Tel: (0773) 684 S616** or E-mail: **masts@tencton.com**

rallies

October 6: The Great Lumley Amateur Radio And Electronics Society opens at 1030. Billed as the biggest and best rally in the North East, it takes place at the Great Lumley Community Centre, Front Street, Great Lumley, Nr. Chester Le Street, County Durham - just off the A1(M). There will be free parking plus easy access with good, inexpensive food and drink. Other attractions will include: a flying display by Chester Le Street model aircraft club, radio, hobbies, electronics, computer, satellite, component stalls and a Bring & Buy. Admission £1, free of charge to under 14s accompanied by an adult. Contact **Nancy Bone** on **0191-477 0036 (home)** or **(07990) 760920 (mobile)** or E-mail: **nancybone2001@yahoo.co.uk**

October 20: The Blackwood & DARC are holding their rally at the Newport Centre, one mile from J25A M4. Features include radio traders, Bring & Buy, model boat traders, free car park, food, bar, novice talk, DXpedition video, raffle and a talk-in on S22. Admission is £1.50. Doors open 1030/1045. Contact **George Kallis** on **(01495) 724942** or **Dave Lewis** on **(01495) 228516**.

November 2/3: The Sixteenth North Wales Radio & Electronics Show will be held at the North Wales Conference Centre, Llandudno. The show opens at 1000 both days and the entrance fee is £2 for adults, under 14s go free when accompanied an adult. There will be a club room and an extensive Bring & Buy. More information about the show from **M. Mee GW7NFY** on **(01745) 591704** (combined telephone and FAX number).

BARTG News

The last few months have been busy ones for BARTG. There has been a change of staff in two major posts (membership secretary and magazine editor) and there's also been a major change of format and frequency to *Datacom*, BARTG's magazine. Membership of BARTG is open to anyone with an interest in datacoms within amateur radio, whether they are a listener, novice or licensed amateur.

Following a short break away from the post, BARTG are pleased to welcome back **Bill GM0DXB** as **Membership Secretary**. Bill is the person to contact for anything relating to membership of BARTG. Bill's contact details are: Bill GM0DXB, **c/o 1 Nobel Place, Roslin, Midlothian EH25 9NN, E-mail: members@bartg.demon.co.uk**

With regards to *Datacom* - this has changed quite dramatically. Until recently, Datacom was an A5 format magazine, published every quarter. It has now become A4 format, published every month, in order to carry more up-to-date information about amateur radio datacoms operating. BARTG hopes that its members will understand and appreciate the reason for this change and that Datacom will continue to be a useful reference and guide to amateur radio datacoms.

Welcome back **Arthur G1XKZ** as **Editor** of *Datacom*. Arthur aims to let *Datacom* cover many aspects of datacoms within amateur radio and welcomes articles from any BARTG member. He also hopes to run a Q&A page. Contact Arthur by post at **9 Linden Road, Oak Park, Cullompton, Devon EX15 1TE, E-mail: arthur.bard@btinternet.com**

Publishing *Datacom* more frequently comes at a cost and at the recent bi-annual general meeting, it was decided to increase subscriptions. Contact BARTG for more information on the above, plus details on their popular new awards scheme. Visit **www.bartg.demon.co.uk**

Free Calls From DECT 'Phones

NTL have recently announced the launch of a stunning new range of home telephones featuring the latest DECT (Digitally Enhanced Cordless Telephones) Technology. This new range offers the very latest in style, sophistication and features and, with DECT technology, you have the freedom to roam and talk up to 50m indoors and 300m outdoors, without the restriction of telephone cables. Yet another great advantage of DECT is the ability to add additional handsets for use around the home without the need to install costly extra telephone sockets.

All these new NTL 'phones are highly featured to give the very best in terms of performance, convenience and ease of use. Some models can even be personalised to display the room names on the handset l.c.d., i.e. lounge, study, kitchen, bedroom, etc., whilst with others there's a useful call blocking feature to prevent unwanted callers ringing.

You are also able to choose from a variety of ringer melodies and with the NTL D6000 'phone you can even change the fascia to suit your mood. With the new VS2000 and the D5101 models, you have a digital answering machine incorporated in to the base unit, which gives up to 12 minutes recording time.

Probably the smallest and lightest DECT 'phone on the market is the uniquely styled D8000. With the looks and features of a mobile 'phone, including vibrate alert, it comes with free headphones complete with their own dial facility for hands-free talking.

Finally, if making unlimited free calls within a 3km radius to friends and family with no telephone line rental or monthly bills sounds too good to be true, then think again. With the new NTL Walkie Talkies that's exactly what you can do. Once you've bought the handsets, there's no other cost involved! There's the choice of a twin pack or a quad pack - both of which come with rechargeable batteries. Headphones are also provided to enable hands-free talking.

All of these new NTL DECT 'phones are available now from major high street outlets and mail order catalogues.

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

Making a visit to my local car boot sale, I spied a long cardboard box. From a glance I thought it was a rotary clothes line, but after looking closer, I discovered it was a Jaybeam Antenna, type 7035, freq: 76.86, 50Ω. Being interested in communication material, I promptly asked the vendor how much he wanted for it. The reply was £3 and thinking I had a bargain, I paid for it.

Looking closer, I found it had never been assembled. When I arrived home I took a look through past editions of *SWM*, but couldn't find anything about it, so I telephoned Lowe's to find the firm had ceased manufacturing in the late eighties.

So, being a reader of *SWM*, I wondered if you could ask your readers if they have any information on same as there was no instructions with it. I've assembled most of it, but am lost on putting the 'lower bar' on the main part.

R.C. Fleet
Cambs

Anyone have any info re: this antenna? ***- Ed.***

Dear Sir

Five Megs

I am delighted that MOD have released five spot frequencies in the 5MHz region. These are ideal for inter-UK daylight comms, as anyone in the Royal Signals will tell you. However, I believe the RSGB and/or the MOD have misunderstood the nature of an Army spot frequency in requiring amateurs to tune down by 1.5kHz.

In the Army, the allocated frequency is what the dial on the frequency synthesiser says. On all NATO Army h.f. transceivers, it is in fact 2kHz above the nominal carrier. The centre of transmission of course varies with the modulation and the width of the s.s.b. filter. Most s.s.b. filters fitted to military equipment have a nominal 3dB bandwidth of about 2.8kHz. Technically, the centre of transmission would be around 1.7kHz above the nominal carrier. To simplify matters (and doing complicated sums under battle conditions is not a job description for many soldiers), the dial is designed to read 2kHz above the suppressed carrier. Thus to catch BBC WS news on 9.410MHz (as one does when life becomes dull on exercises) the decade switches off the spare PRC320 have to be set to 9.412MHz.

I understand this frequency arrangement is called FINNABEL in contrast to CCIR which is referenced to the suppressed carrier. I therefore believe that amateurs ought to set their transceiver 2kHz low on u.s.b. That would make life easier for everyone.

Needless to say, things are different in the other Services. In the RAF the h.f. channel frequency is the carrier because their kit has to be compatible with civilian standards. I am not sure what the position is with the Royal Navy - probably similar to the RAF.

Michael O'Beirne G8MOB
Surrey

An interesting point you raise Michael, I wonder how many amateur stations will be asked to shift frequency by the primary users of the five channels? ***- Ed.***

Dear Sir

It was with disappointment I got my August copy of *SWM* in its new transparent package. My reason for this is that I live in a small village with a very nosy and gossipy postmaster, who is almost next door to my local police (Garda) station. This makes me uneasy, especially with 'Scanning Scene' printed on the front.

As you know, and often stated, discretion is important in our hobby so I dread a visit from my local sergeant and try to explain to him that all the antennas and coaxial runs are just for listening to broadcast and amateurs. I really enjoy *SWM* and hope to renew my subscription for the third year, otherwise I will have to drive ten miles in traffic for the nearest stockist.

I am sure I am not the only one in this predicament, so I hope others write and you can sort something out. To you and all the staff at *SWM*, best wishes and keep up the good work. P.S. I have also written to the subscription department about the problem. I would appreciate a reply either by mail, 'phone or via the 'QSL' column.

Ray Hardiman
Co. Galway

Ray, please accept my apologies for the use of a clear wrapper on your magazine. We have always specified the use of a coloured bag. It seems there was a supply problem with the correct material, and rather than delay shipment, our subscription fulfilment agency used what they had to hand without consultation. The problem has been addressed. I hope that the error hasn't caused you a problem. ***- Ed.***

topqsl

Dear Sir

I have recently started taking your magazine as I am a beginner to short wave radio listening. I wonder if you would be able to help me by publishing a letter in your magazine, or might you be able to put me in touch with someone experienced in short wave radio listening. I have lots of questions to ask, and can't seem to find anyone local who is a listener, rather than a broadcasting amateur.

My receiver is a Kenwood R-5000, which also has a board for u.h.f. and v.h.f. I like to listen to aircraft and also distant stations. I live in Chard, in Somerset, and would like to talk to anyone reasonably local who is experienced and can give me good listening advice. My address is: **25 Bampton Avenue, Chard, Somerset TA20 1DS, Tel: (01460) 62599**. Many thanks for any help you can give me.

Bob Norman
Somerset

Bob, welcome both to the hobby and SWM. A quick look through my list of Somerset Radio Clubs revealed the following:

Taunton & DARS. (G3XZW): *Meet at 1930 1st and 3rd Fridays at the Memorial Hall, Taunton. More details via David Rosewarn M0CIF.*

West Somerset ARC: *Meet 1st Tuesday of the month at the West Somerset Community College, Minehead. Details from Alan Elliott G7RSU, Tel: (01643) 707207.*

Wincanton ARC. (G0WRA): *Meet 1930 1st and 3rd Monday of the month at King Arthur's Community School, West Hill, Wincanton. Contact G. Fingerhut G0ENW for more details. Tel: (01963) 370506.*

Yeovil & DARC. (G3CMH): *Meet 1930 Thursday at the British Red Cross HQ, 72 Grove Avenue, Yeovil, Somerset. Contact George Davis G3ICO on (01935) 425669. Hopefully that should give you a few contacts of like minded interest. I'm sure that there will be some other readers in your area who will get in touch. Enjoy the path of discovery - happy listening.* ***- Ed.***

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

Bandscan Europe

BROADCAST

In July's 'Bandscan Europe' we were lamenting the imminent demise of ITV digital. Things moved pretty quickly during the following weeks and a consortium, headed up by the BBC, was successful in bidding for the digital terrestrial licence.

Autumn's launch will see 24 free-to-air channels including all the BBC fare, a selection from BSkyB and a smattering of others including CNN and QVC (hurrah!). All current OnDigital and iTVDigital set-top-boxes will be able to receive the service, and there are other options already available or on the horizon.

The Pace digital TV converter is a firm favourite and can be had for as little as £70 if you shop around. If you're able to contain yourself until Spring next year, an outfit called Tvcompass promise a £29 solution. The subsided hardware is offered in the hope that consumers will buy products and services further down the line. But we don't want to do that?!

The Independent Television Commission (ITC), meanwhile, is discussing the possibility of altering the transmission standard of digital terrestrial television. They recognise the advantages for viewers in applying the so-called 16QAM transmission mode and anticipate improved reception which in turn would lead to a strengthening of confidence among consumers and industry. The down side is that fewer channels can be accommodated within each multiplex.

BBC 1Xtra launched August 16th with a mix of black music from both sides of the Atlantic and topped off with its own dedicated news and discussion service. August 29th saw the digital launch of Radio nan Gaidheal, the Corporation's Gaelic service for Scotland, hitherto only on f.m. Both services are carried via Sky satellite whilst 1Xtra is also available on DAB.

So it may well be that you'll soon be considering buying a digital radio. Well, there's been a couple of developments in that area. Number one is the availability of the first widely available, sub-£100 DAB radio. The Pure Evoke-1 from VideoLogic was released on an unsuspecting public at the end of July and initial stocks sold out within hours. It's a portable, but remains tethered by its mains lead as it can't be powered from batteries. The (mono) sound is via a 75mm speaker that surely lays to waste any improvements in audio quality that DAB has to offer.

Reviews so far have been mixed, with David Johnson of *The Sunday Times* claiming that "after enduring music from both Kiss FM and Classic FM hissing like snakepits, you want to hurl this box through the window. The Evoke-1 has an awkward display, fiddly tuning and an antenna with the will of a supermarket trolley". Others disagree. Personally, I'll be waiting for a battery-powered portable that I can take out into the garden.

More promising may be the new hi-fi DAB receiver from Acoustic Solutions, which is selling at Argos for just £129.99. Details are sketchy, but you may want to check it out.

Analogue To Digital

Over in Russia, the head of the state-owned TV and radio transmission network, Gennadiy Sklyar, has advised the government stump up two million pounds to convert from analogue to digital broadcasting over the next five years. This brings forward the previously set target date of 2015 to 2007.

Up to 80% of the network, totalling some 15,000 TV, and over 3,000 radio transmitters, is thought to be in a dilapidated state. Rather than replace hardware with newer analogue equipment only to supersede it later with digital-ready transmitters, he thinks it's prudent to go straight for the digital option. At a recent press conference, Sklyar expressed his fear that if Europe switches to digital and Russia remains in analogue, then his country would "become an enclave unable to develop".

Radio Finland is reportedly winding up its foreign service broadcasts on short wave in English, German and French when the current schedule expires in October. The cutbacks are part of a development plan, approved by the broadcaster's administrative council in June. Another one bites the dust.

Live Online

Back home, and Reading College Radio's, Blast 1386, mentioned last time, is now streaming live online. The station broadcasts 0600 to 1730, and after closedown, relays *Potion*, an R&B station, downlinked from the WorldSpace satellite. If you'd like to sample their wares, and find out more about some of the stories I've included this month, please check out a page of links I've set up for you at **www.pwpublishing.ltd.uk/swm/bandscan/**

Talking of WorldSpace, the new kid on the block is our old friend, Radio Caroline. The lady took up residence on the craft on July 22nd and can now be heard throughout Europe and Africa. WorldSpace will, at some stage, encrypt the signal and charge a subscription for the service, but for now, anyone with a suitable receiver can enjoy the voice of Loving Awareness. See last month's issue for more.

Station News

Two long wave stories - neither encouraging. The first is the demise of teamTalk 252 which took over the 252kHz slot from ailing Atlantic 252 just five months before closing on July 31st.

Station teamTalk were recently bought out by bookmaker UKBetting plc who could not see a future for the radio venture. Irish state-broadcaster RTE now have rights to the frequency but, at the time of writing, no firm plans have been made for the outlet. Chris Carey, who used to run Radio Nova from the Emerald Isle during the early eighties, is said to be hopeful pulling off some deal. It's doubtful that the transmitter will remain silent for too long so in the meantime, you can dial up 252kHz on your radio - even your car radio - and check out Radio Algiers.

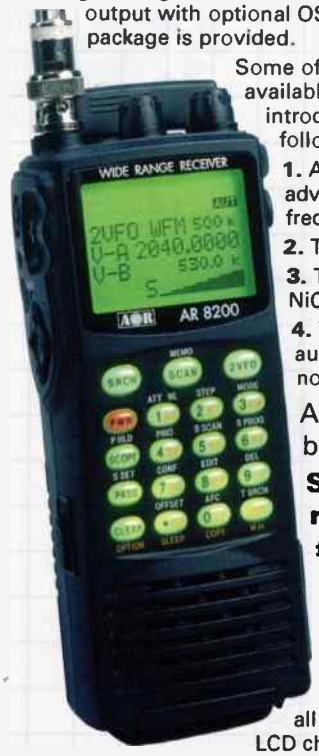
Meanwhile, the Isle of Man's long wave saga rumbles on (and on). MusicMann 279's plans have suffered another blow, this time by a petition, instigated by the local parish council, questioning the Government's decision to allow the building of an offshore transmission platform. The hearing will only take a few days, but has been adjourned to January 2003, before which work on the platform is unable to commence. Despite his disappointment, Paul Rusling, the project's founder, said that he hoped that a more rapid solution can be found.

New Stations

Three new access radio stations have just taken to the air. Forest of Dean Community Radio, on 1521 and 1503kHz; Sound Radio (east London) on 1503kHz and New Style Radio, on 98.7MHz out of Winson Green, Birmingham, all launched during July/August.

AR8200 Mk3 - EVOLUTION PRODUCES THE VERY BEST - NATURALLY

On release of the AR8200, it was apparent that a new bench mark had been set encompassing features and performance. Evolution led to the AR8200 Series-2 and now to the **NEW AR8200 Mk3**. The AR8200 has continuously providing exactly what customers have been yearning for... excellent full coverage all mode receive, computer control, reaction tune, tape record facilities, optional cards (CTCSS, external memory, on-chip recording, analogue voice inversion and tone eliminator). Add to this free PC control software, discriminator output with optional OS8200 AUX connecting lead, data clone and you will see what a COMPLETE package is provided.



Some of the components used for the RF signal path have been made obsolete (still available for service but not for volume production) so the opportunity was taken to introduce some changes as recently applied to the AR8600-2. The changes are in the following areas:

1. As the RF components have been changed, there is a positive performance advantage with sensitivity and strong signal handling increasing on some frequencies.
2. The frequency coverage has been extended to 3GHz.
3. The charging circuit has been revised for use with NiHi batteries (in place of NiCads) and the unit will be supplied with 1500mAhr NiHi cells.
4. The LCD illumination may be switched to AUTO so that the illumination will automatically switch-on (for just a few seconds) when the squelch opens, ideal for noting the active frequencies at night time.

As this advertisement is being placed, first delivery time is yet to be confirmed but is expected around the end of September 2002.

Still looking for the small print, there isn't any, price remains unchanged from that of the earlier model at £439.00 inc VAT.

Summary: A Temperature Compensated Crystal Oscillator (**TCXO**) forms the heart of the AR8200 Mk3 resulting in **high stability** with **minimal internal spurii**. RF preselection in the mid-VHF bands ensures **best sensitivity and strong signal handling** with a wide coverage up to 3GHz (all mode receive without gaps). **Flexible tuning steps including 8.33kHz,** programmable in all modes down to 50Hz. LCD illumination is nice and bright with sharp display of LCD characters and adjustable contrast, the beep is also configurable. **Flexible power,** a set of 4 x 1500mAhr AA rechargeable high capacity NiHi are provided, a DC lead with cigar plug is also provided along with AC charger which doubles up as a power supply. The receiver may also be powered from standard dry batteries such as alkaline. **Computer control,** nearly all functions can be controlled via computer (optional 8200PC interface required), free PC control software is available from the AOR web site.

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.

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. **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.

AOR (UK) LTD 4E East Mill, Bridgefoot, Belper, Derbyshire, DE56 2UA England
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■ BRIAN ODDY G3FEX, THREE CORNERS, MERRYFIELD WAY, STORRINGTON, WEST SUSSEX RH20 4NS

LM&S

When referring to the data herein please bear in mind that some s.w.broadcasters may introduce new transmission schedules on October 27 to allow for seasonal changes in propagation. After that date, part of the information herein may be inapplicable. If you observe any schedule changes while searching the bands, please send the details to me at the above address for inclusion in 'LM&S'.

Perhaps I should also mention that British Summer Time (BST) ends at midnight on Saturday October 26. Clocks in the UK must then be put back one hour so that Greenwich Mean Time (GMT) is displayed. For most purposes, GMT is the same as Universal Time Co-ordinated (UTC), the time system referred to by the international broadcasters in their s.w. transmission schedules and quoted in this column. If you have a clock set to UTC beside your receiver, **do not** alter it when the changeover from BST to GMT takes place. All times quoted in this column - and the rest of the magazine - are UTC unless stated.

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 July.

Enhanced propagation conditions were observed during some nights in July by listeners who searched the band after dark. On the 3rd **Simon Hockenhull** (E.Bristol) picked up a broadcast from Rikisutvarpid (RUV) in Reyjkavik via their outlet at Gufuskalar, W.Iceland (300kW) on **189kHz**, which rated SINPO 23443 at 0128; also via Eidar, E.Iceland (100kW) on **207kHz**, noted as 23442 at 0130. On the 14th he logged Nador, Morocco (2000kW) on **171** as 25442 at 2328. On the 27th Taldom, Russia on **261** was 25442 at 2355 and Tipaza, Algeria on **252** was 43543 at 2359. The 28th also proved to be favourable, with Sasnovy, Belarus on **279** peaking 24443 at 2025.

The Radiotelevisione Italiana (RAI) 10kW outlet at Caltanissetta, Italy on **189kHz** was heard with National Anthem and switch-off at 2300 by **Jim Edwards** in Wigan. Sasnovy on **279** also closed down at 2300 and a weak signal was then heard on **279** which sounded Russian. The RUV Gufuskalar, W.Iceland outlet on **189** was heard at 2330. Later, he logged Gavar, Armenia on **234** at 0030; Chita, Siberia on **183** at 0305; also Nador, Morocco on **171** at 0350.

A very welcome report came from **David Stevenson** (Swansea), who has returned to this hobby after a long gap. Most of the entries were received after dark - see chart. At 2350 on the 23rd he heard a woman's voice under Beidweiler, Luxembourg on **234**, with a strong Russian or Slavic accent. It lasted for about six minutes and then some classical music began. By 2358 it had faded out completely.

Over in N.Ireland **Eddie McKeown** (Newry, Co.Down) found the conditions favourable on the 26th when he logged Topolna on **270** as 25232 at 2116 and Sasnovy on **279** as 24222 at 2117; also the 30th when a marked improvement in the reception of RUV via Gufuskalar on **189** and via Eidar on **207** was observed - at 0110 they rated 34233 and 21321 respectively.

In his latest report, **Bernard Curtis** (Stalbridge) mentioned that the broadcasts from Team Talk on **252kHz** ceased on July 31. Apparently the running costs of the high power transmitter at Clarkestown, Eire were proving too much for the company - perhaps there was not enough advertising revenue. No doubt many listeners will miss their broadcasts, which covered a wide area. Since the closure, Bernard has been able to receive the co-channel transmission from Tipaza, Algeria, during daylight. Along in Storrington **Fred Pallant** was surprised to hear Tipaza at 1445.

An interesting report on l.w./m.w. reception at a holiday location on the Isle of Man came from **Michael Wasley** (Scunthorpe). He stayed at The Braid, IoM, during the first two weeks of July and devoted some hours to searching the bands with his Grundig Yacht Boy 400 portable. His logs for this band were compiled during dusk on the 2nd (2230-2250) and during daylight on the 3rd (2117-2123) - see chart.

Listeners:-
(A) Jim Edwards, Wigan
(B) Simon Hockenhull, E.Bristol.
(C) Sheila Hughes, Morden.
(D) Eddie McKeown, Newry.
(E) Fred Pallant, Storrington.
(F) David Stevenson, Swansea.
(G) Michael Wasley, while at The Braaid, IoM
(H) Michael Wasley, while on Ferry, Irish Sea.
(I) Fred Wilmshurst, Northampton.

Long Wave Chart

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

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

Medium Wave Reports

After dark, some listeners enjoyed searching for the sky waves from m.w. stations in the Middle East, N.Africa, Europe and Scandinavia and they compiled some interesting logs - see chart.

An extensive m.w. log was compiled during July by **David Stevenson** - see chart. On average he spent three hours a day, mostly after dark, searching this band with his Steepletone receiver which does not have a digital frequency display, so extra care was needed when logging the stations. On some channels he detected weak transmissions under those listed which he was unable to identify.

A few of the N.African m.w. outlets were logged by Simon Hockenhull during the evening of the 11th - the most distant was Batra, Egypt on **819**, which rated 23342 at 2131. A broadcast in Arabic from R.Algiers on **891** was heard at 0415 by **Sheila Hughes** in Morden. The transmission rated 33333 and Sheila was surprised to hear it because it was not dark at that time.

Between 0625 and 0730 on the 5th Michael Wasley logged a number of stations while at The Braid, IoM - see chart. He says "I was rather disappointed by reception. I had thought with long sea paths things might be interesting, but apparently not. We were in a traditional Manx cottage with very thick walls and few windows and had higher (but not really high) ground on three sides which I suppose might have been an explanation".

While on his way home from the IoM on July 14, Michael checked reception on the deck of the ferry. Although there was very little electrical interference, the noise from the exhausts made listening difficult even with earphones. He says "This was rather frustrating as reception from eastern Europe seemed quite good, but it was hard to get a positive ident in some cases". Nevertheless, between 1915 and 2030 he compiled an interesting log - see chart.

Some listeners searched the band during daylight for the ground waves from distant UK local radio stations. A list of forty-five stations was compiled by **Fred Wilmshurst**, some of which are a long way from his location in Northampton - see chart.

Short Wave Reports

The Ionosphere was disturbed by the effects of solar activity during the first half of July and propagation in the higher frequency s.w. bands was impaired. The daily broadcasts in the **25MHz (11m)** band from Radio France International (RFI) on **25.820** (Fr, Eng to E/C.Africa 0830-1300) continued during July, but there were no reports to indicate how well they were received in that area.

Listeners in the UK who monitored the RFI transmissions during July found them to be weak, almost buried in the noise or completely inaudible. The fact that they are beamed in the opposite direction and arrive here via back scatter and other modes did not help! At best they were rated 45434 at 0920 in Stalbridge; 24222 at 1010 by **Thomas Williams** in Truro; 14221 at 1042 by **Rhoderick Illman** in Oxted; 45232 at 1209 in Newry; 15521 at 1210 in E.Bristol; 24343 at 1210 in Northampton.

Reception over long distances in the **21MHz (13m)** band was seriously affected by the solar activity. Listeners in the UK to R.Australia's broadcasts via Shepparton on **21.725** (Eng to Pacific areas 0200-0900) and **21.820** (Eng to Asia 0900-1400) found them to be inaudible. However, the conditions improved towards the end of the month and **21.725** was rated 34223 at 0658 by **Vera Brindley** in Woodhall Spa and **21.820** was noted as 33333 at 0900 by **David Hall** in Morpeth, 35233 at 1018 in Newry & 22222 at 1224 in Truro.

Also mentioned in the reports were Swiss R.Int via Sottens **21.770** (Eng, It, Ger, Fr to Near East, Africa 0830-1030), rated

Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer
2.325	ABC Tennant Creek	Australia	2041	I
3.230	SABC Meyerton	S.Africa	2037	I
3.240	TWR Manzini	Swaziland	2140	B
3.255	BBC via Meyerton	S.Africa	2037	B,H,I
3.270	Namibian BC,Windhoek	Namibia	2215	B,H,I
3.290	Namibian BC,Windhoek	Namibia	0224	H
3.320	SABC (RSG) Meyerton	S.Africa	2118	B,H,I
3.365	GBC R-2	Ghana	2145	B,H,I
3.915	BBC via Kranji	Singapore	2113	B,F,H
3.955	R.Korea via Skelton	England	2100	A,C,F,H,J
3.955	R.Taipei via Skelton	England	1800	C,G,H,J,K
3.975	R.Budapest	Hungary	2100	C,F,G,H
3.985	China R.Int via SRI	Switzerland	2133	B,H
3.995	DW via Julich?	Germany	2234	G,H
4.005	Vatican R.	Italy	2130	G,H
4.750	Hulun Buir-Mo	China	2335	B
4.760	ELWA Monrovia	Liberia	2040	B,H
4.765	R.Rural, Santarem	Brazil	0115	B,H
4.770	FRCN Kaduna	Nigeria	2105	B,H,I
4.783	RTM Bamako	Mali	2100	B
4.790	AIR Itanagar	India	0105	B
4.790	Azad Kashmir R.	Pakistan	0115	B,H
4.800	CPBS 2 Beijing	China	2055	B,G,H
4.800	AIR Hyderabad	India	0110	B
4.805	R.Nac.Amazonas	Brazil	0120	B
4.820	R.Botswana, Gaberone	Botswana	2030	B,H
4.820	Xizang, Lhasa	China	2100	B,H
4.820	La Voz Evangelica	Honduras	0410	B
4.830	R.Tachira	Venezuela	0220	E
4.835	RTM Bamako	Mali	2100	B,D,G,H,I
4.840	AIR Bombay	India	0115	B
4.845	ORTM Nouakchott	Mauritania	2033	B,D,H,I
4.860	AIR Delhi	India	1908	B,I
4.875	R.Roraima, Boa Vista	Brazil	0225	E
4.885	R.Clube do Para	Brazil	2226	B,E,G,H
4.885	KBC East Sce Nairobi	Kenya	1915	I
4.890	RFI Paris	via Gabon	0359	B,H
4.905	CPBS 1, Beijing	China	2350	B
4.905	R. La Oroya	Peru	0340	B
4.910	AIR Jaipur	India	0120	B
4.915	R.Anhanguera	Brazil	0010	B,H
4.915	R.Difusora, Macapa	Brazil	0232	E
4.915	GBC-1, Accra	Ghana	2026	B,H,I
4.915	KBC Cent Sce Nairobi	Kenya	1903	I
4.920	R.Quito, Quito	Ecuador	0025	B,H
4.920	AIR Chennai	India	0105	B
4.925	R.S.Miguel,Riberalta	Bolivia	0215	B
4.935	KBC Gen Sce Nairobi	Kenya	1903	I
4.945	R.Illimani, La Paz	Bolivia	0235	E
4.950	VOA via Sao Tome	Sao Tome	2044	B,H,I
4.960	VOA via Sao Tome	Sao Tome	0430	E
4.965	Christian Voice	Zambia	2105	B,H,I
4.975	R.Uganda, Kampala	Uganda	2045	B,H,I
4.980	Ecos del Torbes	Venezuela	0027	B,H
4.985	R.Brazil Central	Brazil	0245	B,D,E
5.009	R.TV Malagasy	Madagascar	0306	B,H
5.010	R.Misones Int.	Honduras	0210	B
5.010	AIR Thiru'puram	India	0125	B,H
5.025	R.Parakou	Benin	1905	D,I
5.025	R.Rebelde, Bauta	Cuba	0300	B,E,H
5.025	R.Uganda, Kampala	Uganda	2045	B,H
5.030	AWR Latin America	Costa Rica	0305	B
5.030	RTM Kuching	Sarawak	2050	B
5.033	R.Bangui	C.Africa	2030	I
5.035	R.Aparecida	Brazil	0130	B
5.050	R.Tanzania	Tanzania	2030	B,E,H,I

DXers:-
(A) Bernard Curtis, Stalbridge.
(B) Jim Edwards, Wigan.
(C) Stan Evans, Herstmonceux.
(D) Bill Griffith, W.London.
(E) David Hall, Morpeth.
(F) Simon Hockenhull, E.Bristol.
(G) Sheila Hughes, Morden.
(H) Eddie McKeown, Newry.
(I) Fred Pallant, Storrington.
(J) Clare Pinder, Appleby.
(K) Peter Pollard, Rugby.

43433 at 0845 by **Stan Evans** in Herstmonceux; DW via Kigali, Rwanda **21.560** (Eng to Africa 0900-0945) 34222 at 0902 in Newry; R.Pakistan, Islamabad **21.465** (Ur, Eng to Eur 0700?-1010) 22222 at 0927 in Truro; R.Finland via Pori **21.800** (Fin to SE.Asia 1000?-1200?) 45555 at 1100 by **Peter Pollard** in Rugby; VOIRI Tehran **21.470** (Eng to Asia 1100-1228) 22322 at 1115 in E.Bristol; R.France Int (RFI) via Montsinery, Fr.Guiana **21.645** (Fr to America 1100?-1200) 24232 at 1115 in Oxted; also RFI via Allouis **21.620** (Fr to Africa 0900-1300) 24333 at 1119 in Oxted; R.Prague, Czech. Rep **21.735** (Eng to Asia 1300-1330) 55555 at 1300 by **Gerald Guest** in Dudley; UAE R.Dubai **21.595** (Eng to Eur, Africa 1330-1345) 43333 at 1330 in Morden; BSKSA Riyadh, Saudi Arabia **21.705** (Ar to W.Eur 0600-1500) 55445 at 1350 in Stalbridge; BBC via Cyprus **21.660** (Eng to S.Africa 1400-1700) 55445 at 1400 in Stalbridge; R.Nederlands via Bonaire, Ned.Antilles **21.590** (Eng to Africa 1830-2025) 25444 at 1942 in Northampton.

Subject to confirmation the occupants of the **18MHz (15m)** band have been joined by R.Afghanistan via Kvitsoy, Norway? on **18.940** (Pas, Dari to ? 1330-1630), logged as 44444 at 1400 in Morden. Also active are R.Denmark via Sveio, Norway **18.950** (Da to Australia, N.America 1230-1255), rated 55334 at 1252 in E.Bristol; R.Sweden **18.960** (Eng to N.America 1230-1300, 1330-1400, 1430-1500) 44444 at 1232 in Truro & 54544 at 1345 in Herstmonceux; Christian Science Herald via WSHB Cypress Creek **18.910** (Fr, Eng to E/S.Africa 1600-2200?) 34333 at 1740 in Stalbridge; Family R, WYFR via Okeechobee FL, USA **18.980** (Eng to Eur, Africa 1600-2200) 34233 at 1817 in Newry & 34444 at 1932 in Northampton; Family R, WYFR via Okeechobee FL, USA **18.930** (Eng, Sp to Eur 1900-2200?) 34232 at 1940 in Newry.

The effects of the solar activity were also very evident in the **17MHz (16m)** band. R.Australia's broadcasts via Shepparton on **17.750** (Eng to Asia 0000-0500, 0600-1100) became inaudible in the UK but when the conditions improved they rated 22222 at 0724 in Newry & 44333 at 0900 in Morden. Their transmission from Darwin on **17.775** (Eng to Asia, Eur 0000-0130) was 34533 at 0005 in E.Bristol.

Also noted by listeners in the UK were Vatican R, Italy **17.515** (Various incl Eng to Eur 0930-1050, Sun), rated 33333 at 0935 in Truro; Voice of Turkey **17.830** (Eng to Eur, Asia, Australia 1230-1300) 55545 at 1235 in Stalbridge; WBCQ Montecello ME, USA **17.495** (Eng to N.America 1300?-0200?) 24322 at 1320 in Northampton; Voice of Russia **17.645** (Eng [News]) 54445 at 1410 in Stalbridge; Voice of America (VOA) via Morocco **17.895** (Eng to Africa 1600?-1900) 44444 at 1644 in Woodhall Spa; R.France Int via Issoudun? **17.605** (Eng to Africa? 1600-1730) 23222 at 1710 in Rugby; Israel R, Jerusalem **17.545** (Eng to Eur, N.America 1900-1930) 54444 at 1900 by **Clare Pinder** in Appleby; WEWN Birmingham, USA **17.595** (Eng to N.America, Eur?) 34343 at 1932 in Northampton; R.Nederlands via Bonaire, Ned.Antilles **17.605** (Eng to C/W.Africa 1830-2025) 24222 at 1948 in Newry; HCJB Quito, Ecuador **17.660** (Eng to Eur 2000-2200 [DX prog 2000 Sat]) 44433 at 2040 in Herstmonceux; World Harvest R. (WHRI) via Maine, USA **17.650** (Eng to Eur, M.East, Africa 1600-2300?) 44444 at 2130 in Morpeth.

Propagation in the **15MHz (19m)** band was also disturbed by the solar activity. When the conditions improved listeners in the UK picked up R.Australia's broadcasts on three frequencies from Shepparton: **15.415** (Eng to E/SE.Asia 0600-0900), rated 34333 at 0515 in Morpeth & 44434 at 0720 in Stalbridge; **15.515** (Eng to Pacific, N.America 0200-0700) 24212 at 0550 in Newry; **15.240** (Eng to Asia 0000-0800 [via Darwin 0800-1200]) 44433 at 0745 in Herstmonceux. Much later, R.New Zealand's 100kW transmission to Pacific areas on **15.160** (Eng 1851-2215) was rated 33222 at 1930 in Appleby & 24343 at 2105 in Northampton.

Also mentioned in the reports were the Voice of Nigeria via Ikorodu **15.120** (Eng), noted as 24322 at 0605 in Rugby & 33333 at 0942 in Truro; BBC via Skelton, UK **15.485** (Eng to W/SW.Eur 0600-1700?) 54444 at 0645 in Morden; VOIRI Tehran, Iran **15.084** (It to Eur?) 34332 at 0704 in Oxted; R.Kuwait via Sulabyiah **15.110** (Eng to Asia, Australia 0700-0800) 23222 at 0706 in Woodhall Spa; Voice of Greece, Athens **15.630** (Gr, Eng to Eur? 0900-1000) 44444 at 0932 in Newry; R.Ext.Espana via Noblejas, Spain **15.585** (Sp to Eur 0800?-1700?) 45354 at 1000 in Rugby.

Later, the BBC via Rampisham, UK **15.225** (Russ to Russia) was 55555 at 1705 in Stalbridge; WWCR Nashville, USA **15.825** (Eng to N.America, Eur 1000?-2200) 44334 at 1735 in Stalbridge; RCI via Sackville **15.325** (Eng, Fr to Eur, M.East, Africa 2000-2200) 34444 at 2010 in Northampton & 45544 at 2107 in E.Bristol; BBC via Ascension Is **15.400** (Eng to

Listeners:-
(A) Simon Hockenhull, E.Bristol.
(B) Sheila Hughes, Morden.
(C) Rhoderick Illman, Dxted.
(D) Bob Norman, Chard.
(E) David Stevenson, Swansea.
(F) Michael Wasley, while at The Braaid, IoM.
(G) Michael Wasley, while on Ferry, Irish Sea.
(H) Fred Wilmshurst, Northampton.

Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.80	A,E*,H
603	Cap.Gld,Litt'brne	I	0.10	E*,H
630	R.Bedfordshire(3CR)	B	0.20	A,E,H
630	R.Cornwall	B	2.00	A*,E,F
657	R.Clwyd	B	2.00	E,F,G,H
657	R.Cornwall	B	0.50	A*,E
666	Cl.Gold 666, Exeter	I	0.34	A,D,E,G,H
666	R.York	B	0.80	E*
729	BBC Essex	B	0.20	B,H
738	Hereford/Worcester	B	0.037	A,B,E,H
756	R.Cumbria	B	1.00	F,G
756	The Magic 756,Powys	I	0.63	A,E,H
765	BBC Essex	B	0.50	B,H
774	R.Kent	B	0.70	H
774	Cl.Gold 774, Glos	I	0.14	E
792	Cl.Gold 792,Bedford	I	0.27	H
801	R.Devon	B	2.00	A,B,E
828	Cl.Gold 828, Luton	I	0.20	E*,H
828	Cl.G 828 Bournem'th	I	0.27	D,E*
837	R.Cumbria/Furness	B	1.50	F,G
837	Asian Net Leicester	B	0.45	A,B,G,H
855	R.Devon	B	1.00	E
855	R.Lancashire	B	1.50	F
855	R.Norfolk, Postwick	B	1.50	B,C
855	Sunshine 855,Ludlow	I	0.15	A,B,E,H
873	R.Norfolk, W.Lynn	B	0.30	B,C,H
936	Brunel CG, W.Wilts	I	0.16	E,H
936	Fresh AM, Hawes	I	1.00	F,G
945	Cl.Gold GEM, Derby	I	0.20	H
945	Capital G, Bexhill	I	0.75	E
954	Cl.Gold 954,Torquay	I	0.32	E
954	Cl.Gold 954, H'ford	I	0.16	A,H
963	Asian Sd, E.Lancs	I	0.80	E,F,G
963	Liberty R, Hackney	I	1.00	B,H
972	Liberty R, Southall	I	1.00	A,B,H
990	R.Devon, E.Devon	B	1.00	D,E
990	Cl.G, Wolverhampton	I	0.09	H
999	C.Gold GEM Nott'ham	I	0.25	H
999	Magic 9-99 P'stn	I	0.80	F,G
999	Valley R, Aberdare	I	0.300	E*
1017	Cl.G,WABC,Shr'shire	I	0.70	E*,F,G,H
1026	R.Cambridgeshire	B	0.50	B,E,H
1026	Downtown R, Belfast	I	1.70	F,G
1026	R.Jersey	B	1.00	E
1035	RTL C'try(Ritz)1035	I	1.00	E,H
1116	R.Derby	B	1.20	H
1116	R.Guernsey	B	0.50	B,E
1116	Valley R, Ebbw Vale	I	0.50	A
1152	LBC 1152 AM	I	23.50	E,H
1152	Cl.G, Birmingham	I	3.00	A,E*
1161	R.Bedfordshire(3CR)	B	0.10	H
1170	Swansea Snd,Swansea	I	0.58	A,E
1170	1170AM,High Wycombe	I	0.25	H
1242	Capital G,Maidstone	I	0.32	E
1260	Brunel CG, Bristol	I	1.60	E
1260	Marcher G, Wrexham	I	0.64	F,G
1260	SabrasSnd,Leicester	I	0.29	H
1296	Radio XL,Birmingham	I	5.00	E,H
1305	Premier via ?	I	0.50	E,H
1305	Touch AM, Newport	I	0.20	E
1323	SomersetSnd,Bristol	B	0.63	A,E
1332	Premier, Battersea	I	1.00	E
1332	Cl.Gold 1332,Pt'bo	I	0.60	H
1359	Breeze, Chelmsford	I	0.28	E
1359	Cl.Gold 1359, C'try	I	0.27	H
1368	R.Lincolnshire	B	2.00	H
1368	Southern Counties R	B	0.50	E
1413	R.Gloucester via ?	B	?	H
1413	Premier via ?	I	0.50	E
1431	Cl.Gold, Reading	I	0.14	E*,H
1449	Asian Net Peterbro	B	0.15	B,H
1458	R.Cumbria	B	0.50	F,G
1458	R.Devon	B	2.00	E
1458	Sunrise, London	I	50.00	B,E*,H
1458	Asian Net Langley	B	5.00	A,H
1485	Cl.Gold, Newbury	I	1.00	A,H
1485	R.Merseyside	B	1.20	E
1485	Southern Counties R	B	1.00	E
1503	R.Stoke-on-Trent	B	1.00	A*,B*
1521	Cl.Gold, Reigate	I	0.64	A*,E,H
1530	R.Essex, Southend	B	0.15	B
1530	Cl.Gold Worcester	I	0.52	A,B*,E,H
1548	R.Bristol	B	5.00	E
1548	Capital G, London	I	97.50	E
1548	MagicAB,Liverpool	I	4.40	F,G
1557	R.Lancashire	B	0.25	F,G
1557	Cl.Gold 1557,N.hant	I	0.76	H
1566	CountySnd,Guildford	I	0.50	A*,E
1584	R.Nottingham	B	1.00	E,H
1584	R.Shropshire	B	0.50	A*

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

Africa 1700?-2300) 44343 at 2127 in Newry; R.Taipei Int via WYFR **15.600** (Eng to Eur 2200-2300) 45544 at 2215 in Northampton.

In the **13MHz (22m)** band Croatian R, Zargreb **13.830** (Cr to Eur) was rated 33333 at 0952 in Truro; WWCR Nashville, USA **13.845** (Eng to Africa 1300-0100) 34333 at 1306 in Woodhall Spa; R.Prague, Czech Rep. **13.580** (Eng to Eur, Asia 1300-1329) 45423 at 1320 in E.Bristol; R.Austria Int via Moosbrunn **13.730** (Eng to Eur, M.East, Africa 1330-1400) 44343 at 1335 in Herstmonceux; Voice of Vietnam, Hanoi **13.740** (Eng to Eur 1600-1630) 45544 at 1620 in Northampton; BBC via Rampisham, UK **13.745** (Russ to Russia) 55555 at 1705 in Stalbridge; Voice of Vietnam, Hanoi **13.740** (Fr, Eng to Eur 1900-2100) 45444 at 1915 in Rugby; WHRI via Noblesville, USA **13.760** (Eng to E.USA, Eur 1600-2000) 44333 at 1915 in Morpeth; Swiss R.Int via Sottens **13.645** (It, Ar, Eng, Ger, Fr to M.East, Africa 1830-2130) 55444 at 1930 in Appleby; R.Nederlands via Flevo **13.700** (Eng to Africa 1830-2025) 33333 at 2000 in Morden; R.Canada Int via ? **13.690** (Eng [when compared with **15.325** there is a long satellite delay on this txm]) 44243 at 2105 in Newry; R.Australia via Darwin **13.620** (Eng to SE.Asia 2200-0000) 34233 at 2244 in Newry.

R.New Zealand has been reaching the UK in the **11MHz (25m)** band during their early morning broadcast to Pacific areas on **11.820** (Eng 0459-0658). Their transmission was rated 43333 at 0655 in Herstmonceux. Later, they broadcast a special programme to NZ forces in Bougainville, the Solomon Is and E.Timor on **11.675** (Eng 1100-1300) but it was not mentioned in the reports.

During the afternoon R.Australia's broadcast to Asia via Shepparton on **11.660** (Eng 1430-1700) may be heard in the UK. It was rated 43443 at 1610 in Northampton. Later, their transmission to Pacific areas & N.America via Shepparton? on **11.880** (Eng 1700?-2200?) was 24122 at 2118 in Newry.

Other broadcasters taking advantage of the conditions in this band include HCJB Quito via ? **11.680** (Eng to Eur 0600-0800), rated 54444 at 0605 in Morpeth; World Harvest R. (WHRI) via Maine, USA **11.730** (Eng to Africa) 44444 at 0708 in Woodhall Spa; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1300-1730) 44444 at 1320 in Northampton; Voice of Russia **11.675** (Russ? 1700-1800, Eng 1800-1930?) 55555 at 1800 in Appleby; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 54445 at 1855 in Stalbridge; Voice of Mediterranean, Malta via Russia? **12.060** (Eng to Eur, N.Africa 1900-2000) 22222 at 1905 in Truro; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1900-1930) 45333 at 1910 in E.Bristol; R.Canada Int (RCI) via Wertachtal, Germany **11.965** (Eng to Eur 2000-2100) 34433 at 2000 in Dudley; China R.Int via ? **11.790** (Eng to Eur 2000-2200) 43344 at 2020 in Rugby; R.Damascus, Syria **12.085** (Eng to Eur 2005-2105) 43333 at 2030 in Morden; R.Romania Int **11.740** (Eng to N.America? 2300-0000?) SIO 333 at 2312 by **Francis Hearne** in N.Bristol; R.Brasil Central, Goiania, Brazil **11.815** (Port 0700-0300) 22222 at 0255 by **Bill Griffith** in W.London.

R.Australia's broadcasts to Asia in the **9MHz (31m)** band have been received in the UK on two frequencies from Shepparton: **9.475** (Eng 1330-1858), rated 34333 at 1636 in Woodhall Spa & 32333 at 1715 in Stalbridge; **9.500** (Eng to Asia 1900-2130) 44333 at 1900 in Appleby & 33333 at 2115 in E.Bristol.

Also received here were TWR Monaco **9.870** (Eng to Eur 0700-0900), noted as 55555 at 0728 in Newry; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 55544 at 0935 in Herstmonceux; Christian Science Herald via WSHB Cypress Creek, USA **9.860** (Sp, Eng to Eur 0800-0955) 33333 at 0950 in Truro; R.Nederlands via Wertachtal, Germany **9.860** (Eng to Eur 1030-1225) 55544 at 1055 in Northampton; Voice of Russia **9.480** (Eng [News]] 43434 at 1905 in Stalbridge; Voice of Armenia, Yerevan **9.960** (Eng to Eur 1940-2000) 55444 at 1942 in Northampton; R.Thailand, Udon Thani **9.680** (Fr, Eng to Eur 2015-2145) 44444 at 2028 in Rugby; BBC via Cyprus **9.410** (Eng to W/SW.Eur, N.Africa 1600-2200) 45434 at 2050 in E.Bristol; R.Cairo, Egypt **9.990** (Eng to Eur 2115-2245) 44444 at 2130 in Morden; R.Tirana, Albania **9.540** (Eng to Eur 2130-2200) 44343 at 2152 in Newry; R.Bulgaria, Sofia **9.400** (Eng to Eur 2100-2200) SIO 444 at 2157

Listeners:-
(A) Simon Hockenhull, E.Bristol.
(B) Sheila Hughes, Morden.
(C) Rhoderick Illman, Dxted.
(D) Eddie McKeown, Newry.
(E) Bob Norman, Chard.
(F) Clare Pinder, Appleby.
(G) David Stevenson, Swansea.
(H) Michael Wasley, while at The Braaid, IoM
(I) Michael Wasley, while on Ferry, Irish Sea.
(J) Fred Wilmshurst, Northampton.

Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
531	Ain Beida	Algeria	600/300	G*
531	Berg	Germany	20	D*,G*
531	RNE5 via ?	Spain	?	D*,G*
531	Beromunster	Switzerland	500	A*,D*,G*,H,J*
540	Wavre-Dverijse(VRT)	Belgium	150/50	B,D*,G*,J
540	Sidi Bennour	Morocco	600	A*,D*,G*
549	Les Trembles	Algeria	600	A*
549	Sasnovy	Belarus	1000	G*
549	Thurnau (DLF)	Germany	200	G*,J*
558	Espoo	Finland	50	D*
558	RNE5 via ?	Spain	?	D*,G*
567	Tullamore(RTE1)	Eire	500	A,D,G,H,I,J*
576	Muhlacker(SDR)	Germany	500	D*,G*,J*
576	Barcelona(RNE5)	Spain	50	A*,D*,G*
585	Madrid(RNE1)	Spain	200	A*,D*,G*,J*
585	Dumfries(BBCScot)	UK	2	D*,H,I
594	Frankfurt(HR)	Germany	1000/400	D*,G*,J*
594	Dujda-1	Morocco	100	G*
594	Muge	Portugal	100	D*
603	Lyon	France	300	D*,G*
603	Sevilla(RNE5)	Spain	50	D*,G*
603	Newcastle(BBC)	UK	2	H
612	Athlone(RTE2)	Eire	100	A,D,G*,H,I,J*
621	Wavre (RTBF)	Belgium	80	B,D*,G*,J*
621	RNE1 via ?	Spain	10	G*
621	Barcelona(DCR)	Spain	50	D*
630	Vigra	Norway	100	A*,D*,G*
630	Tunis-Djedeida	Tunisia	600	D*,G*
639	Praha(Liblice)	Czech	1500	D*,G*,J*
639	RNE1 via ?	Spain	?	D*,G*,J*
648	RNE1 via ?	Spain	10	D*,G*
648	Drfordness(BBC)	UK	500	A,D*,G*,J
657	Madrid(RNE5)	Spain	20	D*,G*,J*
657	Wrexham(BBCWales)	UK	2	A,D*,G,J
666	MesskirchRohrd(SWF)	Germany	150	D*,G*,J*
666	Sitkunai(R.Vilnius)	Lithuania	500	G*
666	Lisboa	Portugal	135	D*,G*
675	R10 FM	Holland	120	A,D*,G*,H,I,J
684	Sevilla(RNE1)	Spain	500	A*,D*,G*
693	Droitwich(BBC)	UK	150	G,H,I,J
702	Flensburg(NDR)	Germany	5	D*
711	Rennes (R.Bleu)	France	300	A,D*,G*,J
711	Laayoune	Morocco	600	G*
720	Lisnagarvey(BBC4)	N.Ireland	10	A*,G,H,I
720	Crystal Palace BBC4	UK	0.75	A,J
729	Cork(RTE1)	Eire	10	A,D*
729	RNE1 via ?	Spain	?	A*,D*,G*,J*
738	Paris	France	4	B,D*
738	Barcelona(RNE1)	Spain	500	A*,D*,G*,J*
747	Flevo(NDS-1)	Holland	400	A,D*,G*,H,I,J*
756	Braunschweig(DLF)	Germany	800/200	A*,D*,G*,J*
756	Bilbao(EI)	Spain	5	G*
756	Redruth(BBC)	UK	2	A*
765	Sottens	Switzerland	500	A*,D*,G*
774	Enniskillen(BBC)	N.Ireland	1	D*
774	RNE1 via ?	Spain	?	D*,G*,J*
783	Leipzig(MDR)	Germany	100	A*,D*,G*
792	Limoges	France	300	D*,G*
792	Sevilla(SER)	Spain	20	G*
801	Munchen-Ismaning	Germany	300	D*,G*
801	RNE1 via ?	Spain	?	G*
810	Madrid(SER)	Spain	20	G*
810	Westerglen(BBCScot)	UK	100	A*,D,G*,H,I,J*
819	Batra	Egypt	450	A*,D*
819	S.Sebastian(EI)	Spain	5	G*
828	Hannover(NDR)	Germany	100/5	D*
828	Heinencord(Cl.Rock)	Holland	20	D*,G*
837	Nancy	France	200	D*,G*
837	CDPE via ?	Spain	?	G*
846	Rome	Italy	1200	G*
855	RNE1 via ?	Spain	?	A*,D*,G*,J*
864	Paris	France	300	A,C,D*,G*,J*
873	Frankfurt(AFN)	Germany	150	A*,D*,G*
873	Zaragoza(SER)	Spain	20	G*
873	Enniskillen(R.UI)	UK	1	D*,G
882	Washford(BBCWales)	UK	100	C,D,G,H,I,J
891	Algiers	Algeria	600/300	A,B,G*
891	Hulsberg	Netherlands	20	D*
900	Brno(CRo2)	Czech Rep	25	D*,G*
900	Milan	Italy	600	D*,G*
900	CDPE via ?	Spain	?	G*
909	B'mans Pk(BBC5)	UK	140	G,H,I,J
918	Domzale	Slovenia	600/100	B*,D*,G*,J*
927	Wolvertem	Belgium	300	C,D*,G*,I,J
936	Bremen	Germany	100	D*,G*
936	Venezia	Italy	20	G*
945	Toulouse	France	300	A*,D*,G*,J*
954	Brno (CRo2)	Czech Rep.	200	D*
954	Madrid(CI)	Spain	20	D*,G*,J*
963	Pori	Finland	600	A*,D*,G*
972	Hamburg(NDR)	Germany	100	D*
972	RNE1 via ?	Spain	?	G*
981	Alger	Algeria	600/300	A,G*
990	Berlin	Germany	100	D*,G*
990	R.Bilbao(SER)	Spain	10	D*,G*
990	Tywyn(BBC)	UK	1	D*,H
999	Schwerin (RIAS)	Germany	20	D*
999	Madrid(CDPE)	Spain	50	A*,D*,G*,J*
1008	Flevo(NDS-5)	Holland	400	D*,G*,J
1017	Rheinsender(SWF)	Germany	600	A*,D*,G*,J*
1017	RNE5 via ?	Spain	?	D*,G*
1026	SER via ?	Spain	?	G*
1035	Milan	Italy	50	G*
1035	Lisbon	Portugal	120	D*
1044	Dresden(MDR)	Germany	20	D*,G*
1044	S.Sebastian(SER)	Spain	10	D*,G*
1053	Zarogoza(CDPE)	Spain	10	D*
1053	Talk Sport via ?	UK	?	D*,G,H,I,J
1062	Kalundborg	Denmark	250	A*,D*,G*,J*
1062	R.Uno via ?	Italy	?	D*
1071	Riga	Latvia	50	J*
1071	Bilbao(EI)	Spain	5	A*,D*,G*
1071	Talk Sport via ?	UK	?	D*,J
1080	SER via ?	Spain	?	D*,G*
1089	Talk Sport via ?	UK	?	D*,E*,G,H,I,J
1098	Nitra(Jarok)	Slovakia	1500	A*,D*,E*,G*,J*
1098	RNE5 via ?	Spain	?	D*
1107	AFN via ?	Germany	10	D*,G*
1107	Talk Sport via ?	UK	?	D*,G,H,I,J
1116	Pontevedra(SER)	Spain	5	A*,D*
1125	La Louviere	Belgium	20	D*,G*
1125	Deanovec	Croatia	100	G*,J*
1125	RNE5 via ?	Spain	?	G*
1125	Llandrindod Wells	UK	1	A,G
1134	Zadar(Croatian R)	Croatia	600/1200	A,D*,G*,J*
1134	CDPE via ?	Spain	2	D*
1143	Stuttgart(AFN)	Germany	10	D*,G*
1143	CDPE via ?	Spain	2	D*,G*
1179	SER via ?	Spain	?	G*
1179	Solvesborg	Sweden	600	A*,B*,D*,G*,J*
1188	Kuurne	Belgium	5	D*,G*
1188	Marcali(VDA/RFE)	Hungary	500	A*,D*,G*,J*
1197	Munich(VDA)	Germany	300	D*,G*,J
1197	Virgin via ?	UK	?	D*,G*,H,I,J
1206	Bordeaux	France	100	A*,D*,E*,G*,J,J*
1215	Virgin via ?	UK	?	D*,E*,G,H,I,J
1224	Lelystad(Qthe beat)	Holland	50	D*,G*
1224	CDPE via ?	Spain	?	G*
1233	Nitra	Slovakia	40	D*
1233	Virgin via ?	UK	?	D*,G*,J
1242	Marseille	France	150	A*,E*
1242	Virgin via ?	UK	?	D*,G*
1251	Huisberg	Netherlands	10	D*,G*
1260	SER via ?	Spain	?	D*,G*
1269	Neumunster(DLF)	Germany	600	A*,D*,G,J*
1278	Dublin/Cork(RTE2)	Eire	10	A,D*,G,H,I,J*
1278	Strasbourg	France	300	A*
1287	RFE via ?	Czech Rep.	?	D*,G*
1287	Lerida(SER)	Spain	10	E*,G*,J*
1296	Valencia(CDPE)	Spain	10	G*,J*
1296	Drfordness(BBC)	UK	500	D*,G
1305	RNE5 via ?	Spain	?	D*
1314	Kvitsoy	Norway	1200	A*,D*,G*,I,J*
1323	W'brunn (VDR)	Germany	800/150	D*,I,J
1332	Rome	Italy	300	D*
1341	Lisnagarvey(BBC)	N.Ireland	100	A,B*,G,H,I,J
1359	Madrid(RNE-FS)	Spain	600	A*,G*,J*
1368	Foxdale(Manx R)	Is of Man	20	A*,D,H,I,J*
1377	Lille	France	300	A,D*,G*,I,J
1386	Bolshakovo	Russia	1200	A,B*,D*,G*,I,J
1395	Fllake	Albania	500	G*,I
1395	Lopic (Biz Nieuws)	Netherlands	120/40	D*,G*
1404	Brest	France	20	A*,D*,G*,J*
1413	RNE5 via ?	Spain	?	D*
1422	Heusweiler(DLF)	Germany	1200/600	A*,D*,G*,I,J
1440	Marnach(RTL)	Luxembourg	1200	B*,D*,G*,I,J
1440	Dammam	Saudi Arabia	1600	D*
1449	Squinzano (RAI)	Italy	50	D*
1449	Redmoss(BBC)	UK	2	A*,D*
1458	Fllake	Albania	500	G*
1467	Monte Carlo(TWR)	Monaco	1000/400	D*,G*,I,J
1476	Wien-Bisamberg	Austria	600	D*,F,G*,J*
1494	Clermont-Ferrand	France	20	A,D*,G*,J*
1494	Krasnyy Bor	Russia	1200	D*
1503	Bashehr	Iran	50	D*
1503	RNE5 via ?	Spain	?	G*
1512	Wolvertem	Belgium	300	A*,B*,D*,G*,I,J
1512	Jeddah	Saudi Arabia	1000	D*,G*
1521	Kosice(Cizatice)	Slovakia	600	D*,G*,J*
1530	Vatican R	Italy	150/450	B*,D*,G*,J
1539	Mainflingen(ERF)	Germany	350(700)	A*,D*,G*,J,J
1539	SER via ?	Spain	?	J*
1557	Nice	France	300	A*,D*,G*
1575	Genova	Italy	50	A*,D*,G*,J*
1575	SER via ?	Spain	5	D*,G*,J*
1584	SER via ?	Spain	2	A
1593	Marrakech	Morocco	1	G*
1602	SER via ?	Spain	?	D*,G*
1602	Vitoria(EI)	Spain	10	D*,G*,J*
1611	Vatican R	Italy	15	G*

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

LM&S *Continued*

in N.Bristol; WBCQ Monticello, Maine USA **9.335** (Eng to N.America 2100?-1100?) 44142 at 2200 in Newry; WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) 44343 at 0010 in Newry; China R.Int via Spain? **9.690** (Eng to N.America 0300-0357) 44444 at 0300 in W.London.

Some of the broadcasts in the **7MHz (41m)** band are beamed towards Europe. They include those from Vatican R, Italy **7.250** (Lat 0500-0700), rated 33333 at 0535 in Rugby; R.Japan via Woofferton, UK **7.230** (Eng 0500-0700) 55544 at 0650 in Herstmonceux; Family R. (WYFR) via ? **7.355** (Eng) 55545 at 0730 in Stalbridge; R.Slovakia Int. **7.345** (Eng 1630-1700) 43443 at 1640 in Newry; R.Budapest, Hungary **7.130** (Eng 1900-1930) 44444 at 1900 in Appleby; R.Thailand, Udon Thani **7.155** (Eng 1900-2000) 22222 at 1918 in Truro; Voice of Russia **7.440** (Eng - News 1930) 45444 at 1923 in E.Bristol; AWR via Slovakia **7.130** (Eng 1930-2000) 44444 at 1930 in Morden; R.Polonia (Polish R), Warsaw **7.165** (Eng 1930-2030) 24222 at 1936 in E.Bristol; RCI via Skelton, UK **7.235** (Eng 2100-2130) 44343 at 2106 in Newry & 55555 at 2115 in Herstmonceux; AIR via Bangalore **7.410** (Eng, Hind 1745-2230) SIO 222 at 2208 in N.Bristol.

A few intended for other areas have also been received here: R.Nederlands via Madagascar **7.120** (Eng to Africa 1730-2025), rated 44444 at 1755 in Northampton; World Harvest Radio (WHRI) via Maine, USA **7.580** (Eng to N.America) 54444 at 0005 in Morpeth; WBCQ Monticello, USA **7.415** (Eng to N.America 2100-1100) 44333 at 0212 in Morpeth; WWCR Nashville, USA **7.560** (Eng to N.America) 25343 at 0614 in Northampton.

Many of the broadcasts in the **6MHz (49m)** band are intended for listeners in Europe. Some come from R.Vlaanderen Int, Belgium via Julich, Germany **5.985** (Eng 0700-0730) rated 55555 at 0715 in Herstmonceux; TWR Monaco via Germany? **6.045** (Eng 0655-0800) 54344 at 0729 in Newry; Deutsch Welle (DW) via Julich **6.140** (Eng Service) 35333 at 1137 in E.Bristol & 45544 at 1515 in Northampton; R.Nederlands via Julich, Germany **6.045** (Eng 1030-1225) 44333 at 1145 in Rugby; R.Polonia [Polish R] Warsaw **5.995** Eng 1700-1800) 34423 at 1725 in Stalbridge; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 54445 at 1735 in Stalbridge; R.Slovakia Int. **6.055** (Eng 1830-1900) 43344 at 1846 in Rugby; RAI Rome **5.970** (Eng 1935-1955) 55444 at 1935 in Appleby; Vatican R, Italy **5.890** (Various, Eng 1950-2010) 33333 at 1955 in Truro; R.Prague, Cz.Rep **5.930** (Eng 2000-2030) 44444 at 2000 in Dudley; Deutschland R, Berlin **6.005** (Ger 24hrs) 43333 at 2055 in Oxted; R.Budapest, Hungary **6.025** (Eng 2100-2130) 43443 at 2100 in Morden; R.Canada Int via Horby, Sweden **5.850** (Eng 2000-2130, Fr 2130-2200) SIO 444 at 2106 in N.Bristol; R.Japan via Skelton, UK **6.180** (Eng 2100-2200) SIO 333 at 2111 in N.Bristol; also on **6.055** (Eng to Eur 2100-2200) 54555 at 2129 in Newry; BBC via Rampisham, UK **6.195** (Eng 1700-0000) 44544 at 2245 in Northampton.

While beaming to other areas the Voice of America (VOA) via Sao Tome **6.035** (Eng to W.Africa 2000-2300) was rated 42332 at 2058 in Oxted; ORTM Bamako, Mali **5.995** (Fr 0555-0748, 1757-0000) 32233 at 2232 in W.London; BBC via Antigua, W.Indies **5.975** (Eng to Caribbean, C/S.America 2200-0600?) 45433 at 0117 in E.Bristol; Deutsch Welle (DW) via Sackville, Canada **6.040** (Eng) 35534 at 0143 in E.Bristol; American Forces Network (AFN) via Puerto Rico **6.458** (Eng [u.s.b.]) 44444 at 0230 in Morpeth; R.Havana, Cuba **6.000** (Eng to N.America 0100-0500) 43333 at 0305 in Morpeth; WHRI South Bend, USA **5.745** (Eng to N.America 2000?-1000?) 34233 at 0630 in Newry.

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You can win the cost effective d.s.p. noise reduction system built in to a compact loudspeaker enclosure. The bhi NES10-2 offers a fully adaptive noise reducing system that simply plugs in to the audio output of most receivers, scanners and transceivers.

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You could be the lucky winner of the Noise Eliminator - as reviewed in *SWM* last month - kindly donated by bhi Ltd. For more information you can contact bhi Ltd. by 'phone: **(01293) 530147** or take a wander around their website: **www.bhinstrumentation.co.uk**

Since last month's review of the NES10-2, bhi have included both headphone socket and a bi-colour l.e.d. to indicate unit power on/d.s.p. status. How's that for response to feedback?

Specifications

Number of attenuation levels:	8
Noise attenuation:	20dB (typical)
Audio output:	5W r.m.s. max.
Power:	12-28V d.c.
Size:	110 x 65 x 55mm
Weight:	200g
Price:	£106.90 inc. P&P (UK)

Entry Form

To enter this prize draw, please fill in your details on the entry form, (photocopies can be accepted with the original corner flash attached), answer the two questions and post your entry to: ***SWM* bhi NES10-2 Competition, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.**

Name.....

Address.....

.....

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

Do you receive *SWM* every month? .....

Where do you buy *SWM*? .....

Q1: How many operating levels does the NES10-2 provide?

.....

Q2: How is the Noise Eliminator connected to your receiver?

.....

The closing date for this competition is **24 October 2002**, the winner will be drawn on 4 November 2002 - first correct answer drawn will be the winner. The winner will be announced in the December *SWM*. The Editor's decision is final.

If you wish not to be contacted by PW Publishing Ltd. or associated companies please tick here. ☐

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Off The Record

The former pop pirate Radio Caroline has now made a full time return to the radio, well almost. In recent years their broadcasts have been restricted to temporary medium wave RSL transmissions and a service on an Astra TV Satellite that is mainly used in continental Europe.

From Monday 22nd July, Radio Caroline has been available on the Afristar WorldSpace radio satellite with test broadcasts. Originally Radio Caroline had denied they had intentions to broadcast on WorldSpace, however the news had been leaked to the press and was published on the Internet by Radio Netherlands.

Peter Moore speaking for Radio Caroline said that the programmes would be aired on all three beams of the Afristar satellite giving coverage to almost a third of the earth. He compared this achievement with the humble beginnings with the f.m. RSL broadcasts made from Dover Harbour after their ship the *Ross Revenge* had been salvaged from the Goodwin Sands 10 years ago.

The Radio Caroline test transmissions will be free-to-air initially, but plans already exist to encrypt the broadcasts so that only subscribers paying WorldSpace £59.88 a year in advance will be able to hear it. This fact has not been greeted with much enthusiasm among some enthusiasts who feel that free radio should be free. WorldSpace broadcasters have much the same problems as those on DAB where the take-up rate of new technology has been much slower than anticipated.

For information on WorldSpace receivers, take a look at the advertisers in *SWM*, Nevada Communications normally stock Hitachi and Sanyo models, you can see their website at **www.worldspaceradios.co.uk** My own order for an Hitachi KH-WS1 recently placed with them over the Internet arrived in just two days.

Howard Rose

By now some of you may have already heard of the sad death of Howard Rose on 17th July. He was better known in pirate radio circles as either Crispian St. John or Jay Jackson. He started as an 18 year old disk jockey on the ship based Radio Northsea International during 1971 (where I first met him) and later with Radio Atlantis and Radio Caroline. He started a legal local radio station in Kettering called KCBC and went on to publish *The Radio Magazine*. This publication grew from a duplicated newsheet to a bone-fide trade magazine that rapidly expanded in line with the local radio industry.

It was only a few weeks previously Howard sold *The Radio Magazine* to newspaper publisher and radio station proprietor Sir Ray Tindle, in a deal which included him staying on as Editor. Sadly this was not to be, he leaves his wife Patricia and three children who had asked for no flowers to be sent for the funeral, but donations to the Royal National Lifeboat Institution. This seemed entirely appropriate for someone who had spent so much time at sea which had included him surviving the dramatic firebomb attack on the radio ship *Mebo 2* in 1971.

Hythe FM

Thanks to those that wrote and E-mailed me about my recent radio appearance on Hythe FM. I have done several of these, but as they were very local, they were of little relevance to many readers. This time was different as Dan, Nick and Matt, the three radio amateurs that run Hythe FM, decided in addition to running just the f.m. transmitter, they would stream the output on the Internet.

After a day or two publicising the website **www.hythefm.com** among the amateur radio and anorak fraternities, we soon found requests coming by E-mail from all over the world. It certainly had a World Service kind of feel about playing a dedication for someone living in Western Australia. We did encourage people to come and see us, though the premises were somewhat cramped and not exactly very tidy.

There were indeed some rather exasperated looks as programme assistant Rosemary, without warning, staggered through the door literally towing local MP and former Home Secretary, Michael Howard. The station was sponsored to provide information and entertainment for the week long Hythe Festival with outside broadcasts from most events. The open day at Hythe Ranges, normally an MOD secure area, certainly tested our skills at broadcasting in a noisy environment.

Laser Radio Calling

Laser Radio have been conducting tests on 5.935MHz from a 100kW transmitter based at Ulbroka in Latvia, this series of trial broadcasts have been heard in the UK, usually on Sundays from 1400 to 2200. They have received many reports from the USA and apparently one from Brazil. The station hopes to provide alternative programming for radio enthusiasts on a regular basis. Their website is updated regularly and well worth a visit **www.laserradio.net**

Station Closures

TeamTalk, the successor to the long wave pop station Atlantic 252, have now closed the powerful 500kW transmitter after it being purchased by UK Betting. TeamTalk had purchased an 80% share in the station for an estimated £2M, the remaining shares are owned by Radio Telefis Eireann the Irish state broadcaster.

At the time of going to press, it is uncertain what will happen to the station, there have been suggestions in Ireland that it should be used to broadcast RTE radio programmes to the UK, but an ex-pirate radio entrepreneur has rather more ambitious plans for the station.

Chris Cary who ran the successful pirate station Radio Nova in Ireland during the early 80s is hoping to re-launch his station using the former Atlantic 252/TeamTalk transmitter near Dublin. He says that he is involved in a minefield of negotiations where the idea is accepted, but nobody will actually say 'Yes'. The difficulties are apparently not financial, but are being frustrated by what he calls bloody-mindedness. Ironically, it was Chris Cary who pioneered long wave radio in Ireland by making test broadcasts on long wave well before the 252kHz frequency had been officially approved.

The Dutch station Radio International is reported to have fired most of their staff in a cost cutting measure. Radio frequencies in Holland are being sold to the highest bidder meaning that it would be impossible for Radio International to purchase a much needed national f.m. service for their listeners. As a temporary measure, they had been hiring time on a UK medium wave transmitter at Orfordness in Suffolk on 1296kHz - this is at present just airing Radio International jingles and continuous music.

Station Ownership

There is general concern in the radio and television industry over government plans to remove obstacles that at present protect radio and TV stations form being taken over by foreign broadcasters. Because a comparative few companies own so much of Britain's electronic media, it is feared that large American networks could very easily soon dominate the commercial broadcasting field. I suspect there would also be some Australian businesses that would be interested in increasing their investments in British media, though whether this would lead to better quality programmes is perhaps doubtful.

Audio Senders

Following my comments about how to economically get audio from your listening shack to the rest of the house, I have had several replies, most involving the various cordless headphone/speaker systems. **Dave Porter** suggested a Goodmans CD90071 863MHz unit that comes with the choice of headphones or speakers. The transmitter has a range of about 100m and runs from a power adaptor, the speakers have two rechargeable AA type batteries. For those with a large QTH you can also buy extra pairs of speakers. Dave bought his cordless speaker system advertised for about £68 in a recent CPC catalogue and finds it most satisfactory.

Eric Jan van der Bogaard says he uses a video sender 'Trust 100' that includes stereo sound and operates on 2.4GHz and includes an infra-red remote control which in Holland costs 95 Euros.

From Knot End-on-Sea in Lancashire, **Geoff Taylor** says he uses Ross wireless speakers from Maplin, each of which has two frequencies. He says the speakers sometimes drift off tune requiring the twiddling of a thumbwheel at the rear of the unit, however the relayed stereo reproduction from the WorldSpace satellite station RIFF is astonishing. On E-mail, **Trevor M** says he uses a two-way wireless intercom made by Altai that just plugs into the mains, they have three frequencies and have the provision for the XYL to make calls back the radio shack. Lunch is served my darling!

Offshore Themes

For those that remember the old offshore radio stations, you can take a nostalgic trip down memory lane by visiting a website dedicated to all the tunes that were used to introduce most of the personality DJs and their programmes. There are audio files containing most of the music and also included are radio presenters from the Dutch and Belgium stations like Mi Amigo and Atlantis - **www.offshoreechos.com/offshorethemes**

Digital Radio Mondiale

Harry Richards writing from Barton-on-Humber says he is trying to elicit some information about whether long range medium wave reception using DRM would be subject to D-layer absorption during the day. For example, he says would we all receive Radio Luxembourg on 1440kHz all day during the summer.

My own suggestion that normal propagation would continue to apply, which I suppose includes the legendary night-time fading on this channel. Much has been written about the audio quality of DRM in its service area, but of course DXers are more interested in the possibility of increased audibility at long distances and the probability of co-channel interference. Other opinions are welcome, particularly from those involved with in band on channel digital broadcasting.

Beginners

BROADCAST SPECIAL

From choosing a receiver that's right for you, a look at antennas and a guide to where and when to listen, Martin Peters brings us all this and more in this year's 'Broadcast Special'.

Welcome. With only a few thousand words at my disposal, I was in a bit of a quandary as to what to write about.

Given that a fair number of letters to the *SWM* Editorial Offices are of the, 'How do I get started', variety, I thought I'd direct this to the growing number of newcomers to the listening hobby. That's right. An unforeseen, tiny side-effect of last year's terrorist attacks on the US has been increased sales of short wave radios, bought by those wishing to satisfy their renewed interest in world affairs from different perspectives.

Over the next few pages, we'll look at choosing a receiver that's right for you - fundamental to your enjoyment of the hobby - a quick look at antennas and then a guide to maximising your listening pleasure (and success) with judicious use of the spectrum, knowing where and when to listen, QSLing, books to read, clubs you can join and more besides.

I'll try not to mention the Internet too often - as it tends to alienate those without - but I have provided a page of links to a lot of what I've covered - **www.tinyurl.com/ttm**

Choosing A Receiver

So you've decided you'd like to buy a new receiver to expand your broadcast listening horizons. If you're new to the hobby and considering the purchase of your first short wave radio, you'll soon discover the range and diversity of hardware available and it all may at first seem bewildering. However, you can begin to narrow down your choices by considering your priorities whilst discounting the features that you definitely do not require.

Probably the first thing you'll want to consider is the type of receiver you want to purchase - portable, tabletop or PC-based. Each comes with its own benefits and disadvantages.

Restricted by budget? Then you will almost certainly be looking to buy a portable receiver. Whilst these cannot compete in sophistication with their tabletop cousins, the number of features some of these receivers

pack in is truly remarkable for the price - and their size. Added to which, most portable receivers provide v.h.f. f.m. reception, not a feature found on most tabletop sets.

The main advantage of owning one of these receivers is its portability and convenience. Want to take your hobby on holiday? A complete f.m., long, medium and short wave receiving station, the size of a paperback book, can be taken abroad these days without the need to pay excess baggage and without raising the suspicions of customs officials. Most portable radios are super-sensitive, requiring no more than their built-in telescopic whip antenna to pull in your catch. Nulling out interference on long and medium wave can be as easy as rotating the set.

Analogue Or Digital?

Within the range of portable radios, you can choose either analogue or digital - a reference to the type of tuning and the display. Analogue first. There is nothing to beat the simplicity of turning a dial and watching the pointer traverse the radio's scale. Tuning can be as quick or as precise as you wish and you are quickly rewarded with a feel for the band being investigated and the prevailing radio conditions. With no need for microprocessors, phase-locked loops and an active display, these sets seem to run forever on a couple of penlight cells.

You'll have to weigh this up with the fact that analogue radios do not always enjoy pin-point tuning accuracy and invariably come supplied with no bells and whistles whatsoever. Moreover, the analogue sets tend only to cover the officially recognised broadcast bands. Many radio stations

operate outside of these bands in the knowledge they do not have to compete with other high powered broadcasters for the channel.

Up until a few years ago, some of the BBC's most audible channels were out-of-band - of note 18.080MHz - which was still in use years after this had been allocated to radio amateurs as part of their 17m band. Analogue radios generally only offer a.m. mode reception. If you later decide you want to investigate the spectrum in between the broadcasting bands, you'll need something more up-market.

More Complex

Which is why most s.w.l.s opt for digital portable radios. Not only do these sets offer an accurate frequency readout, most will allow the user to navigate around the bands in a number of ways. You can key in the frequency directly via the keypad, step up through the bands, channel by channel, and initiate an automatic scan whereby the radio trawls up the band, halting only on the

stronger stations in the range. All these radios possess a number of memories into which you can store your favourite stations. Recalling your favourites is no more than a mere button-push away.

Sony are considered by many to have the portable market pretty much sewn up. The electronics giant has a wide variety of short wave receivers on its stall and includes the classic ICF-7600 (the Ford Cortina of Sony's portable world), which boasts synchronous detection of a.m. signals. Synchronous detection provides a method of tuning a.m. signals in a manner that reduces significantly, adjacent-channel interference. Another advantage is a reduction in audio distortion on signals suffering from the effects of fading. It's a definite boon and requires no particular skill to use.

Apart from Sony, Sangean receivers have been gaining respect amongst listeners. One reason for this is that many Sangean radios are simply re-badged Roberts designs. The Sangean ATS-909 (Roberts R861) is a good all-rounder and offers RDS decoding which delivers the station name to the radio's display. Only available on v.h.f. transmissions, RDS can take the guesswork out of f.m. DXing.

Other makes will vie for your custom, Grundig springs to mind. Don't get tempted into purchasing compact, multi-band radios, manufactured by far-eastern outfits you've never heard of, and selling for a few pounds. These devices epitomise the term 'cheap and nasty', combining poor sensitivity with even poorer image rejection and dial calibration. Owing to the single conversion techniques inherent in their design, these radios are also prone to phantom pops and squeaks up and down the dial.

Tabletop Radio

If portability (and price) isn't an issue and you intend to do most of listening at home, you'll probably be thinking in terms of purchasing a tabletop radio. Armed with one of these machines and only a modest external antenna, the broadcast world will be your oyster.

These receivers are designed to tune effectively, the multiplicity of signal types that populate the short wave bands. The very look and feel of them tells you they mean business, equipped, as they are, with an array of features that will help dig that tiny signal out of the noise. Standard on most receivers, is a noise blanker, helpful for suppressing car ignition noise, variable-width filters for reducing adjacent-channel interference, notch filters for obliterating unwanted carriers (whistles) and attenuators for reducing receiver overload.

Better still, some receivers offer digital signal processing (d.s.p.), which can spectacularly clean up incoming audio, rendering previously useless reception, monitorable. Some models offer synchronous a.m. detection as standard (I mentioned this earlier). Others, as an optional extra.

As usual, there are several makes and models from which to choose. The Icom R75, Yaesu FRG-100, Kenwood R-5000, the AOR AR7030 and the Lowe HF-225 are all receivers with a proven track record. Something from the JRC stables is also well worth considering.

Take a look at *SWM* reviews of the past for more info on the sets you are considering. *A full list is available from the* SWM *Editorial Offices.* **- *Ed.***

Personal Taste

One indeterminable element is that of personal taste. Many receivers within the same price bracket offer similar specifications. So the deciding factor can come down to whether you like the way a particular rig handles, its ergonomics and even the way it looks.

Some receivers have a button for everything, others rely on a menu-driven system, you'll have to drill down into to alter certain parameters. This makes for a smaller receiver, but pushing and/or holding combinations of buttons to alter some little detail can really hack you off after a while. It so makes sense to pop down to your retailer of choice and put some receivers through their paces.

"IF PORTABILITY (AND PRICE) ISN'T AN ISSUE AND YOU INTEND TO DO MOST LISTENING AT HOME, YOU'LL PROBABLY BE THINKING IN TERMS OF PURCHASING A TABLETOP RADIO"

There are few general coverage tabletop receivers that also boast v.h.f. reception as well as good performance on the long, medium and short waves. One exception I can personally vouch for is the Icom IC-R8500, a beautiful, highly specified receiver that tunes 0.1-2000MHz.

The final, main-stream option open to you is to purchase a PC-based radio. These come in two flavours - receiver cards that slot into a spare internal socket within the guts of your computer, and external units that plug into the PC or laptop via one of the COM ports. Each is controlled by mouse-clicking on the virtual front panel displayed on the screen. One of the main advantages of PC-based radios is the ability to enter and manipulate memory channels to suit your needs - probably more useful if you're a scanning enthusiast, but handy nonetheless.

There are two front-runners manufacturing this type of receiver - WinRadio, based in Australia, produce a range of card-based and external units, whilst Icom offer the latter in the guise of their PCR1000. My personal opinion is that whilst these receivers can offer something to those of you who already possess a PC or laptop, or if you have a particular need for a unit of this type, for the money, I'd go for a tabletop radio every time for sheer performance and 'usability'.

Second-Hand Or Kit?

Other choices open to you is to buy a second-hand, professional receiver. For a few hundred pounds you can pick up a gem from Racal or a Watkins-Johnson, receivers that would have cost thousands in their day. True, these radios are highly specified, but unless you also are lucky enough to own a superb antenna system, and live in an electrically quiet part of the countryside, as a beginner, some of what you have paid for will, in practice, be wasted. Spare parts for many of these receivers are becoming hard to find, and experts to repair them, even more elusive.

For those of you wondering if it is possible to build a receiver from a kit, the answer is, 'Yes'. Don't expect to build a simple kit and enjoy much in the way of performance, though. Unless building your own radios constitutes a major element of your hobby, more versatile (and usually cheaper) receivers can be had from the shop on the high street. That said, building your own radio is quite instructive and it's quite a buzz to pull in the DX using nothing more than a few components that you've just soldered

HAYDON Communications

PRICES SUBJECT TO CHANGE WITHOUT PRIOR NOTICE. PLEASE VERIFY BEFORE ORDERING. E&OE.

Mail order: 01708 862524

See over for address

NEXT DAY DELIVERY TO MOST AREAS, £10.00.

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.

ROYAL DISCONE

(Stainless steel)
Frequency range: receives 0.2-2000MHz, transmit 6/2/70/23cm, connector N type. High seusitivity 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: ≥+75dBm (2nd ord), ≥ + 50dBm (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 6mts to 20mts 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).

£64.95 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**

(Probably the best ATU around) P&P £5

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

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 **£62.95** 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 DUPLEXER/COMBINER

SEND SAE FOR DATA SHEET

Can be used in reverse

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

HAYDON COMMUNICATIONS

DISCOVER A WORLD OF INFORMATION AND INTRIGUE

100kHz-3GHz
ALL MODE
No gaps

NEW MODEL
AOR AR-8600 MKII

HAYDON PRICE
£649.00
Optional PSU unit £19.99

Among many improvements the AR8600 MKII boasts remarkable short wave performance.

100kHz-2.6GHz
ALL MODE
No gaps

"YEARS AHEAD OF IT'S TIME"
YAESU VR-5000

HAYDON PRICE
£575.00
(INCL' PSU)
Optional DSP unit £79.99

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

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

*Optional DSP-1 unit required

desk receivers

JRC NRD-545 DSP

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

OUR PRICE **£1299.00** Del £10.00

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

2 YR G'EE ICOM IC-R75

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

Optional DSP unit £8[illegible].00

OUR PRICE **£589.00**

OUR BEST SELLING HF RECEIVER

SP-21 Extention speaker £74.99

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

portable receivers

SANGEAN ATS-909

A superb performance portable/base synthesized world receiver with true SSB and 40Hz tunning 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
HD-1010 mono/stereo headphones.....£9.99

SONY SW-100E

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

OUR PRICE **£159.95** P&P £10

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

SANGEAN ATS-505

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

SALE PRICE **£79.00** P&P £10

Optional power supply.....£16.95

NEW! Coming in November - order now - DAB "digital audio broadcasting" portable receiver for £99.95

gizmos

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.....33.95

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?

items of interest

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 neatley away. (0.1-2GHz).

OUR PRICE **£14.99** P&P £1.50

QS-200

Superb quick fit dash mount for hand-helds. £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.

JM-838

JUMBO WALL/DESK CLOCK.
- Wide screen/2" digit time display
- Barometer
- Calender
- Temp
- Auto RF synch clock from Rugby.

PRICE **£59.99** P&P £6.00

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

together. Given the right conditions, results can be surprising.

One type of receiver I can't recommend for serious short wave broadcast listening is the scanner, especially the hand-held variety. Whilst a number of these devices cover the short wave spectrum, their performance here is limited. The a.m. filters supplied, adequate for the reception of communications on v.h.f., are just too wide to allow anything, but the stronger, interference-free short wave signals to be received successfully. Short wave reception can be quite poor, but doing the obvious and connecting an external antenna will usually result in receiver overload. Not really the best solution for beginners.

A Good Deal

The pages of *SWM* bristle with ads for all types of radios and accessories. Once you've decided on what you want (don't forget that all-important hands-on session), 'phone around for a good price. Make sure you know exactly what you're getting for your money. For instance, dealer A may appear, at first glance, to be offering a good price, but may not include the accessories. If you don't want the accessories, fine. Otherwise, dealer B, who charges a bit more, but throws in the extras, may turn out to be the cheaper alternative. Don't forget to take the carriage fees into account and don't forget to check out the dealers' return policy.

If you want some detailed advice on what the various portable radios have to offer, a really good place to start is the *Radio Listener's Guide*. This annual publication offers short reviews on scores of portable radios and also includes sections on WorldSpace radios, DAB radios, even solar and wind-up affairs.

As well as the reviews, the guide contains several, easy-to-read articles on broadcasting, rounding off with a complete frequency-order listing of Band II f.m. transmitters in the UK. There's even a map detailing the shipping forecast areas so, if you're ever asked the whereabouts of sea area North Utsire at the pub quiz, you'll be able to impress your friends.

Not covered, are PC-based and tabletop designs. For more on these, a read through the *World Radio & Television Handbook* (*WRTH*) may help. Although the receivers are reviewed in relative detail, only a few are tested each year. *Passport to Worldband Radio*, another annual publication, also rates a selection of receivers.

For the 'webbys' among you, Radio Nederland's *Receiver Shopping List* is a first class site, with plenty of advice on buying and in-depth reviews on a variety of radios and accessories.

This 1m diameter active loop antenna is an excellent performer all the way up to 30MHz. It does not overload in the presence of very strong signals. It also does an outstanding job of rejecting local electrical interference. At frequencies below 1.5MHz, the ALA 1530 is directional so is very useful for nulling out unwanted interfering stations. As it works well at ground level rotation by hand is nice and easy.

The advantages of this kind of antenna are many fold, for more details take a look at 'Whips & Loops' *SWM* November 2001 P23.

The Broadcast Bands

You've treated yourself to a new receiver. What now? With just a little know-how you can enhance your listening pleasure and enjoy the experience that much more.

One of the first things you'll want to know is where to listen. Let's first take a look at the broadcast radio spectrum. For all practical purposes we can say this starts at around 150kHz, the bottom end of long wave, and extends to just beyond 26MHz - not forgetting the 87.5-108MHz v.h.f. f.m. band. Frequency spectrum is a rare and much sought-after commodity and there are many parties interested in taking up residence.

Different frequencies within the spectrum behave in their own peculiar way and some bands are more desirable to the users than others. To prevent a free-for-all, and the various operators coming on the air when and where they please, the bands have to be allocated and then policed. It is the job of the International Telecommunications Union (ITU) to take into consideration the needs of the various users and carve up the spectrum so as to avoid the mutual interference that would otherwise ensue.

And so it is that there are broadcasting bands, amateur bands, marine and aircraft bands and bands for commercial and government communications. So where are the broadcast bands within this vast spectrum?

If you own one of the analogue portable radios mentioned elsewhere, the work has been done for you as the radio's short wave coverage is limited only to the bands of interest. Those of you with a digital 0-30MHz general coverage receiver may find **Table 1** helpful.

Many broadcasters cling affectionately to

"IF YOU'VE INVESTED YOUR HARD-EARNED CASH ON A SPLENDID TABLETOP RECEIVER, PLEASE DO PUT THE EFFORT INTO RIGGING UP A DECENT ANTENNA TO DO IT JUSTICE"

Table 1

MHz	Metre band
2.300-2.495	120*
3.200-3.400	90*
3.900-3.950	75*
3.950-4.000	75
4.750-5.060	60*
5.900-6.200	49
7.100-7350	41
9.400-9.900	31
11.600-12.100	25
13.570-13.870	22
15.100-15.800	19
17.480-17.900	16
18.900-19.020	15
21.450-21.850	13
25.670-26.100	11

A Word On Antennas

Much can be said on the subject. Alas - not enough space here. To draw an audio analogy, you can own the best hi-fi system on the planet, but feed it to a couple of three inch speakers of the type found in a cheap transistor radios and it will sound like a cheap transistor radio. If you've invested your hard-earned cash on a splendid tabletop receiver, please do put the effort into rigging up a decent antenna to do it justice.

Individual circumstances vary and you may be able to get away with a wire antenna, as long and high as possible, fed via an antenna tuning unit. If you don't own a long garden, you may wish to consider an active antenna. Flavour of the month would seem to be the Wellbrook ALA 1530 loop which has seem some excellent reviews in this very magazine.

references to, for instance, the 31m band. Even most analogue radios are calibrated in kilohertz, but the table shows both for your added convenience. Most bands are available globally except for those marked with an asterisk. These so-called 'tropical bands' are set aside for broadcasters in tropical areas only.

With up to 15 short wave bands to choose from, you'll have guessed that they all possess distinct qualities and each is put to use to make the most of prevailing circumstances. As you are probably aware, radio waves, travel in straight lines. This means that, because the world is round, before very much distance is covered, transmissions disappear off into space. So how is it that, despite this fact, we can hear radio stations from around our planet with relative ease?

The answer lies above us. Shrouding the Earth, at a height of between 70 and 400km, lies the ionosphere. This region consists of several gaseous layers which have an effect on the radio waves that hit them. Some of the layers appear to behave like a mirror, turning the signal back down to Earth. This process can repeated, with waves bounced up and down several times, resulting in signals reaching the far side of the world.

Simple? Simple not! Propagation conditions change - a lot. Conditions on the short waves vary by the time of day, season of the year and where, in the 11 year solar cycle, we happen to be. Some layers within the ionosphere absorb radio waves of certain frequencies during the day. Other layers reflect certain frequencies, but not all. It's a fascinating subject, but not one we have space to investigate at length here.

All broadcast bands are subject to the vagaries of propagation as the signals they carry are bounced around the world (or not) by these refractive layers. As a rule of thumb, during the hours of darkness, the lower frequency bands - medium wave to around 10MHz - are the most useful.

During daylight, lower frequencies are attenuated due to absorption, but higher frequencies are 'reflected'. You will gather from the above that the lower frequency bands remain useful for longer in winter.

As a backdrop to all this, the solar cycle has a significant part to play. The ionosphere only becomes 'reflective' as a result of the daily dose of radiation it receives from the sun's rays - hence the difference between night and daytime propagation. This radiation peaks every 11 years and coincides with increased sunspot activity. More sunspots means the layers get more heavily ionised, and therefore more able to reflect higher frequencies for longer.

The bad news is that we've recently passed the latest peak meaning radio conditions on the higher bands will deteriorate over the next four years or so. As a result, many broadcasters are abandoning the highest short wave broadcasting band (26MHz) as it has become too unreliable a medium for them to utilise.

"IF YOU WANT SOME DETAILED ADVICE ON WHAT THE VARIOUS PORTABLE RADIOS HAVE TO OFFER, A REALLY GOOD PLACE TO START IS THE RADIO LISTENER'S GUIDE"

Top Listening Tips

Next up are a few top tips to help you make the most of your listening post.

Over time, much fun can be had whilst ticking off the countries and broadcasters that you've managed to pull in. To collate all this data, it's a good idea to keep some kind of log - nothing fancy - just note the name of the station, date and time heard, frequency, reception report and details of the programming you heard. This will all come in handy should you wish to contact the station concerned, asking for a QSL card, more of which later.

During periods of difficult reception, listening with headphones, rather than through the radio's loudspeaker, increases considerably the intelligibility of the incoming signal.

Another 'must have' for the dedicated listener is some kind of audio recording device. A cassette recorder will do. Rather than record the radio with a microphone, go for a direct connection between the two. Many receivers, even some portables, boast a 'line out' socket which can be cabled up to the recorder's input for superior results. You'll be amazed how a garbled, unintelligible announcement, half obliterated by static, when listened to repeatedly, suddenly makes perfect sense and, Hey Presto! another one in the bag.

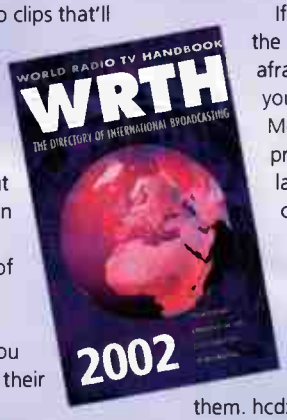
Alternatively, if you're fortunate enough to have a PC or a laptop computer near your receiver, this opens the possibility of recording audio onto the hard disk for later retrieval. There are a couple of very useful shareware programs that will do this for you - follow the link.

When starting out, you'll probably tune randomly around the active bands, listening to and logging a lot of what you hear. And what you'll hear straight away will be the major international players - the BBC, Voice of America, Deutsche Welle, Radio France International and Radio Free Europe/Radio Liberty are some. At any given time of day, these stations pump literally hundreds of megawatts-worth of news and information into the ether. You may find that you'd welcome a little assistance in identifying certain broadcasters you come across, so here's a few pointers.

Help is at hand from the radio stations themselves as most broadcasts have an interval signal for the minute preceding every hour (and sometimes the half hour). Interval signals usually consist of a short musical

phrase, repeated every few seconds. The vast majority of interval signals have been in use for decades whilst others are changed every so often.

In addition, most stations also use a very precise form of words to identify themselves when they sign on. "This is London", should ring a bell. So even if you don't speak the lingo, you stand a good chance of identifying your mystery station. Those of you with Internet access should log onto Dave Kernick's Interval Signal website where you'll find literally hundreds of audio clips that'll help you in your quest.



Before long, you'll want to become more selective and start hunting out the more distant or exotic stations. How can you find out when they're on the air and on which frequency they broadcast? The vast majority of stations adhere to fixed times and frequencies, and if you're already on their mailing list, you may be lucky enough to have their schedules drop through the letterbox every few months. Unfortunately, printed schedules are becoming a thing of the past as they cost money to produce and distribute - a major factor in the shoe-string world of international broadcasting.

Sources Of Information

Reference material comes into its own here. If you're hooked up to the 'net, there's more in a mo. Those of you who are paper-bound will want to purchase either the *World Radio and Television Handbook* (*WRTH*) or the *Passport to Worldband Radio*. Both these fine publications, available from the *SWM* Book Store, contain essentially similar information, and whilst *WRTH* is used by s.w.l.s and professionals alike, *Passport* contains more in the way of receiver reviews and highly readable articles. Both contain scheduling details and contact information from hundreds of broadcasters world-wide. Pulling these tomes together each year is a mammoth task.

But there's the rub. Although highly recommended, being annual publications with fairly lengthy lead times, it's fair to say that a significant amount of the scheduling information is out-of-date almost as soon as they're published. This is because the broadcasters change frequency bands twice a year - the last weekend in March and October - to exploit the seasonal variations in propagation conditions I mentioned earlier.

This is where reading the periodicals really pays off. Updated with schedules and listeners' logs, these provide an up-to-date picture of what's out there, where it is and when to catch it.

If you really want to keep abreast of the latest news and information, I'm afraid you really do need to get yourself connected to the Internet. Most radio stations have an online presence which will include the very latest schedule - even planned changes in the pipeline.

Not only that, as a member of the online community, you'll be able to subscribe to one of the mailing lists catering for the DXers needs. The hard-core DX (hcdx) mailing list is one of them. hcdx publish regular online bulletins, crammed full of the latest DX news. Glenn Hauser's *DX Listening Digest* is another frequently published gold mine of schedules and breaking stories in the radio world.

Finally, there are a couple of online frequency databases available to you, free of charge. Just type in a frequency and seconds later, all the scheduled transmissions for that channel are displayed, with current broadcasts highlighted. My web page shows you where.

It's All In Your Head

OK - you now have some frequency information at your fingertips. You're tuned to what you believe to be the scheduled transmission from a station that refuses to identify. The time, frequency and language are all correct, but you're uneasy about committing to your log book. Try alternating between the scheduled frequencies. If signals are strong, you'll soon determine if both are carrying the same programme. If so, the chances of two broadcasters using the same pair of frequencies at the same time is pretty slim. Another one under the belt. You have just identified the station by means of its simultaneous broadcast.

If you have two receivers (and the station is broadcasting on more than one frequency) you can expand on this technique. Plug a pair of in-the-ear headphones into each of the radios. Place one earpiece from each pair into your ears. You will now have two sets of earpieces half-dangling from your head (ensure your loved one doesn't have access to a camera). Dial up the mystery station on one of your receivers then tune through the alternative scheduled frequencies with the other.

If there's a matching transmission on one of the other channels then an audio image will appear somewhere in the middle of your head. The neat trick is that, even if the simultaneous broadcast is buried under another station, or other interference, rendering it almost undetectable in its own right, the tell-tale stereo image will always be produced.

Contacting The Station

Another interesting facet to the hobby is that of collecting QSL cards and station memorabilia. QSL cards are the written verification from a broadcaster, often in postcard form, that you have actually logged their signal. Certain stations encourage reception reports whilst an increasing number do not. Some reply by return - some can take months (even years), whilst others, despite much grovelling on your part, will never get back to you.

There are ways to endear yourself to the station when you ask for a QSL. First of all - the report. Make it useful. "I heard your radio station today. Please send me a card", is unlikely to solicit a reply. As a minimum, your report must include date, time span, frequency, signal strength, cochannel and adjacent channel interference (levels and source of), and an overall audibility rating. The SINPO code is the internationally recognised form of report sending, see **Table 2**. A note about prevailing radio conditions at the time would also be useful.

Don't forget to give details of your receiver and antenna - don't give a glowing report in the hope that this will get the response you desire. Give it to them straight. If, on a regular basis, you can hardly hear a transmission intended for your area, they need to know. Finally, as further proof of reception, give some details (with times in UTC) of what you heard - songs, subject of discussion and the like.

In this day and age, the major broadcasters know, pretty much, how well they're being heard as many possess remote receivers in some of their target areas. Others employ professional monitors, or trusted

Table 2

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

individuals, to send in regular reception reports. These stations may still value your communication, not for the report, but more for the fact that they can file away your letter and bring it out, with hundreds of others, to help justify next year's budget. Broadcasters also enjoy feedback on their content - what you like (or not) and what you'd like to see by way of improvement.

On the other hand, a small-scale African or South American station, broadcasting only to a domestic audience, has no interest in reports from abroad. If you're lucky, they may humour you, but to stack the odds in your favour, make sure you have enclosed a self-addressed envelope and one US dollar (minimum) or an International Reply Coupon to cover return postage. Why not also include some used UK stamps as these can find their way to a good home, cost you nothing and earn you Brownie points.

However, depending on the country of destination, be prepared for any or all of your goodies to get 'lost in transit'. Don't necessarily expect a reply to your letter, written in English, when sent to deepest south America. Cobble a few lines together in Spanish and you're more likely to get a response.

Korea Or Cumbria?

Something else to bear in mind. During the early days of short wave broadcasting, if you heard a country's external service on the radio you could be pretty sure that the transmissions were being radiated from the nation in question. It soon became clear that much would be gained, by the stations, if the transmitters were sited nearer to the target area.

Broadcasters began to look at ways of relaying their audio to a remote transmitter site for rebroadcast close to the area of interest. Nations with empires at their beck and call built transmitter sites in their far-flung territories and delivered recordings to each. Not exactly ideal for breaking news, but suitable for non time-specific programmes. Once landline communication could be relied upon, programmes were fed out live from a studio centre and rebroadcast with relative ease, but at great cost - one line per transmitter site.

Later, a number a concerns, BBC and Voice of America included, built feeder stations that would transmit the programmes, usually using single or independent sideband, to remote reception sites from where audio would be cabled to the transmitters. It's many years now since the majority of these discontinued operations, although some of the old BBC feeder frequencies now host the so-called number stations, so popular with some of the readers of this fine magazine. Surely some bizarre coincidence?

One station that still employs short wave feeder stations is American Forces Radio. Until recently, feeds to their outposts resided on the Inmarsat satellite system. In a bid to save costs, this was abandoned in favour of short wave feeders, now active 24 hours-a-day.

The trend has been in the opposite sense with the majority of broadcasters opting for satellite carriage to remote transmission sites. Internet feeders are now also often used.

Reciprocal agreements abound with radio stations rebroadcasting other people's content in order to maximise audibility in the target zone. If not by mutual arrangement, facilities can be hired out to whoever has the cash - even you. This is basically how Britain's Merlin Communications earns a crust. Meanwhile, Deutsche Welle's Juelich site is exclusively for hire to third-party broadcasters.

The moral of this story is - just because you hear, for instance, Radio Korea International romping in on 3.955MHz at 2100-2130 on your short wave portable, it doesn't mean you're actually netting a signal from the home of this year's World Cup. It's actually being broadcast from Skelton, just off the M6, near Penrith.

When it comes to QSLing, you'll probably make up some rules for yourself along the way. Whether logging a station's rebroadcast counts as hearing that country will be down to you.

BDXC regularly publishes *Radio Stations in the UK* and *Broadcasts in English*, the titles of which are self-explanatory. As a member, you'll be entitled to generous discounts on the two de-facto bibles for s.w.l.s, *WRTH* and *Passport to Worldband Radio*. Membership costs £12 a year and you can find out more by writing to **BDXC, 126 Bargery Road, London SE6 2LR** or by checking into their web site.

Medium and long wave listening your thing? Then so is the Medium Wave Circle. Their monthly publication, *Medium Wave News* runs for up 60 pages and includes articles on antennas and receivers, not forgetting the regular reception reports, members' mailbag and medium wave beacon lists. There are discounts on books and membership costs £12 a year. Contact the **Medium Wave Circle Treasurer, S9 Moat Lane, Luton LU3 1UU** or point your browser to their web site.

If you have Internet access, there are many interest groups catering for all aspects of the hobby where you can exchange information and ideas almost instantaneously.

International short wave radio has been with us for over 70 years. It's method of delivery - terrestrial a.m. - bears all the signs sharing equal longevity with that of the gramophone record. Despite threats from alternative platforms - Digital Radio Mondiale for long, medium and short waves - not to mention satellite and Internet distribution, there will be a place for conventional a.m. radio on short wave for years to come.

"IF YOU REALLY WANT TO KEEP ABREAST OF THE LATEST NEWS AND INFORMATION, I'M AFRAID YOU REALLY DO NEED TO GET YOURSELF CONNECTED TO THE INTERNET"

Clubs With Subs

Keeping up-to-date with what's happening in the broadcast world and exchanging ideas with others having similar interests is always rewarding. As well as buying your copy of *SWM* each month, you'll want to join one of the clubs that exist with you in mind.

If you live in the UK, then the British DX Club (BDXC) has a lot to offer. The club's monthly publication *Communication* contains the latest DX news, UK news, members' loggings, a QSL report, a regular pirate radio report, v.h.f. news, topical regional reports, book reviews and more. The A5 format magazine is edited only days before publication, so it's one of the most up-to-date sources of printed information you'll find.

As well as the monthly newsletter, the

One potential threat to the listening hobby is the increased levels of interference generated by some of the Internet distribution systems themselves. ADSL and PLT, broadband Internet over the telephone and power lines respectively, may generate potentially high enough levels of interference as to make monitoring of weak stations nigh impossible. Let's hope not.

I trust you have enjoyed this *Broadcast Special* - only time to scratch the surface of just a few topics. Next time I'll dig a little deeper. I hope that it has encouraged any newcomers amongst you to buy into short wave listening and so maybe embark on a lifetime's enjoyment of this unique and absorbing hobby.

SWM

WATERS & STANTON

MAIN STORE:

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

MIDLANDS STORE:

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

SCOTTISH STORE:

• 20 WOODSIDE WAY, GLENROTHES, FIFE, KY7 5DF. • TEL: 01592 756962 • FAX: 01592 610451
• E-MAIL: jayceecoms@aol.com • WEB: www.jayceecoms.com • HOURS: TUE - FRI 9am - 5.00pm SAT - 9am - 4.00pm
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The chance to do some deals and meet old friends. Trade stands in adjacent hall, with refreshments and easy parking. The biggest Open Day ever held in Scotland. Be there!

OPENS 10AM

FREEPHONE ORDER LINE:08000 73 73 88

carriage charges: A=£2.75, B=£6, C=£9

WATSON W-HP200 COMMS HEADPHONES

NEW

HEAR THE DIFFERENCE!

- Dual 8 Ohm drivers
- 200 - 10,000Hz
- Tailored for Comms
- Padded ear pieces
- Good sound proofing
- Single cable
- 3.5mm stereo
- 1/4" stereo adaptor

£22.95 Plus £2.75 Carr.

NES10-2 DSP SPEAKER

NEW

DSP BUILT IN!

- *Speaker with built-in DSP noise filters*
- *Dip switch settings for 8 filter settings*
- *Plugs directly into 3.5m speaker socket*
- *Handles up to 5 Watts input*
- *Max 2.5 Watts output*
- *Requires 12V at 0.4 Amps max*
- *AC adaptor included*
- *Use mobile with cigar adaptor*

KILLS NOISE
ENHANCES SPEECH
MOBILE OR BASE

This is a combined speaker and DSP unit that can be used with any receiver or transceiver. It offers 8 filter settings selected via a dip switch on the back and a top mounted on/off switch to select the DSP in and out of circuit. The unit offers dramatic noise reduction enabling weak signals to be cleaned up by removing most of the noise. DX and weak signals can sound just like locals. It is equally great for mobile use by reducing car noise and making speech clearer.

£99.95 Plus £6.00 Carr.

Uniden-Bearcat UBC-220XLT

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

£119 Plus £6.00 Carr.

MVT-3300EU SCANNER

SPECIAL OFFER

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.

VR-120D RECEIVER

NEW MODEL

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

£159 Plus £6.00 Carr.

YUPITERU MVT-7100EX

100kHz - 1.65GHz

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

£229 Plus £6.00 Carr.

UBC-3000XLT

- 25MHz to 1.3GHz
- 400 Ch/20 Banks
- 10 Priority Channels
- Automatic store
- Twin Turbo Scan & Search
- Scan rate: 100 ch per sec
- Data skip feature
- Selectable Attenuator
- Modes: AM, WFM, NFM
- LCD with back light
- Ext spkr jack 3.5mm
- Ext earphone jack 2.5mm
- Rechargeable battery (5hrs)
- Power requirements 6.5V DC
- Size 68 x 88 x 38mm
- Weight 368g

£189 Plus £9.00 Carr.

AOR AR-8600 II

NEW

AOR's exciting new scanner.
- 530kHz - 2040MHz
- 1000 Memories
- 37ch sec scan
- RS232 PC interface fitted
- 10.7MHz IF for SDU5500
- Accepts up to 5 slot-in cards
- Detachable MW bar aerial
- FM AM SSB CW
- 2000 pass frequencies
- 8.33kHz airband steps

£679 Plus £9.00 Carr.

Fairhaven RD500VX Radio Database Receiver

£749 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.

Yupiteru MVT-7300

£239 Plus £6.00 Carr.

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

NOW WITH NICADS & CHARGER

BEARCAT UBC - 9000XLT BASE STATION

£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 unattanded operation the 9000XLT has an automatic tape recorder ON/OFF and tape output feature!

AOR-7030 RECEIVER

0kHz - 32MHz

£749 Plus £9.00 Carr.

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

AR-7030+ £879 C

YAESU VR-5000

£599 Plus £9.00 Carr.

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

YAESU VR-500

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

£199 Plus £6.00 Carr.

08000 73 73 88

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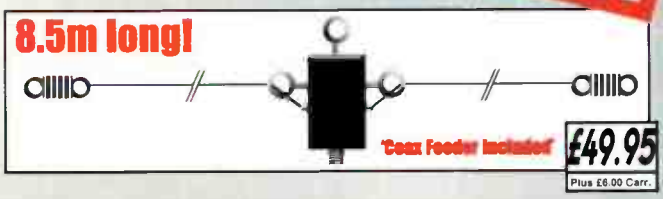
CUSTOMER SERVICE WON'T

PRICE MATCH

WDP-30 SHORT WAVE DIPOLE

NEW



£49.95 Plus £6.00 Carr.

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

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

STREET PILOT III

NEW FROM GARMIN

IT TALKS TO YOU

£945.95 Plus £9.00 Carr.

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

GARMIN GPS-V

£499.95 Plus £6.00 Carr.

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

IC-R75 RECEIVER
30kHz - 60MHz

£599 Plus £9.00 Carr.

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

BAR-888U RADIO CONTROLLED WEATHER CENTRE

£59.95 Plus £6.00 Carr.

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

GLOBAL AT-2000 ANTENNA TUNER

£89.95 Plus £6.00 Carr.

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

ICOM IC-R8500
"EDITORS CHOICE"

£1199 Plus £9.00 Carr.

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

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

ICOM IC-R10E
500KHZ - 1300MHZ

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

£279 Plus £6.00 Carr.

PCR-1000 10kHz - 1300MHz
COMPUTER CONTROLLED RECEIVER

£299 Plus £6.00 Carr.

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

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

ICOM IC-R2
500kHz - 1309MHz

£139 Plus £6.00 Carr.

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

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

£59.95 Plus £6.00 Carr.

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

SPY CATCHERS

NEARFIELD MONITORS

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

WR-5001 £99.95 WR-5002 £159.95

OPTOELECTRONICS
DS-1000 DIGITAL COUNTER

PROMOTION SAVE £100

£499 Plus £6.00 Carr.

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

AOR-8200 SERIES 2
500KHZ - 2040MHZ

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

£389 Plus £6.00 Carr.

R-861 PORTABLE
SW WITH RDS

£199.95 Plus £6.00 Carr.

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

SANYO WS-1000 WORLD SPACE DIGITAL RECEIVER

£149 Plus £6.00 Carr.

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

WATSON WMM-3 MkII

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

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

£69.95 Plus £6.00 Carr.

YUPITERU MVT-9000EU MK2
100kHz - 1.99GHz

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

£369 Plus £9.00 Carr.

MFJ-461
MORSE CODE READER

IT'S BRILLIANT

£84.95 Plus £9.00 Carr.

The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays 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 receivers audio if required. Truly pocket sized at 57 x 92.5 x 25.5mm and 156g.

HITACHI KH-WS1 WORLD SPACE DIGITAL RECEIVER

£149 Plus £6.00 Carr.

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

PRO-89 Race Scanner

We gave our 'Scanning' man Dave Roberts the chance to test drive the PRO-89 from Radio Shack, so was it a winner? Read on for Dave's verdict.

I love fast cars. I've never owned one, so I just work the small cars that I have driven until the engines give up. Sad but true. As for sport, unless you put petrol in it. I'm just not interested.

Motor racing is very big business all over the world. In the US there are so many motor racing series that the average punter can get confused just reading the TV listings. Here in the UK the sport is not as diverse, but is yearly becoming more so. As well as CART and the various Formula series, there is now the ASCAR race series at Rockingham Circuit in Corby, Northamptonshire.

These days all motor racing involves radio communications. From the vehicle on board communications to the pit crew, it seems that everyone is sporting some set or other.

I don't live near a race track and it's some time since I last visited a NASCAR or CASCAR race, but when I got a view of the Radio Shack box that housed the PRO-89 scanner, for a moment - just a small moment - I was back at a circuit and could smell the exhaust and scorched rubber and feel the heat haze from the asphalt.

Race Scanner

'Hand-held Race Scanner' are the words that shout at you from the package.

The kit consists of the hand-held radio, two antennas, handbook, a spare battery tray and a booklet of American race frequencies. At this point, it's worth noting that there is no power adapter/battery charger included. Adapters and other power leads and accessories are available from outlets that stock this radio, at extra charge.

The spare battery tray is yellow coloured and is there to allow the user to install rechargeable batteries in a separate holder and the colour reminds you of the fact. This is done to minimise the risk of a 9V charger being plugged in the side socket when non rechargeable cells are installed.

Two antennas...one is 160mm long and the other 45mm long. Both appear to be helical type antennas. My first thought was that the stubby little one was to enhance reception at u.h.f. frequencies, but the well compiled handbook informed me that the small one was there to make it easier to carry the radio on a belt at a race event.

"A look at the PRO-89 confirms that this scanner is primarily intended for use at a race track"

A Cursory Peek

A look at the PRO-89 confirms that this scanner is primarily intended for use at a race track. A cursory peek at the set top would initially prompt the comment that the top panel switch labelling is the wrong way round, i.e. the labels for squelch and on/off volume are designed to be viewed from the back of the set and not the front side where the display is. It looks a bit odd, but then you realise that this set is designed to be hung on your belt, with supplied sturdy clip, while you are at the race and as such the controls would be viewed from the back.

Apart from the antenna BNC connection, the only other feature on the top of the radio is the 3.5mm headphone jack socket. I say headphone because if you're at a race meet and those small block V8s are roaring past you at around 150mph, you aren't going to hear the radio if you just plug in an earphone or your girlfriend's Walkman headset. You will need a proper headphone pair with built-in sound proofing to hear any radio traffic at all. These heavy duty headphones are also available from Radio Shack outlets (too few and far between these days).

"An interesting feature of the '89 is the set of pre-programmed search frequency bands which can't be altered"

What Will I Hear?

At this point, it's time to look at what the PRO-89 will hear and how. Coverage is as follows:-

29-54MHz in 5kHz steps.
108-136.9875 in 12.5kHz steps
137-174MHz in 5kHz steps
380-512MHz again in 12.5kHz steps
806-823.9875 at 12.5kHz stepping
849-868.9875 at 12.5kHz spacing and
894-960MHz again in 12.5kHz steps

Apart from a.m. airband coverage (108-136.9875), the other ranges are n.b.f.m. only. This state of affairs cannot be changed. The frequency coverage may sound a bit familiar to those of us that have wasted much of our lives fooling with receivers.

In fact, apart from the low end, the frequency range is pretty much identical to the Radio Shack PRO-34 hand-held. At 200, the PRO-34 and '89 also share the same number of memory channels. The PRO-34 was also only a.m. capable at airband. It's hard to believe, but the '34 was on sale almost 20 years ago! Fifty five model numbers separate them, but they aren't exactly PROs apart in this respect.

A glance at the frequencies available immediately indicates that this radio is, like many others, manufactured primarily for the US/Canadian market. The frequency steps are non negotiable. In Europe we really need 12.5 spacing available on our receivers pretty much everywhere, 6.25kHz would be nicer and a choice of 5, 6.25, 8.33, 10, 12.5, 20, 25 and 100kHz programmable anywhere in the receiver's spectrum, better still.

Looking at the 'set in stone' modes and spacing confirms that this is a Trans-Atlantic set as does the handbook, which on page five gives you the indication that it's legal to listen to the police, fire and military. Well it is in Texas, but don't try telling that to the nice policeman who hears his sergeant booming from the speaker as you stroll by him, PRO-89 in hand.

It's Tough!

The '89 has a tough moulded plastic case and at a swift glance the radio would appear almost identical to many other hand-held scanners available. Look a little closer and you see that the top left button on the control panel is marked 'CAR'. Utilising this and the keyboard allows frequencies associated with a particular race car to be entered and recalled using the car's race number.

Once you identify frequencies associated with a particular vehicle (the voice link, pit crew, etc.), you can enter the car's race number. Then should you be scanning all the memories, if one pops up you can then check to see which vehicle or vehicle's crew is on air. Alternately the frequencies can be reviewed by entering the car's race number.

So you enter 54 and manually page through the frequencies that are involved with car 54. You can't scan by car number unless you entered only a particular vehicle's frequency set in it's own memory bank. There are ten banks of twenty channels. I think that the motor racing enthusiast would have preferred more memory banks with less channels in each bank so that a scan could be made of individual car's associated frequencies.

The UK racing enthusiast will probably find that the inflexible channel/search steps on the PRO-89 will not be compatible with spacing on this side of the Atlantic, although with f.m. signals at close range (such as a racing circuit) this may not pose too much of a problem.

Already Programmed

An interesting feature of the '89 is the set of pre-programmed search frequency bands which can't be altered. The first group are US racing frequencies and the group is in three banks. The first runs from 150.995 to 154.625 in 5kHz steps with some big gaps in coverage. The second covers from 460-470MHz in 12.5 steps and the third scans 32 spot frequencies in bands from 851 to 937MHz.

Presumably these spot frequencies are in use at circuits in America. Radio Shack supply a US race team frequency guide with the set and this reveals that many racing teams use the 460-470 band. Here in the UK you may hear the BAR, Arrows, Jordan and Jaguar teams in that region, but most of the motor racing in the UK has no relevance to the frequencies programmed into the scanner.

The second pre programmed band (Radio Shack call them Service Banks) is listed as Fire/Police and is split into four groups. The first searches a number of frequencies and some spot frequencies between 33 and 46.5MHz. These are police and fire frequencies in the USA, but again are not relevant here.

Other frequencies in the 150MHz region together with some odd spot frequencies are in the second group and some u.h.f. frequencies in groups three and four. All these groups have odd gaps in coverage and are best avoided.

A useful pre-programmed Service Band is the civil air band which can be easily accessed. The next band is the amateur band and you can choose to search through all or any of the four groups. The first covers the f.m. section of the 10m band, the second covers 50-54MHz (6m), the third 144-148 and the final group covers 420-450MHz. All useful stuff.

An Odd One

Now to the Marine Service Bank. This is an odd one because the radio won't search any marine channels below channel 6. The rest are covered and the '89 also searches some duplex marine channels as well, but not all of them. I'm not very familiar with American marine duplex channels so I guess that this all makes sense over there. Having said this, I have found the amateur, air and marine service banks really useful.

I don't find the pre-programmed weather channels handy at all and neither will anyone in Britain, but if you happen to be in Oklahoma and that big twister is headed for your mobile home, you'll find 'em invaluable.

There are 20 scratchpad frequencies (RS call them 'Monitor' frequencies) that can be saved during a frequency search. They can then be entered later in memory channels if required. Another useful feature is the ability to review locked out frequencies and, if necessary, unlock them individually or *en masse*.

As is the case with all other scanners, a priority channel can be entered and the '89 has the usual search and scan facilities with delay and a useful bleeping and visual warning lets you know if you are about to store a duplicate frequency. It's very easy to delete memories and/or reset the unit swiftly if required.

Works Well

Having mentioned the many programming features that make this radio different, it's now time to mention how well it works. And it does work well. The sensitivity of the unit is pretty good. As this receiver is designed to be used in the field, I decided not to run it on an external antenna.

Accordingly, during the time that I've been using it, I have only had one of the two supplied antennas fitted and I was surprised just how efficient the stubby antenna was. Obviously signals were down compared with the larger antenna, but not as much as I had feared.

"Recovered audio quality is nice and sharp which is how it should sound to make the best of communications traffic"

Sensitivity is good. The '89 is effective in this regard and compares favourably with some other scanners that I possess. Recovered audio quality is nice and sharp which is how it should sound to make the best of communications traffic. Scan and search speeds are 25 channels and 50 steps respectively and the radio doesn't seem to miss transmissions, a fault that has been known to occur with other sets.

The bottom line on this scanner is that if you buy it to monitor motor races in the UK you're in for a disappointment. If, however, you make the purchase to acquire a competent 200 channel f.m. handy scanner with civil air band and easily accessed marine and amateur f.m. coverage you have probably made a sensible choice.

SWM

Thanks To Thanks go to RuSk Ltd. for the loan of the Radio Shack PRO-89. **RuSk Ltd. can be contacted at 29 The Hollies, The Hollies Industrial Estate, Cannock, Staffs WS1 1DB, Tel: (01543) 468855. The PRO-89 costs £149.99.**

Loop the Loop

John Wilson ventures into the great outdoors, well a field of sheep, to bring us the amazing steerable low frequency wire loop antenna from Wellbrook Communications. The K9AY proves to exceed both expectations and specification. Null away John...

It must have become apparent to most readers that I have become an enthusiast for loop antennas, with their very real advantages in providing a low noise floor due to the rejection of localised E-field interference and, if rotated, their ability to use the two signal nulls to reject unwanted interfering stations. Evidence from other reviewers around the world has confirmed the real superiority of the loop antenna over the active whip or rod antenna, and for proof of that superiority, you only have to take a look at my comparative results when I tested the Wellbrook LFL-1010 loop against the RF Systems LFA-520 active whip in *SWM* November 2001. I have had further confirmation of the excellence of the Wellbrook design in a letter from the calibration laboratory which did the UKAS calibration of the Wellbrook screened l.f. loop which I use in my professional measurements at the EMC Test House. The letter said that they had been calibrating a large (1.04m dia.) unscreened loop for the BBC, and from the description it could only have been a Wellbrook. To quote:

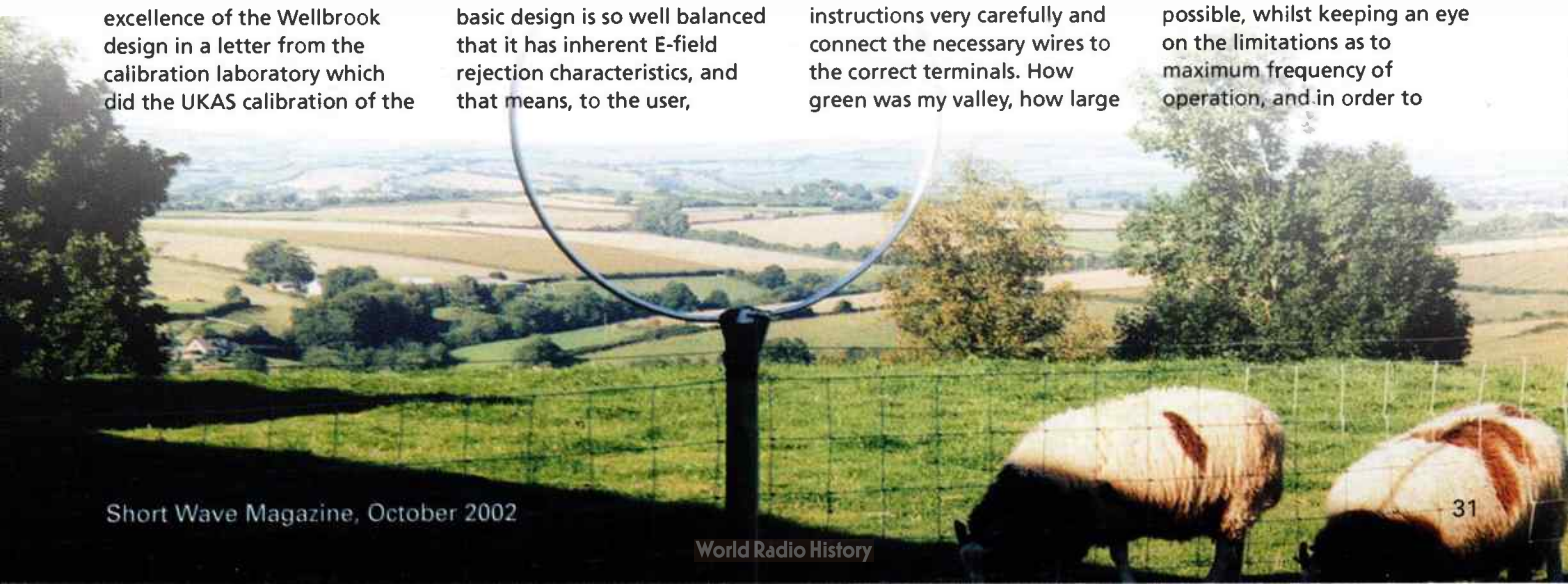
"Having previously had problems with unshielded loops, it came as a relief to find absolutely no calibration problems so I suspect it has good E-field rejection due to being of low impedance, balanced and suitably matched. It is easy to be wise after the event, but possibly yours could have been satisfactory without a Faraday shield".

Noise Rejection

In other words, the Wellbrook basic design is so well balanced that it has inherent E-field rejection characteristics, and that means, to the user, rejection of near-field noise - the same noise that devastates the active whip antenna.

As I said, I'm a loop enthusiast, so it was a pleasure to receive for review a kit from Wellbrook for the erection of a really large loop antenna based on the research carried out by an American engineer Gary Breed K9AY into the behaviour of large terminated single loops. I say 'kit' because the loop(s) have to be made from flexible wire, which anyone can do for themselves, so there is no need to ship hundreds of metres of copper wire around the country. Actually 'kit' is the wrong expression to use, because the component parts of the Wellbrook 'K9AY' loop are professionally designed and fully finished units. All the user has to do is read the instructions very carefully and connect the necessary wires to the correct terminals. How green was my valley, how large was my loop?

Gary Breed K9AY states in his original *QST* article that: "The maximum circumference of the loop is a little over a quarter wavelength at the highest frequency of operation", and goes on to say "Smaller loops, or same size loops at lower frequencies retain the directional pattern, which makes this an excellent antenna for a.m. broadcast reception". The final key statement is: "Unfortunately, the received signal voltage is proportional to the area enclosed by the loop, so sensitivity decreases rapidly as the antenna becomes smaller. Unless you have a very good pre-amp, keep the loop size near the maximum". So, the object of the exercise is to make the loop area as large as possible, whilst keeping an eye on the limitations as to maximum frequency of operation, and in order to



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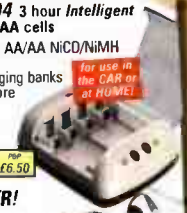

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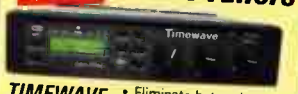

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Null and Direction knobs reside on the front of the K9AY Control Unit. The socket for the p.s.u. end receiver output on the side.

maintain l.f. performance a very good pre-amp is recommended.

Alakazam!

Enter the genie of the loop, otherwise known as Andrew Ikin, the owner of Wellbrook. Andrew has been: a) making high performance loops for a long time and b) always includes a very high specification preamplifier within his loop matching system, so he is clearly the best person to design and build a K9AY loop system which incorporates every possible refinement of the original design and present it to the hobby listener in a package which is easy to install and use. The basic principle of this type of antenna is that of a wire loop that is resistively terminated to ground at one end, with the receiver connected to the other end of the loop via an impedance matching transformer. The feed impedance and the resistive termination are in the order of 390-560Ω, thus requiring a 9:1 impedance ratio in the matching transformer. These impedances may seem familiar to those who have considered the T2FD antenna, but the transformer design for the K9AY is made a little easier because it is working between two unbalanced feeds and does not have to perform the balance to unbalance conversion called for in the T2FD. Wellbrook have improved matters by modifying the original transformer design so that the antenna ground is isolated from the feeder, thus eliminating potential earth loop noise and feeder pick-up. Those of you who have done some more reading about antennas will see similarities with the Beverage antenna, but as Bill Bridges pointed out in a follow-up article in *QST*, the antennas are quite different in their characteristics, and from a practical point of view, the Beverage of course is stretched out just above ground for several wavelengths and suits only those hobbyists who have a garden two metres wide and several kilometres long – not many around unless you live on the Mull of Kintyre.

The major advantage of the terminated loop antenna is that it can be made very directional, with maximum response to incoming signals from the direction of the feed point, and more importantly a

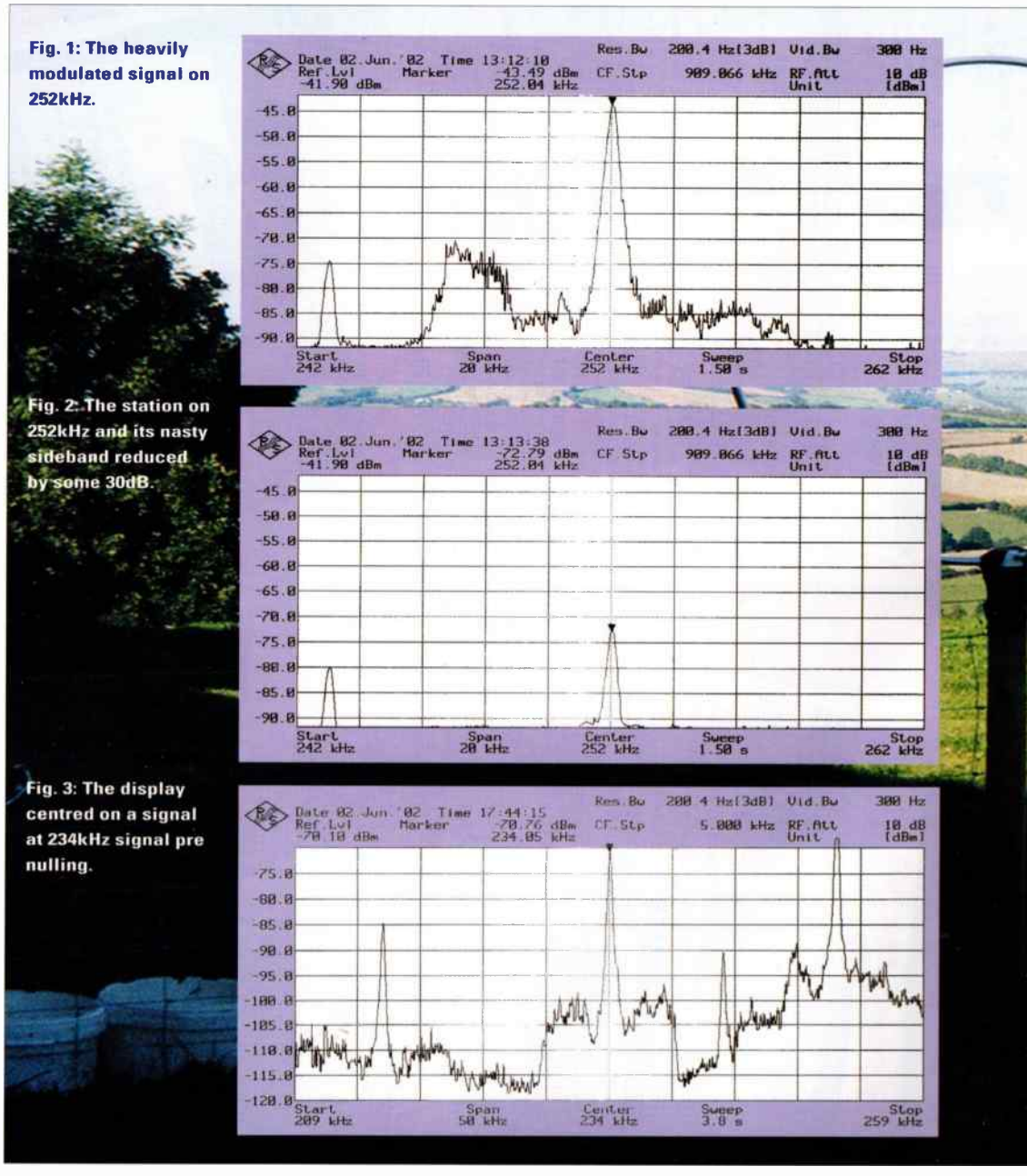

Fig. 1: The heavily modulated signal on 252kHz.

Fig. 2: The station on 252kHz and its nasty sideband reduced by some 30dB.

Fig. 3: The display centred on a signal at 234kHz signal pre nulling.

deep null to signals arriving from the opposite direction – how green was my valley, how deep was my null? Very deep indeed, as I will demonstrate later. The depth of the null and the overall performance of the loop depend largely on the value of the terminating resistor, and this varies with frequency and ground conductivity, so for optimum performance the resistor has to be variable and non-inductive. This is tricky because with the receiver located indoors (presumably), the resistor is outside at the other end of the loop, which means a trip outside when you want to make large frequency changes, and then how do you know that the resistor has been correctly set? The original K9AY design was intended for amateur radio use on 160 metres and recommends using a variable resistor of about 1KΩ to find the best null, then measuring the value of the pot and substituting a fixed resistor. All very well, but if you want a wide frequency range and optimise performance under different values of ground conductivity, such as the variations caused by wet or dry ground – very important in the UK, then you really need to be able to vary the termination impedance from the comfort of your operating position. Enter the genie of the loop again.

Just Twiddle

The Wellbrook control unit includes the facility for varying the termination by simply twiddling a rotary control which does some secret 'electrickery' down at the far end of the loop, and in use this means you can select a station on your receiver then twiddle the control to maximise the forward lobe of the antenna, and/or maximise the rearward null to remove an interfering signal from the opposite direction. The forward antenna pattern is quite broad (K9AY states that the front/side ratio is about one 'S' point, i.e. 6dB) but the rearward null is fairly narrow, but not so narrow as to make it a 'one direction only' feature, and in practice there is a substantial reduction for all signals arriving from the rear of the antenna. This is all very well so far, but having decided to erect a terminated loop, in which direction should you point it? Well, the first thing to consider is that by reversing the positions of the terminating resistor you can reverse the front and back direction of the incoming signals, so you now have a two-direction loop. What about now considering erecting a second loop at right angles to the first one and also making it possible to reverse the feed and termination ends of that loop as well? You now have effectively made a high performance antenna which can be 'steered' around four quadrants of the compass, but let's take a look at the practical aspects of getting all this to work sensibly.

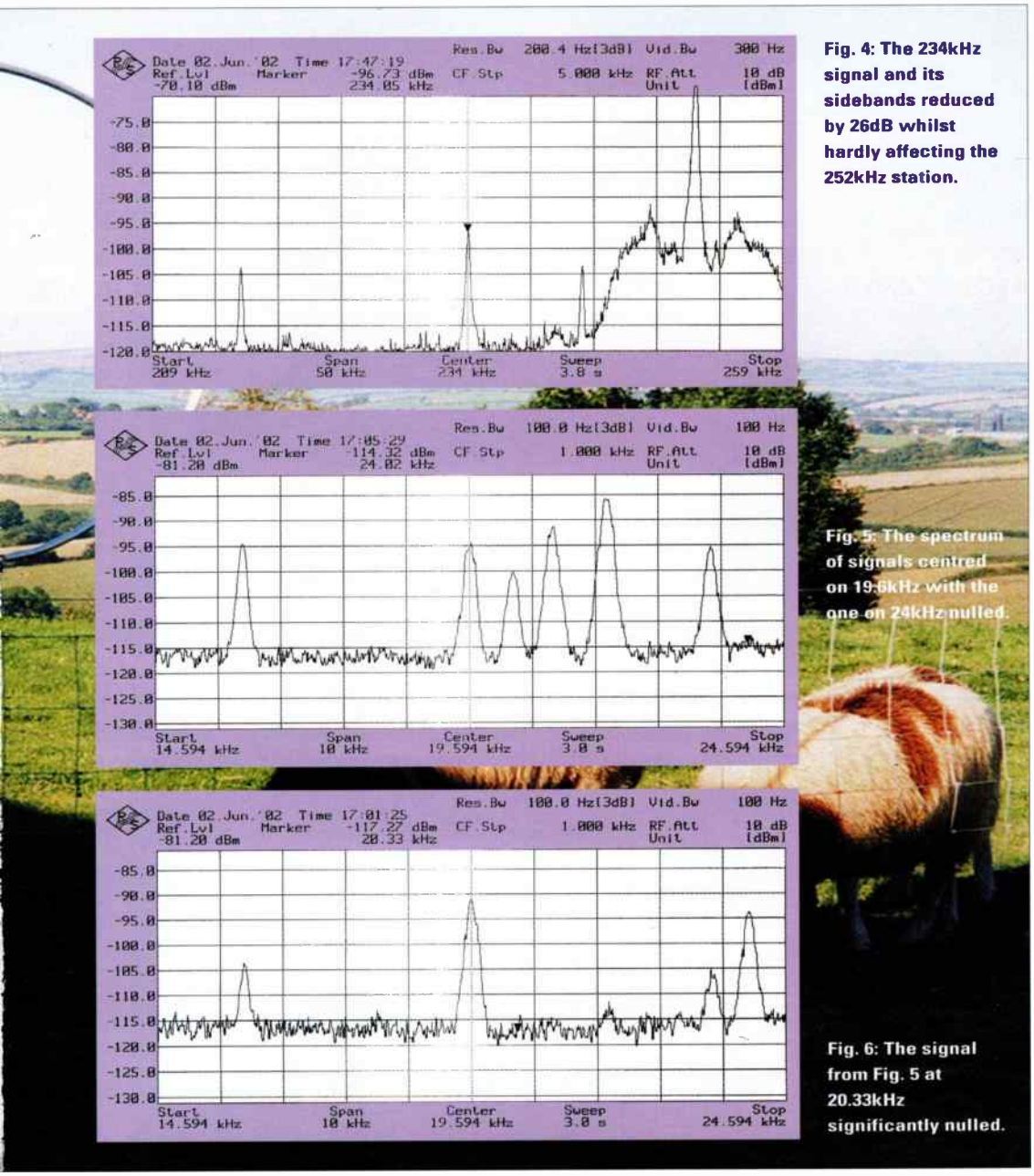

Fig. 4: The 234kHz signal and its sidebands reduced by 26dB whilst hardly affecting the 252kHz station.

Fig. 5: The spectrum of signals centred on 19.6kHz with the one on 24kHz nulled.

Fig. 6: The signal from Fig. 5 at 20.33kHz significantly nulled.

Easy Solution

You will have to design and construct a magic box in which you have a remotely variable termination impedance, together with the ability to switch between two incoming loops and also reverse the direction of feed and termination. You need wide band 9:1 matching transformers, and to make the system perfect, a low noise preamplifier with a very high intercept point performance. All this has to be completely weatherproof because it will be sitting out there in the wild and windy environment for some years. Back in the comfort of your home, you also have to design and construct a unit, which will allow you to control all the outside electronics and power the preamplifier, and you have to do this with a minimum of cabling to the base of the antenna. If you think you can do all this and make it work, then go ahead, but be prepared for some failures as well as successes, because what appears simple on paper often doesn't work quite as you expected when you wind the transformers and construct the preamplifiers – many a top receiver designer has fallen at this apparently easy hurdle! For those who want the ready made solution, the Wellbrook version of the K9AY is the answer. How did I get on with it?

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Erection Time

The design of the Wellbrook system follows the K9AY layout in having the loops suspended from a common single central support some seven metres high. The literature suggests that this could be a tree, but I have open land around me so I considered all sorts of options involving plastic drain pipe from the DIY store, or lengths of square section wood screwed together. In the end I was fortunate to be loaned a telescopic GRP composite mast from Sycom **www.sycomcomp.co.uk** which closes down to a little over one metre in length, weighs only 1.5kg, but extends to ten metres when fully erected. At a current price of £57.95 this was the complete answer to my central support needs, and proved to be an excellent investment for future antenna installations. The loops can be erected as a diamond shape with one point at the support height and the other at ground, but in my case I erected them as isosceles triangles with the apex at the top of the support and the base supported on electric fence insulating stakes at one metre off the ground. Incidentally, these stakes are quite cheap and I have a fancy to try out a Beverage using them, but I would have to let the sheep run riot if I removed the fences from the fields. Having calculated the total length of the loops, I cut two 30 metre lengths of insulated antenna wire (which I had plenty of, having had to buy 3000 metres of it for my T2FD project) and connected the middle of the lengths to the top of the fibreglass mast. I took care to mark the ends of the wire, realising that once I had hoisted the whole lot into the air I could easily lose track of which loop was which. Bringing the centre of the base of both loops to the base of the mast, I installed the Wellbrook 'box' at one metre off the floor and prepared to fix up some sort of ground system, since the loops will not work without a ground connection – or will they? Having been forced to erect the loops over an existing wire fence, I decided to try using this fence as a counterpoise, but at the same time drove a length of 15mm copper tube into the ground as an alternative. The loops had to be aligned NNE to SSW and WNW to ESE because of the fence. In a free installation the exact alignment could be chosen to suit particular listening interests, but my results were very good indeed with my own arrangement.

Impressive

From the outside 'Head Unit I ran a single coaxial cable back to my test lab, together with a two wire control pair for which I used cheap light duty intruder alarm cable – simply because I had it to hand. Any low current twin flex will do the job. The internal control box and power supply were placed next to a receiver and off we went. The whole installation was completed in an afternoon and looked most impressive – but did it work?

Oh Boy, did it work. The signals came pounding in, but always standing above a low noise floor which is a characteristic of loop antennas. The specification for this antenna says it works from 60kHz to 2MHz, but in my installation I could hear and see (using a spectrum analyser) signals all the way down to 16kHz, and above 2MHz with these lengths of wire in the sky, the antenna carried on working but with the null control having less and less effect. Using the rotary switch on the control unit to select North, East, West and South directions made stations from those directions appear and disappear, and adjusting the null control seemed to 'tune' the loop notch to knock out stations at will. I don't know how the variable termination manages to achieve this, but believe me it works. Let me show you an example of the null control in action.

Control wires and antenna feeder connect here.

Long Wave Beam!

Take a look at **Fig. 1** which shows the (as usual) heavily modulated signal on 252kHz from the station previously known as Atlantic 252. You can clearly see the sideband energy extending well outside their allocated bandwidth, and the station is notorious for 'sideband splatter'. A quick twiddle of the 'null' control on the Wellbrook control unit and the effect can be seen in **Fig. 2**, with '252' and its nasty sideband reduced by some 30dB. Note the signal at 243kHz which only drops by 5dB when '252' is nulled out. That's how sharp the apparent tuning is, and it is this null feature which makes the Wellbrook loop such a powerful listening weapon. Now let me show you the same thing in reverse. The analyser plot **Fig. 3** shows the display centred on a signal at 234kHz signal with '252' banging away on the right hand side. Re-tuning the null control reduces the 234kHz signal and its sidebands by 26dB whilst hardly affecting '252' as can be seen in **Fig. 4**. One reason for the null being so effective is that '252' and Radio Luxembourg on 234kHz are in different directions from me, and each station can therefore be dropped into a null by selection of the appropriate antenna direction – hey, I've got a rotary beam antenna on the Long Wave!

An even more powerful demonstration of the null effectiveness can be observed by nulling out 'Atlantic' on 252kHz, whereupon you can suddenly hear Arabic music. This is coming from Radio Algeria, and it is quite easy to listen to this in the presence of 'Atlantic' providing that you carefully 'null out' the Atlantic signal. It works at even lower frequencies as well. Plot **Fig. 5** shows a spectrum of signals centred on 19.6kHz from which I have nulled out a signal on 24kHz – you may be able to see the marker at the right hand edge of the display. Twiddling the null control I then took out a signal at 20.33kHz as you can see in **Fig. 6**, with the original 24kHz signal back up, but the three strong signals between 19.6 and 24kHz being virtually eliminated without affecting the 19.6kHz. Absolutely wonderful for the l.f. DX enthusiast, and so easy to use.

Essential Earth

I mentioned earlier that I tried out the antenna with a counterpoise and with a ground rod (the recommended method), and began by listening to weak beacon signals on 346kHz. I could hear three call signs, LHO, LN and RS, and by using the direction switch and null control could pick them off one by one. With no ground connection and no

counterpoise the signal levels were at -105dBm. Connecting the counterpoise raised them by 7dB to -98dBm, and removing the counterpoise and connecting the copper ground rod raised them by another 2dB to -96dBm. Trying the same thing on the 60kHz signal from Rugby raised the signal level by 11dB from 'no ground' to 'copper ground' conditions, and yes, I tried connecting both the counterpoise and the ground rod at the same time but this did not improve the signal above that using the ground rod alone. Therefore, the moral seems to be **Use a decent ground connection** which is, after all, exactly what Wellbrook say in their instructions. However, since you have the unique feature of being able to adjust the termination impedance using the 'null' control, at least you can compensate for different ground conditions.

Higher Frequencies Too

Performance all the way up through the medium wave and into the low end of the h.f. bands is maintained well, and with the squeaks, bleeps and groans which plague l.f. listening being so easy to eliminate, it becomes a pleasure rather than a pain to go back to winkling out the rare ones. Even on 80 metres it was possible to knock out interfering stations from Europe when listening to UK stations in the various nets, but let no-one inadvertently forget that this is a receiving only antenna and you won't get much sympathy from Wellbrook if you send a box back which has had 400 watts of lower sideband stuffed into it - it wasn't me sir, it was a nearby lightning strike! Between 4 and 30MHz, the antenna still provides excellent low noise reception.

My Conclusions

The Wellbrook interpretation of the original K9AY can be strongly recommended to serious listeners. Wellbrook have taken every optional aspect of the design and combined them all into an easy-to-use package which produces outstanding results all the way down to 15kHz and much higher than the quoted 2MHz, in fact to much higher frequencies as a general antenna. The directional control, which gives the effect of having a steerable beam antenna for low frequencies, is a new experience for me, and I played for hours up and down the bands becoming increasingly impressed. The erected antenna fits in an area of about nine metres square, which is very compact, and all the advantages of having a low impedance loop with the inherent rejection characteristics of locally generated noise make it work well in urban environments. Towards the end of my tests I had to erect an electric fence around the bottom of the antenna so as to keep out my wife's inquisitive sheep, and was surprised to find that the loop did not respond to the resultant multi-kilovolt discharges as badly as I had anticipated. In fact, I was able to continue listening comfortably in the presence of the one second blasts from the fence. The Wellbrook package is not a low cost item, quality never is, but believe me there is a lot of painstaking design and assembly effort in it, particularly in the selection of semiconductor devices when building and testing the built-in high performance preamplifier, all of which makes the Wellbrook K9AY an antenna which the listener can rely on to provide outstanding, even unequalled performance in the l.f. spectrum. The user will have to provide a centre support, the antenna wire, the coaxial feed cable. A 12V d.c. regulated power supply is supplied for UK and Eire users. Anyone outside those areas will have to provide a p.s.u. that can supply about 100mA.

The Head Unit, this is the interface between the loops and the shack located Control Unit.

Contact Details

Wellbrook

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Web: www.wellbrook.uk.com
Wellbrook Communications,Wellbrook House, Brookside Road, Bransgore, Christchurch BH23 8NA

Sycom

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Sycom, PO Box 148, Leatherhead, Surrey KT22 9YW

Wellbrook sees to all the hard technical bits. I cannot wait for the autumn listening season to really get to grips with this amazing antenna - if Wellbrook and Sycom will let me hang on to the kit. Must further mention the Sycom ten metre telescopic mast. It bends like a fishing rod when you wave it about, but just like a fishing rod, it is extremely strong, and took the stress of 60m of heavy antenna wire hanging from it without any signs of distress. The whole experience was, for me at least, another nail in the coffin of the active whip antenna. Loop de Loop man!

Antenna Wire

Finally, a small commercial. I mentioned the antenna wire that I had made to my specification for an aborted T2FD project and which I used for this test of the Wellbrook K9AY. I still have this in stock and would be quite happy to supply it for anyone who wants to make a really good job of a wire or loop antenna. The wire is made up of seven strands of 0.67mm pure copper, covered overall in a clear sheath (to reduce visual impact) and has an outside diameter of 3.4mm. This is excellent antenna wire, made to my own specification and I can sell it at 29p per metre plus any carriage charges. I'll measure and cut it in multiples of 10m, so if you are interested in the best, drop me a line *c/o Short Wave Magazine*, or E-mail me at **johnwilson@freezone.co.uk**

My sincere thanks to **Wellbrook Communications** and **Sycom Ltd.** for letting me have such a good time with their products.

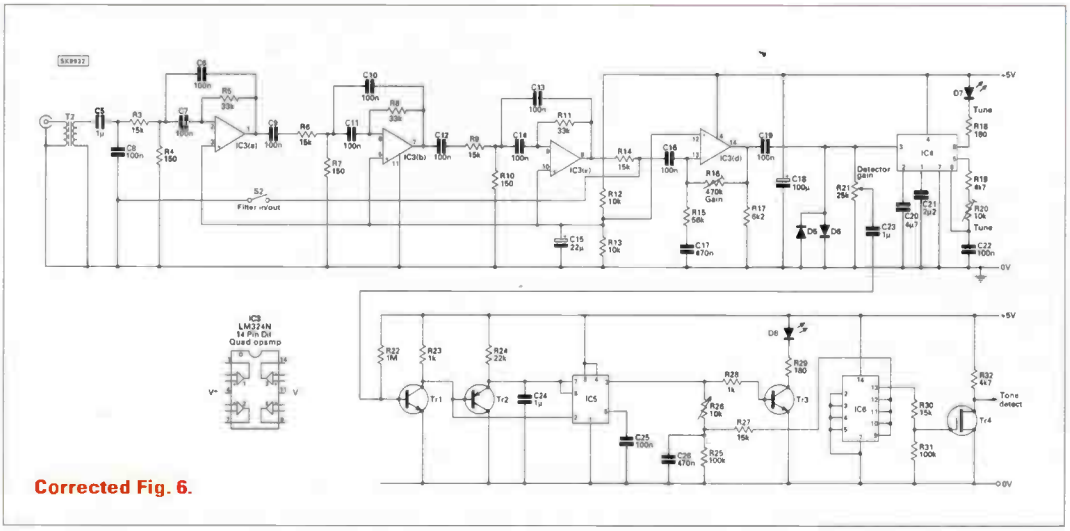
Happy listening.
SWM

NB John's review activities with the K9AY antenna were conducted before Team Talk on 252kHz went off air. Please see 'Off The Record' (p15) for more details on the station closure - **Ed.**

The Morse Assistant

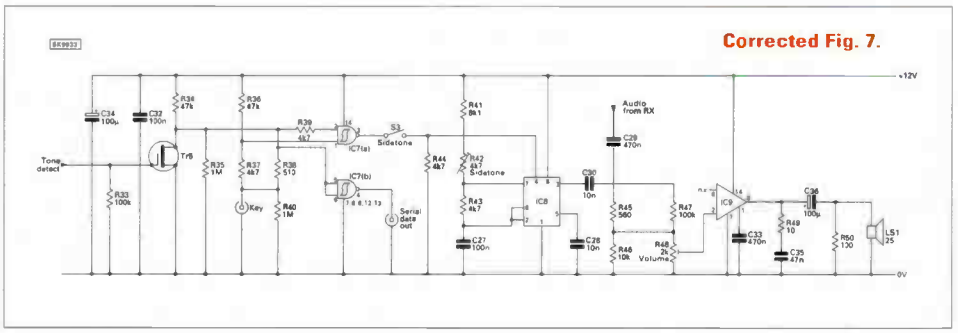
A Morse Reader Program and PC Interface UPDATE

Parts one and two of Graham Sutton's creation were published in *SWM* July and August respectively. This update includes the omitted shopping list of materials required to build this handy project and some circuit corrections.



Corrected Fig. 6.

Regrettably there were some errors introduced in the conversion to *SWM* style of the supplied circuit diagrams. Here we provide the replacement circuits which also include detail that was missing from the originals.



Corrected Fig. 7.

You Will Need

Resistors

Carbon film 0.25W, 5%

510Ω	1	R49
100Ω	1	R50
150Ω	3	R4, R7, R10
180Ω	1	R18
510Ω	1	R38
560Ω	1	R45
1kΩ	2	R23, R28
4k7Ω	6	R19, R32, R37, R39, R43, R44
6k2Ω	1	R17
8k1Ω	1	R41
10kΩ	4	R12, R13, R29, R46
15kΩ	6	R3, R6, R9, R14, R27, R30
22kΩ	1	R24
33kΩ	3	R5, R8, R11
47kΩ	2	R34, R36
56kΩ	1	R15
100kΩ	4	R25, R31, R33, R47
1MΩ	3	R22, R35, R40

Carbon film 0.5W, 5%

4k7Ω	2	R1, R2

Potentiometers horizontal preset

2kΩ log	1	R48
4k7Ω log	1	R42
10kΩ lin	1	R20
470kΩ log	1	R16

Potentiometers 0.25in shaft

10kΩ lin	1	R26
25kΩ lin	1	R21

Capacitors

Ceramic

10nF	4	C28, C30, C31, C32
47nF	1	C35
100nF	15	C3, C6, C7, C8, C9, C10, C11, C12, C13, C14, C16, C19, C22, C25, C27
220nF	1	C1
470nF	4	C17, C26, C29, C33
1µF	3	C5, C23, C24

Tantalum 16V

2.2µF	1	C21
4.7µF	1	C20
22µF	1	C15

Electrolytic

100µF 6.3V	3	C18, C34, C36
1000µF 40V	1	C2
4000µF 25V	1	C4

Semiconductors

Transistors

BC109	1	Tr1
BC477	1	Tr2
BC107	1	Tr3
VN10	2	Tr4, Tr5

Diodes

1N1004	4	D1, D2, D3, D4
1N914	2	D5, D6

Light Emitting Diodes

Panel mount 10mA	2	D7, D8

Intergrated Circuits

CD4002	1	IC6
CD4093B	1	IC7
LM324N	1	IC3
LM380	1	IC9
NE555	2	IC5, IC8
NE567	1	IC4

Regulators

7805	1	IC2
7812	1	IC1

Miscellaneous

3off - 8-pin d.i.l. IC sockets, 4off - 14-pin d.i.l. IC sockets. Transformer p.c.b. mount 230/12V 3VA (T1), Transistor o/p transformer (T2). Single sided copper clad FR4 - 90 x 150mm, Double sided copper clad FR4 - 100 x 200mm, or similar. 200mW 25Ω 50mm moving coil loudspeaker. 3off - p.c.b. mounting 20mm fuse holders. 2off - 20mm 1A anti-surge fuses (F1, F2), 1off - 20mm 1A fast blow fuses (F3). 1off - d.p.s.t. illuminated rocker switch - 250V a.c. (S1), 2off s.p.s.t. mini toggle switches (S2, S3). 1off - 0.25in panel mount mono jack socket (Key).
Case - 280 x 160 x 80mm (w x d x h).

What does it all mean?

Part 2

Short Wave Magazine's Guide to Abbreviations and Acronyms

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

Following on from last month, we are bringing you the rest of the A-Z of terms, in subsequent months we'll bring a more detailed explanation of some of the less straightforward abbreviations and acronyms.

M CONTINUED

MHz	megahertz
mm	millimetre
MN	Maine
MOD	Ministry of Defence
Morse	character set used for two state communications
ms	millisecond
MSL	Multi-zonal Scanner Low resolution
MSM	Multi-zonal Scanner Medium resolution
MTWA	Maximum Take-Off Weight Authorised
mV	millivolt - one thousandth of a volt
MW	megawatt (1,000,000 watts)
mW	milliwatt (one thousandth of a watt)
MΩ	one million ohms

N

N-type	coaxial connector system
n.b	noise blanker
n.b.f.m.	narrow band frequency modulation
n.d.b.	non-directional beacon
n.f.m.	narrow band f.m. (alternative)
NASA	National Aeronautics & Space Administration
NAT	North ATlantic
nav	navigation, navigational
NF	Newfoundland
NiCad	Nickel Cadmium
nm	nautical miles
NOAA	National Oceanic & Atmospheric Administration
NTSC	National Television Standard for Colour (US colour TV standard)
NZ$	New Zealand dollars

O

o.b.s.	omni-bearing selector
o.n.o.	or nearest offer
o.v.n.o.	or very nearest offer
Ohms	Unit of Electrical resistance
op-amp	Operational Amplifier
OT	'old timer'
OTHR	Over The Horizon Radar

P

P&P	Post and Packaging
p-p	peak-to-peak (height of wave form)
p.c.b.	printed circuit board
p.d.	potential difference (voltage)
p.e.p.	peak envelope power
p.l.l.	phased lock loop
p.m.r.	private mobile radio
p.p.l. (A, H)	private pilot's licence (Aeroplanes, Helicopters)
p.p.m.	parts per million
p.r.f.	pulse reception frequency
p.s.k.	phase shift keying
p.s.u.	power supply unit
p.t.t.	push to talk
p.v.c.	Poly Vinyl Chloride
pass band	range of frequencies allowed through a filter network
Paxolin	Resin bonded paper material
Perspex	Trade name for acrylic plastic material
pF	picofarad - one million millionths of a Farad
PFA	Popular Flying Association
PL-259	type of coaxial connector
PO	Post Office
Port	Portuguese

Q

Q	the 'pureness' of a tuned circuit
Qantas	Queensland and Northern Territories Air Service
QNH	Altimeter pressure setting, reads zero at sea level
qps	quiescent prominences
QRM	man-made electrical noise
QRN	natural electrical noise
QRO	high power
QRP	low power
QSB	fading of a signal
QSL	acknowledgement of contact
QSO	two-way radio contact
QTH	home or station address/location
QTI	Quotations of Technical Interest

R

r.d.s.	radio data system
r.f.	radio frequency
r.f.c.	radio frequency choke
r.f.i.	radio frequency interference
r.i.t.	receiver incremental tuning
r.m.d.i.	radio magnetic direction indicator
r.m.i.	radio magnetic indicator
r.m.s.	root mean square
r.p.m.	revolutions per minute
r.v.r.	runway visual range
R/T	radio telephony
RA	Radiocommunications agency
RadCom	Journal of the RSGB
RAE	Radio Amateur's Examination
RAF	Royal Air Force
RAFARS	Royal Air Force Amateur Radio Society
RAM	Random Access Memory
RNARS	Royal Navy Amateur Radio Society
RO	Radio Operator
ROM	Read Only Memory
RSARS	Royal Signals Amateur Radio Society
RSGB	Radio Society of Great Britain
RTTY	Radio TeleTYpe
Russ	Russian
RX	receiver

S

s	second
S-Band	
S-meter	received signal strength meter
s.a.e.	stamped addressed envelope
s.c.a.	subsidary communications authorisation
s.h.f.	super high frequency
s.o.c.	sector operation centre
s.r.z.	special rules zone
s.s.a.e.	stamped self addressed envelope
s.s.b.	single sideband
s.s.r.	secondary surveillance radar
s.w.	short wave (see h.f.)
s.w.g.	standard wire gauge
s.w.l.	short wave listener
s.w.r.	standing wave ratio
SE	south-east
SECAM	French colour TV standard
Selcall	Selective calling short wave Frequencies between 1.4 and 30MHz
SINAD	SIgnal to Noise And Distortion ratio (used for performance measurement)
SINPO	scheme for recording reception quality
SITOR	SImplex Telegraphy Over Radio
SNR	signal to noise ratio
SO-239	Mating half of PL-259
Sp	Spanish
Sp-E	Sporadic-E
SR	symbol rate
SSTV	Slow Scan Television
stop-band	range of frequencies not allowed through a filter network
SVGA	Super Versatile Graphic Array
Sw	Swedish

T

t.c.x.o.	temperature controlled crystal oscillator
t.d.r.	Transponder (satellite receiver and re transmitter)
t.h.d.	total harmonic distortion
t.m.a.	terminal manoeuvring area
t.o.t.	time on target
t.r.f.	tuned radio frequency
t.t.l.	transistor-transistor logic
t.w.t.	travelling wave tube
TACAN	TACtical Air Navigation
Tah	Tahitian
Tel	Telgu
Teletext	low resolution text service transmitted in TV picture frames
Teletype	mechanical computer terminal
timebase	reference waveform used to control c.r.t. scanning
TNC	Terminal Node Controller
TOR	Teleprinter Over Radio
Tur	Turkish
TV	television
TVDX	long distance television
TVDXer	'long distance' television signal watcher
TX	transmitter

U

u.h.f.	ultra high frequency (over 300MHz)
u.s.b.	upper sideband
Uk	Ukrainian
Ur	Urdu
US$	United States dollars
USA	United States of America
USAF	US Air Force
UTC	Universal Co-Ordinated Time (=GMT)

V

V	Volt - unit of electrical potential difference
v.c.o.	voltage controlled oscillator
v.c.r.	video cassette recorder
v.d.f.	very high frequency direction finding
v.d.u.	visual display unit
v.f.o.	variable frequency oscilloscope
v.f.r.	visual flight rules
v.h.f.	very high frequency (30-300MHz)
v.i.t.s.	vertical interval time signal
v.l.f.	very low frequency
v.m.c.	visual meteorological conditions
v.o.r.	very high frequency omni-directional radio range
v.s.i.	vertical speed indicator
v.s.w.r.	voltage standing wave ratio
VA	volt-amps (similar to power in Watts, but not accounting for power factor)
VAT	Value Added Tax
Veroboard	copper clad perforated material for electronic assembly
VGA	Versatile Graphic Array
Viet	Vietnamese
VOA	Voice of America
VOLMET	VOLume METeorological report

W

W	Watt, Unit of power
W	west
w.b.f.m.	wide band frequency modulation
w.f.m.	wide band f.m. (alternative)
w.h.y.	what have you
w.p.m.	words per minute
WEFAX	weather facsimile
WRTH	World Radio & TV Handbook
WWII	World War Two

X

XYL	wife (ex young lady)

Y

Yagi	Multi-element antenna array
YL	female partner

Z

Zenner	semiconductor diode with voltage regulating properties
Zepp	type of antenna

UNITS

°	degrees
°C	degrees Celsius
°E	degrees East
°F	degrees Fahrenheit
°W	degrees West
µ	micro
µF	microfarads
µs	microsecond
µV	microvolts
Ω	ohm (unit of electrical resistance)
%	percent
+	positive
-	negative

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

Decode

NAVTEX Update

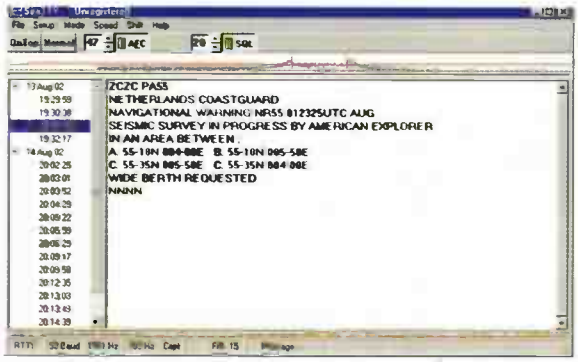
Alan Pudsey has written to me pointing-out that I omitted to mention the 490kHz transmissions in my recent feature on NAVTEX - he is quite right they were omitted, but mainly because I wanted to encourage new listeners to start with the much busier 518kHz transmissions. The new 490kHz transmission was launched last year and is aimed at users of smaller craft and the information covers the waters up to 20km offshore. For the UK, the broadcasts are transmitted twice a day from Portpatric, Cullercoats and Niton Radio stations. The transmission time for the weather broadcasts are: Portpatric: 0820 and 2020; Cullercoats: 0720 and 1920 and Niton: 0520 and 1720.

One of the particularly attractive items in the 490kHz transmission is the coastal weather forecast along with a 3-day outlook. This is a really good way to get a quality weather forecast. Of course it's only really valid if you happen to live in one of the coastal areas. Anyway, to put things straight, here's a sample of a typical 490kHz weather transmission.

Time (UTC)	Message
08:18:15	ZCZC CE97
08:18:17	ISSUED BY THE MET OFFICE AT 0500 UTC ON MONDAY 12 AUGUST 2002.
08:18:27	INSHORE WATERS FORECAST TO 12 MILES OFFSHORE FROM 0500 UTC TO
08:18:37	0500 UTC.
08:18:39	LANDS END TO ST DAVIDS HEAD INCLUDING THE BRISTOL CHANNEL.
08:18:48	24 HOUR FORECAST:
08:18:51	NORTHWEST 5, PERHAPS 6 AT FIRST, BACKING AND DECREASING
08:19:00	SOUTHWEST 3 OR 4.
08:19:04	FAIR AT FIRST, THEN OCCASIONAL DRIZZLE LATER.
08:19:11	GOOD, BECOMING MODERATE IN DRIZZLE.
08:19:17	SEA STATE: MODERATE, LOCALLY SLIGHT LATER.
08:19:24	OUTLOOK FOR THE FOLLOWING 24 HOURS:
08:19:30	SOUTHWEST BACKING SOUTH, 3 OR 4.
08:19:36	PATCHY DRIZZLE AT FIRST, OTHERWISE FAIR.
08:19:43	MODERATE OR GOOD.
08:19:46	SEA STATE: SLIGHT OR MODERATE.
08:19:51	ST DAVIDS HEAD TO COLWYN BAY, INCLUDING ST GEORGES CHANNEL.
08:20:00	24 HOUR FORECAST:
08:20:03	NORTHWEST 5, DECREASING 3 OR 4, THEN BACKING SOUTHWEST 4 OR 5.
08:20:14	FAIR AT FIRST, THEN OCCASIONAL DRIZZLE LATER.
08:20:22	GOOD, BECOMING MODERATE IN DRIZZLE.
08:20:28	SEA STATE: MODERATE, DECREASING SLIGHT FOR A TIME.
08:20:36	OUTLOOK FOR THE FOLLOWING 24 HOURS:
08:20:42	SOUTHWEST BACKING SOUTH, 4 OR 5.
08:20:48	PATCHY DRIZZLE AT TIMES.

New Software - *SeaTTY*

SeaTTY's handy message window display.



Not really new, but certainly one I've not covered here before. If you've been reading 'Decode' for a while, you will remember my praise of the *CWGet* program produced by Sergei Podstrigailo. That program was extremely well put together and is just about the best Morse decoder around.

Sergei has also lent his hand to some RTTY programming and *SeaTTY* is the result, hence my interest. Although the program appears to be a fairly basic RTTY/FEC decoder, Sergei has added his touch of magic and included a few interesting extras to really bring the program to life. Sergei's brief with *SeaTTY* was to put together a decoding program designed specifically for the reception of text based weather information. That means the type of plain language reports you find transmitted from time to time by the likes of Hamburg Met and the NAVTEX coastal stations. Rather than simply include the appropriate modes, Sergio has included some filtering so that the software can be set to extract the wanted messages from the signal and store them for later retrieval. More of this later.

The program requires a 133MHz AMD processor or a fairly basic 75MHz Pentium PC, so is not too demanding in this respect. The download is available from **www.dxsoft.com** in the form of a

Zip file so is reasonably quick to download. To install you just need to unzip the files and copy them to a suitable temporary directory so you can run the setup program to complete the installation.

Once complete, the installation takes about 1.6Mb of hard disk space. Running *SeaTTY* is really simple as it uses the soundcard to process the signal from the receiver. All you need is the usual audio screened lead with a 3.5mm jack plug at one end and the appropriate connection for your receivers 'line/tape out' at the other. Please make sure you use the 'Line-in' on your soundcard to avoid overload problems.

With the program running, you are presented with a very clear screen with five separate areas. At the very top of the screen is the spectrum display that provides all the information and controls you need to get the best from the signal. Instead of the usual passive system, the *SeaTTY* display has a number of adjustments that can be used to optimise the decoder's performance.

SeaTTY has a wonderfully wide input range thanks to the use of the soundcard input, so you can decode a RTTY/NAVTEX signal anywhere in the audio pass band rather than having to stick with the narrow options presented by some systems. To extend this, *SeaTTY* includes an automatic tuning control to automatically track signals. These features are particularly useful if you have a receiver with coarse tuning steps or a drift problem, as *SeaTTY* will automatically keep locked on to the signal.

Another little gem is the provision of a squelch control. This is enabled and controlled by a button and up/down arrows on the menu bar. What makes this particularly powerful is the way the squelch is shown on the tuning display.

If you look carefully at the pictures, you will see a thin horizontal line running through the spectrum display, this is the squelch threshold. In use you just raise or lower the squelch threshold so that the peaks of the wanted signal are above the line. That way the noise is suppressed and you don't suffer a string of random characters whilst you're waiting for your signal to reappear.

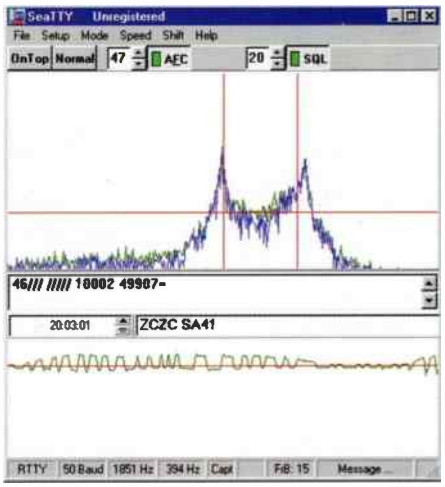
The next window is the main receive buffer that shows live messages as they arrive - no frills here. The next two windows are where things really start to get interesting. The left hand window looks a bit like a directory tree on your computer but, instead of folder names, you will find dates and times. As with a directory tree, these can be expanded by clicking on the + sign. This is the section where *SeaTTY* captures and displays all the plain text messages.

Detecting a plain text message is done using the ZCZC and NNNN codes that appear at the start and end of every message. As the program detects a complete message it will add another entry to the message section.

I thought this was a great and, as far as I know, unique way of handling this type of message. It really worked a treat and made reviewing messages very easy. As you click on a message in the left hand window, the text appears in the right hand window. The final window is the oscillograph that runs the full width of the screen. If you want to change the size of any or all of the display screens you just place your cursor over the dividing line and drag it to the size you want.

***SeaTTY* set for normal operation.**

Mode wise, *SeaTTY* is limited to those systems that carry weather information, i.e. RTTY and NAVTEX. The RTTY option supports speeds of 45, 50, 75 and 100 baud with shifts of 85, 150, 450 and 850Hz that covers just about everything! NAVTEX is even more straightforward as the only choice you have to make is whether or not to use fastsync, the answer to this should be yes! This really is another excellent program from Sergei with a few novel but very powerful features - well worth a try.



***SeaTTY*s detailed tuning display systems.**

dxsoft.com - the web site.

ICOM

Remarkable Receiver

All-Mode 30kHz/60MHz-USB-LSB-CW-RTTY-AM-FM-S-AM!

This superb receiver is designed to suit a range of market sectors from the demanding 'decoder' to the interested SWL. The IC-R75 incorporates Icom's leading-edge technology and offers a range of features that make it exceptional in many ways. It sets a new standard for performance and value, and will become a popular choice for SWL's everywhere.

• Twin PBT, 2-level pre-amp • Selectable Auto-Gain Control (AGC) • Noise blanker helps capture and clean up DX signals • RF attenuator reduces local station interference • Synchronous AM detection circuit prevents audio distortion while receiving AM broadcasts • Bar graph-style, digital signal meter • Clear audio, even at maximum level of 2 watts!

The IC-R75 is a dedicated HF+50 MHz, all-mode unit with frequency coverage stretching from 30kHz to 60MHz in USB, LSB, CW, RTTY, AM, FM and S-AM. The compact IC-R75 241(W) x 94(H) x 229(D) mm. is an extremely sensitive receiver crammed full of features but the small dimensions give complete installation flexibility for base or mobile operation.

The user-friendly front panel has a large, clear, alphanumeric LCD display showing the frequency or '6+2' character channel name. The panel's numeric keypad allows direct frequency entry or memory channel selection. The SQL control may be configured to adjust RF gain and/or squelch threshold.

Other IC-R75 features include; 2 programmable scan edges, 99 memory channels, an internal clock with ON/OFF timer functions and three speed-selectable scan functions; namely program scan, memory scan and priority scan - what a terrific receiver!

We definitely think you should try one right now!

IC-R75

• Fantastic Value! • Exceptional Quality • Incredible Versatility •

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Count on us!

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

Satellite TV News

Things don't look good in the Gulf! With several TV press conferences in recent times seen over the North Atlantic circuits, there's a definite feel of sabre rattling. I was checking over *Europe-Star-1* @ 45°E July 16th and found the 'GLOBECAST AFRICA 2' circuit open at 1730 feeding out of the APTN Bureau Johannesburg.

'Africa-2' always appears on 11.512GHz-V (SR 5632 + FEC 3/4) as most uplinkers are creatures of habit - if it works - leave it! Content of this edited news feed revealed a robed Kuwaiti official who was very interested in the several arms exhibitions (or factories) that he visited showing weaponry for use in the air, on the ground and in the hands...footage cut to a conference hall with the same Kuwaiti and accompanying delegation listening to a slick presentation from a podium based suit pointing his stick at a display board showing various armaments and was clearly heard to say that "...this is what will be used when we go into Iraq..."

I had a call from **Roy Carman** (Dorking) to say that Fox News, Kabul had moved on *Europe*Star-1* having left their 11.675GHz slot and now appeared at 11.553GHz-V, but with a new SR5470 + 3/4 and still running in 525-lines NTSC. A letter from **Edmund Spicer** (Littlehampton) and an E-mail from **Hugh Cocks** (Algarve) both advising that the French 'Canal Plus France' programming is currently seen in good old SECAM analogue via the *Telecom 2D/Atlantic Bird-2* slot @ 8°W, check 12.606GHz-V, reasons for dual illumination are uncertain since Canal Plus France also is present on the *Telecom 2C* slot at 5°W.

Mid summer and the regional OB units are now out and about, *Intelsat 801*, 31.5°W has carried several cricket matches from around the UK for Sky Sports news, this appeared 10.960GHz-V (5632+3/4) as noted by Edmund Spicer (Littlehampton) using the BT truck 'BT-TES-34' and on July 20th they were parked outside the Leeds Football Club ground feeding a live into Sky News. 'Up the *801* dial a bit' and the Meridian leased BT trucks have been very busy, 'MERIDIAN 8MBIT TES () 10.974GHz-V was at the Farnborough air show on the 22nd whilst brother TES-43 (10.983GHz-V) was covering the Cowes Week yachting activities for much of the week 5th August onwards, a 'live' each evening from on the water - well floating pontoons!

Noting TES-34 as above for Sky Sports action, 5th August they were seen mid evening still on 10.960 running MPEG 4:2:2 with the Globecast NY test card, most odd. One of my receivers, the budget Manhattan DigiPlaza - which is solely MPEG-2 - can actually resolve (after a fashion) 4:2:2 images if a test pattern or stationary picture is transmitted, at least sufficient for identification. The nearby picture (on a b/w TV) shows the *Eutelsat 2F3*, 21.5°E downlink 'ITN PATH-1 STANDb' mid July @ 11.099GHz-H (5632+3/4) using MPEG 4:2:2 and as received on the DigiPlaza MPEG-2 receiver. The signal appears as a kaleidoscopic confusion (especially in colour!), but gradually a static image will build into a steady picture from left to right.

I was scanning over the recently arrived *NSS-7* @ 21.5°W (which has just replaced the Ku-band only *NSS-K*, *NSS-7* is a high powered C + Ku-band craft) evening of July 29th and checked out a favourite Reuters slot for breaking news - 11.462GHz-V (5632+3/4) and co-incidentally as I hit the spot at 2000 there appeared live helicopter pictures showing a very long double decker American train that had just derailed. This was the Chicago-Washington express that left the rails in Montgomery County, Penn.

Passengers were being rescued and ambulanced to hospitals. There were several video cuts to a ground based camera as the media troops arrived and rigged for breaking news live reports into their respective networks, picture quality in several feeds - also carried over the Reuters feed - showed over-chroma'd NTSC colour, e.g. red reporters faces. Previously, I have noticed that if 'something's happening' in the Americas' then the *NSS-7* 11.462 lease will usually carry live unedited pictures as they arrive in from their various news bureau.

Unfortunately, there seems no answer to the ongoing Palestinian suicide bomber and the Israel reaction, July 17th and this time Tel Aviv witnessed a double suicider bomb and Eutelsat's *W2* 16°E carried the all too familiar pictures carried in 625-line PAL - 12.562GHz-H and parallel fed 525-line NTSC @ 12.553GHz-H. It was but a short wait and within hours the Israelis hit back, similar scenes with grisly images linked over *Eutelsat W1* @ 10°E - 12.738GHz-V - all these Middle East feeds using the familiar SR 5632 + FEC 3/4.

Late July into August and the Pope was on his American Tour. Reuters were feeding pictures of his visits, speeches, etc. from various American countries as he was welcomed by very large rapturous crowds. The Canadian Youth Games opening ceremony was carried over *NSS-7* capacity July 25th on 11.462-V and paralleled with Reuters 11.487GHz-H (latter identing as 'Reuters WNS' [World News Service]). The Pope sat on the stage in a vast auditoria surmounted with a giant crucifix, making a speech and blessing many of the sports participants.

Sunday 21st July and a ball for motor circuit racing, Ferrari receive the 'Builders Championship' prize, this on *Eutelsat W2* @ 11.052GHz-V (5632+3/4), service id 'RTL MIDI'. Meanwhile 'American' *Le Mans* series racing is buzzing over *Telstar 11*, 37.5°W - 12.636GHz-V (6111+3/4), racing full of thrills and spills!

A couple of days earlier, the Spanish military 'retook' a small rocky island off the Moroccon coast that some nearby locals had 'invaded', the military force re-occupied the island and restored peace to the resident goats - with Gibraltar on the boil perhaps the military treated this as a rehearsal in readiness for the Spanish reoccupation of the 'Rock'. Military footage was downlinked via *Hispasat* @ 30°W -11.660GHz-H (SR4500+3/4).

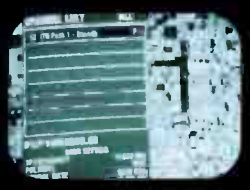
The Spanish have been bombing, but with water and chemicals, they have suffered devastating forest fires in Southern Spain and *Hispasat* relayed pictures of aircraft dropping the above fire retardants July 15th, 'ADMIRA M54' provided picture linking capacity, seen by Roy Carman @ 11.564GHz-V (SR6750+3/4). Note the extreme variation in symbol rates...

In years past, I have enjoyed the dramatic pictures of the *Tour de France* cycle race coverage from French TV, lots of heli-pix and truly excellent quality images, this year I couldn't find any French cycling activity, but Edmund at the Littlehampton Teleport July 24th was more successful! On inspiration he looked at the old *Telecom 2A* 3°E slot and hit lucky, on 12.606GHz-V, (SR27500+3/4) he found a four channel bouquet, each channel having a picture from three terrestrially sited cameras and the 4th from the heli-cam.

The downlinking video streams were service idented as 'GCR/PGM/RMX'; 'GCR/PGM2'; 'PGM3' and 'PGM4 - the last one being the heli-cam and the others ground based cameras.

Whilst discussing the *Telecom* 3°E slot, the BBC were also 'found' at this slot the same day with a live feed from Albert Square, Manchester, this with coverage of the *Commonwealth Games* baton. An additional insert was made into the BBC 'One o'clock News' with comments from Manchester's mayor. This could be a productive BBC OB feed slot so check around 12.522GHz-V, they'll be using a symbol rate of either 5632 or 27500. A final sighting from Stefan Hagedorn's Internet news, *Eutelsat W3*, 7°E has been sighted with TRT Turkish TV programming in the clear (i.e. FTA), tune up at 11.492GHz, SR30000+3/4 to find TRT1, TRT2, TRT3, TRT4 and TRT Gap (!). You can brush up on your Turkish conversation expertise for the next holiday!

At home, I've been testing both a Nokia 9500 fitted with DVB2000 software and a 'New Wave' DVB receiver, both have auto search capacity in both FEC and symbol parameters, ideal for sat-zapping. Both seemed to dislike my Swedish Microwave dual-band 10GHz LNB with up-front ferrite polariser however and as a consequence I replaced the dual-band with a C120 0.6dB noise Universal LNB Lo-band i.f. 9.750GHz, Hi-band 10.600GHz - it's completely cleared the problem of picture freeze and pixellation. The Taiwan sourced LNB cost (new) under £20 trade and is the size of a Swan Vestas box, amazingly cheap technology.



MPEG 4:2:2 pix using MPEG-2 on b/w TV, with memory channel overlay, via *Eutelsat 2F3*.

Pope Jean Paul in Canada, opening ceremony of Youth Games, via *NSS-7*.

VHS video via Reuters Miami bureau showing Latin American terrorists and hostage.

Reuters change channels!

LA International Airport shootout, KNBC-4 reporter with a live into the news. Note the microwave terrestrial link masts behind from news trucks, these operate line of sight 2.5GHz circuits to high points base stations and thence linked to the studio.

KNBC test card from the LA airport location.

The LA FBI Bureau prepare a news conference to update the media on investigations after the LA shootout.

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DX Television

There were fewer signals around during July compared to the previous month. The most exciting and productive day was the 3rd with an intense all-day opening extending to the Middle East by evening, albeit at scanner- level. Signals from the Middle East were evident again on the 23rd from 2100. One Arabic station on Channel E2, possibly Iran, was screening a film with Arabic subtitles.

Reception Log For July 3rd

The collective log features reports from **Simon Hockehull** (Bristol), **Stephen Michie** (Bristol), **Peter Barclay** (Sunderland), **Tom Crane** (Hawkwell), **Vincent Richardson** (Dolgarrog) and **Peter Barber** (Coventry).

Spain (TVE-1) E2, E3 and E4 first noted around 0100 with intermittent reception over a 24-hour period; Italy (RAI UNO) A and B; Switzerland (SF-1 DRS) E2; Slovenia (SLO-1) E3; Germany (ARD) E2; Portugal (RTP-1) E3; Corsica (Canal Plus) L2; Hungary (MTV-1) R1; Rumania (TVR-1) R2; Iceland (RUV) E4 from 1200; Ukraine (YT-2) R2 with '1+1' logo; Italy (TELE A) E2; Serbia (RTS) E3; Hungary (RTL KLUB) R2; Lithuania (LRT) R2 from 1730; Ukraine (YT-1) R2; Moldova (TVM R2; Estonia (ETV) R2; Italy (TELE 3) E2; Austria (ORF) E2a; Czech Republic (NOVA) R1 and R2; Norway (NRK-1) E2, E3 and E4; Sweden (SVT-1) E2, E3 and E4; Iran E2; Jordan (JTV-1) E3; Syria E2.

Reception Reports

On the 8th from 0835, Belarus (BT-1) R1 was identified by **Steve Reed** (Nantwich), Stephen Michie and Vincent Richardson. A rectangular clock appeared at 1200 followed by 'HOBINI' news. Steve has also noticed Belarus radiating a 'TVT' caption. Peter Barclay identified Rumania (TVR-1) and Russia (RTR) with the news at 1000. Later, on R2, there was a Russian-style test card with a 1kHz tone, followed by a variety of test patterns, including a multi-burst, until approximately 1045. Lithuania R2 also featured showing a film or TV drama.

Stephen Michie and Peter Barber (Coventry) saw the Estonian PM5534 test card on R2 at 0900 on the 18th. The 'ETV TALLINN' identification now appears at the top. Stephen comments that the former 'TALLINN' lettering in the lower name panel was still slightly visible despite technical attempts to hide it!

On the 19th, Peter Barclay (Sunderland) discovered an interesting late-evening opening with Belarus on R1 and R2 from 2135, co-channelling with a wide-screen film from Lithuania. At 2155 on R3, ORT-1 programmes with adverts from Russia were present until 2220. At 2202, colour bars and a grey-scale were resolved on R2 until 2210 from an unknown source. By 2215 a path was established to the north-west with Iceland (RUV) on E4 showing programme previews, football and a subtitled programme.

On the 23rd at 1051, Peter Barclay received RTP-1 on E4. There are two possibilities: Valenca do Douro (50W e.r.p.) located in Portugal and Cume (180W e.r.p.) situated considerably further away in the Azores. There have been no reports of the RTP-2 low-power outlet on E2 (Valenca do Douro, 42W) this season. In recent years, this has co-channelled with RTP-1 E2 when its E4 counterpart has been present.

Unidentified Italian Private Stations

There seems to be a mini-explosion in the number of Italian private stations taking to the air. Tom Crane (Hawkwell), **Peter Chalkley** (Luton) and Peter Barclay (Sunderland) have all reported unidentified private stations operating just below E2 and either on, or just below, Channel C. The following private stations in Bands I and II are known to be operating:- Below E2: Tele A+ (47.9640MHz Mt. Faito); TELE 3 (47.8730MHz Mt. Penice); Channel E2: TELE 3 (48.2487MHz Naples); Tele Alt Italia (48.250MHz Genova); Antenna Blu TV (48.250MHz Granardo). Channel A: TVA (Napoli; TV-7 (Palermo). Channel C: TLC (Napoli).

FM Reports

On July 3rd at 1630, Stephen Michie discovered Spanish stations on 87.5, 87.9, 88.8, 89.1, 91.8 and 92.7MHz. According to Peter Barclay and Simon Hockenhull, the band was awash with Spanish and Italian signals on the 4th and 5th at various times of the day. Greek and Tunisian stations were also identified during the month.

Martin Dale (Stockport) has just invested in a DAB receiver, but is unimpressed because the digital signals break up when using an indoor antenna, unlike normal f.m. ones, which sound slightly hissy. Portable DAB equipment is now available at 'around £100', but can they really be classed as 'portable' when it is unlikely to work without the constraints of an outdoor antenna?

Gear For Sale

Due to new commitments, **Graeme Wilson** (Stoke-on-Trent) wishes to sell some of his DX equipment. The items include two Group A u.h.f. antennas with X-directors and two Sony Betamax C7 video recorders in good order, together with spares, service and training manuals. Contact Graeme for further details on **(07767) 248205** (mobile) after 1800.

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**

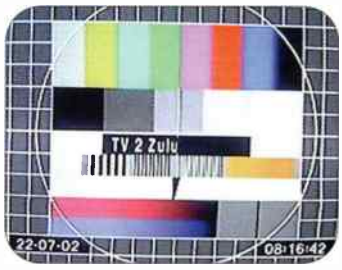

Fig. 1: The FuBK test card radiated in Denmark by TV-2 Zulu.

Fig. 2: LRT Lithuania received by Stephen Michie on Channel R2.

Fig. 3: 'Sportas' weather forecast from Lithuania, received by Stephen Michie.

Fig. 4: One of the eight current BBC-1 Identification Symbols. This one is called 'Festival'.

Service Information

Latvia: LTV-2 uses the PM5544 test card with 'LVRTV' at the top and 'PAL' below.
Portugal: The Government is to close RTP-2 on the grounds of cost. The channel may be replaced by a private service.
Spain: The Band I transmitters due for closure at the end of July have earned a reprieve. Band I transmitters operating this season have been restricted to Madrid E2, Aitaina E3, Izaña E3 (Tenerife) and Guadalcanal E4.
United Kingdom: TV-12, the RSL station based on the Isle of Wight, has ceased operation. The station hoped that its licence would be renewed, but instead it has been awarded to the rival company, Solent TV. The new service commences on 31st October.

This month's Service Information was kindly supplied by **Lionel Michelland** (France), **Roger Bunney** (UK) and Stephen Michie (UK).

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Amateur Bands

Doesn't Time Fly?

It's a year since I wrote my first 'Amateur Bands' column for *SWM*. I'll take the opportunity to say 'Many Thanks' to those who've contributed to the column, and to wonder how the time went so quickly!

As the evenings begin to draw in, it's more tempting than ever to sit in a nice warm shack to play radios. Not the time to be outside tinkering with antennas. So I hope everything is ship-shape in that department at your locations! Not that any amateurs or listeners ever seemed satisfied with their antennas.

I'm quite happy with the wire antennas at my station, but I had an object lesson in antenna directivity recently. I was supposed to be providing the contact for budding foundation licensees making their practice QSO from a local club, but despite many watts being wafted my way from not many kilometres distant, I couldn't hear a thing and vice versa. After a while it occurred to me that the ends of my antennas were pointing straight towards the club. So the theory that dipoles should be side on to the source for maximum signal reception was proved in practice.

One of the students on that occasion was my wife Chris. She now has the call M3SHE, the letters being her late father's initials. He was an ex Royal Signals man who made a significant contribution to my grasping of Morse code a couple of decades ago. A good lad!

Antenna Tuners

Why? Without getting too bogged down in theory, the thing to remember is that the maximum energy is transferred between a source and a load if the resistance of the load matches that of the source. And as we're dealing with radio frequencies, the term impedance can replace the word resistance.

Now think of radio signals causing all those little electrons to jiggle about in the antenna. This excited antenna is the source of energy. And the load? It's the receiver with its input impedance of 50Ω. As that can't be changed, the only option is to make sure that the impedance of the source, the antenna, is 50Ω. However, your average antenna is only going to have a 50Ω impedance on one frequency, and at a particular point along its length. So unless operation is confined to that frequency, then most of the time the energy transfer from antenna to radio will not be as efficient as it could be because of the impedance mis-match.

Remember, matching impedances means maximum power transfer. What the a.t.u. does is to match the impedance of the antenna to the 50Ω impedance of the receiver. Despite its name, the a.t.u. doesn't tune the antenna unless it's an integral part of the actual antenna. Because there's usually a fair bit of coaxial feeder between the a.t.u. and the antenna, some people more correctly refer to an a.t.u. as an a.s.t.u. - antenna system tuning units - the system comprising the antenna and its feeder.

Whatever you call it, with the a.t.u. properly adjusted so that the source impedance is matched to the load impedance, the transfer of signal from antenna to receiver is optimised. By doing that it brings the system into resonance at a particular frequency. That will cause the system to be less responsive to other frequencies, and that means less noise. Why use an a.t.u. then? More signal, less noise. That's why!

DSP

I had a brief play with one of those d.s.p. noise reducing speakers the other day. Very simple to use. Just plug into the receiver's extension speaker or headphone socket, and connect to 12V. Very effective too. Whilst there is a slightly mechanical sound to the human voice after digital signal processing, the circuit in the speaker certainly works at cutting out background noise. Rather like the quest for the perfect amplifier, the holy grail of d.s.p. for communications engineers must be the algorithm which cuts out everything, but the human voice from the signal, and still leaves it sounding natural. We await perfection with baited breath! Meantime, the current imperfect systems are pretty good, and getting better. Well worth considering as easy 'bolt-on' performance enhancers.

Heard Around

John Collins of Birmingham who uses an Eddystone 1650 connected to an ex CB antenna up at 20m, sent in a log of some his listening activity on 7MHz.

Amongst them was DF0MV on a German WWII Minesweeper. John suggested that because of the ship's history the station was being subjected to interference. I do hope that he was mistaken. Other stations in his log were, TM4X on Aix Island, western France, TY9F Benin, Africa, AY4DX Argentina, SV9CVY Crete with what is described as 'beautiful audio', XQ6ET Chile and 6W1RD Senegal, West Africa.

Clive with newly licensed wife Chris M3SHE.

DXpeditions

Ely IN3VZE will be active as 7Q7CE from Malawi, southern east Africa, from 22nd September to 8th October.

Argentinians Mariano and Daniel will be using the callsigns AY4EJ/D and AY3DTD/D whilst operating from Ariadna Island (SA-021) from the 4th to the 6th of October. Most activity will be on s.s.b. with some c.w. after 2100.

Four ladies, Elizabeth, June, Mio and Gwen using ZK1 calls will operate for a fortnight from the 1st October on two southern Pacific Cook Islands. The first six days will be on Aitutaki, and the remainder on Rarotonga.

There's plenty of activity from Malta until the 6th October with over a dozen Dutch amateurs visiting the island for their holiday come DXpedition. 9H9PA is the callsign to listen for. Operation will be everywhere from 7MHz to v.h.f. with Top Band and 80m as well if they can find enough places to erect suitable antennas!

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SSB Utilities

Last month I said that I would be investigating an interesting looking wire antenna from **Solid State Electonics (UK)** (SSE) which I had bought from the SSE stand at the Longleat Rally in June. The antenna actually has the rather grand title of the 'JIM WIA-SW2in1+' because it can be used for v.h.f. and u.h.f. as well as h.f. reception. The antenna comes in a plastic bag, and when you cut that open, you are faced with a number of smaller plastic bags containing various wires and other parts to be used for various bands.

The first bag that we are interested in is the one containing a plastic spool with about 15m of wire. This terminates in a small 4mm phono-plug which fits tightly into the contents of the second plastic bag - which contains the 'balun' section.

The balun section is actually two small plastic tubes comprising an isolation unit and the balun itself. The top of the isolation unit has a small tag allowing you to suspend it at a suitable height. At the bottom end of the balun section is a BNC connector which has some additional screw terminals allowing earth-leads (or counterpoises, as they may be known) to be attached. The people at SSE seem to have thought of everything, as they even provide suitable earth leads of various lengths as part of the overall package.

But that's not all that can be found in this antenna kit. There are two additional lengths of wire and a pair of plastic 'egg' insulators allowing you to make your own antenna. One of these extra wires is already fitted with a phono-plug so that it can be attached to the balun section, while the second piece of wire is not terminated at all and can be used to make a 'T type' antenna.

I mentioned the earth lead above, and SSE provide a length of suitable green/yellow wire for this purpose, complete with a tag at one end to attach to the BNC socket and a croc-clip at the other end. This is rather handy, as you can use the croc-clip to attach the earth wire to somewhere suitable, or you can extend the length of the earth-wire using one of the other wires in the kit.

There is a final small plastic bag which contains all sorts of nylon strings, a cable-tie, the plastic 'egg' insulators, and even a small screwdriver so that you can connect the lengths of wire to the special BNC plug. This is truly an amazing collection of wire and 'bits' and contains everything you could need for a portable wire antenna.

One minor problem that I did find with this SSE antenna kit is that the connector into the receiver is via a BNC socket. This is ideal for those people with v.h.f./u.h.f. scanners which also cover the h.f. bands, and it is also suitable for some h.f. receivers, but it is not suitable for the range of portable h.f. receivers equipped with a telescopic antenna.

I have a Sony ICF-SW7600 which has such a telescopic antenna, so I needed to make a patch lead using a BNC connector, a piece of coaxial cable and a crocodile clip. I could then clip this to the telescopic antenna. I have now used the SSE antenna with my scanner (a Yupiteru MVT-7200) on h.f. and v.h.f., my Sony portable, and also my main h.f. receiver (an AOR AR3030).

In use, the antenna works very well, and I easily managed to pick-up signals from aircraft crossing the North Atlantic (5.616MHz) and also over the Middle East (11.300MHz). The wire was simply strung along my garden, but only at about 2m above ground level, so comparative tests against my main long-wire antenna which is about 8m above ground level are not very meaningful.

I have not tried any real portable operations yet, but maybe during the next few months I will have time to have a day in the countryside. All the above experiments were done with the antenna installed outside in my garden, which is just what Mr. Baker *cannot* do, so I also plan to try this antenna inside my house.

I have plans to install the long-wire section of the antenna around the ceiling of a room, just to prove that this method of installation will work, and to gauge how it works when compared against my external long-wire. Once again, I will report back again sometime in the next few months.

Space Shuttle

The Space Shuttle has been grounded for the past few months due to cracks found in a fuel-line, so a number of missions have been cancelled. At the end of July NASA announced that the problem had been solved and that launches would recommence at the end of September.

The next launch is scheduled for sometime on, or soon after, 28th September, and as this is very soon after the publication date of this issue, I would hope by mentioning it here it will be fresh in peoples minds. This flight is the fifteenth to the *International Space Station* (*ISS*) and will be an 11-day mission flown by orbiter *Atlantis*.

Following the terrorist action in New York in September 2001, NASA no longer announce the exact launch time until a few hours before launch, and in the days and weeks prior to that they will only give an indication of a three-hour 'window' when the launch is due to occur. For *ISS* missions this is only a minor problem, as the Shuttle launch window is only five minutes long and there are very few orbits which put the *ISS* in the correct relative position.

The important orbits to investigate are those which pass over the launch site in Florida. There are just two orbits per day which match this criteria - one with the *ISS* flying from north to south, and the other going from south to north - it is the latter one that is important. It does not matter where in the orbit the *ISS* is located, so long as that orbit is a northbound pass over Florida.

With an up-to-date set of Keplerian elements for *ISS* it is possible to work out when the most likely launch will be, to within five minutes of the actual launch time. With this information, listening on **10.780MHz** in the few hours before launch should give some interesting listening.

The JIM WIA-SW2in1 antenna, showing the roll of antenna wire (top left), isolation unit and balun section (top right), insulators and screwdriver (centre) and assorted lengths of wire.

Letters

The first letter this month is from **Anthony Humm** in Middlesex who writes with some ideas for antennas for those who cannot install an external antenna. His comments relate to the problem posed by **Mr C.W. Baker** in Surrey who is limited to an indoor antenna.

Like Mr. Baker, Anthony is also unable to erect a suitable outdoor antenna, so he had to resort to an alternative. Anthony found a design for a tuned-loop in the July 1996 issue of *RadCom* (the monthly journal of the Radio Society of Great Britain, back-issues are available either in 'print' or on CD), and currently has three different versions available for use and he says that they perform very well.

The first example consists of a single loop of wire approximately 1.8m in diameter which tunes from 4-36MHz across two ranges. The second example is the same size as the first, but just has a single range, covering 4-20MHz. The third example has two turns of wire and tunes from 2.2-10.3MHz.

Tuning on all three loops is via an air-spaced variable capacitor with an in-built slow-motion drive. Mr. Humm reports that he gets very good results with these antenna using either his Sony ICF-SW100 or his Grundig Satellit 700, more proof that you don't need to spend hundreds of pounds on expensive receivers to achieve good results on h.f., *see also page 38* SWM *October 1998 for Andrew Howlett's 'A Loop For The HF Bands'* - ***Ed.***

Web Watch

Solid State Electronics (UK) Ltd - **http://www.ssejim.co.uk**
RSGB - **http://www.rsgb.org.uk/**
NASA Shuttle launch information - **http://www-pao.ksc.nasa.gov/kscpao/schedule/schedule.htm**

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

Sky High

In my years writing for *SWM*, I don't think that two subjects such as August 'Airband Special' and this year's RIAT 2002 at Fairford has produced quite so much correspondence, (perhaps not surprisingly in the case of Fairford). So let's have a look at what you all had to say.

Fairford - 1

When my copy went to *SWM* for the September 'Sky High', I had just returned from Fairford and it was perhaps too soon to judge the general public's reaction to Fairford, but it rapidly became evident that many people were not happy. As I stated last month, many of my early E-mails related to the traffic and security arrangements, rather than the airband aspect of the show. I have already made some comments on this subject last month, but as so many people took the trouble to get in contact, I thought that I would include some of their comments.

The traffic record appears to go to **Brian T** and his wife who entered the traffic queue on Saturday westbound on the M4 over quarter of a mile from the A419 exit! **Dave M** writes, "For over an hour on Friday lunchtime in Park and View I thought I was at Duxford Air Show not the RIAT, all that landed was a stream of vintage civil and military aircraft, where were all the current military aircraft of previous years!". **Martin** and **Chris** E-mailed me to say that on Friday morning it took them 1 hour and 29 minutes to get from their B&B in Kempsford, into the car park, through security and into the Park and View enclosure - a distance of about 1.6km!

Steve S comments, "Whilst I realise the need for security, surely this was completely over the top, having left Fairford on the Monday, I drove down to Farnborough and subsequently spent a pleasant day wandering around the Air Show with my scanner with no searches, no hassle and no problems. Surely Farnborough was just as likely to be a target as Fairford?".

On the other hand, **Steve L** writes, "I like many others was disappointed with the military aircraft participation at RIAT 2002, but to put it into perspective, if the IAT had not existed in the past and this was a new air show, everyone would be raving about it" - good point Steve.

And finally a very abrupt E-mail from **Dennis T**, "No Phantoms, No Starfighters, No Hornets, No traffic plan, No to security queues, No I'm not going next year!" - Hmmm!

There were a number of further pieces of correspondence in the same vein, but I'm sure you've all got the message. I think the IAT team will have some hard thinking to do before next year's show. To quickly add my two-penneth, just in case they get to read this column, please can we have the campsite back!

Fairford - 2

To be honest, having scanned through the IAT callsigns sent to me for Thursday to Sunday, there were very few new or interesting callsigns, most had all been well documented in the past. Here are a few that may be of interest.

Callsign	Aircraft	Owner
LION 1 - 4	F-16	USAF/31 FW
ORANGE 1 - 2	F-16	Dutch AF
PISCES 1 - 4	Tucano	RAF/1 FTS
BATMAN 1 - 2	Tornado	RAF/9 SQN
REDSKIN 13	AH-64D	Dutch AF/301 SQN
MAJAN 293	C-130	Omani AF/16 SQN

The B-2 on Saturday was using the callsign DEATH 51 and was escorted by F-15Cs NOBLE 11 to 14, two reports indicated that they used the 493 FS Aux frequency 388.35 for Air to Air communications. Two Mildenhall tankers provided air refuelling support using the callsigns QUID 91 and 92. They used 379.075 as their Air to Air frequency and 300.125 as their Boom frequency.

On Sunday, the B-2 callsign was DEATH 71 and the escorting F-15Cs were calling NINJA 11 to 14, once again 388.35 was noted in use. (Incidentally, I have had a report in the last year of Yeovilton Sea Harriers also using the callsign BATMAN - can anyone confirm this?).

Airband Special

Thanks to everyone who wrote in with favourable comments regarding the 'Airband Special' and the Datacard. I knew that if I included a 'best airband radio' section in the 'Airband Special' it would open a can of worms and I wasn't wrong! It didn't take long before a variety of correspondence came my way. I don't have the space to go into extensive detail with some of the letters and some of the points have already been covered in recent 'Sky High' columns, but I will try to address the salient points.

Several readers took me to task over the selection of such expensive radios. Two of our more senior readers complained that as pensioners, radios such as the IC-R8500 were not a realistic financial proposition for someone who is on a limited pension - a fair comment and one I understand, but as I stated in the article, I was attempting to list what in my opinion was the best airband radio and unfortunately, as in many things in life, you get what you pay for.

That's not to say that radios in the sub £400 price range cannot give a good performance, so as I said in the article, if you have a radio which you feel performs well on the airbands, drop me a line with a brief explanation of why you think this radio is worthy of mention. As one reader expressed his surprise that I had not used a Bearcat radio, how about our readers commenting on the airband performance of one of the current Bearcats, such as the UBC-9000XLT or the UBC-780XLT?

One reader comments that he found the AOR AR8600 extremely difficult to operate, he used it for over a year, but has now gone back to his Realistic PRO-2042. He goes on to say that he feels that it

The photo this month is Italian Air Force Tornado from 6 Stormo in special marks arriving at RIAT 2002.

outperforms the AR8600 on the airbands with the signal strength being twice as good and at less than half the price. He also comments that it is easier to use, has an internal power supply and better audio.

In the 'Airband Special', I mentioned that I had not used many Realistic base-station radios. The two I have used were the PRO-2004 and PRO-2006 and I was not over impressed with either of them. Fortunately, I remembered a friend had bought a PRO-2042 a couple of years ago when they were being sold off for about £150, so I contacted him and we set up a comparison with the AR8600.

The outcome - I'm sorry, but I have to disagree with the reader, on the trial we conducted, the AR8600 was quite clearly more sensitive than the PRO-2042, but nevertheless it did give a respectable performance. Also the comment about the difficulty of operation of the AR8600 became a source of amusement as co-incidentally we found the PRO-2042 infuriating to operate at times.

In the end, it's all down to what you're used to! Having made the brief comparison, that is not to say that the PRO-2042 would not make a good budget scanner for those with an interest in the airbands or other parts of the spectrum. As the sell off price was £150 you should be able to get a second-hand one for around £110 - not bad for a base station.

With regards to my comments on the origin of aircraft spotting probably coming from the Royal Observer Corps during the Second World War, **John F** writes to say that is not strictly true. As I stated, there was already much interest in aviation in the pre-war years with events such as RAF Air Shows, Record breaking flights, Flying Circuses, etc.

In the run up to and in the early years of the war, aircraft recognition became very important and so it was not only the Observer Corp, (as they were then), but also the Home Guard, the Local Defence Volunteers the Air Training Corps who had obtained a knowledge of aircraft recognition. As John comments, by 1941 even the Scouts had an Air Scout section where you could obtain an 'Aircraft Spotters' proficiency badge. So it would be fair to say that the hobby originated from a general interest in aviation and our countries need to defend itself in time of war.

So that leaves me with one question, when did the collecting of aircraft registrations or serials start, surely not during the war years as that could have been considered espionage? I assume that the collecting of civil registrations must have started soon after the war as the first edition of Ian Allan's, *Civil Aircraft Markings* was in 1950 - any ideas anyone?

My thanks to **Ron G**, **AHH**, **Mel**, **Mac**, **Ian L**, **Jimmy**, **Stinger**, **John F**, **John L**, **Mervyn** and several Anons.

Callsign Swanwick Mil

As reported earlier in the year, in addition to the Civil Air Traffic, London Military has also moved the London Joint Area Organisation, (LJAO), element of Military Air Traffic Control to Swanwick. The unit was called Swanwick Military, with the callsign remaining as 'London Mil'. As from the 9th August 2002 the callsign for these LJAO frequencies has become 'Swanwick Mil'. For those who didn't see the earlier report the frequencies concerned are: CENTRAL 275.35; NORTHWEST 254.275; NORTHWEST 127.45; CLACTON 233.8; DOVER/LYDD 299.8; LONDON UPPER 291.075 and SEAFORD/HURN 251.225.

Farnborough

I couldn't go myself and surprisingly just one E-mail in my mailbox regarding Farnborough, (perhaps you were all too busy commenting on Fairford?). Noted on the 15th July were two FA-18F Super Hornets which were escorted across the Atlantic by an Omega Boeing 707 tanker conversion, N707AR, using the callsign Omega 70. Farnborough Approach and Radar frequencies were as published - 130.05 and 134.45 - but interestingly for the Tower frequency 136.775 was used in place of 122.5 - thanks to **Keith L**.

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Info in Orbit

Fig. 1: *MSG-1* SEVERI imager undergoes tests before launch - image courtesy EUMETSAT.

MSG-1 (*METEOSAT Second Generation-1*) Europe's first digital-only weather satellite (WXSAT) was successfully launched 28 August - one day later than scheduled. Looking further into the future, the Americans are getting ready for their own new generation of digital satellites.

A countdown dress rehearsal was held on 28 June with **Sergio Rota** (EUMETSAT MSG Programme Manager) and **Wolfgang Schumann** (ESA Satellite Engineering Manager) in a provisional control centre.

Take a look at the MSG control room - **Fig. 3**. This room contains the monitoring and control elements of the MSG ground segment. People there are working in parallel on both operational and validation environments. On the operational environment (left part of the image), they are running the formal validation test of the first version of the ground segment, completed in July.

Fig. 2: *MSG-1* - courtesy EUMETSAT. On 31 July 2002, the satellite is viewed inside its container in a clean room. After establishing clean conditions in room S5A, the container is opened and the satellite lifted, put out and on the filling stand.

On the validation environment, they are rehearsing the operational scenarios which were run from mid-July on the operational environment up to late September, at which time EUMETSAT will take over the control of the satellite from ESOC (European Space Operations Centre) and start the commissioning.

Before the launch of any satellite, teams of users and scientists try to anticipate possible types of failure, and then work out and document, methods to rescue the mission from such failure modes. Just occasionally something completely unexpected goes wrong, but most failures are anticipated.

A view of the fully integrated satellite - as on 22 June - during the antenna test preparation can be seen in **Fig. 4**. From left to right, the three 'windows' show a thruster, a battery and the GERB (Geostationary Earth Radiation Budget) instrument. Just visible on the right edge of the spacecraft is the SEVIRI (imager) baffle cover. On the upper part of the spacecraft, one can see the u.h.f. antennas (16 in total) which will receive DCP (data collection platform) and S&R (search and rescue) beacons.

Fig. 3: The Control Room for MSG - courtesy EUMETSAT.

Also visible behind the u.h.f. antennas is the drum of the Electronically Despun Antenna (EDA) to be used for downlinking SEVIRI and GERB raw data, the processed SEVIRI images and meteorological products. Above this drum is the TPA (Toroidal Pattern Antenna - the black cylinder) for receiving the uplink of the processed SEVIRI images and meteorological products. On top of the TPA is the S-band antenna for the TT&C (Telemetry Tracking and Command). Below the battery you can see the liquid apogee motor (LAM) nozzle.

MSG-1 - The Manufacturers Reply

A few columns ago, I mentioned that I had E-mailed the four companies that EUMETSAT lists as having an interest in producing hardware for *MSG-1* - the second generation METEOSAT. The third company - Dartcom - responded just after press deadlines at that time. **Dave Wright** replied:

"As you are aware we really only (supply) in the professional market and I don't see us being able to offer anything into the 'Hobbies' market. There is also a big question regarding the take up of LRIT and HRIT. Like many other manufacturers, as soon as encryption was put on, PDUS sales of these systems went into free fall. I even had this comment from Dr. Peter Scheidgen from VCS in a conversation with him a few months back. We have systems under development, but these are aimed at the professional market". My thanks to David Wright, a Partner (RF Engineering) with Dartcom, at Yelverton in Devon, Tel: (01822) 880253.

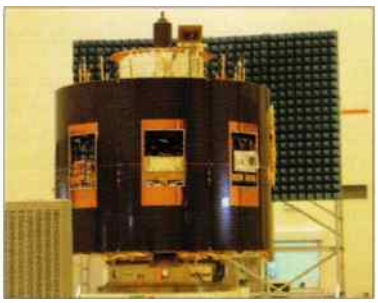

Fig. 4: Electrical tests on *MSG-1* - courtesy EUMETSAT.

NOAA Satellite Direct Readout Conference

In December (9-13) this year, America's NOAA (National Oceanographic and Atmopsheric Administration) is holding a Conference in Miami, Florida. This will undoubtedly be a significant event. Britain's Remote Imaging Group will be attending the conference and hopes to have an exhibition table there.

Committee member **Dave Cawley** tells me that RIG has around 2400 members world-wide, most of them receiving both polar and geostationary images for their own use, using low cost and often home-built equipment. In Europe, there are an estimated 10,000 private individual users of METEOSAT data. Dave comments that it is difficult to obtain figures for the USA, but can currently directly account for a bit less than 3000, though he suspects it could be over 5000.

The purpose of this Conference is to bring together users of the NOAA GOES (geostationary) and POES (polar orbiting satellites), potential users

of the forthcoming METOP polar orbiting satellite comprising part of the Initial Joint Polar-Orbiting Operational Satellite System and the future NOAA NPOESS. The METOP series are the Meteorological Operational Polar satellites of EUMETSAT.

The NPOESS series are the National Polar-orbiting Operational Environmental Satellite System of the USA. NOAA expects the Conference to provide a forum for the exchange of ideas on the impact of future NOAA satellite systems. Speakers representing NOAA, hydrometeorological organisations, NASA, EUMETSAT, universities and other organisations throughout the Americas will be on the program.

Figure 5 is a schematic illustrating successive orbits of a METOP satellite of the EUMETSAT Polar System. The satellites will observe meteorological, climatological and environmental features of the Earth, transmit regional data to user stations throughout the world and transmit stored global data to central facilities in Europe for further processing and distribution.

Wayne Winston, the NOAA Direct Readout Co-ordinator explained: "This will be an opportunity for manufacturers of satellite direct readout hardware and software to present new products designed for the next generation of satellites to attending decision makers. Additionally, the program committee is considering a panel discussion on new technologies that will be required for the next generation satellites that will include manufacturers".

With so many changes planned for the future, "We need all the help we can get from NOAA, Eumetsat and the other satellite operators", commented Dave Cawley.

For those considering visiting Miami to attend the conference, further details are available at:
http://noaasis.noaa.gov/miami02/ My thanks to Wayne Winston of NOAA for providing the information. NOAA plans to release a 'write-up' of the Conference, so I shall include a precis in the column following.

METEOSAT-7 Operations Extension

John Tellick is the secretary of RIG and advised the Internet 'rig-l' mailing list of a significant announcement concerning *METEOSAT-7* operations. In late July, a meeting of the EUMETSAT Council Delegates made a decision to extend both PDUS and WEFAX operations until the end of 2005. The EUMETSAT Indian Ocean Data Coverage service from *METEOSAT-5* at 63°E has also been extended until the end of 2005. Should *METEOSAT-5* fail, the mission will continue via *METEOSAT-6* - if it takes over at this location.

Current WXSATs

A glance at the frequency list at the end of this column shows what a 'surplus of riches' h.r.p.t. users have. However, like thousands of others around the world, I continue to use my a.p.t. system and have recently re-fitted the QFH (quadrifilar helix antenna) to the ground-based mast, following mechanical failure of my 15+ year old crossed dipole. The QFH is destined for the roof, and that will release the mast supported spot for my Log-Periodic Yagi that I use for monitoring ordinary satellites.

Transmissions from *METEOR 3-5* on 137.30MHz on 29 July broke a long period of silence from the Russian WXSATs. **David Brooks** of Barbados reported "two reasonable passes today starting at 1822 and 2011 respectively" and noted the synchronising problems were still present.

Fig. 5: EUMETSAT Polar System satellite schematic - courtesy EUMETSAT.

NOAA-14 hit problems once more when, on 27 July, the AVHRR instrument scan mirror motor began to operate erratically. This causes both a.p.t. and h.r.p.t. imagery to be unusable. NOAA is aware of the condition, and the fault was well documented from its last occurrence. The satellite is now eight years old, and operating beyond its design life. NOAA continues to monitor the situation, but is unable to do much to correct the problem. Previously, the scan motor has returned to operating limits and substantially corrected itself; it remains to be seen whether this 'self-fix' occurs again. *NOAA-14* a.p.t. was terminated from 14 August.

NOAA-17 was still transmitting both visible-light channels as near mid-August - see **Fig. 7**. Normal operations can be expected by the time that *SWM* is published.

OKEAN-O - The Latest

There seems to be no recently published reports of anyone receiving transmissions from *OKEAN-O*, so I did some research to find the organisations that use OKEAN data. *OKEAN-O* is one of three oceanographic satellites that have previously transmitted imagery on 137.40MHz.

The Ukranian Land and Resource Management Centre (ULRMC) is not widely known in amateur WXSAT circles, but **Dr Mykola S. Zalogin**, their Senior Marketing and Research Specialist based at Kyiv in the Ukraine, explained to me that the organisation operates as a 'Centre of Excellence' in Information Technologies, producing and providing commercially available information to strengthen the process of decision making and to improve the quality of life in Ukraine and throughout the region. As a Ukrainian organisation, the ULRMC promotes sustainable

Fig. 6: *METEOR 3-5* 1456 10 August received in Southampton.

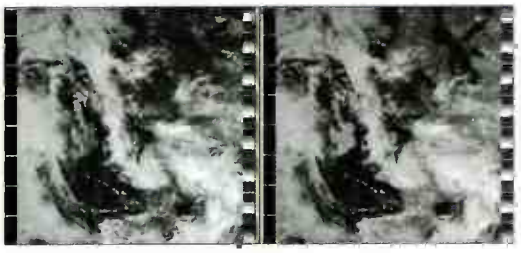

Fig. 7: *NOAA-17* 1044 10 August visible-light channels.

economic and natural resource development, environmental management, disaster mitigation and response, and collaboration with government and Industry.

Their agricultural research work involves the use of a number of high resolution imaging satellites, notably NOAA h.r.p.t., SeaWiFS data, and *OKEAN-O*. **Figure 8** shows an image from *OKEAN-O*. Governmental authorities use this satellite imagery to define and register the boundaries of parcels of land.

The ULRMC applies digital mapping of remotely sensed imaging products to monitor environmental contamination of land and water, and to monitor crop production.

For satellite reception, their station uses a 1.5m antenna, positioned to acquire a satellite signal at about 1° elevation (wow!), mounted to be able to rotate through the zenith for overhead passes at some 15° per second, and covered by a fibregalss radome. The system can cope with 100km/h winds, and survive double this.

Their High Resolution Picture Transmission (h.r.p.t.) satellite receiving station captures data from the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) and NOAA Advanced Very High Resolution Radiometer (AVHRR) sensors. The station has been operating since November 1999 and is located on the roof of the building owned by the Ukrainian founding partner of ULRMC.

SeaWiFS provide daily multispectral images optimised for the assessment of agricultural and forestry vegetation and production, oil spills, coastal water quality problems, and regional atmospheric pollution. AVHRR imagery affords ULRMC the opportunity to determine sea and land surface temperatures, identification of snow and clouds.

Correspondence

Several people wrote to me following the running expose of **Kevin Hughes'** WXSAT interference problem. **Alan Overton** of Welling in Kent was one writer, and he described his experiences. Alan noticed in February 2000 that "images after dark were ruined by lines obviously related to 50Hz", and he noticed that they suddenly appeared when the street lights near his house came on. He toured the area with a scanner and loop pick-up to compile information. Alan logged the interference frequencies emitted by each of seven lamps near his house. The images that he received showed a drift of the interfering frequency, that Alan suspected was due to the lamps.

Over the following months, the interference reduced, and he installed an antenna some 5m higher, since when the interference has stopped.

International Space Station - Shuttle Launches Resume

STS-112 *Atlantis* becomes the first shuttle flight scheduled since the programme was suspended following discovery of minute cracks in one of the Space Shuttle orbiter's Main Propulsion System (MPS) flow liners. Teams of experts developed a repair procedure that has allowed a resumption of flights.

Launch is currently scheduled for 28 September to the *ISS*. Official launch dates are set at the Flight Readiness Review, held approximately two weeks prior to the targeted liftoff date. However, launch dates and times are subject to change up to the time of launch due to weather, technical issues or other reasons.

Fig. 8: ULRMC logo.

Alan now notes some interference near the start and end of some passes, in which the lines are straight.

Kevin Hughes is a regular contributor to the images shown in this column. In early August, Britain experienced a north-south split in the weather, when, on 2 August, much of the southern part of Britain enjoyed clear skies whilst the north suffered cloud cover. The following day, this was reversed when the active cloud system moved further north. Kevin provided early morning *NOAA-15* a.p.t. images to illustrate.

Fig. 9: *OKEAN-O* processed image from 17 April 2000 courtesy ULRMC.

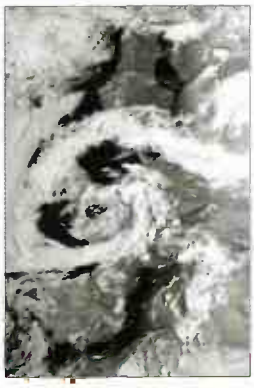

Fig. 10: *NOAA-15* 3 August 0715 from Kevin Hughes.

Frequencies - Complete List

a.p.t.

NOAA-12 and *NOAA-15* transmit a.p.t. on 137.50MHz.
NOAA-14 a.p.t. off (14 August).
NOAA-17 transmits 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.

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.

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

All times quoted in *SWM* are in UTC.

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■ DAVE ROBERTS *c/o SWM* EDITORIAL OFFICES, BROADSTONE
■ E-MAIL: scanning@pwpublishing.ltd.uk

Scanning Scene

It didn't take long at all! I have seen the first working TETRA portable sets for sale. Talk about surplus. These Simoco sets working on direct mode in the 380-410MHz band were sold, with chargers, for a bargain price that I have promised not to mention. Obviously these radios will never be validated on an Airwave system, but the purchaser has a mass of knowledge in these matters and their acquisition will only add to his expertise. I have tried the sets out and they work just fine in direct mode with a range commensurate with their power output (1W) and frequency. They exhibit the usual digital audio lag.

I was involved in TETRA trials a few years ago and I can tell you that the audio quality and the suppression of extraneous noise is superb. It really is interesting to note that these sets are hitting the surplus market already.

It does appear that Lancashire Police are having some difficulty with their Airwave equipment. It seems that 173 officers have gone sick with symptoms that they attribute to the new radio system. Pregnant staff have been advised that they need not use the system. In these increasingly litigious times, the authorities appear to be gambling that no one will be able to prove that the TETRA equipment causes any ill effects.

Guess what? Encryption units are being sold for the TRA967 sets that have been on the market for a while. To refresh your memory, the 967 is a low band v.h.f. military manpack and a whole load of them have hit the surplus market in the last year or so. It looks like those folks that have purchased these excellent little sets will now be able to secure their transmissions. The encryption units enable audio inversion with 700 code options available.

I think that several people noticed that a Royal Marine officer appeared to be using a Motorola PMR446 radio in Afghanistan. It was pictured together with the Marine on a TV news programme. I know that the military have used PMR446 in the UK. It may well be that they are simply utilising the same equipment overseas or it could well be that the frequencies in use are those used by the US military, who also use PMR446/FRS equipment that has been programmed with military channels in that frequency area.

These are the three PFX sets. The middle one is the standard unit. The other two are the sneaky beaky encrypted sets.

It's not a surgical appliance! It's a covert harness, a nice, clean non-sweaty one.

New Channels

More news at u.h.f. is that the UK general licence frequencies have changed at u.h.f., the new channels being 449.3125, 449.400 and 449.475. UK general licences are issued to companies that may need to use their radios in any part of the UK. The old frequencies are likely to be in use for ages yet, but these new channels will soon start to be heard.

Tougher Penalties

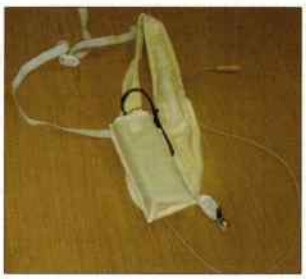
Recent legislation passed in the USA has made the penalties for listening to mobile or cordless 'phone calls and intercepting pager messages, etc. much tougher. Basically they have given the authorities the option to charge offenders under federal law as opposed to other legislation.

As things stand over there, it won't make too much difference, but if the state decides to throw the book at a hobbyist in America, it's going to be a much heavier volume. Jail is likely to be the outcome, posing the question of whether one needs a green card to work on the prison farm. The UK already has very tough laws on what we are allowed to listen to on our radios. Will things become even more regulated over here?

Time To Listen

With the autumn being upon us and the nights drawing in, it will mean that some of us will tend to spend more time listening to the monitoring station. Do you have friends or contacts in your area who indulge in the pastime? If so, you may find that you spend rather a lot of your time on the 'phone to each other.

If this is a familiar story, have you considered buying some of the



PMR446 licence free radios that are on sale these days? The range can be up to one kilometre or so in built up areas and considerably more in open country.

Just select a free channel and, if necessary, a CTCSS tone to help cut out any other users on the frequency and away you go. There is no need to be too specific about what you are discussing. Frequencies can be passed openly with a prefix denoting whether they are a.m. or f.m.

Another code can be used to indicate the user service. If you need to be specific about anything else, then use another channel to pass that traffic only. My neighbour lives around one kilometre from my place and is a keen scannist. PMR446 does not work for us due to the construction of his property and at the moment we are considering other means.

CB radio is not suitable and we may end up laying a field telephone line, but I am dreading having to go down that route. I'll keep you informed of what (if anything) is decided, but when two people can operate scanners from locations a short distance apart, it certainly maximises the collection of information.

Items Of Interest

A couple of items that may be of interest this month. In the picture you can see three Pye/Philips PFX radios. The one in the middle is the usual u.h.f. set. The two either side of this rather historical unit are encrypted PFXs. These are from a British military unit and have a white noise encryption system built in. There are four encryption codes available and of course they operate in the clear.

Another interesting thing is that the sets have no markings whatsoever on them. If Saddam is a *SWM* reader he will, however, recognise the units. The encrypted sets can be seen to be a little longer than the standard PFX. These sets operate in the 440MHz region. The encryption type may be called DES (Digitally Encrypted Signalling perhaps). In any case it works well.

I try not to twitter on about the Internet or give web addresses because by the time this gets into print the site has usually disappeared and the site owner is doing time, **but** try taking a look at **www.kb9ukd.com/digital/** This site will give you audio samples of differing data and encryption modes. I have found it really useful.

Another handy tool that I mentioned earlier is the covert wireless earpiece. These little beauties require an induction loop or covert harness to run them, but the loop can be made and the harnesses are occasionally offered for sale on ebay or at rallies. The second-hand harnesses can be very sweaty and beastly indeed, but the essential parts can be removed from the fabric which can then be sent to Sellafield for disposal. Here is a picture of the harness. This one is made by Sonic.

The unit has a microphone and small coil built in a tiny plastic box. It also has a u.h.f. dipole antenna fitted. The pink lead has a push-to-talk button on the end to switch the radio to transmit. The black lead connects to the radio which sits in a pouch in the harness. A covert earpiece may even minimise your chances of a) getting arrested by police who think that you are a subversive demonstrator or b) being battered by subversive demonstrators who may think that you are in the police. The earpiece can save you pain. First build or locate an induction loop or harness and then consider the earpiece from Tardis Communications at Aylesbury, Bucks. The ear thingies cost around £85.

SWM

■ JACQUES D'AVIGNON VE3VIA ■ E-MAIL: jacques@pwpublishing.ltd.uk

Propagation Forecasts

How to use the Propagation Charts

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

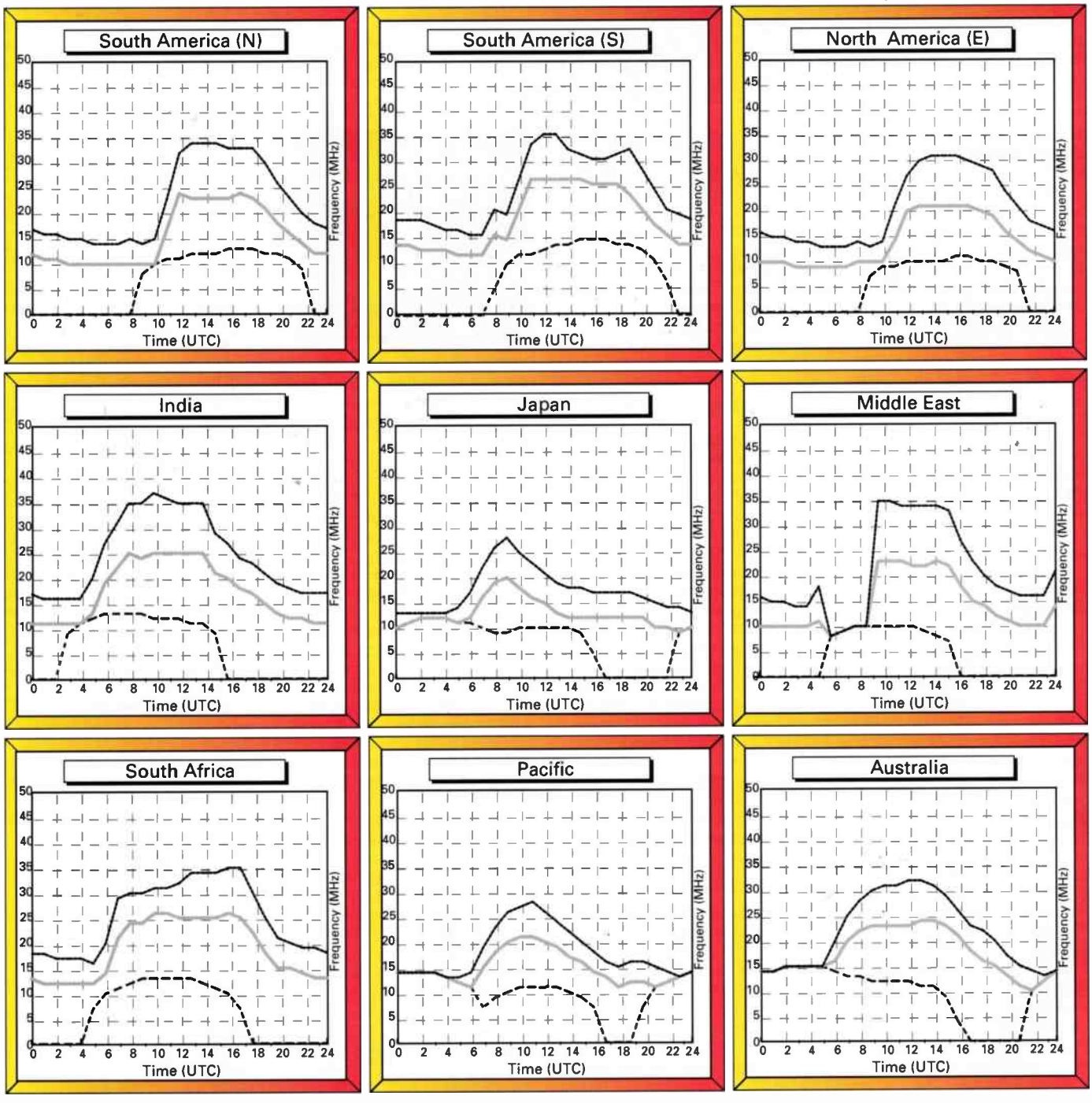
The middle line indicates the optimum working frequency (OWF) with a 90% probability of success for the particular path and time.

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

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

Good luck and happy listening.

October 2002
Circuits to London

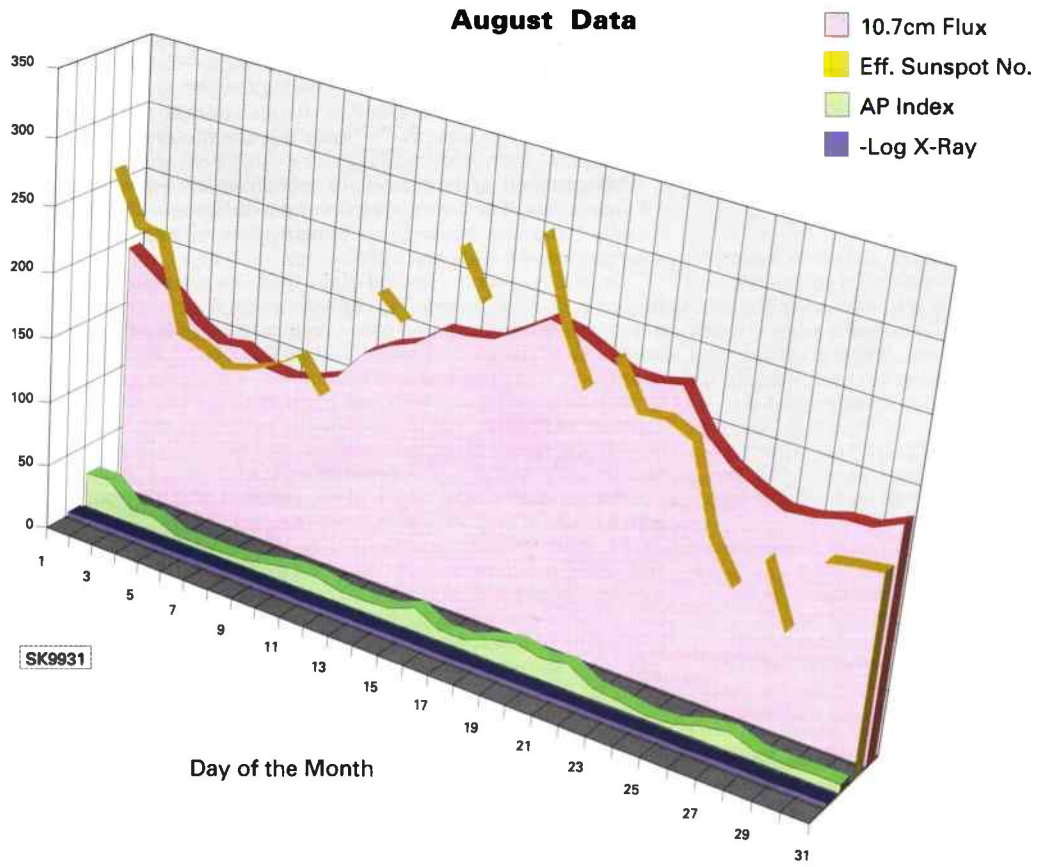


SK9930

■ KEVIN NICE G7TZC/M3SWM, SWM EDITORIAL OFFICES, BROADSTONE ■ E-MAIL: kevin.nice@pwpublishing.ltd.uk

Propagation Extra

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



guide to the chart

The 10.7cm solar radio flux is used as an indicator of the general level of solar activity.

The K and AP indices are measures of geomagnetic activity.

The K index ranges from zero (very quiet) to nine (severely disturbed).

K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions.

The AP index ranges from 0 to 400. An AP of 30 is the threshold for geomagnetic storm conditions.

■ ENIGMA, 17-21 CHAPEL STREET, BRADFORD, WEST YORKSHIRE BD1 5DT. FAX: (01274) 77004
■ E-MAIL: enigma@pwpublishing.ltd.uk

Attention-123!

Enigma Control List (continued)

Family	Ref	Comments	Counterparts
Ib	**M12**	5f, 3 or 4f DK, ends 000 000	E7, G7, S7, V7, V23, XP
	M13	5f, 3f serial No, ends 000*	E18, G22, S4
XV	**M13a**	call & rpt sequence 3Ff-000	none
Ia	**M14**	5F, 3F DK, ends 00000	E6, G6, S6, V6
	M14a	dual message, same SN	S6e
	M14b	dual message, 2nd hand-keyed	none
	M14c	dual msg, two consecutive SNs	S6f
XIX	**M16**	*'8BY', long zero*, 3f, ends AR	none
0	**M23**	*long zero*, ***many variants***, 5f, favoured ending: AR	
Ib	M24	(deleted: very fast version of M14)	
XIII	**M29**	*'VDE'*, 5f non-random, ends AR	none
	M29a	no preamble	G4
	M29b	extended preamble	none
0	**M26/34**	*long zero*, no ending	
	M34a	'98' continuous variant	
IXc	**M39**	rapid dashes, 5f	S18
0	**M40**	*long zero*, 5f, ends AR AR SK SK	
XIV	**M45**	slow M1-type, 1st group usually stutter grp (eg. 11111)	S21
XIV	**M50**	practice tr, GC always 50, several variants	(M1, M45, S21)
XIX	**M51**	all msgs 100 5-*letter* groups	none
0	**M52**	*long zero*, uses colon, 2 or 6f, ends AR	
0	**M76**	*long zero*, 4-char bogus callsigns, v complex, no ending	
	MX	single letter HF markers (SLHFMs) - all now Russian	

Note that within Europe all stations using long zeroes (five dashes) originate from former Western bloc countries and vice versa. The list only includes the more important stations, all are European except M40 and North Korean M76 which are audible in this country. In the next article, we'll cover all the presently-active English language stations.

Before beginning, an error crept into the last column. The *V* prefix refers to all other languages (not covered by prefixes *E, G* or *S*) - such as French, Spanish, Romanian, Chinese, etc. and **not** to 'other transmissions which cannot be classified as either Morse or voice' - the prefix for these is *X* (i.e. polytone is *XP*).

We did finish with *M10e* last time and all the stations listed used short zeroes (a single dash), so carrying on from there with the **more active** Morse stations, see above table.

Family XI: Swedish Rhapsody

This family once included a Morse station (M4) and a voice station (G2) and has always been something of a mystery. Of course, all Numbers Stations are mysterious, but some are better understood than others, and this family, once so well known, has always managed to keep more of its secrets than most. It operated for decades with little change and, well remembered in the 1960s, it probably dates back to World War Two. Various clues suggest a Western operation, M4 used long zeroes and the letters *LO LO* in the preamble, an old Morse abbreviation for *'HELLO HELLO'*. One long-defunct voice station (E24) actually used these words in its call, the live male voice shouting out *'Allo! Allo!'* followed by an ID number repeatedly.

There were persistent rumours that Family XI used transmitters on the French/Swiss border, but this was never confirmed. The more well-known and more active voice network operated complex four or five weekly schedules (depending on the length of months) commencing on the Saturday after the first Sunday of the month. Several schedules operated and each sent its own fixed number of repeats, often on different frequencies. Times and frequencies used were fixed and predictable for years on end, the lowest frequency being 3.824MHz and the highest 11.618MHz.

Transmissions were all in a.m. and consisted of a repeated tone lasting ten minutes before the hour or half hour after which the interval signature would run for five minutes. This took the form of a musical box repeatedly playing the first few bars of *Swedish Rhapsody*. After five minutes there was a pause, followed by a female voice in German (often described as a little girl's voice), *"Achtung!"*. Three random 5-figure headers were often read several times. Another pause, then the first header would be read again, twice, then *"Achtung!"* and 100 paired 5-figure groups would follow. The second header then preceded another 100 groups and finally the third header began a further *fifty* groups.

There was a variant, G2a, identical to G2 apart from sending one message of 50 groups only and interspersing the interval signal with a count in German from one to zero. This network again operated a four or five weekly schedule and restricted most of its transmissions to the evenings on three parallel frequencies. (G2 preferred European office hours). G2a schedules sent far more repeats each week than G2.

M4 operated far less ambitious schedules, but on the same 4/5-week cycle. It favoured the lower frequencies and always sent a single 100-group message per transmission. All transmissions were auto-keyed and used MCW.

Gradually, after the ending of the Cold War, this family started to decline. Scheduling changed and the number of transmissions dropped and a few years ago a drastic and inexplicable change took place. (During this period, M4 remained unaltered). This upheaval was the sudden replacement of the familiar little girl's voice with that of the American-English 'Cynthia' of the CIA - not to mention the scrapping of her musical box! At the same time, transmissions became much weaker, as if further away, and a.m. was replaced by u.s.b. in most cases.

Transmissions now began at two minutes past the hours with a count in English lasting three minutes: '11111 22222...99999 00000', repeated. Oddly, the same G2-style 100/100/50 group messages continued except the headers, message beginnings and ends all ran into one another due to the lack of pauses or words such as 'Attention'. This makes the untangling of messages and headers very difficult! The word *'End'* only sometimes marks the end of transmission - otherwise nothing!

Only four messages (up to 11 repeats each) are now sent per month:

Week Beginning	Mon/Wed/Thu	0752	0952	1152	1252
1st Sat	u.s.b.	-	6.507	8.188	5.340
2nd Sat	u.s.b.	-	7.250	8.188	5.748
3rd Sat	u.s.b.	4.832	6.200	8.188	6.507
4th Sat	a.m.	5.340	8.188	7.250	-

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RX320

Thank you for the prompt delivery of RX320. I ordered at approx 1430 Friday, received the radio 1030 Saturday and was up and running at lunchtime. One could not wish for better... thank you for an excellent product. ***AEC***

I have recently purchased a RX320 from you, which I find is remarkable value for money. What a joy to use a radio that doesn't require me to have sharpened fingers and 20x20 vision! ... May I wish you well in your new venture, you do seem to have the prices and quality of all three radios right, a prerequisite for success. ***JB***

... using it with a much longer wire running through the attic and performance is, quite honestly, absolutely stunning. ***MA***

RX350

I have had my eye on the RX350 since the end of last year and have finally made up my mind, this is quite a big investment for me but with AOR and TenTec's good name and reputation things should be alright. ...RX350 arrived (about 10am) and within 10 minutes of opening the box I was up and running. It is quite a step up from my current ICOM R-75 although I have owned several receivers over the last 10 years, this receiver is cutting edge. ***PC***

RX340

I don't usually do things like this, but I wanted to say that the RX-340 is pretty well the best HF radio I've ever used - and that takes into account some pretty mean Racal and W-J stuff... ***JN***

This is to say how delighted I am to discover your new trading arrangement with TenTec... My RX340 receiver and 1252 utility amp are perhaps at different ends of the complexity scale, but what they have in common is quality, efficiency and value for money. As I also have been a user of an AOR AR7030 PLUS and AR5000+3 and an SDU5500, as well as a number of associated accessories for a number of years, it is obvious to me that the two brands compliment each other beautifully ... thanking you for your much appreciated help... ***VC***

TenTec Kits

TenTec produce a wide range of kits with prices from less than £20 through to short wave receivers and transceivers. A list is available from the TenTec web site, or request the kit catalogue. Popular items are available from stock, for special orders please allow 28 days for delivery. *Full instructions supplied with each kit, support is via e-mail from the factory in the USA only.*

TenTec Transceivers

TenTec has a long history of producing quality transceivers for amateur radio. The 'CE' approval phase has started with the Jupiter HF transceiver model 538, we hope to be able to supply a range over the coming months and will advise of availability through the specialist magazines and TenTec UK web site.

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