

The  
**SHORT WAVE**  
*Magazine*  
**SWM**

**& Scanning Scene**

It's Here  
And It's  
First  
In SWM!

**WINRADIO**

**G-303i**

**WIN an  
Icom R5**

- **More  
2.4GHz  
Radio**
- **Build a  
Ten-Tec Kit  
radio with  
Kevin Nice**
- **PIC based  
NAVTEX  
Decoder  
Project**

February 2003

£3.25



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# ALINCO

wideband scanning receivers

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- Bug detector
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- Attenuator
- SMA Antenna
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- Program Search banks
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8.33kHz for  
airband

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Programmed memory scan  
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(not found on many scanners!)
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- S Meter
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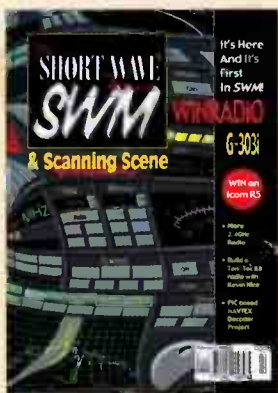
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**Radios in  
computer  
come of age -  
the WINRADIO  
G-303i.**

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Ten-Tec's 1056 Direct  
Conversion Receiver Kit**  
In the first of an irregular new series, Kevin Nice takes a few hours away from the keyboard to indulge in some soldering therapy. If you've ever fancied building a radio and never dared read on and be inspired.

- 24 **WINRADIO G-303i - PC Card  
HF Receiver System - UK  
First!**  
John Wilson brings us an in-depth look at the new G-303i receiver from WINRADIO. This first



### Amateur Bands

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offering from a new series of receivers uses a computer sound card to perform the final i.f. and demodulation functions with the benefit of a very user friendly display set.

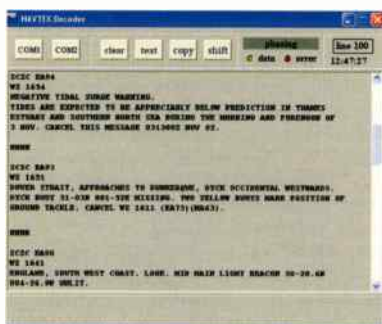
## 34 Preserving The Wireless Nerd at 2.4GHz

Far from being something that is dying, as some would have us believe, Henry O'Tani puts the case for the continuation of radio for the hobby enthusiast.



## 40 Build a NAVTEX Decoder - Part 1

NAVTEX is a continual source of fascinating automated maritime information. Roger Thomas, brings us the first part of his neat project, that utilises both a programmed PIC microcontroller and some PC software to convert received audio to on-screen text.



# ICOM RS COMPETITION

TURN TO PAGE 7 NOW TO ENTER.

# Coming Next Month

- JW - There's Nothing New Under The Sun - Practical Antennas
- More 2.4GHz Monitoring
- WIN! a WiNRADiO G-303i
- SWM Radio Clubs Directory
- All those usual regular columns

*in SWM March 2003*

*\*contents subject to change*

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[www.pwpublishing.ltd.uk/swm](http://www.pwpublishing.ltd.uk/swm)  
 Join the SWM Readers' E-mail Forum - send an E-mail to  
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Share your thoughts

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### Subscriptions

Subscriptions are available at £36 per annum to UK addresses, £43 in Europe and £54 (ROW Airmail). Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £61 (UK) £74 (Europe) and £94 (ROW 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 £2.50 per article.

Binders are also available (each binder takes one volume) for £6.50 plus £1.50 P&P for one binder, £2.75 P&P for two or more, UK or overseas. Prices include VAT where appropriate.

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

### Placing An Order

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](mailto: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.

# ED'S



# Comments

First off, I'd like to thank everyone who took time to congratulate Leslie and I on our recent marriage. I even received a letter from a reader who knows Leslie as they were both members of the same club relating to his previous hobby activities way back, but hasn't seen her for years.

## Shape of the Future?

This month's cover should give you a clue as to the subject of our lead feature this month. It has proved to be a quite remarkable experience for our h.f. guru John Wilson. John, who was wholly against the concept of actually installing a sensitive radio receiver inside a noise ridden PC, reveals just what can be done. The G-303i bears testament to the expertise of WINRADIO in this field. Don't miss reading this expose of the software defined radio.

For next month, WINRADIO have buckled to my persuasive insistence and have generously donated a brand new standard demodulator version of the G-303i as a prize. Keep a look out for next month's SWM so that you can enter and have a chance at winning the G303i.

## Generous Reader

A few months ago I made a plea on this very page to find anyone who could help me obtain a power amplifier and a mobile mounting bracket for my much beloved Kenwood TR-2300, 2m f.m. transceiver. I wanted to use this rig for mobile use, but since it only has a one Watt output an amplifier is pretty much essential. My intention was, as you'd imagine, to buy the items in question.

You would not believe my surprise, when in early January, a large box arrived here at the *Short Wave Magazine* Editorial Offices, containing both items I was trying to locate. If that wasn't enough of a surprise, the box also contained some working TR-2300s and an ample selection of spares and documentation.

All this lot was sent by an extremely generous reader who explained that due to his health problems, hadn't used the equipment for some time. Due to his continued hospitalisation, he doesn't anticipate using them again. Unbelievably this anonymous benefactor has gifted me with the box of goodies. I really cannot thank you enough for this very kind act. I'll be installing the mobile kit in the car just as soon as I get a free moment. The accompanying letter, suggested that I may wish to pass any unwanted sets on to a deserving home, this I shall indeed do. I'm aware of a local youngster, Rob, who's a friend of PW's Tex Swann who has taken a keen interest in the hobby and is looking for a set. When I've checked out a fully working candidate then I'll pass it on.

So, many thanks to the mystery reader. What a wonderful gesture. You've helped out two fellow enthusiasts with your kindness. I hope your stay in the recuperation ward is eased by now being able to use your FT-817 with your new M3 ĉall. All the best.

## Sadly

Just prior to the new year I received the following from Ian Hollingsbee. "It is with sadness that I have to report the death of my uncle, Donald Hollingsbee on 27th December at Addenbrooks Hospital Cambridge.

The reason I inform you of Don's death is that he was one of the founding fathers of our hobby and wrote a number of articles in the *Short Wave Magazine*.

I have in front of me the June, July and August issues of SWM 1969. Vol XXV11 Number 4,5 and 6. His article in three parts was called; Design for an Amateur-Band Receiver a solid state all silicon double conversion top band to ten metres receiver, (SWM June 1969 page 212-216). Don had published an article in March 1967 of SWM on the introduction to Field Effect Transistors as well as mention of the m.o.s.f.e.t. Donald's receiver was designed round these two elements and as such was a pioneering undertaking.



The late Don Hollingsbee G3TDT and nephew Ian G4NVC.

To understand Donald's sense of humour I quote from the second article page 279. Referring to the stability of the oscillator he writes 'Quite frankly, the author is not in the habit of working either in the fridge or the linen cupboard, let alone dashing madly between the two, so no dramatic temperature curves have been prepared. Suffice to say that when the lady of the house throws wide the window to clear the pipe smoke, then the tuning stays put.'

It was Donald who fired my interest in Amateur radio and construction work as well as being the man I turned to when things didn't work as expected. He encouraged me to get my licence and since then I have had many a QSO on 80 metres with him.

Kevin, there is far more I could tell you about Donald and his contribution to

electronics and robotics but as he was not one to blow his own trumpet I shall not add more except to say that Donald was an honourable advocate to our hobby and will be missed".

Ian, our deepest sympathies to you and Don's other family and friends.

## FRARS

Paul Marsh of Flight Refuelling Amateur Radio Society send me a last minute E-mail which missed the 'slot' for our 'Communiqué' section. The contents, which relate to the FRARS events that are due to take place in February are obviously time sensitive. in consequence, here's the list:

9th Feb 2003 - 70MHz cumulative at FRARS - 1000 to 1200.

9th Feb 2003 - Peter G0SKN will be talking about modern day air traffic control, and also showing a video of current ATC operations. Starting time 2000.

16th Feb 2003 - John G6AZV will be holding an open contest forum at FRARS to discuss the years contests with interested members. Starting time 2000.

23rd Feb 2003 - 70MHz cumulative at FRARS - 10:00 to 12:00.

Paul also says have a look at [www.frars.org.uk/cgi-bin/render.pl?pageid=1202](http://www.frars.org.uk/cgi-bin/render.pl?pageid=1202) He tells me that FRARS believe that this could well be the largest 4m antenna array in the UK. That is of course, unless you know better, as they used to say on a well known TV programme from the past.

## SWM Listening Competition

Plans for our forthcoming activity day and contest are developing rapidly. We've got approval from the land owner and a rudimentary idea of bands and modes for the activity. A kit list is developing as I type. Full information in next month's magazine.

## Speech Inverter Software

Almost forgot to say, the speech inverter software that Dave featured in last month's 'Scanning Scene' can be downloaded from [www.pwpublishing.ltd.uk/swm/scanning/](http://www.pwpublishing.ltd.uk/swm/scanning/)

04 73 Kevin



Win a pocket scanner courtesy of SWM and Icom (UK) Ltd.

# Win Icom's Latest Pocket Scanner

Worth  
£179!

**W**e reviewed the capable R5 in *SWM* December last year. Scanning Scene's Dave Roberts comments "...the IC-R5 possesses precious few controls. Yep, you've guessed it. It's menu driven. With such a small unit this can make sense for if we had to rely on a conventional keypad to enter frequencies/channel numbers, etc., the buttons would of necessity be really tiny and accordingly most people would need smaller fingers to drive the thing. I'd need much better eyesight as well! It follows that frequency entry is by a combination of button pushing and dial turning. This in itself is pretty straightforward and I soon found myself able to tune the radio efficiently. Frequency coverage is factory set and is dependant on the target market area."

## Phenominal

In addition to this, CTCSS and DTCS values can be entered to each channel if required. Memory management is phenomenal. You can move memories around and assign them alpha numeric tags. You can assign tags to memory banks and perform a whole load of other memory functions as well.

For more information on the IC-R5 and its range of accessories Icom (UK) Ltd. can be contacted at **Sea St., Herne Bay, Kent CT6 8LD**, Tel: (01227) 741741 Fax: (01227) 741742 or web: [www.icomuk.co.uk](http://www.icomuk.co.uk)

### SPECIFICATIONS

<b>Receiver Architecture:</b>	Triple conversion superheterodyne
<b>Frequency coverage:</b>	0.150 - 1309.995MHz
<b>Modes:</b>	a.m., n.b.f.m. and w.b.f.m.
<b>Memory channels:</b>	1250 (1000 regular, 50 scan edges and 200 auto memory write)
<b>Tuning steps:</b>	5, 6.25, 8.33*, 9*, 10, 12.5, 15, 20, 25, 30, 50 and 100kHz (* Selectable depending on operating bands)
<b>Battery requirement:</b>	2 x AA NiCad or alkaline cells
<b>External power supply:</b>	6.0V d.c. ±5%
<b>Current drain:</b>	Rated audio, 170mA
	Standby, 100mA
	Power save, 41mA (3.0V d.c. typical)
<b>Antenna impedance:</b>	50Ω (SMA)
<b>Dimensions:</b>	58 x 86 x 27mm (W x H x D)
<b>Weight:</b>	185g (approx.)
<b>Intermediate frequencies:</b>	1st - 266.7MHz, 2nd - 19.65MHz, 3rd - 450kHz
<b>AF output power:</b>	100mW typ. at 10% distortion with an 8Ω load at 3.0V d.c.
<b>External Speaker:</b>	3-way 3.5mm jack - 8Ω

This handy pocket sized scanner could provide you with all you need to get started into the world scanning. Just enter our competition to the IC-R5 prize draw, simply complete the entry form below answering the three questions and post your entry now.

Good luck.

## 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 three questions and post your entry to: **SWM IC-R5 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 do you control the R5? It is...  By thought  By menu

Q2: How many demodulation modes does the R5 offer? .....

Q3: How many cells are required to power the R5? .....

The closing date for this competition is 27 February 2003, the winner will be drawn on 6 March 2003 - the first correct answer drawn will win. The winner will be announced in the April 2003 *SWM*. The Editor's decision is final.

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



## NVCF 2003

This year, the **National Vintage Communications Fair** celebrates its 11th successful year on **Sunday 4th May 2003** in Hall 11 at the NEC in Birmingham. Since its inception in 1992, the NVCF has been recognised as the UK's leading vintage communications fair aimed specifically at collectors of early radios, Bakelite and candlestick telephones, fifties television sets, old wind-up gramophones and classic valve audio equipment, etc. all saved from a bygone era and lovingly restored. As well as supplying the needs of collectors, the NVCF caters for those interested in furnishing 20th century period homes and interiors and supplying the film and TV industry with authentic and genuine props.

The Fair is held twice a year at the NEC and is supported by over 300 stallholders from all over Britain and as far afield as Europe, America and the Far East, who may be anything from full time specialist dealers, to people selling surplus items from their collections. Several collectors' clubs and magazines also exhibit at the Fair and are on hand to give helpful advice on the practical side of the hobby.

The Fair opens from 1030 till 1600 and admission is £5 (under 14s free). More information can be obtained from the Organiser **Jonathan Hill** at **Sunrise Press, 13 Belmont Road, Exeter, Devon EX1 2HF**, Tel: **(01392) 411565**, E-mail: **germanium1@yahoo.co.uk** or alternatively visit **www.angelfire.com/tx/sunpress**

## Annual Lighthouse Event

This highly popular annual August event attracts hundreds of activated lighthouses and lightships (316 last year) in 45 countries. It is organised by **Mike GM4SUC** and **Kevin VK2CE** the Internet's site web-master. The Amateur Radio Lighthouse Society offers several awards and certificates for achievements in various categories. This year the period of the event is from 0001 on Saturday 16 August until 2359 on Sunday 17 August 2003.

The event is **not** a contest. It is a special event weekend when each group decides how it will operate with regard to modes and bands. Participants are not committed to being on the air during the entire period - you can operate as much as you like. There are no restrictions on antennas or power. The Society wish operators to enjoy themselves and have fun while making contact with as many stations as possible giving priority to other lighthouse/lightship stations. Please take some time to work the slow operator, the newly licensed and QRP stations.

As available space in many lighthouses is filled to capacity, participation in this activity does not have to take place inside the tower itself. Field day type set-up at the light or other buildings next to the light or adjacent field is OK. Permission **must** be obtained from any interested parties.

As from last year, the World Lighthouse Day is held on the Sunday and lighthouse keepers/managers/caretakers all around the world open their lighthouses to the public. Visit <http://www.lighthouse.fsnet.co.uk/events/intlighthouseday.html>

Because the ILLW is **not** a contest, you can operate on any authorised QRGs as per your licence, including the WARC bands. Please be sure to observe band limits for your class of licence and your country.

To assist other stations in identification of lighthouse/lightship stations, it is requested that participating stations add LIGHT, LGT, LIGHTHOUSE or LIGHTSHIP after their call. UK stations normally obtain a GB callsign with the letter L in the suffix and USA stations can request a Special Event callsign from the ARRL.

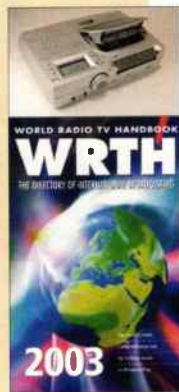
If you decide to join in, please register on-line at <http://vk2ce.com/illw/> or send mail to [illw@vk2ce.com](mailto:illw@vk2ce.com) with details of your name, callsign to be used, lighthouse/lightship, country, QSL route, etc. Although registration is not compulsory, doing so enables the Society to maintain a detailed list of participants at <http://vk2ce.com/illw/2003.htm> showing QSL address, web site and any special event calls they may be using.

So come and join in the fun of the weekend, establish a station at a lighthouse, lightship or maritime beacon. The more the merrier!

## Lucky Winners

The lucky winner of our Roberts C9950 Cassette Recorder competition, which appeared in the December 2002 SWM, is **Ron Boye** from Gwynedd. Well done Ron. The prize will be on its way to you shortly.

Also, the five lucky winners who win a copy of the *WRTH 2003* are as follows: **Edmund Gray**, Colchester; **Leo Noran**, Ireland; **Joseph Herron**, Eire; **S.R. Jessop**, N. Yorks and **Richard Edwards**, Kent. The books will be posted out to you shortly. Well done everyone!



## World's Smallest

**N**evada are pleased to announce the release of the DR101 - the world's smallest portable DAB Digital Radio. DAB Digital broadcasts provide stunning reception - even on earphones (as supplied with the DR101). The DR101 enables reception of the new digital programmes whilst on the move. The radio receives both the DAB Digital and the existing v.h.f. f.m. radio bands. It also has a large full graphic four line display with backlight, stereo headphone output, mains adapter and earphones supplied.

The DR101 will sell for £169. More information about the new DR101 can be obtained from UK Distributors, Nevada, on **(02392) 313090** or visit [www.nevada.co.uk](http://www.nevada.co.uk)



## Chelmsford's Raffle

For the **Chelmsford Amateur Radio Society**, like most clubs, the hire of a meeting hall is a major expense. To help offset this, the club hold a raffle at each meeting. There are usually between five and eight prizes which gives members a good chance of winning something.

The club meet on the 1st Tuesday of each month in the Marconi Social Club, Beehive Lane, Great Baddow, Chelmsford, Essex. Foundation courses are held on Thursday evenings. More information from Secretary **David Bradley M0BQC** on **(01245) 602838** or visit [www.g0mwt.org.uk](http://www.g0mwt.org.uk)



## New QSLs

**R**adio Prague have released some brand new QSL cards - which they will be sending to listeners in recognition of reception reports for programmes heard in 2003. The series of eight photographs depicts historical JAWA motorcycles. Radio Prague issues a series of QSL cards with a different topic each year - the 2002 series featured UNESCO World Heritage Sites in the Czech Republic.



If you're travelling a long distance to a rally, it could be worth phoning the contact number to check all is well, before setting off. The Editorial Staff of SWM cannot be held responsible for any information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers. If you have any queries about a particular event, please contact the organisers direct. Editor.

## rallies

**January 26:** Olham Amateur Radio Rally. Please note that despite rumours that this rally is not taking place, it is! However, due to problems at the usual venue the rally will be moving to **The Oldham Sports Centre, Lord Street, Oldham**. Doors open at 1100 (1030 for disabled visitors). Usual trade stalls and Bring & Buy. Talk-in on S22 (145.550MHz) and ample parking. Details from **Mike M1CVL** on (01706) 367343 or E-mail **Steve** at [m5aug@btinternet.com](mailto:m5aug@btinternet.com)

**February 2:** The 18th South Essex Amateur Radio Society are holding their Radio & Computer Rally at The Paddocks, Long Road, Canvey Island, Essex, (The Paddocks are situated at the end of the A130). Admission is £1.50 and doors open at 1030 - features include amateur radio, computer and electronic component exhibitors; there will also be home-made refreshments, free car parking with disabled access, RSGB Morse tests (two passport photos and fee required). More information from [www.southessex.ars.btinternet.com](http://www.southessex.ars.btinternet.com) or from **Brian G7IIO/M3IIO** on (01268) 756331 or E-mail: [briang7iio@yahoo.com](mailto:briang7iio@yahoo.com)

**February 9:** The Harwell ARS Radio & Computing Rally will take place at Dicot Leisure Centre, Mereland Road, Didcot, Oxfordshire. The rally will be signposted from the Milton Interchange on the A34. Talk-in on S22. There will be a car park and admission is £1.50. Doors open at 1030, 1015 for disabled visitors. Trade stands, Bring & Buy, Special Interest Groups, a

licensed bar, light refreshments and disabled facilities. More information from **Ann G8NVI** on (01235) 816379 or [ann.stevens@btinternet.com](mailto:ann.stevens@btinternet.com) or visit [www.hamradio.harwell.com](http://www.hamradio.harwell.com)

**February 16:** The Northern Cross Radio Rally is to be held at Thornes Park Athletics Stadium, Wakefield, W. Yorkshire. The rally is held in one large hall - just out of town on the Horbury Road. Easy access from M1 J39 & J40 - well signposted and with talk-in on 2m and 70cm. Doors open at 1030 (1015 for disabled visitors and Bring & Buy). There will be the usual attractions plus Morse tests on-demand. More details from **John G7JTH** on (01924) 251822, E-mail: [g7jth@wdrs.org.uk](mailto:g7jth@wdrs.org.uk) or visit [www.wdrs.org.uk](http://www.wdrs.org.uk)

**February 16:** The Cambridge & District Amateur Radio Club are holding their rally at Britten Arena, Wood Green Animal Shelter, King's Bush Farm, London Road, Godmanchester at 1000. Entrance fee is £2, concessions £1.50. There is enough free parking for 2000 cars, there will also be two bars, a restaurant, animal shelter, water garden and lake. A great day out for all the family. More information at [www.cdarc.org.uk](http://www.cdarc.org.uk)

**March 8:** The Crystal Palace Radio and Electronics Club Spring Radio Fair at St. John's Hall, Sylvan Road, London SE19. Doors open at 1030 till 1330. Traders Tables £5 in advance. Admission is just £1, which includes a free drink. Children under 16 free.

Free local parking. Contact **Bob** on (01737) 552170. More details on <http://www.members.aol.com/rfcburns>

**March 9:** The 18th Annual Wythall Radio & Computer Rally is to be held at Wythall Park, Silver Street, Wythall, near Birmingham, on the A435, just two miles from J3 on the M42. Doors open 1000 till 1600 and admission is just £1.50. Plenty of traders in three halls and a large marquee. There will also be bar and refreshment facilities on site, along with a Bring & Buy stand and a unique free park and ride for easy, comfortable parking. All are welcome. For licensed radio amateurs, there is a talk-in on S22. Information at [www.wrcrally.co.uk](http://www.wrcrally.co.uk) or contact Rally Organiser **Martin V8VXX** on 0121-474 2077 evenings or FAX: 0121-742 3471 working hours, E-mail: [enquiries@wrcrally.co.uk](mailto:enquiries@wrcrally.co.uk)

**March 9:** The 9th West Wales Amateur Radio & Computer Rally will be held at Penparcau School, Aberystwyth (as part of National Science Week). Doors open 1000 till 1530 and admission is just £1. Good parking facilities with easy access for disabled visitors and traders for all stalls. See GB4FUN Amateur Radio on the Move. Demonstrations on h.f., v.h.f., on the air. Amateur Radio and Computer Traders, Bring & Buy, Clubs and Special Interest Groups, including Motorcycle Display. Catering facilities. Talk-in on S22. More information from organiser **Ray GW7AGG** at home QTH or (01686) 628778, FAX: (01686) 621880 or E-mail: [mwmg01@aber.ac.uk](mailto:mwmg01@aber.ac.uk)

## Fred Ward G2CVV - Short In Stature - Giant In Character

**R**ob Mannion G3XFD remembers Fred Ward G2CVV. Fred was a tiny man, but what a giant character! Many of us will remember him as the enthusiastic mainstay of the famous Derby Rally, but I'm privileged to have known him from when I was only three years old! Fred was a friend of my late Grandfather, who just happened to be Station Master at Derby Friargate Station. Fred said it was the only time he was taller than me as I rapidly overtook his five foot-and-a-bit which he witnessed on my visits to my grandparents!

Born on the 23rd of April 1919, St. Georges Day, he became interested in radio in 1932 as a 13 year old short wave listener. Pre-war, in 1937, his Artificial Aerial callsign was 2CVV. Fred joined the

Derby Wireless Club - one of the oldest clubs in the world and the first in England. After the War he became G2CVV and spent many years working for the old Post Office. Helping many people into the hobby through his enthusiastic support of his club and the hobby in general, he became President of the RSGB in 1971, and was also President of the Radio Amateur's Old Timers Association (RAOTA).

A delightfully friendly man - he'll be greatly missed.



Photo Courtesy: G7GJL

## Manchester DX Meeting

**T**he next Manchester DXers 'get together' will take place on **Saturday 1st February 2003** in the city centre. Anyone with an interest in radio is invited to come along to this meeting, one of the regular ones arranged by the British DX Club. The BDXC is primarily concerned with broadcast radio listening - short wave, medium wave, longwave, f.m., international, local, free radio, etc. However, many other radio topics will no doubt be discussed, such as amateur, utility, WorldSpace, satellite, etc., as well as current happenings such as the introduction of DAB and receivers such as the Pure Evoke, and the amateur radio 'Summits On The Air' programme.

Regular participants in the Manchester meetings often bring along items of interest such as recently received QSL cards, books, photographs and latest loggings. You are invited to do the same! The Manchester meetings are informal affairs and this one will be no different - commencing in the Wetherspoons Pub in Piccadilly Gardens from 1600 and moving on later for a meal then to more alehouses.

Piccadilly Gardens is in city centre Manchester, just a short walk down from the Piccadilly mainline railway station. For further information, please contact **Tom Read** via E-mail: [tommyread@hotmail.com](mailto:tommyread@hotmail.com) see the website at <http://tomread.co.uk> or telephone (01625) 612916. It is hoped to have a couple of mobile contact numbers in operation on the day - please E-mail or ring for these.

# AR8200 Mark3 RECEIVER

## EVOLUTION PRODUCES THE VERY BEST

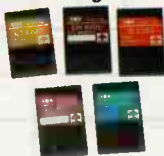
Evolution had led to the **NEW AR8200 MK3** and provides excellent full coverage all mode receive including USB, LSB, AM, NFM, WFM with multiple IF bandwidths. Frequency coverage is **530kHz - 3GHz** with minimum acceptable input of 100kHz. Supplied with NiMH rechargeable batteries, charger, car lead, whip aerial, MW aerial and comprehensive illustrated operating manual.



The MK3 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 AR8200 MK3 is supplied with 1500mAh NiMH batteries (in place of NiCads) for extended operation.
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. Many options are available including SLOT CARDS for CTCSS, analogue voice inverting, external memory, recording / playback, tone eliminator, computer interface lead, reaction tune lead, soft case, free PC software from the AOR web site.

**£439.00 inc VAT.**



## AR7030 employed by the BBC for DRM evaluation

The following information has been provided by the BBC following display at the IBC in Amsterdam 2002. The material and photograph is (c) copyright BBC R&D 2002 and presented here by their kind permission.

BBC Research & Development engineers recently adapted one of our AOR 7030 receivers for a demonstration of DRM reception at the International Broadcasting Convention in Amsterdam. They modified the 7030 to be a stand-alone DRM receiver by fitting a DSP card into it. (They had designed this card as part of a collaboration with Coding Technologies to produce a complete receiver which was also shown at IBC.)



The modified AOR7030. The BBC DSP card can be seen on the right of the receiver, partly obscured by the loudspeaker. It's a perfect fit! (Picture courtesy BBC R&D).

The DSP card takes in a low-IF DRM signal and gives out decoded analogue audio. To fit it into the 7030 in the simplest and quickest way possible, a low IF input centred on 12kHz was used, as this was already produced by the tiny downconverter card available as an AOR option. The audio output from the card was then fed to the 7030's own audio amplifier. The card can also provide information like station names, text messages, etc. but these were not used in this quick-and-simple conversion. A separate external power supply fed the DSP card.

During the Convention the modified 7030 (together with other DRM receivers) was demonstrated to many interested visitors to the DRM stand, with HF signals received live from DRM-members' transmitters in Canada, Germany, Netherlands Antilles, Portugal and UK. Demonstrating DRM with small receivers like the modified 7030 helped to show that DRM represents an achievable future for broadcasting in the bands below 30MHz.

Note, the DRM modification provided by AOR does NOT include the DSP board.

For details of the modifications and current status, please visit the AOR UK 'DRM PAGE' at :-

<http://www.aoruk.com/drm.htm>

BBC R&D <http://www.bbc.co.uk/rd>

Coding Technologies  
<http://www.codingtechnologies.com>

Digital Radio Mondiale <http://www.drm.org>

Fraunhofer Institute <http://www.iis.fhg.de>

Full details may be viewed on the AOR web site [www.aoruk.com](http://www.aoruk.com)

## AOR DIRECT AERIALS

Items in this column are available directly from AOR UK LTD, please place your order using any of the following methods:

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

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

The **LA350** is a compact active loop aerial specifically designed to provide good reception when away from the main monitoring location or when large external aerials are not practical. **SEE THE DETAILED REVIEW IN THE NOVEMBER 2002 SWM.**

Compact, but achieving high performance, featuring an internal high-gain amplifier (13.5dB) and excellent overall strong signal handling (high IP<sup>3</sup> +30dBm).

Very compact being constructed of metal loops and providing a quality finish, still the LA350 remains only half the diameter of other well known loop aerials.

Supplied with two loops, 3.0 - 9.0 & 9.0 - 30MHz **£199.00 carriage £5.00**

- 350L Optional element 0.2 - 0.54 MHz for LA350, **£49.00**
- 350M Optional element 0.54 - 1.6 MHz for LA350, **£49.00**

Carriage on optional elements £2.50 if ordered separately

**DA3000** 16 element disccone aerial. Usable coverage is 25 MHz to 2,000 MHz (2GHz). Supplied with 15m of coaxial cable and terminated in a BNC plug. **£69.00 carriage £5.00**

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

## WL500 NEW short wave window loop aerial

Following on from the success of the LA350 loop aerial (see above), the WL500 provides a solution to those operators who need a good compact aerial for travelling around.

The loop is constructed of flexible cable braced by a centre pole which splits in to two sections so that it can be easily stored away. When setup, the loop forms a diamond shape with an approximate diameter of 60cm. The loop covers 3.5 to 30MHz with a range switch mounted at the termination point of the loop (switching at 10MHz). A length of screened cable is supplied which is terminated in PHONO plugs to connect the loop to the control box. The control unit provides preselection and amplification terminated in a BNC socket for connection to the receiver. Excellent strong signal characteristics are achieved, typically 16dB gain with an IP<sup>3</sup> of +14.5dBm. The control unit can be powered from an internal 9V PP3 battery (current consumption is around 16mA), alternatively external 12V DC may be used (power supply included). While the WL500 will operate below 3.5MHz, performance on the lower bands can be enhanced by the addition of the optional 500LM bar element. The bar has a selector switch for LW or MW operation and connects to the control box in place of the short wave loop.

**£149.00 carriage £5.00**

- 500LM Optional element **£49.00**  
Carriage on 500LM optional element £5.00 if ordered separately



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



Tel: 01773 880788 Fax: 01773 880780  
info@aoruk.com www.aoruk.com E&OE

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

■ **E-MAIL:** [off.the.record@pwpublishing.ltd.uk](mailto:off.the.record@pwpublishing.ltd.uk)

# Off The Record

**T**he Radio Authority, soon to become a part of Ofcom, and the radio industry are considering even further deregulation of ownership of the UK's local and regional commercial radio stations. The idea is to have a minimum of just two commercial station owners, plus the BBC in any particular area. There are also minor restrictions in cases where broadcasters also have the same owners as newspapers groups covering the same area.

Many small stations start as completely independent concerns, but soon find themselves at a substantial disadvantage when attempting to compete with the larger multiple station networks. Ultimately these small stations sell their licences to the very same organisations that they had intended competing with, resulting in the inevitable reduction in customer choice.

The RA have issued about 15 temporary Access Radio licences as a part of an experiment in low budget broadcasting, the decision relating to its future has been extended and will be left for Ofcom to make next year. If this new strata of radio does become a reality, I only hope that licences (like amateur radio) are not transferable and would have to be returned to Ofcom should the licence holder wish to cease broadcasting. This way, new suitable applicants could be sought rather than simply passing their licence onto their richest competitor.

## Vintage Wireless

These days with everything going digital it is a surprise to receive so many comments about old radio programmes and things. The Internet has lots of information, though finding it can be very time consuming.

Much interest seems to exist on subjects related to the early days of the BBC and I found a website that gives details of the construction of Broadcasting House and how it has been adapted over the years. It also covers much of the BBC's studio equipment used over the years including some of those huge BBC Type A ribbon microphones that still seem to appear in cartoons to this very day.

So if you are into the technical and historical side of British radio broadcasting try [www.roger.beckwith.btinternet.co.uk](http://www.roger.beckwith.btinternet.co.uk) and click on Old Broadcasting Equipment. Recently the BBC donated their original London transmitter 2LO to the British Science Museum. The 2LO transmitter was built in 1922 and had been discovered in the basement of the London MW transmitter station at Brookmans Park.

## Radio Caroline

There is both bad and good news from Radio Caroline. Their WorldSpace channel became encrypted on 26th November last year after several reported delays, so now only those who have paid their £60 subscription will be able to receive this service. The American news channel National Public Radio was also to be encrypted on this same day and the subscription will cover both stations.

Vizja, the Polish Astra satellite TV station, have moved their studio at Maidstone, to premises at Amsterdam, so Radio Caroline have lost their audio carrier on the satellite too. The Maidstone studio complex, which once housed TVS a regional TV station, is now mainly used for independent production purposes, it has now been sold, but this should not immediately affect the area rented to Radio Caroline.

Moves are being made to have the station available on the UK's Sky satellite sometime during 2003. This could involve sharing a channel with a religious broadcaster, this deal - if successful - could mean Caroline being on the Sky satellite very soon. The downside of this is that the UK satellite is not generally received in continental Europe, so this may cause the demise of the German service and their relays of the short wave pirate Radio Marabu.

## Ireland 252

**Ivan Tallon** from Co. Meath sent me a press cutting from his local newspaper saying that the building, until fairly recently used by the long wave station Atlantic 252, has been sold by auction. The property is Morningtown House, Summerhill Road, Trim, a three storey period building has now been acquired by the local council for use as offices. Ivan says he lives quite close to the former studio building and just 20km from the transmitter site.

The local press say that proposals exist for RTE, the Irish state broadcaster, to use the l.w. frequency to reinforce reception to their existing services in Ireland and the UK. Test tones have continued to be heard at infrequent intervals on 252kHz.

A local action group, that strongly opposed the construction of the 500kW radio station, still view the tall mast as a symbol of injustice. They had expressed concern over the levels of electromagnetic radiation and neighbouring properties had experienced background interference on telephone lines.

## Hot Gossip

As a result of new cost cutting measures, the BBC are considering transferring the ownership of their properties to a new joint venture, this would include Broadcasting House, the BBC sold their transmission facilities some years ago. The BBC also intends to vacate many of their rented sites including the World Service headquarters at Bush House. The expansion at Broadcasting House could give a capacity of 140 studios and become one of the biggest broadcast centres in the world.

The commercial radio and TV companies who in recent years have suffered a downturn in advertising revenue are accusing the BBC of unfair competition. The commercial companies are financing digital broadcasting from their diminishing revenues while the BBC is benefiting by above inflation rate increases in the licence fee. I suspect there were some raised eyebrows when the legendary cash strapped BBC suddenly became a partner in Freeview, the digital terrestrial TV service that replaced ITV and On Digital.

## SW Pirates

Radio Skyline, from Holland, on 6.298MHz has been received in the USA, however the E-mail address broadcast on air seems not to work. Radio Cochiguaz have been testing on 11.440MHz u.s.b. between 0100 and 0200. Their address is **PO Box 159, Santiago, Chile** or [Radio\\_Cochiguaz@yahoo.com](mailto:Radio_Cochiguaz@yahoo.com)

Jack Russell's Weekend Music Radio has been heard over much of Europe on 7.526MHz. Another station (similar name) - European Music Radio - is now being aired by the Italian Radio Relay Service in Milan on 13.840MHz, the times are irregular, but try 0830. Peter Verbruggen of the Free Radio Service, Holland (FRS) says that he is able to provide a mail-drop for interested stations at reasonable rates - **PO Box 2702, 6049ZG, Herten, Holland.**

For those seeking information on radio hardware, I have stumbled on a website - [www.transmittersrus.com](http://www.transmittersrus.com) - that has the unlikely name of Transmitters R Us. Readers to this page will I am sure be aware of the legal implications attached to the use of unlicensed transmitting equipment. The American pirate announcing the call WMPR (Micro Power Radio) has been heard on 6.955MHz at 2315.

## Radio News

Laser Radio started running a regular Sunday service via the 100kW transmitter at Ulbroka in the Republic of Latvia on December 22nd 2002. The content of the programmes are aimed at radio hobbyists and pirate radio enthusiasts with music from the 60s to the 80s. The frequency is 5.935MHz between 1700 and 2300 each Sunday. So far DX reports have been received from the USA, Brazil, Indonesia and Japan.

The Isle of Man government are considering the future of Manx Radio, as there have been concerns that programmes may have to be curtailed unless additional finance could be found. Consideration is being given to establishing a statutory charter for the station so it will become a national broadcaster. A strategy report has outlined various options to improve the stations funding including increasing the government support to £800,000 per year.

If Manx Radio were to become a government owned National station it may be fair to assume they could be entitled to a small proportion to their residents TV licence fees. On the island Manx Radio would have exactly the same status as BBC local radio has on the mainland, which is completely financed from the national TV licence fee.

## Clandestine Broadcasts

As opposed to pirates, clandestine stations are usually financed by governments or political movements and directed to another country. Sometimes the origins of the transmissions are deliberately concealed. In contrast to this, the USA launched Radio Sawa with much publicity, this station is directed at Arab speaking nations with the intention of enhancing Americas reputation with young people in this area.

One can possibly assume that the new station was started as the reputation of the USA's Voice of America has ceased to become a relevant source of information to many in the Arab world. I had a website for Radio Sawa [www.ibt.gov/radiosawa](http://www.ibt.gov/radiosawa) but it seems not to work for me at the moment. Their format includes a mix of western and Arabic pop music - suggested frequencies include 7.105, 9.505, 11.825 and 15.545MHz all directed at the Middle East.

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

# LM&S



Many of the frequencies now being used by the international broadcasters were mentioned in the latest reports and they have been included in the short wave data herein. There have been some reports of unusual reception in the long and medium wave bands too, so you may well find them of interest!

If you would like to contribute to the information in 'LM&S', please post your report(s) to me at the above address to arrive here during or before the first week of the month following reception e.g. the first week of February for reception during January.

## 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 November.

Whilst searching the band in Wigan, **Jim Edwards** picked up a broadcast from Bod, Romania, under DLF via Donebach on **153kHz** at 1840. Tuning higher up the band he came across a co-channel transmission under Polski R-1 on **225kHz** at 1845, which he assumed came from TRT via Van, Turkey (600kW) as Turkish type music was being played at that time.

A broadcast from Erzurum, Turkey on **243kHz** was heard at 2250 on the 24th by **Ernie Strong** (Ramsey, Cambs), which lasted for about 15 minutes before fading into the noise. During that time a woman announcer introduced European pop music. At best he rated the transmission SINPO 23232.

Between 2100 & 2130 on the 30th, **Fred Pallant** (Storrington) listened to a broadcast in Italian from Radiotelevisione Italiana (RAI) via their 10kW outlet at Caltanissetta, Italy, on **189kHz**. It was fluctuating between S1 & S2 and sounded like a football commentary.

## Medium Wave Reports

The increasing hours of darkness during November encouraged some listeners to search for the sky waves from the many m.w. stations in the Middle East, N.Africa, Europe and Scandinavia - see chart.

The sky waves from Galei Zahal, Jerusalem (10kW) on **1404kHz** were received for the first time by Ernie Strong at 2100 on the 17th, which rated 33433.

Unusual conditions were observed during daylight on the 24th by **Simon Hockenull** in E.Bristol. At 1330 he heard BBC R.Scotland on **810kHz**, which is shared by Westerglen (100kW), Burghead (100kW) & Redmoss (5kW). He logged it as 35433. He also heard **Kraberg**, Faeroe Is (100/200kW) on **531kHz**, which he noted as 23432 at 1337. During the late evening of the

26th & 27th he found reception from stations in N.Africa and the Middle East to be unusually good.

The ground waves from distant local radio stations were picked up by some listeners during daylight. Over in Co.Down **Robert Connolly** (Kilkeel) searched the band on the 17th between 1200 & 1320 and logged some fifty stations, including BBC R.Kent via Rusthall (0.25kW) on **1602**, which he rated SINPO 22222 - see chart. The 0.5kW transmission from BBC R.Guernsey on **1116kHz** was received by **Rhoderick Illman** in Oxted and rated 23432 at 1057.

The frequency change to BBC Somerset Sound in Taunton (**1323** to **1566kHz**) was mentioned in several reports. Commenting from Stalbridge **Bernard Curtis** says "For the

first there is a local radio station on medium wave in this area that can be heard clearly throughout the 24 hours. Previously, when they were on **1323kHz**, the signal used to get mixed up with the Voice of Russia as soon as the hours of darkness got near".

Another change was mentioned by **Sheila Hughes** in Morden. The Ritz Group, which is now in liquidation, has transferred the former Ritz/Country outlet on **1035kHz** to the Mean Fiddler Group. The station was relaunched as 'Mean Country' on October 29. On November 23 Sheila logged their 1kW transmission on **1035kHz** from London as SINPO 55555 at 1155.

## Short Wave Reports

Radio France International continued to broadcast daily in the **25MHz (11m)** band during November. Their transmissions are beamed to E/C.Africa on **25.820** (Fr, Eng 0830-1300), but no reports arrived here to indicate how well they are being received in that area. In the UK reception of their transmission varied from day to day. The SINPO ratings quoted by some listeners were 24212 at 0915 by **Vic Prier** in Seaton; 44233 at 0917 by **Eddie McKeown** in Newry; 24222 at 1038 by **Thomas Williams** in Truro; 35422 at 1125 in E.Bristol; 25332 at 1130 in Storrington; 55434 at 1200 in Stalbridge; 44444 at 1210 in Morden; 35433 at 1230 by **Fred Wilmshurst** in Northampton.

Since the return of Deutsche Welle (DW) to this band on October 28 their daily transmissions to Asia from Nauen, Germany, on **25.740** (Ger 0800-1400) have often reached the UK, but it is not known here just how well they are being received in Asia or Australia. In the UK their transmission was noted as 'weak and noisy with a slight echo' at 0905 in Seaton; SINPO 35433 at 0915 in Stalbridge; 34444 at 1025 in Northampton; 44423 with echo at 1058 in Truro; 45523 at 1130 in E.Bristol; 35333 at 1130 in Storrington; 35232 at 1138 in Newry.

While searching the band Simon Hockenull noticed that DW are also broadcasting in English on **25.700**. He logged their daily transmission from Nauen, Germany (Eng to Africa 1100-1145) as 35523 at 1120. It was also heard in Storrington and rated 25232 at 1138. Reports on this from other listeners would be welcome here for inclusion in 'LM&S'.

Good reception over long distances was often observed in the **21MHz (13m)** band by listeners in the UK, but during some days, the effects of solar activity disturbed the ionosphere and made the reception of some broadcasts difficult if not impossible. The most distant transmissions to reach the UK came from R.Australia via Shepparton. Their early morning broadcast to Pacific areas on **21.725** (Eng 0200-0900) was rated 33333 at 0845 by **Stan Evans** in Herstmonceux. It is followed by their broadcast to Asia on **21.820** (Eng 0900-1400), which was rated 44434 at 0950 in Stalbridge & 44344 at 1306 in Newry during favourable conditions.

Other broadcasters taking advantage of the propagation conditions in this band before mid-day include BSKSA Riyadh, Saudi Arabia **21.505** (Ar to N.Africa 0500-1500), rated 25333 at 0731 by **Ian Evans** in Ebbw Vale; BSKSA **21.705** (Ar to Eur 0600-1200) 45545 at 0845 in Seaton; Swiss R.Int via Sottens **21.770** (Eng, It, Ger, Fr to Near East, Africa 0830-1030) 25444 at 0850 in Northampton; R.Japan via Yamata, Japan **21.755** (Eng, Jap to Australia 0500-1100) 34433 at 0926 in Oxted; R.Japan via Moyabi, Gabon **21.550** (Jap to M.East 0800-1000) 33343 at 0928 in Oxted; R.Prague, Czech Rep **21.745** (Eng to E.Africa, S.Asia 1000-1030) 33233 at 1000 by **Gerald Guest** in Dudley; R.Ext.Espana via Noblejas, Spain **21.610** (Sp to M.East 0900-1700) 55555 at 1030 in Morden; R.Finland via Pori **21.800** (Fin to E.Asia, Australasia 1000-1200) 44444 at 1032 in Truro; VOIRI Tehran **21.470** (Eng to Asia 1100-1228) 44433 at 1120 in Herstmonceux.

During the afternoon Channel Africa via Meyerton, S.Africa **21.760** (Eng to W.Africa 1300-1500, Sat/Sun) was rated 44444 at 1350 by **David Hall** in Morpeth; HCJB Quito, Ecuador **21.455** (Eng to Eur, Australasia [u.s.b.]) was 44334 at 1410 in Stalbridge; R.Portugal Int, Lisbon **21.810** (Port to S.Asia 1400-1600) 44454 at 1430 by **Robert Hughes** in Liverpool; RAI Rome, Italy **21.520** (It to E.Africa 1345-1730) 45544 at 1616 in E.Bristol; BBC via Ascension Is **21.470** (Eng to S.Africa 1300-1900) 54554 at 1630 by **Bill Griffith** (W.London) while on holiday in Acquafredda, Basilicata, S.Italy; Family R. (WYFR) via Ascension Is **21.680** (Eng to C/E.Africa 1700-1800) 44334 at 1750 in Stalbridge.

## Long Wave Chart

kHz	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	A*,F*,G*,H*
153	Donebach DLF	Germany	500	A,B,C,D*,E,F*,G*,H*,J
153	Bod	Romania	1200	A*,G*
162	Allouis	France	2000	A,B,D*,E,F*,G,H,I*,J
171	Nador Medi-1	Morocco	2000	A,C*,F*,H
171	B'shakovo etc	Russia	1200	A,B,C,D*,E,F*,G*,H*,J
171	Sasnovy	Belarus	1000	H
177	Dranienburg	Germany	500	A,B*,C,E,F*,G*,H,J
180	Polati	Turkey	1200	A*
183	Saarlouis	Germany	2000	A,B,E,F*,G*,H*,J*,J
189	Gufuskalar	W.Iceland	150	A*,E*,H*
189	Caltanissetta	Italy	10	A*,F*
198	Droitwich BBC	UK	500	B,D,E,G,H,J
207	Munich DLF	Germany	500	A,B,C,E,F*,G*,H*,I*,J*
207	Eidar	E.Iceland	100	A*,H*
207	Azilal	Morocco	800	C*,G*
216	Roumoules RMC	S.France	1400	A,B,C,E,F*,G*,H,J
216	Krasnovarsk	Siberia	1200	H*
225	Polskie R-1	Poland	?	A,B*,C,D*,E,F*,H*,J
225	Van TRT-1	Turkey	600	A*
234	Beidweiler	Luxembourg	2000	A,B,E,F*,G*,H,I*,J
243	Kalundborg	Denmark	300	A,B,C,D*,E,F*,G*,H,J
243	Erzurum	Turkey	200	H*
252	Tipaza	Algeria	1500	A*,B,C,D*,E,F*,G*,J
261	Burgi(R.Ropa)	Germany	85	A*,B*,C*,E,F*,G*,H
261	Taldom Moscow	Russia	2500	A*,F*
270	Topolna	Czech Rep	1500	A,B*,C,D*,E,F*,G*,J
279	Sasnovy	Belarus	500	A*,B*,C*,D*,E,F*,G*,H*,J*

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

### Listeners:

- (A) Jim Edwards, Wigan
- (B) Geraint Gilt, Llanfairfechen.
- (C) Simon Hockenull, E.Bristol.
- (D) Sheila Hughes, Morden.
- (E) Eddie McKeown, Newry.
- (F) Fred Pallant, Storrington.
- (G) David Stevenson, Swansea.
- (H) Ernie Strong, Ramsey, Cambs.
- (I) Thomas Williams, Truro.
- (J) Fred Wilmshurst, Northampton.





1045, 1730-1745, 2030-2045, 2330-2345, 0130-0145) 55555 at 1635 in Liverpool; R.Japan via Moyabi, Gabon **15.355** (Eng to S.Africa 1700-1800) 24332 at 1709 in Newry; UAE R.Dubai **15.395** (Ar, Eng to Eur 0600-2045) 44434 at 1715 in Seaton.

Later, VOA via Lampertheim, Germany **15.205** (Eng to M.East 1900-2000) was 45323 at 1946 in Ebbw Vale; VOA via Briech, Morocco **15.240** (Eng to Africa 1600-2200) 32222 at 1950 in Truro; VOA via Greenville NC, USA **15.580** (Eng to Africa 1800-2200) 24332 at 2000 in Storrington; AWR via Meyerton, S.Africa **15.295** (Eng to C/E.Africa 2030-2100) 44333 at 2030 by **Clare Pinder** in Appleby; BBC via Ascension Is **15.400** (Eng to W.Africa 1500-2300) 45433 at 1710 in Folkestone & 35443 at 2040 in E.Bristol.

Noted in the **13MHz (22m)** band were R.Slovakia Int via Rimavska Sobota **13.715** (Eng to Australia & Pacific 0700-0730), rated 55544 at 0710 in Herstmonceux; R.Kuwait **13.620** (Ar to Eur, N.America 0930-1600) 34423 at 1000 in Seaton; Croatian R, Zargreb **13.830** (Cr to Eur) 44444 at 1052 in Truro; R.Austria Int via Moosbrunn **13.730** (Eng to Eur 1230-1300) 54444 at 1230 in Morden; Voice International via Darwin, Australia **13.690** (Eng to Asia 1300-1630) 34434 at 1300 in Dudley; UAER, Dubai **13.675** (Ar, Eng to Eur 0600-2045) 44434 at 1635 in Folkestone; WHRI via Noblesville, USA **13.760** (Eng to E.USA, Eur 1600-2000) 33333 at 1735 in Rugby; Vatican R, Italy **13.765** (Eng to Africa 1730-1800) 55444 at 1755 in Stalbridge; VOA via Briech, Morocco **13.640** (Special Eng News to M.East 1900-2000) 44454 at 1900 in Liverpool; DW via Wertachtal, Germany **13.780** (Eng to Africa 1900-1945) 45223 at 1942 in Ebbw Vale; R.Australia via Darwin **13.620** (Eng to SE.Asia 2200-0000) 44232 at 2236 in Newry; R.Vlaanderen Int via Ned.Antilles **13.700** (Eng to N.America 2230-2300) 35544 at 2240 in Northampton; China R.Int via Sackville, Canada **13.680** (Eng to N.C.America 2300-0000) 25422 at 2345 in E.Bristol.

In the **11MHz (25m)** band R.New Zealand's transmission to Pacific areas on **11.675** (Eng 0700-1100) was rated 35444 at 0845 in Northampton & 33333 at 1036 in Truro. R.Australia's broadcasts have been received in the UK on two frequencies from Shepparton: **11.880** (Eng to E & SE.Asia 1100-1330), noted as 33333 at 1237 in Morpeth & 43343 at 1307 in Newry; **11.660** (Eng to SE.Asia 1330-1700) 34423 at 1530 in Seaton & 42333 at 1610 in Liverpool.

Also mentioned in the reports were the BBC via Woofferton, UK **12.095** (Eng to Eur 0700-1800), rated 44444 at 0805 in S.Italy; China R.Int via Jinhau, China **11.730** (Eng to Australia & Pacific 0900-1100) 44433 at 0905 in Herstmonceux; R.Japan via Singapore **11.920** (Jap to Australia 0700-1000) 33343 at 0926 in Oxted; R.Bulgaria, Sofia **12.000** (Eng to Eur 1230-1300) 44444 at 1230 in Morden; Family R. WYFR via Taiwan **11.550** (Eng to S.Asia 1300-1500) 54334 at 1425 in Stalbridge; KTWR Merizo, Guam **12.130** (Chin to E.Asia 0915-1615) 32232 at 1515 in Liverpool; R.France Int via Allouis, France **11.615** (Eng, Fr to M.East, N.Africa 1600-1900) 44344 at 1610 in Maidstone; R.Netherlands via Uzbekistan? **12.070** (Eng to S.Asia 1430-1625) 45433 at 1624 in E.Bristol; R.Japan via Yamata, Japan **11.970** (Eng to Eur 1700-1800) 43333 at 1700 in Appleby; Israel R. Jerusalem **11.585** (Relay of Home Svce to Eur, N.America 1700-0330) 44434 at 1830 in Seaton; R.Netherlands via Madagascar **11.655** (Eng to Africa 1730-2025) 35233 at 1930 in Ebbw Vale; VOA via Botswana **12.080** (Fr to Africa 1830-2030) 25333 at 1941 in Storrington; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 2000-2025) 45544 at 2010 in Northampton; HCJB Quito, Ecuador **11.895** (Eng to Eur 2000-2200) 24232 at 2130 in Rugby; AWR via Agat, Guam **11.980** (Eng to E.Asia 2130-2200) 44343 at 2155 in Newry.

Many broadcasters are using the **9MHz (31m)** band. R.Australia has been heard in the UK on two frequencies from Shepparton: **9.475** (Eng to Asia 1330-1858), rated 34333 at 1630 in Folkestone & 32222 at 1800 in Seaton; **9.500** (Eng to Asia 1900-2130), logged as 43343 at 1906 in Newry; 22332 at 2016 in Storrington & 22222 at 2052 in Truro.

During the early morning WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) was noted as 44444 at 0540 in Morpeth; BBC via Skelton?, UK **9.410** (Eng to W.Eur 0700-0900) 44444 at 0805 in S.Italy; AWR via Austria **9.660** (Ger, Eng to Eur 0800-0900) 45544 at 0850 in Northampton; R.Japan via Fr.Guiana **9.530** (Jap to S.America 0800-1000) 24231 at 0928 in Oxted; R.Vilnius, Lithuania **9.710** (Eng 0930-1000) 54544 at 0935 in

Herstmonceux; R.Nederlands via Bonaire, Ned.Antilles **9.790** (Eng to Asia, Far East, Pacific 0930-1130) 45434 at 1004 in Ebbw Vale; VOA via Greenville, USA **9.590** (Eng to C.America 1000-1100) 33323 at 1010 in Stalbridge.

Later, R.Nederlands via Wertachtal, Germany **9.860** (Eng to Eur 1130-1330) was 45544 at 1230 in Folkestone; Family R. (WYFR) via Taiwan **9.955** (Chin to W.Asia, E.Eur 1500-1700) 43333 at 1625 in Liverpool; R.Mediterranee Int [Medi-1], Morocco **9.575** (Ar, Fr to N.Africa, S.Eur 0500-0400) 33343 at 1710 in Liverpool; R.Thailand, Udorn Thani **9.535** (Eng to Eur 1900-2000) 44444 at 1900 in Dudley; R.Cairo, Egypt **9.990** (Ger, Fr, Eng to Eur 1900-2245) 34433 at 1910 in Seaton; R.Canada Int via Sackville **9.770** (Fr, Eng to W.Eur, Africa 2000-2200) 32343 at 2120 in Rugby; R.Taipei Int via WYFR Okeechobee, USA **9.355** (Eng to Eur 2200-2300) 24222 at 2200 in Morden; R.Ext. Espana via Noblejas, Spain **9.680** (Eng to Eur 2200-2300 Sat/Sun) 33222 at 2200 in Appleby; R.Romania Int **9.510** (Eng to N.America 2300-0000) SIO 444 at 2346 by **Francis Hearne** in N.Bristol; Voice of Turkey, Ankara **9.655** (Eng to W.Eur, N.America 2300-2350) SIO 333 at 2347 in N.Bristol; Swiss R.Int (SRI) via Sottens **9.885** (Fr, Ger, It, Eng to S.America 2200-0000) 45334 at 2358 in E.Bristol.

Quite a few of the broadcasts in the **7MHz (41m)** band are intended for listeners in Europe. Some originate from R.Japan via Woofferton, UK **7.230** (Eng 0500-0700), rated 44433 at 0645 in Herstmonceux; Christian Science Herald WSHB, USA **7.535** (Eng 0900-1000 Tues/Thurs) 55445 at 0925 in Stalbridge; R.Polonia (Polish R), Warsaw **7.285** (Eng 1800-1900) 44444 at 1830 in Morden; All India R. (AIR) via Bangalore **7.410** (Hind, Eng 1745-2230) 33343 at 1917 in Newry & 45544 at 2220 in Northampton; R.Ext.Espana (REE) via Noblejas, Spain **7.150** (Fr 1900-2000) 32333 at 1932 in Rugby; VOIRI Tehran, Iran **7.320** (Eng 1930-2030) 55555 at 2005 in Liverpool; Voice of the Mediterranean, Malta via Russia **7.440** (Eng 2000-2100 Sat-Thurs) 43333 at 2010 in Truro; R.Budapest, Hungary **7.135** (Eng 2000-2030) 55555 at 2015 in Seaton; Sudwestfunk via Rohrdorf **7.265** (Ger 24hrs) 42333 at 2015 in Liverpool; China R.Int via ? **7.225** (Chin 2000-2100) 43343 at 2020 in Storrington; Voice of Russia **7.340** (Eng 2100-2200) SIO 444 at 2119 in N.Bristol; R.Minsk, Belarus **7.105** (Eng 2130-2200 Tues/Thurs) SIO 333 at 2136 in N.Bristol; R.Romania Int Bucharest **7.195** (Eng to Eur 2300-0000) 43333 at 2303 in Folkestone; Christian Science Herald WSHB, USA **7.510** (Eng 2300-0000, Sun/Wed) 34444 at 2305 in Northampton.

While beaming to other areas R.Prague, Czech.Rep **7.345** (Eng, Fr to N.America 2230-0000) was 23322 at 2255 in Folkestone & 34333 at 2356 in E.Bristol; R.Yugoslavia via Bosnia **7.115** (Eng to N.America 0100-0130) 54544 at 0101 in E.Bristol; R.For Peace Int. (RFPI), Costa Rica **7.445** (Eng to N.America 2200-0800, also to Europe) 44444 at 0421 in Morpeth & 33333 at 0720 in Rugby; RFI via Issoudun, France **7.135** (Fr to N.Africa 0700-0800) 25333 at 0720 in Ebbw Vale; World Harvest Radio (WHRI) via Maine, USA **7.580** (Eng to Africa 0500-1000) 44344 at 0859 in Oxted.

Some of the many broadcasts to Europe in the **6MHz (49m)** band come from HCJB in Quito, Ecuador 5.965 (Eng 0700-0900), rated 44334 at 0700 in Dudley; R.Vlaanderen Int, Belgium via Julich, Germany **5.985** (Eng 0800-0830) 55555 at 0810 in Herstmonceux; R.Nederlands via Julich, Germany **6.045** (Eng 1130-1330) 45343 at 1136 in Newry; R.Slovakia Int. **6.055** (Eng 1730-1800) 44444 at 1730 in Morden; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 45545 at 1810 in Seaton; R.Austria Int via Moosbrunn **6.155** (Fr, Ger, Eng 1830-2000) 54444 at 1845 in Liverpool; Voice of Vietnam via Austria **5.955** (Eng, Viet, Fr 1800-2000) 42233 at 1855 in Liverpool; RAI Rome **5.970** (Eng 1935-1955) 53555 at 1943 in Rugby; Vatican R, Italy **5.890** (It) 33333 at 2018 in Truro; Voice of Russia **6.175** (Eng 1900-2200) SIO 444 at 2029 in N.Bristol; BBC via Rampisham, UK **6.195** (Eng 1700-2300) 54554 at 2105 in S.Italy; R.Canada Int via Horby, Sweden **5.850** (Eng 2100-2200) 54445 at 2120 in Stalbridge; R.Ukraine Int, Kiev **5.905** (Eng 2200-2300) 55333 at 2200 in Appleby; R.Bulgaria, Sofia **5.800** (Eng 2200-2230) 44444 at 2210 in Folkestone; R.Yugoslavia, Belgrade **6.100** (Eng 2200-2230) 44534 at 2218 in E.Bristol; R.Sweden via Horby **6.065** (Eng 2230-2300) 55544 at 2255 in Northampton.

Noted to other areas were R.Havana, Cuba **6.000** (Eng to N.America 2300-0500), rated 35233 at 0100 in Newry; BBC via Antigua, W.Indies **5.975** (Eng to C/N.America 2200-0500) 33422 at 0247 in E.Bristol; BBC via Ascension Is **6.005** (Eng to W.Africa 0400-0715) 44444 at 0455 in Morpeth; WHRI South Bend, USA **5.745** (Eng to N.America 2000-1000) 34333 at 0842 in Oxted; WEWN Birmingham, USA **5.825** (Eng to N/C.America 0000-1000) 34232 at 0917 in Ebbw Vale.



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

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

### MLP32 Log Periodic

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

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★ Freq: 50-1300MHz Tx & Rx  
★ Gain: 10-12dB **£169.95**  
★ Length: 3.00mtr  
★ Conn: N-type  
*The ultimate receiving antenna - a must for the dedicated listener*

### ROTATOR

Suitable for MLP Log Periodic or any UHF/VHF beams.  
**£49.95** + £6.00 P&P

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6" Stand off .....£6.00  
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24" T&K (pair) .....£19.95  
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### MD37 SKY WIRE (LONG WIRE BALUN KIT)

25 METRES OF ENAMELLED WIRE INCLUDES 10M PATCH LEAD & INSULATOR For use on with receiver 0-40MHz. All mode no ATU required 2 "S" points greater signal than other baluns. Matches any long wire to 50Ω improved reception.  
**£39.95**

### MWA HF Wire Antenna Mk11

Freq 0.05MHz-40MHz Adjustable comes with 25 metres of H/Grade flexweave antenna wire, 10 metres of military spec RG58 coax cable  
**NEW LOW PRICE £49.95**

### SUPER SCAN STICK

Freq. Range 0-2000MHz Length 1000mm. It will receive all frequencies at all levels unlike a mono band antenna. It has 4 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals. (Ideal for the New Beginner and the Experienced Listener alike).  
**£29.95**

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Freq. Range: 0-2000 MHz. Length 1500mm. This is designed for external use. It will receive all frequencies. at all levels unlike a mono band antenna. It has 8 capacitor loaded coils inside the vertical element to give maximum sensitivity to even the weakest of signals plus there is an extra 3db gain over the standard super scan stick. (For the expert who wants that extra sensitivity).  
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SET OF FOUR 1 1/4" .....£24.95  
SINGLE 1 1/2" .....£10.00  
SET OF FOUR 1 1/2" .....£34.95  
SINGLE 2" .....£15.00  
SET OF FOUR 2" .....£49.95

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

### Hi-Spec coax cable

RG58 6mm standard .....£0.35 per mtr  
RG58 6mm mil spec .....£0.60 per mtr  
RF mini 8 7mm mil spec .....£0.85 per mtr  
RG213 9mm mil spec .....£0.85 per mtr  
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### XI HF Vertical

★ Freq.: 1.0-50MHz  
★ Type: Loaded  
★ Height: 2.05mtrs  
★ Conn: SO239  
**£49.95**

### UK SCANNING DIRECTORY

8th edition  
**£19.50**

### Wideband 25-1800MHz SuperGainer Rubber Duck Antennas

MRW-100 40cm long BNC .....£19.95  
MRW-250 14-41cm long telescopic BNC .....£19.95  
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*Increase the performance of your hand-held, without an external antenna.*

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25-2000 Mhz A unique high power 1" button magnetic mount 4 mtrs coax terminated in a BNC "Ideal for low profile listening on the move !!"  
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TURNSTILE 137 (Simple and easy to install a must for the enthusiast who has it all.)  
Freq. 137.5 MHz Length 1000mm  
This Antenna is designed for external use to receive weather satellite signals. Complete with mounting hardware. **£39.95**

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

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

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

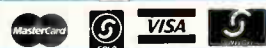
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Magnetic mount Mobile Scanner Antenna. 2 vertical loaded coils for good sensitivity complete with magnetic mount and 4mts of coax, terminated with BNC plug. (Good for when you are driving about). **£24.95**

ADD £6 P&P PER ORDER





# Bandscan America

**E**l Salvador has had no short wave presence for decades, even during the long effort to put down a communist-inspired insurgency during the 1980s. But recently the situation has changed, however minimally. Radio Imperial, a local station in San Salvador, is now relaying its 810 medium wave broadcasts on the 16m band.

But there's a downside - the broadcast is proving very difficult to hear in North America. The transmissions are weak, subject to deep fades and also suffer from poor modulation. Both the frequency and schedule seem to vary - (17.833) - it's been noted signing on around 2200 and running to 0100 or later, but it's also been heard around 1500.

Yet another new US religious broadcaster has been heard testing. This one is KIMF in Pinon, New Mexico, operated by the International Fellowship of Churches. It's probably fully active by now, with an initial schedule having it on 5.835 from 0000 to 1800 and 11.855 from 1800-0000. Mail goes to: **International Fellowship of Churches, KIMF Radio, 9746 6th St., Rancho Cucamonga, CA 97130.**

## Religious Station

Another new religious station - still in the building stages - is running into some problems. The station of Aurora Communications, being constructed near Ninilchik, Alaska, has been ordered to stop construction because of possible violations of regulations about development in areas designated as 'wetlands' and that work on the project was started without Aurora having obtained permission from the federal Environmental Protection Agency.

Still another new one on the air now is WBOH - part of the Fundamental Broadcasting Network and affiliated with WTJC in Kentucky. It has been operating on 5.920, initially with equipment test broadcasts at various hours of the day and night. By the time you read this, it should be active on a regular schedule.

## Postage Required

The venerable HCJB no longer issues QSLs without having received some sort of return postage with the report. The station says it needs an International Reply Coupon, one US dollar, one Euro or three mint US stamps (for US destinations) before a reply can be sent. This really isn't surprising considering the several million dollars the station is having to spend to build that new transmitter site at Santa Elena near the coast and close down the Pifo site, which is too close to the new airport the government is building.

HCJB's new station in at Kununurra, Australia, might well be active by the time you read this. No frequencies or times have been announced yet, but once the new facility is fully operational, the Ecuador transmitters will discontinue their broadcasts to the Pacific. Initial programming will run 10 hours a day, all in English.

## Station News

The station run by Colombia's Revolutionary Armed Forces of Colombia (FARC) - the narco-guerilla group largely responsible for that country being in such turmoil - appears to have resurfaced after a long silence. La Voz de la Resistencia has recently been noted using 6.175 around 1030. Ironically, this is the frequency the station has always announced, even though their transmissions usually floated around the area of 6.250MHz. Another signal was found on 10.000 upper sideband around 2100. This appears to also be a FARC outlet, but is probably aimed at a different part of Colombia.

Coming from the opposite moral direction, La Voz de tu Conciencia is trying to bring peace to the area, aiming their Christian message at the guerrillas and drug traffickers. After trying 6.065 and 6.060, the station settled on 6.010 where the Mexican Radio Mil made reception difficult. Lately the signal has turned up on 6.015MHz. It has been fairly widely heard over North America during the early morning hours (it operates around the clock) and there are some English language identification

announcements here and there.

Reports go to the main office: **Libera Colombia para Cristo, Calle 44, No. 13-69, Barrio Palermo, Bogota, Colombia.** The station runs around 6kW from Lomalinda - in the midst of some of the worst guerilla activity - and has been having some problems obtaining funds, equipment and dealing with hostiles in the area.

The government's Radio Nacional de Colombia, silent for some years, has suddenly turned up on 9.635 (one of its old frequencies) during the North American evening hours (0000 and later).

One of these days we may see a new station on the air in Honduras. Radio Bethel, which currently operates from Taujica on 1.160 medium wave, says it would like to add a short wave facility on 60m. Saying it and doing it are two quite different things, of course, so there's no telling when - or even if - such a thing will ever happen. Like most Central American countries, short wave activity from Honduras is rather sparse, with only Evangelica (4.819), Litoral (4.832) and Misiones (5.010) active on anything like a regular basis.

The new Paraguayan short wave station, Radio America, says it is running tests on a 24 hour a day basis. The frequencies being used are 7.300, 7.737 and 9.983MHz. Unfortunately, the power level is extremely low so getting a log on this one is proving difficult.

The relatively new Radio Baluarte (6.215) in Argentina seems not to be active on a steady basis. Reception has been sporadic, even for those well enough situated to be enjoying daily reception. When it's heard in the US, it's usually around 0100 or later. This one programs in both Spanish and Portuguese and has trouble with its audio.

After months of puzzling over a strange Korean language signal on 6.715 u.s.b., some short wave detectives have identified it as a broadcast from the Yoido Full Gospel Church in - of all places - Las Palmas in the Canary Islands. The programs are intended for Koreans serving in Africa and are aired on Sundays (at 1000 and 1800), Wednesdays (1930) and Fridays at 2130. The broadcasts seem to run for an hour - sometimes two. The transmitter only runs about 100W, making this a rather difficult DX catch, especially outside the US Eastern Time zone. If you are lucky enough to hear this one, you can send a report to: **Full Gospel Las Palmas Church, Plaza de Augustin del Castillo 3, Las Palmas de G.C., Spain.**

Radio Cultural in Coatan, Guatemala, has resumed broadcasts on 4.780 after having been off the air for a time. The same can be said for Radio K'ekchi on 4.845MHz.

Of late the Voice of Guyana on 3.291 has been providing much better signals than normal, as early as late in the afternoons, into the early evenings and then late into the night and post midnight hours. In addition to local programming, it carries some UN radio and BBC broadcasts.

## Pirate Stations

Unlicensed US pirate stations, most often heard on weekends and holidays, frequent the area between 6.925 and 6.960MHz. At the risk of being controversial, we'll state that the vast majority of these feature terrible music and are in bad taste, if not just plain crude. One exception is KIPM whose broadcasts consist of very creative dramatic productions on science fiction or fantasy themes. Not only are they well done, but the signal strength and audio quality are also first rate.

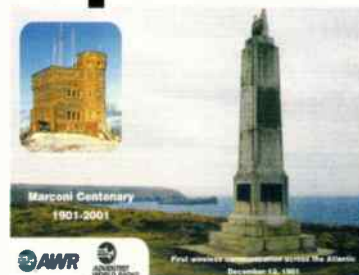
If you want to know when a particular program is on the air or what's available at on a particular day and hour, check out *The Shortwave Listening Guide*. This excellent resource authored by John Figliozzi, a program columnist for the *North American Shortwave Association*, can now be accessed on the world wide web, visit [www.anarc.org/naswa/swlguide](http://www.anarc.org/naswa/swlguide) It's an invaluable tool for those who enjoy program listening.

And that will cover things for this time. Your input (logs, schedules and news) for this column is always most welcome and may be sent to the E-mail address at the top of the column, thanks! Until next time, good listening!

BROADCAST



Long time DXer Robert Brossell in his Pewaukee, Wisconsin shack, which sports an NRD-545 digital signal processing receiver.



Adventist World Radio issued this card in 2001 to commemorate Marconi's first radio communication across the Atlantic.

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95/98/NT & schedule+. CPU/RAM 8meg serial port for direct PC link up (PC lead supplied). Infra-red PC + data entry by stylus pen. Connect to internet via mobile. SSP: £199.00.

END OF LINE PRICE **£59.99**  
P&P £7.50

## PD-293



Touch screen display memory pad, credit card size. Stores more than 10,000 addresses includes

PC docking station & lead to PC. 200 year calendar + world time for 100 cities. SSP £49.99.

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## RM-983



Radio controlled clock. (Synchronised from rugby). Double line display, user selectable, time format 12/24hr, back illumination, indoor temperature. SSP £16.99.

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P&P £3.00

## EMR-899



State of the art, cable free thermometer. Supplied with one outdoor (waterproof)

sensor. Will measure min/max indoor/outdoor temp. Up to three extra sensors can be used (available @ £19.99 each). SSP £49.99.

REDUCED PRICE **£34.99**  
P&P £5.00

bargains

## GARMIN GPSIII+



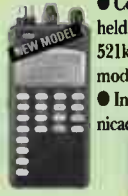
Powered by AA cells or 13.8V, this compact navigational system gives detailed maps

of the UK & Europe.

SAVE £s  
SALE PRICE **£279.99**

Street Pilot Mono .....£399.00  
Street Pilot Colour .....£499.00

## MVT-7300EU



● Compact wideband hand-held receiver ● Covers 521kHz-1300MHz (all mode) ● 8.33kHz steps ● Incl's car charger + nicads.

SPECIAL OFFER  
**£219.99**

Optional mains adapter .....£14.99

## MVT-9000 MkII



The "flag ship" of hand-holds. 0.5-2000MHz. AM, FM, WFM, USB, LSB. Includes nicads & charger. A superb top of the range hand-held with performance to match. 0.5-2GHz all mode. Yupiterus best ever production model.

SALE PRICE **£325.00**

## NEW UBC-280XLT



Sportcat twin turbo. Easy to programme - turbo scan handle. 25-956MHz (with gaps). CTCSS/DCS tone facility. Alph numeric display. Turbo search - 300 steps/sec. Incl's batts/charger.

A SNIP@ **£159.95**

gizmas

## STREET PILOT III DELUXE



Now with "voice prompts" as well as direction indication. Incl's: Map CD, 128 meg cart & data card, power lead & mount. The ultimate in talking GPS's.

Includes 128 meg card. Also includes European map CD.

SALE PRICE **£1099.99**

## Q-TEK APOLLO 3000



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

INTRO PRICE **£54.95** P&P £6.00



## NEW 8th EDITION THE UK SCANNING DIRECTORY

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

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items of interest



## JM-838

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

PRICE **£59.99** P&P £6.00

## WATSON HUNTER



Frequency counter covers 10MHz-3GHz. Incl's nicad, charger, antenna.

ONLY **£59.95**  
P&P £6.00

Optional case £14.95 .....£7.50

## 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

RH-790 As above with SMA .....£21.95



## BA-888U

WEATHER/RADIO CONTROLLED CLOCK.  
● Supplied with one remote (wireless) sensor ● Weather forecast ● Barometer ● 24 hr "radio" clock ● Thermometer

OUR PRICE **£59.95** P&P £5.00

## QS-300



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

OUR PRICE **£10.00** P&P £3.00

## 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

RH-9090 As above with SMA .....£26.95

## SECONDHAND LIST

MVT-7100 as new .....£169.95	IC-R75 as new + DSP .....£549.95
MVT-7300 as new .....£199.95	FRG-100 vgc .....£279.95
MVT-9000 MkII as new .....£275.00	RD-500VX+ as new .....£549.95
AR-8000 boxed as new .....£199.95	HF-150 as new .....£199.95
AR-8200 MkI vgc .....£219.95	Yacht Boy YB-500 .....£59.95
AR-8200 MkII as new .....£299.95	Alinco DJ-X2000 as new .....£369.00
Alinco DJ-X3 as new .....£89.99	IC-R3 as new - boxed .....£339.95
MVT-7000 (boxed) .....£99.95	UBC-780XLT as new - boxed .....£259.95
PRO-2042 (25-1300MHz) .....£169.95	BC-9000XLT as new .....£179.95
DX-394 as new .....£119.95	IC-R8500 as new .....£899.00
AR-3000A immaculate .....£499.95	IC-R70 VGC (private sale) .....£299.99

## 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

## ALKALINE STARTER KIT



Starter kit includes charger & 4 x AA cells.

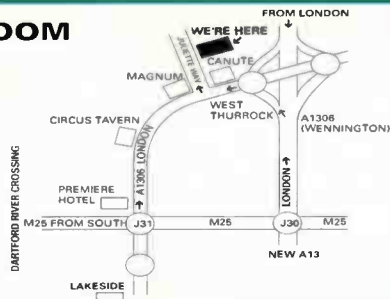
**£14.99** + £3.00 P&P.

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.

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### DPX-30 ANTENNA DUPLEXER/COMBINER

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

Can be used in reverse  
**£54.95** P&P £3.50

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

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### SP-3 (PROFESSIONAL)



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

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

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



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

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

### WA-50 'AMPLIFIER'



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

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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

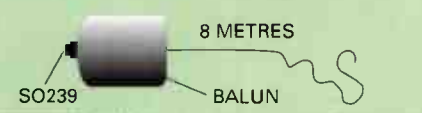
As above with 'rotary hinge'. **£29.95**

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### 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).

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### GLOBAL AT-2000



Deluxe SW ATU  
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ONLY **£89.00** P&P £6.00

(Probably the best ATU around)  
PATCH LEADS AVAILABLE IF REQUIRED.  
PL-259 to PL-259 patch lead .....£5.99  
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**£42.95** POST £3.00

### E.M.F. ANTENNA

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

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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-44 As above 1m long Gain 3/6dB. **£49.95** P&P £8.00

### Q-TEK SS-2000

Compact - indoor/outdoor scanning antenna. (50MHz-2.6GHz). Superb glass fibre construction. Ideal in areas affected by "noisy neighbour syndrome". This antenna can be put in the loft or outside on the building. Initial tests show this to far outperform a discone at "VHF". SO-239 socket (PL-259 plug needed) 1.3m long (mast clamps supplied).

50MHz-2.6GHz and under 1.3m long **£49.95** DEL £10.00

### NEW WSK-3000

Weather satellite antenna kit includes:  
A) A 2 element crossed dipole for receiving weather satellite pictures.  
B) Software for your PC. No interface needed (use your PC's sound card). Available at £4.50 extra.  
Requires scanner or receiver.

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### 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)

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)

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

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

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 socket. Supplied with mounting brackets. (N-plug & coax not supplied).

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 sensitivity with an amazing range of transmitting frequencies. Comes complete with mounting hardware & brackets. (N-plug & coax not supplied).

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).

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

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

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MVT-9000 MkII .....Sale price £325.00  
MVT-7300EU .....Sale price £219.00

### C) ICOM IC-R5

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

NOW IN STOCK **£159.00**  
BATTERIES AND CHARGER INCLUDED

### D) ALINCO DJ-X3

Micro-handly scanner. 100kHz-1300MHz. 200 memories/stereo FM (earphones)/attenuator/bug detector/audio descrambler. AM/FM/WFM/ Selectable tuning steps (incl's 8.33kHz).

SALE PRICE **£99.95**

Optional battery pack and drop in charger **£39.99**

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

### E) ALINCO DJ-X10

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

OUR PRICE **£269.95**

Optional case .....£15.00  
Optional battery box .....£14.99  
PC interface .....£42.95

### F) ALINCO DJ-X2000

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

**Includes 8.33kHz spacing** **£449.95**

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

### G) AOR AR8200MkIII

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

OUR PRICE **£385.00**

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

### H) ICOM IC-R3

'A first!' TV/video picture & sound! Certainly a gadget for the future - see things you didn't know existed! A wide-band scanner covering 0.5-2.3GHz (AM/FM/WFM) with "TFT" colour display.

FOR THE TRUE ENTHUSIAST

OUR PRICE **£379.00**

Soft case for IC-R3 .....£17.99



## base stations

### I) BEARCT UBC-9000XLT

25-1300MHz wideband desktop scanner with turbo scan. (Selectable AM/FM/WFM). Selectable tuning steps + alpha-numeric tagging. "Our best selling desk-top scanner". Incl's PSU.

OUR PRICE **£235.00**

### J) BEARCT UBC-780

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

OUR PRICE **£299.99**

Software 780XLT .....£34.99

### K) YAESU VR-5000

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

OUR PRICE **£575.00**

Optional DSP .....£79.95

### L) AOR AR8600MkII

Extremely versatile all mode receiver (530kHz-2040MHz). "Superb HF performance".

OUR PRICE **£649.95**

Optional power supply 8600 .....£19.95  
AR5000 .....£1295  
AR5000+3 .....£1449  
SDU5500 .....£799  
AR3000A .....£699

Short Wave Magazine, February 2003

# THE RADIO SPECIALIST



## scanners

## sw receivers

## portable receivers

### M) BEARCAT UBC-278

New base scanner with built-in clock radio. 25-956MHz (with gaps) 88-108MHz (WFM) 500kHz-1720kHz (AM). Fully programmable. Ideal for the bedroom.

OUR PRICE **£139.95**

### N) COMMTEL 225

500 channel. 25-1300MHz. AM/FM/WFM.

LIMITED STOCK AVAILABLE

OUR PRICE **£199.99**

### O) FAIRHAVEN RD-500VX+

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

SSP: £899.00 OUR PRICE **£745.00**

### P) ICOM IC-R8500

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

Latest UK version

2 YEAR WARRANTY

OUR PRICE **£1149.95**

SP-21 extention speaker .....£74.99

Voice synthesiser board .....£34.95

Short Wave Magazine, February 2003

### Q) DX-394

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

OUR PRICE **£199.95**

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### R) ICOM IC-R75

2 YR G'EE

The short wave receiver for the true enthusiast.

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

Optional DSP unit  
£85.00

OUR PRICE **£589.99**

OUR BEST SELLING HF RECEIVER

SP-21 Extention speaker .....£74.99

### S) AOR AR7030+ MODEL

A superb top of the range HF receiver. This plus model has certainly earned a name for itself. Enter the world of "professional" short wave listening at well under £1000.

OUR PRICE **£799.99**

### T) JRC NRD-545DSP

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

This is JRCs latest professional receiver.

OUR PRICE **£1299.99**

NVA-319 Extention speaker .....£189.00

CHE-199 VHF/UHF converter.....£269.00

### U) 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.

SALE PRICE **£79.95**

Optional power supply .....£16.95

### V) SANGEAN ATS-909

A superb performance portable/base synthesized world receiver with true SSB and 40Hz tuning for ultra clean reception. The same radio is sold under the Roberts name at nearly twice the price. Other features include RDS facility, 306 memories and FM stereo.

OUR PRICE **£139.95**

### W) 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.

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ACE-30 Power supply unit for above .....£24.95

### X) EVOKE-1

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

OUR PRICE **£99.95**

# In The Ed's Shack

In the first of an irregular new series, Kevin Nice takes a few hours away from the keyboard to indulge in some soldering therapy. If you've ever fancied building a radio and never dared, read on and be inspired.

## Ten-Tec's 1056 Direct Conversion Receiver Kit

It was just like building a project as a youngster again. That thrill and knot of excitement never really goes away. Especially as you solder the final joint and have a quick look around to spot the obvious blunder. It was a quick look too as I was keen to connect it up and see if it worked. As it happens, it didn't. But it was late, the early hours of the morning in fact, so disappointed I got ready for bed with a heavy heart wondering if I'd got the frequency specific component mixed up - I'd checked of course before fitting - well you do don't you. In fact, I'd double checked since it was a while ago since I'd built a kit similar to this one.

There was though, little room for error, as the documentation that comprises the instructions for this nifty Ten-Tec kit is pretty much bomb proof.

### Comprehensive

To ensure success, there is firstly a check list so you can determine that you've been supplied with all the right items. This is found on pages eight and nine of the comprehensive *Instruction Manual* for the 'No. 1056 T-KIT Module Board, CW-SSB Receiver Any band NE612 Direct-Conversion

design with all parts for choice of 160-10 meter ham bands, plus variable bandpass & fine-tuning controls' to quote the cover. This section is preceded

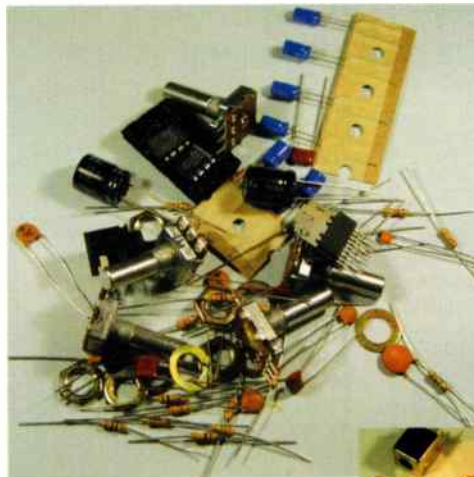
by an introduction to the kit which acquaints the reader with Ten-Tec's aim for the kit, their philosophy in supplying all the parts to cover all the possible bands of use - there is no band switching with this simple kit, so you have to choose the band

the components before running though the check list. This I did, having worked previously in manufacturing, it's a discipline that's second nature anyway, but for good reasons it's ergonomically better to have like components grouped together, also having those with the same value together just makes plain sense.

### Preparation

Additionally I laid out the resistors and capacitors in ascending value order - this makes the checking and fitting process easier. The preparation time took all of 30 minutes.

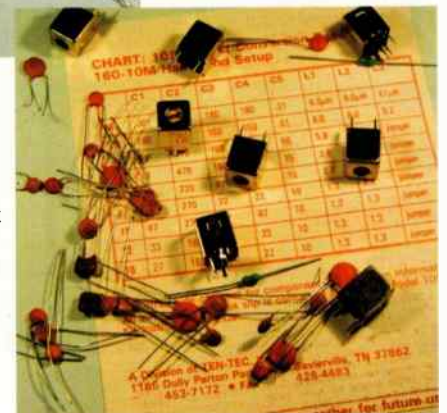
The next step and the next manual page is the



1) This is what you start with.

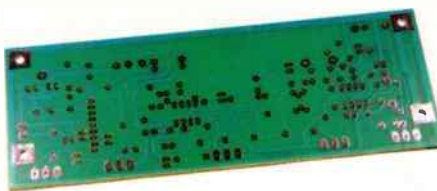
you want to use the radio for when you perform the build. I went for 40m (7MHz), firstly because it's a good band for a mixture of local and DX and secondly because I've just rigged a dipole for this band (for the first reason just stated).

The manual pages following, run you through the design features and the circuit theory, the latter succinctly explained in four paragraphs. This really is a terrific project for a complete beginner - just as long as they can solder proficiently. The aforementioned check-list is laid out in a very conventional way just like those *PW* projects I'd drool over all those years (blimey, is it really over 30 years?) ago. But unlike the *PW* shopping lists the Ten-Tec list has tick boxes and component identification instructions with each line item. Quite correctly, the manual advises you to sort



2) Here's the Ls & Cs for all the bands.

p.c.b., Ten-Tec supply an excellent quality single sided rolled tinned board, screen printed on the component side with all component locations, most of which are obscured once the component has been fitted and a solder resist in the track side. The pads are a big as allows, thus making soldering a straight forward affair. I just made reference to the manual as the component legend layer is repeated on page 10 should you need to refer. I think there is supposed to be a track layer visible on the page under the component locations judging



3) The high quality p.c.b.





#### 4) Now it's time to check the amplifier.

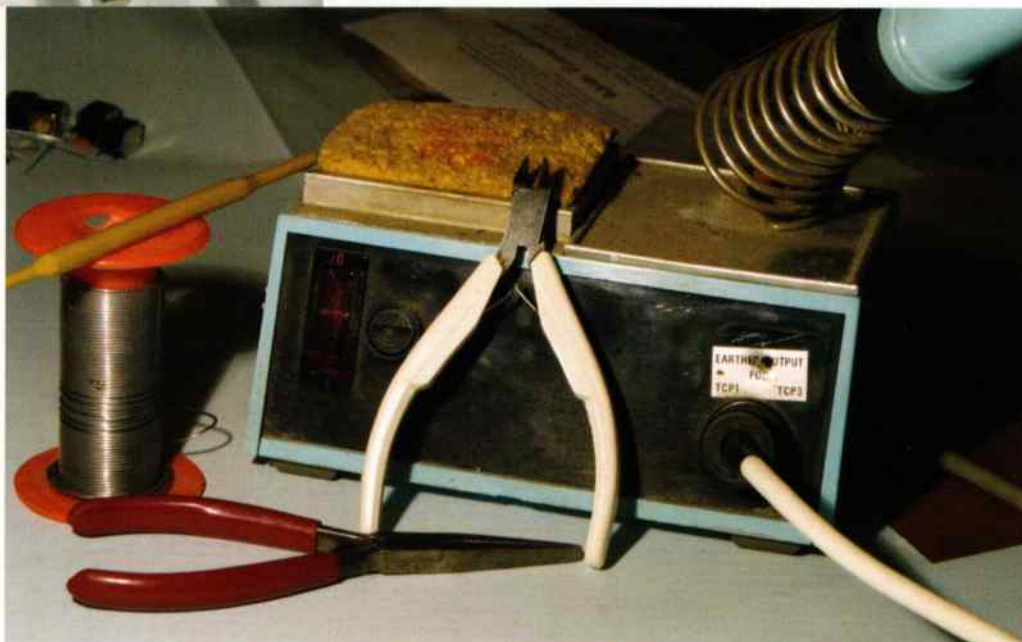
by the caption, but it's not worked in my version!

Then follows the 59-step assembly process, with the radio's circuit diagram in the middle. The step-by-step instructions again provide both tick boxes, component identification and orientation details. This time, you get to tick two boxes, presumably one for fitting and the other for soldering. The assembly process to a little over an hour, this included lead forming, which I performed a per component basis. Mostly it was resistors as the non-polarised capacitors are all radial types. The two d.i.l. integrated circuits, which were supplied in anti-static foam, needed a little tweak to fit the holes.

Ten-Tec provide an optional progress check after Step 33. At this stage you've fully completed the audio amplifier stage so it's possible to verify it works. This I did, and all was fine.

On completion of Step 51 the non band-specific parts have been finished and all that's left is to fit your chosen band inductors and capacitors. Ten-Tec have ensured that this step is very easy. The separate bag which contains capacitors and inductors for all the possible bands of intended operation also includes a sheet duplicating the 'band chart' from the manual on one side and on the other, provides a tick list with definition and descriptions of the supplied components. Since I built the 40m version, I duly selected the correct items and fitted to complete the board.

So, we're pretty much back



#### 5) This is all you need to build the 1056.

to the early hours of the morning with a receiver which doesn't work!

### What's Wrong?

The next morning confirms I've had no secret helpers visit during the night, still no joy.

That evening though I looked closer, it seems that the conversion oscillator isn't running I can hear lots of strong broadcast stations, the front-end tuning seems to work and I can tune individual stations by tweaking the core of L1. What have I done wrong?

A close inspection of both sides of the board fails to give and clues, so I have a quick look through the supplied documentation. It's at this point I notice the photocopied addendum sheet. Due to a track having been left

off the p.c.b., there is a wire link to be fitted. This links the bottom end of the oscillator coil, L2, to earth. Bingo, on re-connecting 12V via my bench supply, we're in business and the 1056 kit is alive.

### Alignment

All that's left now is to set the range of the conversion oscillator and tune the front-end to the band centre. The method I adopted for this was to find the conversion

the oscillator, it was simply a case of setting the Ten-Tec's main tuning potentiometer to the minimum position, the bandspread to the middle and then adjusting the Toko variable inductor core to give a signal on the bottom end to 40m, ie 7MHz. I found after a little experimentation that the band spread provides about 25kHz of span and the main control roughly 300kHz.

A quick peak on the input and I'm done.

There is an optional front

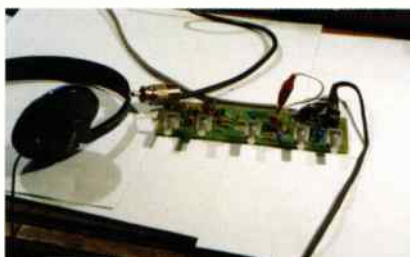
oscillator with another receiver. You can do this with a direct conversion because the conversion oscillator operates on the frequency listened to. The



#### 6) The finished kit - before the missing link's fitted!

panel to suit this kit but Ten-Tec Direct were out of stock so I'll make one up when I get in few spare moments.

If you fancy building this or one of the other similar kits from the range, I suggest you contact **Ten-Tec Direct** on (01773) 880788. I reckon the experience is well worth the £25 plus £3 P&P for this kit. I know I'm going to have hours of fun using it. More information is available on [www.aoruk.com/tentec/](http://www.aoruk.com/tentec/)



#### 7) Now it's receiving signals.

easiest was to do this is to have a short antenna located near to the 1056 kit, connected to the search receiver. I actually used my TS-520 with a 300mm whip. Once I'd found

UK's First from the UK's First!

# WINRADIO

## G-303i - PC Card HF receiver System

John Wilson brings us an in-depth look at the new G-303i receiver from WINRADIO. This first offering from a new series of receivers uses a computer sound card to perform the final i.f. and demodulation functions. Coupled to the benefit of a very user friendly display, this is one desirable radio.



### A Shock To The System

I never thought that I would be so surprised by a receiver as to not know how to start describing it, but I'm sitting here wondering where to begin, and how to tell you of the experience. The receiver in question is a brand new product from WINRADIO Communications, in Australia, and is marketed under their WINRADIO brand name with a model number G-303i. As you will know, WINRADIO Communications have produced a series of receivers under the WINRADIO name over the last few years, but these have included wideband monitoring devices covering frequencies up to 1 or 2GHz,

and mechanically configured as plug-in cards to fit PC expansion slots, that is to say they sit inside the PC itself. Early personal computers were renowned for being generators of high frequency electrical noise, and you could usually detect a computer's presence by having a typical h.f. receiver anywhere within 50 to 100 metres of the culprit. With the advent of the European EMC Directive the situation has changed, and there is no doubt that modern computers from reputable manufacturers are much less noisy than those of even a few years ago. Still it's a brave manufacturer who will put a sensitive receiver actually inside a PC, but WINRADIO Communications have persisted

with development work on tightly screened enclosures and proper r.f. shielding with the result that the computer/receiver marriage is now a little more blessed than before. So what makes the G-303i different, and why was I surprised?

### Proper Receiver

The first thing to know is that the G-303i is not a wideband device but a 'proper' h.f. receiver specified to cover 9kHz to 30MHz, and equipped with all the facilities which we have come to expect from a modern receiver. Some lateral thinking by WINRADIO Communications has resulted in their analysis of a typical receiver as consisting

of three separate sections; the r.f. and i.f. conversion elements, the demodulation and signal analysis elements, nowadays often carried out by digital signal processing (d.s.p.), and a processor controlled management system which drives the whole receiver including the frequency synthesis for frequency conversion and any front panel displays and so on. WINRADIO Communications have essentially pointed out that anyone with a semi-decent computer already has the processing power, and with a reasonable sound card fitted, also has the d.s.p. system, so the only missing element of a receiver is the r.f. and i.f. conversion system, and that is





precisely what the G-303i hardware consists of. The card which you plug into the PC contains r.f. front-end filtering, a mixer to convert to a first i.f. of 45MHz, some gain controlled stages at i.f., a second conversion down to a typically d.s.p. second i.f. of 12kHz and then the 12kHz baseband comes out of the card ready for processing in the computer's existing sound card. It's a very neat concept, and by doing all signal processing under software control it is possible to carry out almost any function you might need. WinRADiO Communications' other strength is an acknowledged expertise in innovative software, and they have really excelled themselves in this department with the G-303i. Let me tell you about it.

## What You Get

The G-303i was supplied for this review already fitted to an IBM NetVista computer running a 2GHz Pentium 4 processor and having 256MB of RAM and a fairly whizzy sound card. The monitor was a very attractive IBM flat panel unit which I immediately wanted for myself! This fits in well with the recommended system specified in the G-303i manual, with a minimum system requiring at least a 500MHz Pentium III with 64MB of RAM, 20MB of free drive space and a SoundBlaster 16-bit full duplex sound card. There are several warnings in the manual text about the whole system 'freezing' should the G-303i be fitted to a slower PC than this minimum specification, and I know from previous experience with digital test instruments that this can be a real problem if you try to compromise. The right course of action is to go for the fastest and best equipped PC you can find (or afford). Firing up the G-303i

software displayed a screen showing a receiver front panel, but with some features not normally found on a conventional receiver. The necessary frequency display and tuning knob were obvious, but the bottom left hand corner was occupied by a spectrum display centred on the receiver tuned frequency and extending for 10kHz on each side. Overlaid on this was a representation of the i.f. bandwidth currently in use, which changed as different modes and bandwidths were selected, and which clearly showed, for example, that my favourite Radio Five Live was occupying rather more of the spectrum than could be accommodated within the standard 6kHz a.m. bandwidth of the receiver. The display looks exactly like any of those you may have seen in my reviews taken with a Rohde & Schwarz FSA analyser, and I did a quick check by connecting my FSA to the 12kHz output from the G-303i receiver, whereupon I could see that the on-screen G-303i display was identical. The only difference is that the FSA originally cost about £40,000 whereas the G-303i cost - well, I'll surprise you later.

Tuning controls are comprehensive, with a conventional looking main knob above which are left and right arrows associated with a 'step size' display and two more arrows which run the steps at 10 times the selected rate. The step sizes available, selected by tiny up and down arrows range from 1Hz to 100kHz in a sensible selection but for the omission of the all-important 9kHz step for European long and medium wave broadcast bands. However, the step size can be set to anything you might want by simply entering the step value into the step size box

using the PC keypad, so 9kHz can be entered and used, although this is lost if you then select another 'standard' step and try to come back to 9kHz - it ain't there any more. A final neat trick with the step size is that if you place the mouse driven cursor between the up and down buttons, a slider appears, and by dragging this up and down the screen, the mouse tunes the receiver up and down in frequency. But that's not all.

## Tuning

The main tuning knob is 'rotated' by placing the mouse cursor at the top or bottom of the knob and clicking, which then tunes the receiver up or down in frequency. At first the tuning step (500Hz) seems very coarse, but by pressing the 'Alt' key on the PC keyboard the steps are reduced to 50Hz, whilst the 'Shift' or 'Ctrl' keys will increase the step size to 5kHz for rapid frequency excursions. I personally found this cumbersome in use, and much preferred to use the 'step' facilities for tuning. You can also turn the main tuning knob up or down in frequency by using the cursor up/down keys on the PC keyboard, but there is a curious anomaly here because although the tuning knob rotates, and the receiver changes frequency, the spectrum and frequency displays both 'freeze' so you don't know what frequency you have tuned to until you release the cursor key. Not at all sensible, bearing in mind that the other tuning methods show the frequency and spectrum changing as you tune. The same 'freezing' occurs when using the 'PgUP' and 'PgDown' keys to single step the tuned frequency from the 'step size' facility. But that's not all.

Below each digit of the

frequency display are up/down arrows with the centre 'slider' facility, and since the display shows frequency down to 1Hz you can move frequency at any rate you choose, even to complete end to end frequency changes using the 10MHz slider. But that's not all. In the bottom right hand corner of the front panel is a combination display showing a row of yellow squares, each one representing increasing tuning step size moving up or down in frequency from zero, and a quasi-analogue display giving a variable tuning step rate as you drag the mouse cursor along it. Choosing either of these methods from the mouse will tune the receiver continuously up or down in the chosen frequency steps until you release the mouse key. And I think that's all, but what an array of facilities from which to choose. Surely no-one can fail to find a preferred method of tuning from this selection. But, actually, I forgot to mention that we old fashioned operators can simply key in any wanted frequency from the PC keyboard. Below 1MHz you need to terminate the entry with 'k' for kHz, but it's possible to be on a new frequency in a few milliseconds, and that's often faster than the operator of the service to which you are listening.

Before leaving the frequency display, another feature is the window below the frequency in which a text message appears telling you what service is allocated to the frequency displayed. This can be a band of frequencies, such as an amateur band, or a single frequency such as RAF Volmet. The text can be changed by going to a text file held in the software and typing in whatever you need, or, as WinRADiO Communications suggest, update the whole lot



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Carriage charges: A=£2.75, B=£6, C=£10

## ICOM IC-R2 SPECIAL OFFER



- 500kHz - 1310MHz
- FM, WFM, AM
- 400 memories
- 25 scan pairs
- 11 tuning steps
- CTCSS decode
- Duplex monitoring feature
- PC programmable
- SMC Antenna
- Requires 2xAA cells

This palm size handy offers great performance.

**£139.95 B**

**£165**

LAST OF STOCK

## WATSON HP-200 NEW



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

These superb headphones have a tailored response for radio communications and are offered at an amazingly low price. With excellent sound proofing, you can pull in the weak DX.

**£22.95 B**

## NES10-2 & NES-CB NEW



NES-CB  
**£79.95 B**

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

NES10-2  
**£99.95 B**

## SignalLink SL-1 NEW



The computer's sound-card plus program is now well established for receiving and transmitting a variety of new modes. The SignalLink is unique as it does not require the use of a com port to trigger the PTT on the

rig when transmitting images, which leaves the com port free for other tasks. The SignalLink has internal links which makes it compatible with most of the rigs on the market.

A separate accessory pack (£14.95) is available, please enquire for more details.

**£69.95 B**

## YUPITERU MVT-3300EU



- 66 - 1000MHz with gaps
- NFM, AM
- 200 memories
- 100 Pass channels
- 5 tuning steps
- Descrambler
- 4xAA Ni-Cds
- Flexible Antenna
- Earpiece

"LOW PRICE SCANNER"

**£129 B**

## YUPITERU MVT-7100 "THE ONE & ONLY"



- 100kHz - 1650MHz Displayed
- NFM, WFM, USB, LSB, CW, AM
- 1000 memories
- 500 Pass channels
- 12 tuning steps
- 4xAA Ni-Cds / AC charger
- 12V DC cigar lead
- Telescopic Antenna
- Earpiece

**£229 B**

## YUPITERU MVT-7300 "COMPACT SIZE"



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

**£239 B**

## YUPITERU MVT-9000 mk2



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

"TOP OF THE RANGE"

**£369 B**

## ADR AR-8200 mk3 NEW



- 530kHz - 3000MHz
- WFM, NFM, SFM, WAM, AM, NAM, USB, LSB, CW
- 1000 memories
- 50 select scan channels
- Tuning steps programmable
- 8.33kHz airband spacing
- 4xAA Ni-MH
- Detachable MW bar antenna
- Telescopic Antenna

**£389 B**

## ALINCO DJ-X3

"SUPER VALUE"



- 100kHz - 1300MHz
- AM, FM, WFM
- 700 memories
- 11 tuning steps
- 8.33kHz airband spacing
- Stereo FM (with headphones)
- Audio descrambler
- 3xAA dry cell battery case
- SMA Antenna

**£109 C**

## UNIDEN-BEARCAT UBC-3000XLT



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

**£189 B**

## UNIDEN-BEARCAT UBC-280XLT



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

**£179 B**

## UNIDEN-BEARCAT UBC-220XLT



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

**£119 B**

## UNIDEN-BEARCAT UBC-120XLT



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

"GREAT PRICE"

**£99 B**

## UNIDEN-BEARCAT UBC-60XLT-2



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

**£69 B**

## ALINCO DJ-X2000 "FABULOUS FEATURES"



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

**£449 B**



#### UNIDEN-BEARCAT UBC-780XLT

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

**£349 C**

#### UNIDEN-BEARCAT UBC-9000XLT

- 25-1300MHz with gaps
- NFM, WFM, AM
- 500 memories
- Twin Turbo Scan & Search
- Alphanumeric display
- Automatic Tape recorder option
- Antenna BNC
- 13.8V DC 700mA

"THOUSANDS SOLD"  
**£249 C**

#### AOR AR-8600 II

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

**£679 C**

#### YAESU VR-5000

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

**£599 C**

#### YAESU VR-500 YAESU 2 YR WARRANTY

- 100kHz - 1300MHz
- NFM, AM
- 1000 memories
- 100 Skip channels
- Smart search feature
- 8 character Alphanumeric display
- Band scope
- PC programmable
- Flexible Antenna

**£199 B**

#### YAESU VR-1200 NEW

- 100kHz - 1300MHz
- AM, NFM, WFM
- 640 memories
- 12 Channel steps
- 8-character Alpha-tags
- Preprogrammed broadcast frequencies
- VFO search feature
- PC programmable
- BNC Flexible Antenna

**£159 B**

#### WINRADIO WR-1550E PC RADIO

- 150kHz - 1500MHz
- AM, NFM, WFM, SSB, CW
- Limitless memories
- Built-in speaker
- RS-232 Interface (D9)
- Requires PC (not included)
- BNC Antenna connection
- AC Mains adaptor
- Start-up Antenna

**£479 B**

#### WINRADIO WR-1550I

- 150kHz - 1500MHz
- AM, NFM, WFM, SSB, CW
- Limitless memories
- Easily fits into PC
- Sound through PC system
- Power from computer
- BNC Antenna connection
- Start-up Antenna

**£399 B**

#### ICOM IC-R5 NEW

- 150kHz - 1310MHz
- AM, FM, WFM
- 1250 memories
- Built-in ferrite rod antenna
- CTCSS & DTCSS tone squelch
- Cloning capability
- 2xAA Ni-Cds + AC Charger
- Flexible Antenna

**£159 B**

#### ICOM IC-R3 SCANNER & TELEVISION

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

**£399 B**

#### ICOM IC-R10 "ICOM QUALITY SCANNER"

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

**£259 C**

#### ICOM IC-R75 "BARGAIN S/W RECEIVER"

- 300kHz - 60MHz
- USB, LSB, CW, AM, FM
- 101 memories
- Automatic Notch filter
- RF Gain/Squelch
- Synchronous AM detection
- DSP (with optional UT-106)
- Clock

**£599 C**

#### ICOM IC-PCR1000RC

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

**£329 B**

#### ROBERTS R-861

- 153kHz-30MHz, 87.5-108MHz
- AM, SSB/CW, FM (Stereo)
- Memories 261SW, 18MW, 18FM
- RDS (Radio Data System)
- Stereo through earphones
- Auto time set • 3 Alarm timers
- 4 x AA cells (Alkaline)
- 110/230V AC adaptor

**£199.95 B**

#### ROBERTS R9914

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

**£99 B**

#### MFJ-461 "INGENIOUS ACCESSORY"

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 and a serial port. Truly pocket sized at 57 x 82.5 x 25.5mm and 158g.

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- WorldSpace Satellite Receiver
- Satellite, FM, MW, SW1, SW2
- 10 SC memories, 30 channels
- WS antenna, whip & ferrite
- Stereo through headphones
- Clock display/timer function
- 6V 4x D cells (not provided)
- 6V DC, 110-127/220-240V AC

**£149 B**

#### SANYO WS-1000

- WorldSpace Satellite Receiver
- Satellite 1452-1492MHZ
- 32 memories
- WS antenna, 5m cable
- Stereo through headphones
- Clock display/timer function
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- 230V AC adaptor

**£149 B**

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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."

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- Built-in speaker
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from an *Excel* spreadsheet. I contented myself by correcting some of the entries for amateur band allocations from American to European bands, just to see how it worked. It worked well, and it was fascinating to see the allocation descriptions changing as the receiver was tuned around.

## RSSI

Before going on to the demodulation modes provided, let me tell you about the signal strength metering. The 'S' meter is an analogue representation of a real meter, but unlike the average receiver has three selectable ranges, calibrated in dBm, 'S' units and microvolts. In addition to the analogue display, the signal level is also displayed in numerical form at the bottom of the meter scale, and when reading 'S' units or microvolts the dBm scale is still shown below the analogue scale, so once again WinRADiO Communications have tried to please everyone - even me! Associated in a way with the signal level is a very neat all-mode squelch system in which the fully adjustable squelch setting is displayed as a red band on the signal meter, showing the exact level in dBm to which the squelch is set. This is extremely clear and unambiguous, and very easy to use. Not only that, the calibration in all modes is very close, although it is clear that the meter units change in 1dBm steps which leads to some peculiar conversions when in 'S' units or microvolts, with signals either being S3 or S4 but never in between. No matter, the metering is amongst the best I've seen outside of professional measuring receivers.

## Demodulation

At this point you need to know that the G-303i can be supplied with 'standard' demodulator software, or the 'Professional' demodulator which gives a range of additional and extremely useful functions. The standard unit provides for a.m., with a bandwidth of 6kHz, a.m.n. with a bandwidth of 4kHz, a.m.s. giving synchronous a.m. with the 4kHz bandwidth, l.s.b. and u.s.b. with

bandwidths of 2.5kHz, c.w. with a bandwidth of 500Hz, and three f.m. modes with bandwidths of 3kHz, 6kHz and 12kHz. Remember that because demodulation and filtering is done at the final i.f. of 12kHz, these bandwidth filters are digitally derived and may or may not equate to an equivalent conventional filter used in a more conventional analogue receiver. The professional demodulator extends the bandwidths available and also adds a very easy to use continuous bandwidth adjustment using the previously mentioned 'slider' control. This is a very useful feature and allows you to exactly match the filter bandwidth to the incoming signal whilst taking account of adjacent channel noise. Hard to describe, but once experienced never to be forgotten. Additionally, the professional demodulator adds d.s.b. (double sideband) and i.s.b. (independent sideband) modes to those available as standard. Neither demodulator option includes a notch filter or pass band tuning.

The professional demodulator is definitely worth including in the purchase of the G-303i because it has a comprehensive user definable series of parameters for the i.f. filters and a.g.c. settings, together with a fascinating graphic display of each demodulator system according to the mode selected, with the facility to 'connect' an on-screen spectrum display to each part of the demodulator to show how it is all working. Even this is then extended to include real-time SINAD and Total harmonic distortion measurement on the incoming signal. The user manual is very

helpful in leading the user through the various options, and if you really get in a tangle you can restore the normal default settings at the touch of an on-screen button. It really is all so easy to understand and use.

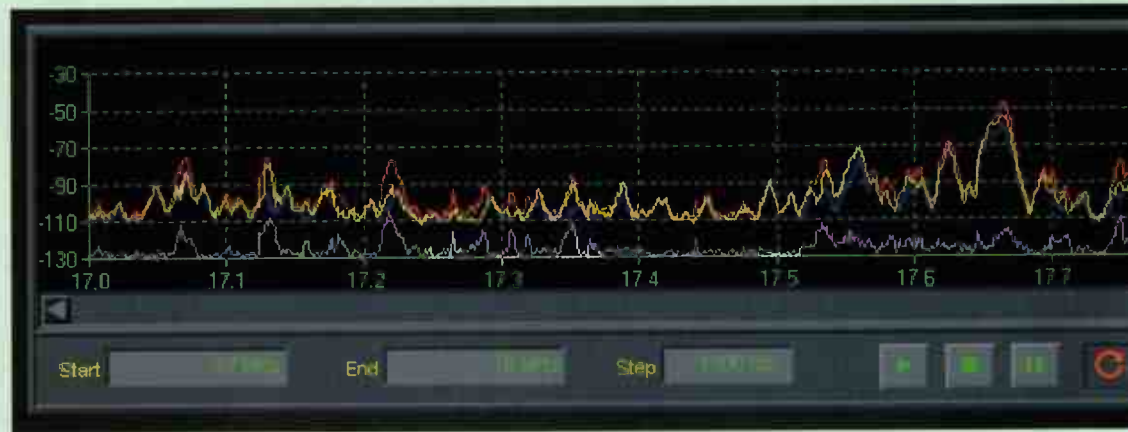
As if that were not enough, clicking on a yellow arrow alongside the power switch drops down a spectrum analyser display below the main receiver panel, on which you can enter start and stop frequencies and, frequency measuring increments. Starting a frequency scan can be done over frequencies having no relationship to the frequency to which the receiver is tuned, so you can be listening to a station on 900kHz and carry out a band scan from 9 to 12MHz then the receiver will revert back to the original station. The receiver is muted during the scan process but it takes only a short time to complete. When the scan is displayed, the mouse pointer can be used to select any displayed frequency, and the measured level is shown in dBm. Clicking the mouse instantly tunes the receiver to the selected frequency, and sliding the mouse drags the receiver frequency to match the mouse movement. There is only one drawback to the system, which is that the measuring bandwidth is fixed and very broad, so that if you sweep across say, 9 to 9.5MHz, instead of a series of sharp signal peaks, you have a broad wavy line with very indeterminate peaks. The facility is fine for sweeping several MHz, but not for looking at a single broadcast or amateur band. There seems to be no way of changing the measuring bandwidth, and it is not related to the selected

bandwidth in the main receiver.

## Harnessing The Power

My description of the receiver facilities ends with the a.g.c. system, because I must get on and tell you how the G-303i came out under the test spotlight. The r.f. section of the G-303i is, as I have said, contained on the plug-in card, and can be considered as a frequency changer. This section of the receiver system is basically analogue, and as I have seen previously in some d.s.p. receivers, the use of digitally derived a.g.c. has had its drawbacks. The G-303i designers have included an a.g.c. system within the analogue section of the receiver, and this is accessed from the on-screen front panel where you can select decay times of slow, medium and fast, together with an a.g.c. off function. These a.g.c. settings are independent of the digital demodulation, but in both standard and professional demodulators there is a further a.g.c. system which works on the demodulated audio. In the standard demodulator this a.f. a.g.c. has a single time constant, but the professional demodulator allows the user to set the attack and decay times for each of the three a.g.c. settings. Using this facility gives great insight into the effects of inappropriate attack times on various types of signal, and is a valuable facility. All the more reason to opt for the professional demodulator.

So there we have a general overview of a very comprehensive receiver from a user's viewpoint, but this merely demonstrates the skill (and it is a very real skill) inherent in the WinRADiO





Communications software development staff. What we have to remember however, is that this is an h.f. receiver, so let's proceed on to the real testing and see if the facilities and features live up to their promises. By the way, I haven't forgotten the memory facilities, but will treat them as a PC feature.

## A Matter Of Cleanliness

One thing which has plagued many receivers is the generation of internal spurious signals, and with the G-303i living inside a computer I made the search for these unwanted signals my first test. The job was made really easy because all I had to do was terminate the antenna connector in a screened 50Ω load and set the receiver to sweep its entire frequency range in 100Hz steps with the squelch set to its most sensitive setting. I could then let the receiver carry on whilst I did something else, secure in the knowledge that if a spurious signal was found the receiver would stop until I

manually re-started it after noting the frequency and level of the unwanted signal. How many signals did I find? Unbelievably only one, at a frequency of 20MHz and at an insignificant level of less than 0.3μV. I was so astonished that I did the whole test again, but the result was the same. As far as I can remember, I have never found any receiver, analogue or digital which had such cleanliness, and the G-303i has set a new standard for others to try and emulate.

Since I was on the trail of signal cleanliness I decided to check the G-303i synthesiser performance by carrying out my standard reciprocal mixing tests. You are by now all familiar with this test, with the results expressed as the phase noise in dBc/Hz (the noise in a theoretical 1Hz bandwidth extrapolated from a real measurement in a chosen receiver bandwidth). At 5kHz from the on-channel frequency the phase noise was -96dBc/Hz, at 10kHz -123dBc/Hz, at 20kHz -133dBc/Hz, at 50kHz -141dBc/Hz and at 100kHz -148dBc/Hz. To put this into context, the performance at 100kHz is close to that of a crystal oscillator, and it is only at 5kHz that the phase noise rises. For a further check I measured my faithful AR7030, and whilst this was 20dB better at 5kHz (-116dBc/Hz against -96dBc/Hz), the performance of the two receivers was equally matched for all the other spacings checked. Another good result for the G-303i.

## More Measurements

Measured sensitivity for s.s.b.

12dB SINAD was substantially flat at -122dBm from 20 to 3MHz, falling by some 2dB by 30MHz, and down to a surprising -113dBm by 1MHz, a change of 9dB. Detailed investigation revealed that at 950kHz the sensitivity was -117dBm but at 951kHz it fell by 11dB to -106dBm. Taking a look at the return loss of the G-303i antenna socket showed that there were some band pass input filters with change over frequencies of (what a surprise) 950/951kHz, 1.8/1.801MHz and at 7.3/7.301MHz. It would seem that the filter for 951kHz to 1.8MHz has much more loss than the other front-end filters, but whether this is normal or a fault I am unable to say. The receiver published specification gives the lowest receive frequency as 9kHz, and checking sensitivity in this range showed a gradual roll off starting at 200kHz with a sensitivity of -115dBm down to -92.5dBm at 20kHz. All these measurements were taken with both r.f. and a.f. a.g.c. system operating; without the a.f. a.g.c. the figures would have shown even more variation. However, it has to be said that Rugby at 60kHz was romping in, although 16kHz GBR never did show much life.

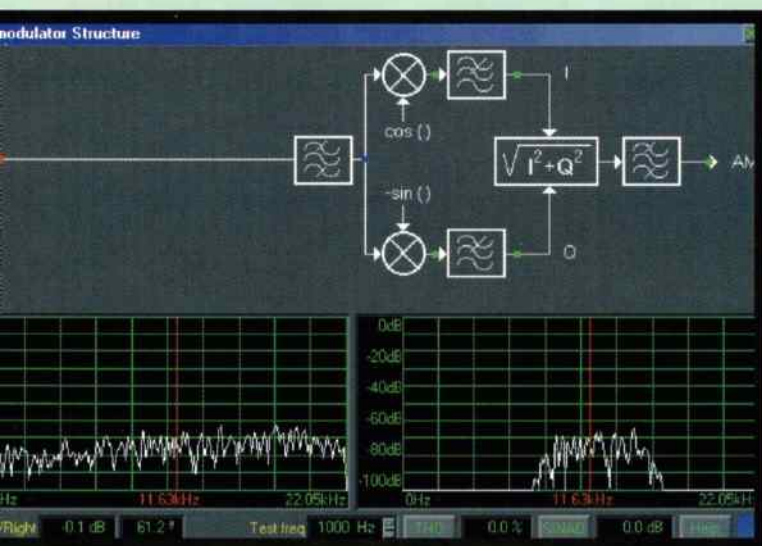
One thing struck me immediately about the h.f. sensitivity and that was, based on my experience with lots of other receivers, the sensitivity was higher than that necessary in a receiver of this type, and that the high sensitivity would probably reveal effects on the r.f. intermodulation performance. Using the accepted technique of feeding in two r.f. signals, 20kHz apart, and raising their combined level until an intermodulation product appeared and equalled the minimum discernible signal (MDS) of the receiver gave me a third order intercept point of +3dBm. Repeating the test using the 'big signal' method used for professional receivers gave a slightly better third order figure of +4dBm, with a dynamic range of 92dB.

Second order intermodulation performance depended on the positioning of the two test signals relative to the band pass filtering in the front-end of the receiver, but with the test signals in band with the IM product I measured

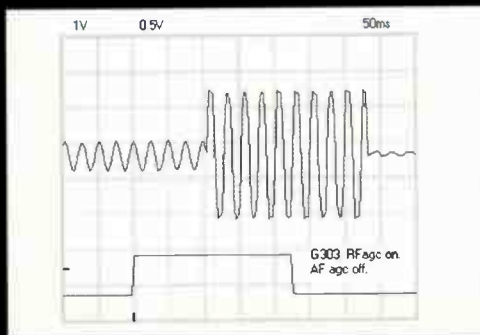
the second order intercept at +26dBm with a dynamic range of 80dB, whilst with the test signals out of band relative to the IM product I measured +36dBm with a dynamic range of 85dB. I have to make a comparison with another receiver, if only to check that my test configuration is correct, and I chose my regular AR7030. This returned figures of third order intercept point of +32.5dBm with a dynamic range of 103dB, and a second order intercept point of +65dBm with a dynamic range of 92dB, and it should be noted that the AR7030 has no input filtering to assist the second order performance. It's also only fair to say that the AR7030 is a more expensive receiver than the G-303i.

As a final comment, there is a growing belief based on extensive work by well known authorities on the thorny subject of h.f. receiver performance, that it is the reciprocal mixing parameter which is paramount in determining what constitutes a good or bad receiver, and it is true that the intermodulation characteristics can be improved in real life operation by the simple expedient of putting some attenuation between the antenna and the non linear stages of a receiver. WinRADiO Communications have included just such a switchable attenuator in the G-303i and whilst at 18dB it may be too much for my preference, switching it in will seriously improve the third order intercept point albeit at the cost of raw sensitivity, but the G-303i is, as I said, very sensitive, and is already ahead in the reciprocal mixing area.

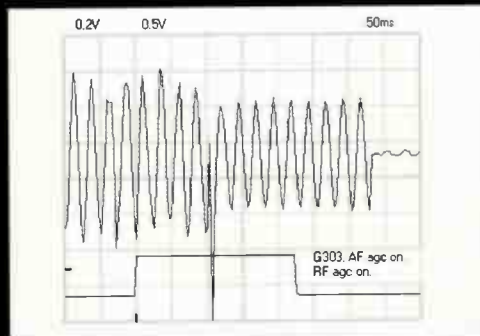
One of the most revealing tests I normally carry out concerns the behaviour of the a.g.c. system of a receiver, and it often reveals the reasons for the odd clicks and pops one hears at the beginning of speech syllables and also at the start of a c.w. dot or dash. Basically what I do is to combine a steady low level r.f. signal with a stepped increase, usually between an equivalent of S4 and S9 on a standard meter. The length of the increase is usually set to about 250ms and I look at the audio output of the receiver during the length of the step increase. All receivers utilising digital



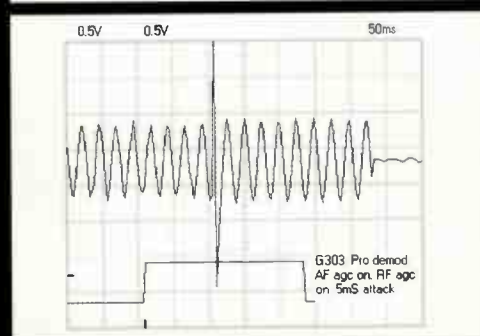
**Fig. 1:** The receiver's audio response during a 250ms input signal step, with the r.f. a.g.c. on and the a.f. a.g.c. off can be seen in the plot.



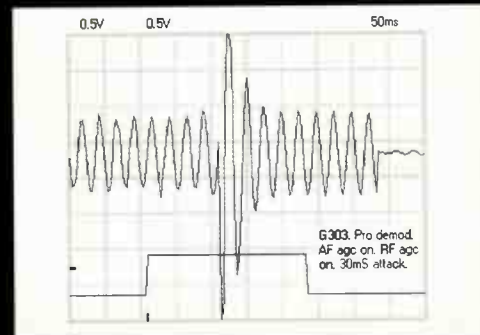
**Fig. 2:** Switching the a.f. a.g.c. on to add audio control causes a dramatic change.



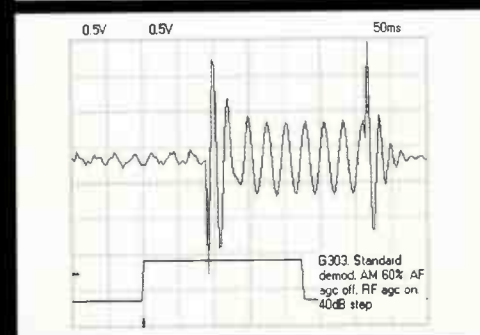
**Fig. 3:** Switching to the professional demodulator with both r.f. and a.f. a.g.c. switched on shows just how much better the 'pro' software works.



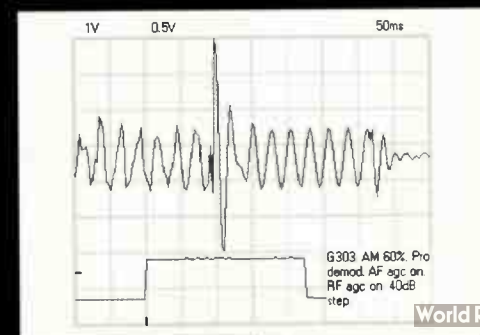
**Fig. 4:** For this test I set the a.f. a.g.c. attack time to 5ms, but then repeated the test with the attack time set to 30ms.



**Fig. 5:** The audio output change using the standard demodulator with only r.f. a.g.c. switched on.



**Fig. 6:** The 'pro' demodulator and the r.f. and a.f. a.g.c. both on, shows much better control, although the 'click' is still prominent.



signal processing take a finite time to carry out the processing function and this leads to a measurable time delay between application of a signal at the antenna and the audio output appearing at the other end of the chain. Since the r.f. step has been applied before the digital system has done its job, a fully digital a.g.c. system has a hard time coping with the overload which occurs before the a.g.c. control has been applied, and this manifests itself as a loud 'click' in the audio output. One outstanding example of this occurs in the Collins 95S-1 which goes into a wild 'squawk' under these overload conditions. WiNRADiO Communications have overcome some of these problems by having a real time hardware a.g.c. system in the receiver card itself, and this is the 'r.f. a.g.c.' shown on the front panel. However, there also has to be an 'a.f. a.g.c.' within the d.s.p. system and this is also selectable from the G-303i panel. Let's see how the receiver performed.

### A Picture Paints...

The receiver's audio response during a 250ms input signal step, with the r.f. a.g.c. on and the a.f. a.g.c. off can be seen in the plot **Fig. 1**. The step increase can be seen and is clean, although the audio output level changes despite the r.f. a.g.c. You can clearly see the processing delay of more than 100ms between application of the signal at the antenna and the audio appearing at the output of the sound card. Switching the a.f. a.g.c. on to add audio control causes a dramatic change as seen in **Fig. 2** where the a.f. a.g.c. has brought up the low level r.f. signal to the start of the increase, and then the r.f. a.g.c. has taken over to keep the audio output more or less constant, but at the transition from low level to high level signal there is a loud and obvious 'click' in the audio. Switching to the professional demodulator with both r.f. and a.f. a.g.c. switched on shows in **Fig. 3** just how much better the 'pro' software works. The transition from low level to high level input signal takes place with hardly any change in the audio output,

but look at the 'click'. For this test I set the a.f. a.g.c. attack time to 5ms, but then repeated the test with the attack time set to 30ms. As you can see in **Fig. 4** this resulted in rather more than a 'click' at the transition, and is a good illustration of why it is usually necessary to have as fast an a.g.c. attack as possible on s.s.b. speech or data signals. That deals with s.s.b. and c.w. signals, but what about a.m.? The audio output change using the standard demodulator with only r.f. a.g.c. switched on is there to see in **Fig. 5**. Note the click now at both start and finish of the level change, whereas with the 'pro' demodulator and the r.f. and a.f. a.g.c. both on, **Fig. 6** shows the much better control offered, although the 'click' is still prominent.

What does this mean in practice? Well, on signals below about S9 (-73dBm) the audio clicks are not much of a problem, but on stronger signals the clicks are quite audible and make listening a bit uneasy, particularly on strong c.w. I realise that we c.w. listeners are a dying (literally) breed, but the clicks are noticeable on reasonably strong a.m. broadcast stations - but the G-303i is still much better than a Collins 95S-1, so you pay your money and takes your choice. Did I mention strong broadcast stations? What was the G-303i like on my favourite 900/909/918kHz tests?

### No Monkey Chatter

Using either demodulator, the d.s.p. worked well, and I was able to flick between the three test frequencies using the up/down buttons after setting the step size to 9kHz. There was a little sideband splatter from 909kHz but the two continental stations on each side were clear and easy to hear, so no problems there. Going a bit further with the 'pro' demodulator, I found that tuning to something like Five Live and sliding the variable bandwidth control until all the station's sidebands were within the filter passband (and of course you can see this all happening on the spectrum display) you could get really good audio out of the receiver, whilst on

weaker a.m. stations in the short wave bands the sliding bandwidth enabled me to close down until I got the best out of what signal was available. A truly excellent facility, but not so good when investigating the 500Hz c.w. filter. Why not?

Listening to c.w. at the bottom end of 40 metres, I realised that I could still hear signals which were well outside the selected and displayed 500Hz passband, so I did some measurements on the true bandwidth of the filter. With the standard demodulator, 500Hz bandwidth, a.f. a.g.c. off, r.f. a.g.c. on, mode set to c.w., I applied an S9 signal at the centre of the filter passband to give an 800Hz audio output. I then tuned the generator to each side of the filter and measured the bandwidth between the points at which the audio output fell by 6dB. The true bandwidth was 1.24kHz, not the 500Hz stated. I then switched the a.f. a.g.c. on and repeated the test to find that because of the levelling effect of the a.f. a.g.c., the true bandwidth was now 2.42kHz rather than the stated 500Hz. I think that this should receive some attention, because it makes the narrow c.w. filtering a waste of time. With the 'pro' demodulator which gives total control over the selected bandwidth, sliding the bandwidth on c.w. from 1kHz down to its narrowest setting did absolutely nothing to the signals on each side of the displayed passband, which remained clearly audible throughout. This being an alarming discovery, I checked the other modes, but in all of these the filter passbands were correct, and attenuated adjacent signals properly, so it's a mystery. (John acted on Milan Hudecek's suggestions re: the sampling rate setting and commented that the result was a transformation of c.w. filtering from useless to superb with the -6dB points being 390Hz - Ed.)

## Conclusions

I listened to all kinds of material during my all too brief time with the G-303i and did not find anything I couldn't hear. The performance in the l.f. beacon band around 350kHz is worthy of mention, not only because of the fact that I could actually hear so many beacons, but that I could see them all spread out on the spectrum screen below the frequency readout, and could watch the keying take place. Narrow band CB f.m. was excellent, as was s.s.b. and c.w., with the caveat about the c.w. bandwidth. Listening to a.m. with the 'pro' demodulator was excellent, but I have to say that the a.m.s. (synchronous) came out of lock quite easily and did a little 'squeak' when restoring, but I found that with the spot on accuracy of the l.s.b. and u.s.b. filtering it was actually better to use these modes on weak and fading a.m. signals.

The antenna connector on the G-303i card is an SMA; a brilliant connector for high frequency performance but very small, so the G-303i comes with an SMA to BNC adapter. I would recommend using a short length of coaxial cable with an SMA on one end and a free BNC socket on the other, because I have seen several SMA/BNC solid adapters shear off at the socket, and replacing the SMA socket on the G-303i will not be an easy job. WinRADIO Communications please note.

You may ask "What antenna did I use for my listening tests?", and you probably guessed that it was an active loop. To some extent this explains the terrific beacon band reception, and of course the loop was located some 20 metres away from the dreaded PC, which could have helped the rejection of PC generated noise. The G-303i is normally supplied with a 'get you going'

wire antenna, which was missing from the unit supplied to me, so I made one according to the description in the user manual. I can tell you that there was only a trace of noise from the computer monitor, which is a sign of the advances made by PC manufacturers, but the signal levels were obviously well down, so I connected the G-303i to a 15 metre long wire via 10 metres of coaxial cable. Again the noise level from the PC was very low, but the loop, as always, beats the living daylights out of lumps of wire antenna, so my advice is clear!

The user handbook is clear and easy to understand, and has a detailed appendix on the use and setting up of the professional demodulator so that the user can investigate various software configurations - this is almost a hobby in itself. There is a WinRADIO web site which gives lots of additional information, and because WinRADIO Communications are so into information technology the facilities exist for downloading additional applications for the G-303i; indeed just such an application (for a signal level monitor and data store) was E-mailed to me during the review, and I was able to install it and have yet another well thought out facility available to me.

I note that this is one of the longest reviews I have ever written, and I still haven't covered some of the aspects of this interesting new receiver. It's difficult to place it in a particular market position because in order to use it, you need to have a fairly decent computer system which could cost you anything from £500 to £1000. If, as many of you do, have an existing PC of the minimum specification then the G-303i is definitely for you because the suggested selling price is around £300 for the standard unit (see, I said I would surprise you) and around £350 for the unit fitted

with the professional demodulator. I consider that this is the one to go for because of the hugely extended capability of the 'pro' demodulator. Starting with an empty desk and a full wallet, the G-303i and PC could be more expensive than many other stand-alone receivers, but let me put it this way; if I had to choose between a Collins 955-1 and the G-303i (ignoring the obvious fact that the 955-1 tunes to 2GHz), I would take the G-303i. That's a statement I thought I would never make.

And, sorry folks, you will have to take it as read that the memory facilities are brilliant, but there are no more pages to tell you about it.

**SWM**

## Manufacturer's Response

We sent a copy of John's findings to WinRADIO's Milan Hudecek, his comments are as follows:

Excellent review, we are indeed thrilled. There are only a few minor things we believe may deserve some clarification.

- Regarding the c.w. i.f. bandwidth issue, the selectivity of the filter depends on the filter lengths, and this influence is more pronounced the narrower the bandwidth gets. I would suggest to adjust the c.w. filters to the maximum available lengths (255), which provides the sharpest filters. Admittedly, this feature is easy to overlook amongst all those sliders and edit boxes!
- The filter length setting is compromise between the filter selectivity and the CPU resources available. The IBM NetVista we supplied has plenty of excess power, so all filter lengths can be comfortably set to the max. For the Standard Demodulator, we have used compromise filter lengths to allow the software to run even on a very slow, beginners' PCs.
- There is in fact yet one more tuning method - as if there were not enough of them - the wheel on a wheeled mouse! :) Easy to overlook, but some customers love this feature in our receivers.

- Many thanks to John for having noticed the lack of 9kHz step size preset, and the anomaly with keyboard tuning. Both have been fixed and the new software is now available for download.

In the UK the WinRADIO G-303i is available from **Falcon Equipment and Systems**.

Tel: **(01684) 295807**. E-mail: [winradio@sda-falcon.co.uk](mailto:winradio@sda-falcon.co.uk) For more details on the WinRADIO products, news of new developments, distributors in your home territory and software downloads visit: [www.winradio.com](http://www.winradio.com)

The G-303i costs **£299** fitted with the standard demodulator. The additional Professional Demodulator costs **£99** as an upgrade. A G-303i and professional demodulator bundle costs **£350**. All prices are plus VAT at 17.5%, P&P is **£15**.

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- 640 ch memory system
- Slot machine game!
- Front panel key lock

**£159.00** £8 P&P

3 CHEQUES OF **£55.66**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### ICOM PCR 1000

COMPUTER RADIO SYSTEM

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

**£389** £10 P&P

3 CHEQUES OF **£133.00**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

PCR OPTION DSP UNIT UT 106 **£82** £2.75 P&P

### PALSTAR AA30

Combined 3-in-1 unit

- ACTIVE ANTENNA • SW PRE-AMP
- ACTIVE ANTENNA/TUNER

Frequency: 300kHz-30MHz

Variable Gain & Peak control

12V DC or internal 9V battery (not supplied)

**£69.95** £10 P&P

### ICOM R3

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

**£449** £10 P&P

3 CHEQUES OF **£153.00**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

REVOLUTIONARY NEW HANDHELD

### MAYCOM FR100

New Dual Civil/Military Airband Radio

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

**£99.95** £7.50 P&P

### MAYCOM AR108

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

**£69.95** £7.50 P&P

Mains Charger **£8.95** £2.75 p&p

### PALSTAR R30

Portable Communications Receiver

- 4-pole crystal filter at 45MHz
- Switchable 7 pole input filter
- Ceramic filters fitted
- Coins mech. filter loop
- 5W low distortion full fidelity audio amp
- Analog S-Meter
- +13dBm 3" audio filter

100kHz - 30MHz AM, SSB SW

100 memory chan.

Internal batteries.

**£429** £10 P&P

3 CHEQUES OF **£146.33**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### AKO TARGET HF3M

COMMUNICATIONS RECEIVER

Connect this radio to your PC & receive Weatherfax pix with the **FREE** Disc & PC interface cable supplied

**£149** £10 P&P

ORIGINALLY **£209.95**

3 CHEQUES OF **£50.00**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### AOR AR 5000

**PRICE MATCH**

- 10kHz-2.6GHz
- Modes AM, FM, USB, LSB, CW
- 1000 memories
- 45 ch/sec scan
- 20 search banks
- DTMF decoder

**£1599** £10 P&P

3 CHEQUES OF **£536.33**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

- RS232 port
- N type & SD239 sockets
- Audio 1.7W (8Ω)
- 12V DC @ 1A

### AOR AR-8600

NEW Mk II Version

ALL MODE WIDE BAND BASE RECEIVER

OPTIONAL PSU AVAILABLE

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

**£699** £10 P&P

3 CHEQUES OF **£236.32**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### AR 8200 Mk III

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

**£439** £39 P&P

3 CHEQUES OF **£136.33**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

NEW! MARK III VERSION

### FAIRHAVEN RD-500VX

LATEST MODEL

- Latest database (over 20,000 frequencies)
- Frequency: 20kHz - 1.7GHz

**£899** £749 P&P

3 CHEQUES OF **£293**  
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**SPECIAL PRICE SAVE £150!**

### UBC 780XLT

"a 'must have' for the enthusiasts!"

**£349** £10 P&P

3 CHEQUES OF **£119.66**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

NEW EUROPEAN VERSION

- 500 channels
- 25-1300 MHz (with gaps)
- AM, FM, WFM
- 5/7.5/10/12.5/20/25/50/100kHz
- Trunktracker - includes Motorola/EDACS/LTR VHF/400/500/800/900
- Smartscanner™ interface
- Alpha tagging
- PC + VFO control
- Clone feature
- CTCSS/DCS/Digital Radio History
- Record functions

### YUPITERU MVT 7100

- 530kHz-1650MHz
- 1000 memories
- AM/FM/WFM/SSB/CW
- C/w NiCads, mains charger, 12VDC cigar lead, belt clip, carry strap

**£240** £229 P&P

3 CHEQUES OF **£79.66**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### YUPITERU MVT 3300

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

**£160** £149 P&P

3 CHEQUES OF **£53.00**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### YUPITERU MVT 7300

- 520kHz - 1.32GHz
- 1000 Memories
- 8.83kHz Airband
- Duplex reception
- Descramble function
- C/w Mains adaptor, NiCads, Belt clip

**£280** £259 P&P

3 CHEQUES OF **£89.66**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### YUPITERU MVT9000EU

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

**OP90 SOFT CASE** **£26.95** £2.75 P&P

3 CHEQUES OF **£89.66**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### UBC 280XLT Sportcat

NEW!

Twin Turbo Handheld

- Triple conversion RX
- 25-956MHz (with gaps)
- 200 memories
- CTCSS/DCS Tone Search
- CTCSS/DCS receive
- Turbo search/Turbo Scan
- C/w Antenna, Earphone, Belt Clip, NiCad battery, 240V UK Mains adaptor

**£179.95** £10 P&P

3 CHEQUES OF **£63.31**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### ICOM IC-R5

**NEW!**

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

**£179** £10 P&P

3 CHEQUES OF **£59.66**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### ICOM IC-R8500

**PRICE MATCH**

**IN STOCK!**

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

**£1240** £1299 P&P

3 CHEQUES OF **£416.33**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### ICOM IC-R75

**PRICE MATCH**

**IN STOCK!**

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

**£699** £10 P&P

3 CHEQUES OF **£236.33**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### YAESU FRG-100

**FREE MAINS PSU**

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

**£480** £399 P&P

3 CHEQUES OF **£136.33**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### UBC 3000XLT

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

**£199.95** £10 P&P

3 CHEQUES OF **£69.98**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### YAESU VR5000

Yaesu's Flagship Desktop "Ultra Wideband" Scanning Receiver

- 0.1 to 2600 MHz
- Tons of features!

**£600** £649 P&P

3 CHEQUES OF **£219.66**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### WS2000

**NEW!**

**£129.95** £10 P&P

3 CHEQUES OF **£46.65**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

- 10 presets and last station memory
- Headphone jack/stereo line out connectors
- External jack for multimedia & data service
- Easy-to-aim antenna WorldSpace antenna
- Battery or mains operation-AC/DC adaptor inc

### SANYO WS1000

WorldSpace Digital Satellite Radio

A stylish satellite radio for home or portable use.

- Stereo headphone socket
- 32 memories
- Mains or battery (Mains adaptor inc)
- Remote control
- Multi-media port

**£149** £10 P&P

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PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### ROBERTS R861

DIGITAL WIDE BAND RADIO WITH RDS

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

Supplied with: Dual voltage AC supply, sw antenna, earphone, carrying case

**£200** £179 P&P

3 CHEQUES OF **£69.66**  
PAY BY CHEQUES/PAYDIAL INTEREST FREE!

### STEEPLETONE MBR747

Multiband Receiver

Covers LW, MW AND

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

**£79.95** PLUS P&P £10



# GRUNDIG Product sheet 2002

## GRUNDIG SATELIT 800

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

### EU VERSION FEATURES

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

£509 ~~£549~~ P&P £10 3 CHEQUES OF £169  
PAY BY CHEQUES/PREAD INTEREST FREE!

## GRUNDIG YB400 HIGH PERFORMANCE PORTABLE SW RADIO

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

- Supplied complete with:
- SW Handbook • Carrying case
  - External Wire Antenna • Carry Strap

£99.00 ~~£110~~ P&P £10 3 CHEQUES OF £36.33  
PAY BY CHEQUES/PREAD INTEREST FREE!

## PORSCHE G-2000

- FM Stereo, AM/FM/MW 13 SW bands, 2.3 - 26.1MHz
- 20 station presets
- Clock, alarm, sleep function, world times
- Mains/Battery (optional ac adaptor)
- Supplied c/w leather cover & in-ear stereo headphones

£89.95 ~~£100~~ P&P £10

## UBC 278CLT Base Scanner with MW/FM Radio & Alarm Clock

**NEW!**

£159 ~~£170~~ P&P £10  
3 CHEQUES OF £56.33

- 25-956 MHz (with gaps)
- VHF Radio: 88-108MHz
- 100 Memories
- 20 Radio Presets
- Full free LCD readout
- Programmable Channel Lockout
- Priority Ch.
- Scan Delay

## UBC 220XLT

£149.95 ~~£170~~ P&P £10 3 CHEQUES OF £53.31  
PAY BY CHEQUES/PREAD INTEREST FREE!

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

## UBC 9000XLT

£269 ~~£280~~ P&P £10 3 CHEQUES OF £93.00

- 25-1300 MHz (with gaps)
- 500 memory channels
- Selectable Attenuator, Delay, Mode (AM/WFM/NFM) /SEARCH
- Auto Store/Freq Transfer
- Auto Tape Record
- TURBO SEARCH
- VFD Control

## UBC 120XLT

£129.95 ~~£140~~ P&P £10 3 CHEQUES OF £46.31  
PAY BY CHEQUES/PREAD INTEREST FREE!

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

## Iron Horse ATA1300 On Glass Scanner Antenna

£26.95 ~~£4.75~~ P&P

- 25 - 1300MHz
- Supplied C/W Coax, Mounting & BNC Connector

## UBC 60XLT-2

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

£79.95

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

## USED EQUIPMENT

YAesu VR120	H/M SCANNER	110.00
UBC 9000XLT	SCANNING RECEIVER	199.00
UBC3000XLT	H/M SCANNER	145.00
AOR AR2000 MK1	H/M SCANNER	249.00
ALINCO DXJ-3 + ACC	H/M SCANNER	129.00
ALINCO DXJ-3	H/M SCANNER	99.00
ALINCO DXJ-2	H/M SCANNER	125.00
YAesu VR 5000	V/BAND RECEIVER	499.00
YAesu FRG-9500	HF RECEIVER	299.00
YAesu FRG 7HF	HF RECEIVER	299.00
LOWE HF725 + ACC	HF RECEIVER	379.00
KENWOOD R-5000	VHF RECEIVER + VHF	599.00
YAesu FRG-100	HF RECEIVER	299.00
JRC NRD-345	HF RECEIVER	325.00
JRC NRD-345	HF RECEIVER	350.00
GRUNDIG SATELLIT 800	RECEIVER	399.00
AOR AR 5000	SCANNER	899.00

## COAXIAL CABLE 100 metre drums

RG58 standard SPECIAL PRICE £38 £25 P&P £10.00

RG213 low loss SPECIAL PRICE £75 £55 P&P £10.00

**DAB digital Radio**

**NEW!**

**DRX-701ES**

**EVOKE - 1**

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

£99 ~~£110~~ P&P £10

**NEW!**

**DRX-701ES**

New DAB Tuner features -

- Fast Autotune
- Digital Text Display
- Remote Control
- USB connectivity

£249 ~~£260~~ P&P £10

**Introducing the world's smallest DAB Digital Radio!**

Enjoy the STUNNING QUALITY OF DAB radio whilst on the move

**DR101 Personal DAB Radio**

The DR101 Personal DAB Radio boasts:

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

£169 ~~£180~~ P&P £10 3 CHEQUES OF £56.33  
PAY BY CHEQUES/PREAD INTEREST FREE!

**DR201 Personal DAB radio**

- DAB
- Voice Recorder
- MP3 Digital Audio Player
- FM Radio

£229

## Noise Killers FROM TIMEWAVE

**TIMEWAVE DSP 599ZX**

- Eliminate heterodynes
- Filters QRM
- Brickwall PSK31 filter
- Sound card interface
- Filter, RTTY Modem, Radio/Sound Card Interface
- Enhanced noise reduction

£389.95 ~~£400~~ P&P £10 3 CHEQUES OF £133.31  
PAY BY CHEQUES/PREAD INTEREST FREE!

**ANC-4**

Antenna Noise Canceller & Diversity Combiner

- Cancels S-9 line noise
- Nulls strong interfering signals
- Makes two antennas into phased array
- Wipes out noise before it hits your receiver
- Works with any transceiver/receiver
- LOTS MORE!

£199.95 ~~£210~~ P&P £10 3 CHEQUES OF £69.98  
PAY BY CHEQUES/PREAD INTEREST FREE!



## SCANMASTER Product sheet 2002

**SCANMASTER B128 AIRBAND BASE SCANNER**

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

- 'N' Type connector
- length: 1mtr

£39.95 ~~£4.75~~ P&P

**SCANMASTER LP1300 WIDEBAND BEAM ANTENNA 16 EL LDG PERIODIC DESIGN**

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

£129.00 ~~£10~~ P&P

**SCANMASTER DESKTOP**

A complete desktop antenna covering 25 - 1300 MHz, just fitted BNC plug with a magnetic base.

£49.95 ~~£4.75~~ P&P

**SCAN AIRMASTER DEDICATED CIVIL & MILITARY AIRBAND ANTENNA**

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

£59.95 ~~£4.75~~ P&P

**ORDER HOTLINE 023 9231 3090**

**www.nevada.co.uk**

**Unit 1 • Fitzherbert Spur • Portsmouth • P06 1TT**

email: info@nevada.co.uk • fax: 023 9231 3091

**ALL GOODS SHIPPED FOR 24 HR DELIVERY**

P&P: £10 (UK Mainland) unless otherwise stated E80E

# Preserving the W at 2.4GHz!

Far from being something that is dying, as some would have us believe, Henry O'Tani puts the case for the continuation of radio for the hobby enthusiast.

**A**s a genuine 'wireless nerd', I don't regard the term as so pejorative but something to aspire towards and to be a little proud of. From the early 1900s up to the 1980s - young people interested in practical science and technology would make radio apparatus on the kitchen table. This practice provided a 'nursery' for our country to produce many of its technically literate people.

Even today, some 50% of professional radio engineers (when subjected to close interrogation), confess to being amateur radio "sympathisers or callsign carrying operators" and probably a similar proportion of older mechanical engineers and designers originate from a 'model engineering' background.

## Taking Up Wireless

I was 13 years old when I decided to take up 'Wireless'. I was on a Summer holiday visit to my aunt in Streatham, South

London. Taken by the idea quite suddenly, I stopped at the news-stand on Victoria Station and on impulse picked up copies of *Practical Mechanics* and *Practical Wireless*. In this September edition were constructional articles for a 'Beginner's Short Wave Receiver' by FG Rayer G3OGR and a '4 tube 10 watt phone transmitter'. I decided to build both, and quite logically to start with the receiver first.

With help from a school-mate, we assembled a list of components and spent the whole of one Saturday visiting the numerous radio component shops in London's Tottenham Court Road, which at that time, was a national 'Mecca' for radio and technical enthusiasts. I suppose now that what we did was to undertake a 'consumer survey' of the best prices for each part. All the key parts were acquired on that day except for a pair of ready-wound OSMOR coils

which proved impossible to procure. Not understanding the process of even mail-order, I returned every Saturday, broadening my searches to the Edgware Road and Charring Cross areas. Visiting each emporium until a kindly counter assistant in Lyle Street (perhaps remembering the little boy who came in every Saturday asking for "Osmor Coils SWQ1 & SWQ2") offered to order them for me. With these key components, the receiver was operational on Christmas Eve that year. Completely new to short wave listening, the thing I remember on those cold dark December



**Fig. 1: G8OTA with home-made v.s.w.r. meter and test dipoles for 2.4GHz.**

afternoons and evenings was sitting hunched over a low oil stove, wearing headphones with home-made log book, totally enthralled at the seemingly unlimited foreign languages and stations from exotic far away places which one could hear, plus a wealth of Morse code, RTTY, telemetry

chirps and tones and the roar of teleprinters in the 30 - 40 metre band in pre-satellite days.

The transmitter was not completed until the following March and not yet having a licence, it was built just as a constructional project in anticipation of becoming a licensed amateur. Apart from some furtive testing, it was never actually used (not so strange I suppose since I have known unlicensed or underage teenagers do similar with motor bike and motor car projects).

## Seasoned Constructor

Within two years, I was building 70cm amateur television receiving equipment, mains powered projects and test gear such as signal generators and oscilloscopes. In building amateur radio equipment, we could with very little cash, aspire to build and operate systems which were years in advance of consumer products. I used to earn pocket money making things like transistor radios and audio amplifiers. Our house had a door intercom and solenoid operated latch twenty years before these became commonplace.

As the diversity and volume of consumer goods became higher and ownership costs lower - the incentive for such activities, just as making your own clothes and preparing your own meals from basic materials becomes more and more marginal.

Later as an active licenced

# Wireless Nerd

radio amateur, (and parent of school aged children), I deeply regret the opportunities for this kind of constructive achievement being lost for present young people. In recent times the national Radio Society of Great Britain has noticed that there are insufficient numbers of younger people to replace its ageing membership. We are losing a whole generation of 'amateur wireless enthusiasts' who with daily access to cell 'phones, text messaging and the Internet cannot see no point in 'old-fashioned' two-way simplex radio and Morse code.

## Latter Day Equivalent

Of course, today the direct contemporary equivalent of this past ('nerdy-tekkie') activity is in music, computers and new media. In much the same way as before, bright young people can assemble surplus computing equipment or develop audio and video media processing 'rigs' with home assembled equipment and produce outstandingly innovative world-class results. A big draw-back is that all these creative 'new media' activities require for their fulfilment a broad band Internet connection which enable enthusiasts to productively interconnect with each other on the Internet. Seen as an enormously profitable commercial monopoly, this crucial connectivity is very unlikely to be available to an ordinary young person for their spare time hobby.

This new century 'Amateur WLAN Communications' can change this.

## Amateur & Community WLANs

The technical innovation of

licence exempt Wireless Local Area Networks (WLANs) releasing high speed data interconnections from buildings, makes it possible to develop something entirely new in ICT namely 'Amateur and Community LANs'. These are not-for-profit, local community owned and

**Fig. 2: An amateur and community WLAN mast.**



**Fig. 3: A '802.11 'Free-To-Talk' Mobile WLAN handset.**

managed Social ICT broad band networks which anyone with a suitable antenna and 'WLAN Transceiver' can connect to free of charge.

A not-for-profit 'Amateur and Community LAN' delivering free or low cost broad band Internet access can make an astounding creative impact on the developing technical skills of the young and guarantee the continued progress of our 'technical and artistic culture' (and incidentally give a much needed boost of newcomers into amateur wireless organisations both local and national).

Community WLANs introduce the welcome prospect of completely profit-free broad band Internet access, local non-commercial (Internet) radio, television, telephone and video communications - delivered via a local small community owned co-operative, business or club. Profit free broad band access can give access to high quality new media for all sections of the community such as the very

young, sick, elderly, unemployed and disadvantaged.

Free broad band additionally offers quality Internet based face-to-face conferencing, counselling and cosmopolitan cross-cultural initiatives in culture and education which would



otherwise, for many years to come, be the exclusive gift of wealthy upmarket consumers and businesses alone.

## Enormous Benefit

Free broad band will be of enormous permanent benefit to children and young people and poorly resourced lower schools without their own telephones, ISDN or 'DSL and the like. It can enhance 'teleworking' just by its speed and immediate realisation of quality face-to-face video. It can encourage interest and self-training in all aspects of Community Media as well as technical Network Administration and Systems Development as widespread enthusiast activities (like Ham Radio) hitherto not seen perhaps since the Amateur BBS FidoNet BBS days of the 1980s and early 1990s.

New mobiles 'phones designed to operate on the 802.11 WLAN system offer free local mobile telephone calls, see **Fig. 3** details of these units can be found at [www.spectralink.com/products/link.html](http://www.spectralink.com/products/link.html)

Free, quality, high speed

broad band access to a network with 'Free Local Mobile Telephones' or 'NetPhones' can encourage widespread participation in modern neighbourhood community development.

Initial studies show that a not-for-profit ethic can deliver end-user connections for just 7% of the existing commercial costs.

By being provided at its real low cost, wireless broad band community Internet can reduce our dependence on the remote decisions of commercial companies as well as bringing broad band to communities that cannot or will not be reached by cable or 'DSL services.

## What You Need

The basic user equipment required is a microwave radio modem 'WLAN Transceiver' called a Wireless (or Network) Interface Adapter (WIA) and an antenna.

A Wireless LAN Transceiver (Wireless Interface Adapter - WIA) such as a D-Link DWL-120 can, with a built-in half-wave dipole antenna, provide a 11Mb/sec 'ethernet' connection between computers without wires for a distance of up to 300 metres.

Since these transceivers work on the amateur 13cm band, it is possible to construct home-made antennas, which dramatically enhance performance. One such antenna can be made using an old satellite parabolic dish and a few pounds worth of cable and other materials.

In the 'Red Block WLAN Transceiver' the USB adapter is fitted into a weatherproof outdoor mounting with a plane reflector (a plate 14mm away). This can be used as a standalone rooftop 'WLAN Transceiver' **Fig. 4** with about 8.4dBi Gain (x 2.5 range) or for

# new year...new gear ML&S wish

**We have many accessories for the SWL including:**

- MFJ-461 Pocket Morse Decoder .....£84.95
- Global AT-2000 Antenna Tuner .....£89.95

## NEW! DRESSLER Active Antennas

This outstanding range is ideal for use with all communication receivers. The AR 1000, AR 2000, AR 3000, AR 4000, AR 5000, AR 6000, AR 7000, AR 8000, AR 9000, AR 10000 are beautifully designed and manufactured in Germany.

- ARA 1 HDX .....£30
- ARA 2 HDX .....£35
- ARA 60 .....£139.95
- ARA 2000 .....£189.95

**IN STOCK!**

## Micro PSU

Ideal for scanners and shortwave receivers. This Mini switch mode 2.5 amp PSU will power many scanners and SW receivers. About the size of 20 cigarettes and very light. Ideal for popping in your brief case or suitcase! (State make and model of receiver when ordering)  
Only £29.95

## NEW Maldol Handheld Discone

Maldol HDX30  
New discone to clip on top of any hnc scanner  
Only £38.95

Maldol GDH-30 General Discone .....£49.95

## MYDEL

MiniWag Scanning Antenna available with BNC fitting .....£32.95  
SMA fitting .....£34.95  
Will also work on 2M & 70cms TX (50 W)

Magnetic Long Wire Balun.....£19.95  
Skywire Antenna Kit.....only £39.95

## UK Scanning Directory

In stock at last!  
The 8th edition of this excellent frequency guide has just arrived  
PRICED £19.75 plus £5.00 P&P  
It's **BIGGER** than ever!

## MIRACLE WHIP

This Amazing Antenna at only 55 inches long is an ideal companion for any receiver covering 600kHz - 460MHz  
PRICED £129.99

Miracle-whip received with thanks had a best run of 100m with an SWR of 1.5 and 20m SWR of 1.7. Found it very good indeed reception was as good as with the outside long wire

**AVAILABLE NOW**

## MAYCOM FR-100

Pocket scanner with 8.33kHz steps for the airband. AM/FM & WFM  
Basic scanner at a basic price  
only £99.00.  
ML&S £99.95

## AOR AR-8200 MKIII

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

**ML&S PRICE: £439 Zero Deposit 36 x £15.96**

## YUPITERU MVT-7100

This scanner is very old in design and lacks a few features but offers good scanning facilities. Covering 100kHz-1300MHz AM/FM/WFM/USB/LSB. Complete with NiCads, Charger, Telescopic Antenna all for £229.00  
ML&S £199.95

## KENWOOD TH-F7E NEW!

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

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

## MAYCOM AR-108

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

ML&S £69.95

## ICOM IC-R5 NEW - NOW IN STOCK!

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

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

## ICOM IC-R10

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

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

## ICOM IC-R3E

The Scanner with TV built-in that picks up a bit more than Coronation Street! Complete with Lithium Ion battery and charger, all ready to go!  
Only £449  
PC Programmable. Requires PC-R3 at £39.95

**ML&S £449 ZERO DEPOSIT! 36 x £15.96**

## GARMIN E MAP

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

**ML&S £329 ZERO DEPOSIT! 24 x £14.49**

## NEW GPS V Deluxe NOW IN STOCK!

GPS V Deluxe has announced a hand held GPS looking similar to the established GPS3 range again with built in route calculator and 24Mb of RAM. Price expected to be about £500

## GARMIN STREET PILOT 3 DELUXE

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

**ML&S £1150**

## GRUNDIG YACHT BOY 400

This popular portable shortwave Receiver is back in stock at only £99.95  
ML&S £99.95

## SDU 5500

See what is happening on the air with this add on spectrum scope. Not only will it work with the AR5000 and AOR3000a - it will also work with Icom ICR8500, ICR9000, ICR7100 and TS-870. (A good alternative to the SM-230)  
PC Controllable  
FREE PSU!  
ML&S £899 ZERO DEPOSIT! 48 x £26.60

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**all our customers a very happy new year**

**The AOR 8600mk2 Plus is the fully loaded scanner from AOR. Coverage is 100khz-3000mhz all mode.**

The "AOR8600mk2 Plus" comes supplied with the following:

- EM-8200 Memory Card
- VI-8200 Voice Inverter
- RU-8200 Record Unit
- CT-8200 CTCSS Card
- TE-8200 Tone Eliminator
- MF-2.5 Collins SSB Filter
- MF-6 Collins AM Filter
- PSU-8600



**AOR 8600mk2 PLUS**  
**ML&S £1139 ZERO DEPOSIT!**  
**36 x £41.41**

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**ICOM ICR8500**  
**ML&S £1349 ZERO DEPOSIT! 48 x £39.91**

**ICOM IC-R9000L**

We are able to offer the last few of these excellent radios at £6995.  
 Coverage: 0.1-1999.8Mhz with all modes. Featuring a spectrum scope, 1000 memory channels and many advanced scanning facilities.

**ML&S PRICE: £6995 £995 Deposit 60 x £134.00**

**One mint, pre owned example available!  
 Only £4500. £500 Deposit 48 x £118.35**

**800 Millennium**

Covers Shortwave, Airband and FM Broadcast. An ideal shortwave broadcast radio - suitable both the experienced or novice listener.



**ICOM PCR 1000**

This black box gives all mode receive 100kHz to 1300MHz via your PC. Supplied with software for Windows 3.1/95 and 98. Featuring DTMF decoder, CTCSS decoder, Spectrum scope and much more. We can supply you with alternative demo software that will work with XP (Registration is under £30.00). Complete with Whip antenna, PSU, UT-106 DSP module and software.



**PC Controllable**

**ML&S £389 ZERO DEPOSIT!**

**AOR AR-7030**



**FREE PSU!**

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

**ML&S £799 ZERO DEPOSIT! 36 x £22.26**

**New DAB Radio's arriving soon. Call for details!**

**new Mk II version!**

**AOR 8600 MKII**

With many of the features of the AR8200 Mk2 this is an exceptional desktop communications receiver with **FREE PSU PC Programmable**

**ML&S £699.00 ZERO DEPOSIT! 48 x £20.88**

**FREE PSU!**

**AOR 5000 ML&S £1599.00 ZERO DEPOSIT! 48 x £47.31**

This is the finest communications receiver AOR have produced and has all the features needed for Commercial users and Scanning enthusiasts. There is also the plus version with extra enhancements.

Offering good short wave reception as well as excellent VHF, UHF performance. With **FREE PSU. PC Controllable**

**AOR AR-8200 MKIII**

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

**ML&S PRICE: £439 Zero Deposit 36 x £15.96**



**ICOM R-75**

**Icom's Latest Shortwave Receiver**  
 With all mode coverage from 30Hz to 60MHz. Options available are:  
 • Voice synthesiser • UT106 DSP Module.

**ML&S £599.00 ZERO DEPOSIT! 36 x £22.26**



**AOR 3000A**

All mode, all band desktop receiver  
**PC Programmable**

**ML&S £799.00 ZERO DEPOSIT! 48 x £23.44**

**LAST FEW!**

**FREE PSU!**

**ICOM ICR-8500**

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

**ML&S PRICE: £1349 Zero Deposit 48 x £39.91**

**FREE PSU!**

**KENWOOD TS-570GERX**

Our best selling HF Transceiver modified for Receive only makes this an excellent DSP Receiver. **PC Programmable**

**ML&S £949.00 ZERO DEPOSIT! 48 x £28.08**

**FREE PSU!**

**YAESU VR5000**

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

**ML&S £599.99 ZERO DEPOSIT! 48 x £17.72**

**Also available.**

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

**BEARCAT UBC 780XLT**

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

**ML&S PRICE: £329 Zero Deposit 36 x £11.60**

**PC PROGRAMMING SOFTWARE NOW AVAILABLE**

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**FINANCE EXAMPLE**

YAESU VR5000	APR.....19.9%
	PRICE.....£599.00
	Deposit.....£00.00
	48 Payments of.....£17.72
	Total purchase price.£850.56

Martin Lynch can offer finance terms up to 48 months with no deposit. We welcome your part exchange against any new (or used) product provided it is clean and in good working order, call the Sales Desk today! Usual APR: 19.9%. Payment protection is also available up to 48 months. All units are brand new and boxed and offered with full manufacturers RTB warranty. All prices quoted for cash/ cheque or Switch/Delta card. No additional charges for credit cards. Martin Lynch is a licensed credit broker. Full written details are available on request. Finance is subject to status. £10 p&p on all major items. £80E

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World Radio History



long-range mounted on a standard satellite dish the required size (x30 range for a 1.2m dish). A small improvement can be had of 1-2dB by the addition of a director element consisting of a circular disc of 43mm diameter and spaced 10mm in front of the active element dipole. This provides about 10dBi stand-alone gain (x3 range) and better matches the requirement for feeding the dish in the most efficient way.

**Fig. 4: A USB WIA in weatherproof housing.**

With a comprehensive nation-wide 'amateur network' on 2.4GHz, (a deployment of nodes no greater than the low-speed network which six thousand or so UK amateurs built nodes during the first five years of AX25 packet), outsiders such as ordinary members of the public might be permitted to participate providing they are using type approved kit and within the service area (footprint) of the amateur node.

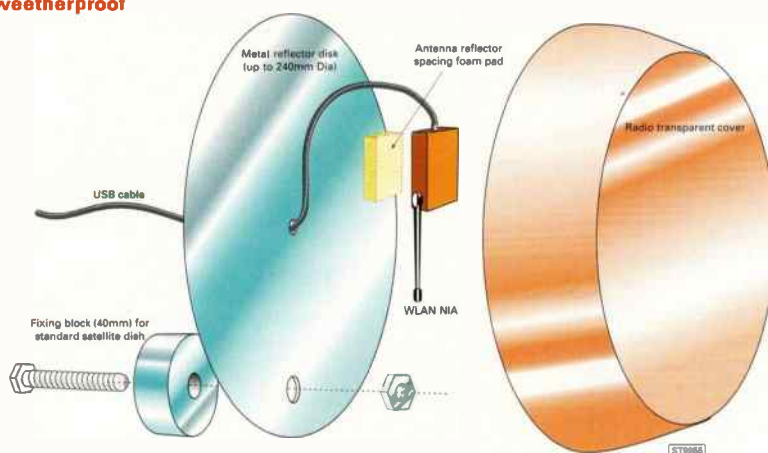
Radio amateurs should on the whole, be delighted to have an explosion of many new people joining the hobby and using their systems. Amateur radio can now be vertically-integrated as a popular local community activity. The development of 'Amateur Radio Internet Services' now could be particularly attractive to the current generation of young mobile 'phone and computer using teenagers.

When implementing WLANs on amateur microwave bands, UK licensed amateurs are not as restricted in transmitter power or antenna gain. With the 'simplex transceivers' used with IEEE 802.11 it is easy with automatic solid state switching between transmit/receive

modes to make 'strip-line power amplifiers' and other performance enhancing in-line goodies.

## Essential Equipment

The basic community WLAN equipment is an Access Point (AP). The Intel 2011B 802.11 is supplied with a stub antenna. This functions like a 10Mb/sec Ethernet hub, connecting all computers fitted with adapters within its 'service area' to



connect as if they are on the same wired network.

The Intel 2011B is a multi-functional unit which works as all the following; A Wireless Access Point, A Wireless Repeater, Wireless Router and A Wireless Bridge. It has the facility to connect to a standard dial-up telephone line via a specified type of modem. It can connect two distant Wired LANs together. It can connect a wireless network to two Wired LANs. The Intel 2011B can also 'daisy chain' a string of compatible access points interlinking Community WLAN across a region. The (reversed) BNC connector allow external antenna to be fitted, but internal transmit power regulation under software control ensures that the resultant Effective Isotropic Radiated Power (EIRP) need not exceed the licence free limits, (licensed radio amateurs can run these at full power below 2.450GHz).

Even without extra amplification, a standard community access point fitted with an amateur omni-

directional high performance repeater antenna could have a practical gain of up to +16dBi (ref. Isotropic radiator) approximately quadrupling service range (x 4).

This 'range gain of x4 is multiplied by whatever gain is used at the 'clients WLAN Transceiver' end so that if using a 600mm dish (x16 range), the client can expect an overall range increase of x64 (say a working service radius of 10-15km).

'plug in and go' network interconnectivity between a whole string and web of local nodes.

The distant user or 'client' who is licenced could have an outdoor parabolic dish antenna of say 600mm diameter with a simple feed, that would give over 25dBi gain. A total improvement (just with high performance antennas) of 38.5dB!

This will extend the normal extreme operating radius of IEEE 802.11 (normally of no more than two or three hundred metres) roughly some 60 times or up to 20km! Adequate for most municipal area schemes and simple inter-nodal links of 10-15km.

## Next Generation

Recently released are products in the next generation of '802.11a WLAN which promise connections of 54Mb/sec on the 5GHz frequency band - some five times faster than '802.11b.

Free high speeds of this sort open up local 'Network Games' 'Virtual Conferences', 'Virtual Reality' the 'Internet Broadcasting' and possibilities of 'Community Radio' 'Community TV' and 'Free Local Video Phone'.

These are areas which the existing speech bandwidth of 56Kb/sec via

telephone modem Internet cannot develop any further.

Community LANs could enable clever young enthusiasts, students and the economically disadvantaged to access the Internet without expensive telephone charges and at presently undreamed of connection speed.

With simple frequency conversion (which is easy at the low power levels available from these products) the discrete modalities of 2.4GHz IEEE 802.11 can through linear mixing be replicated (translated) on any other sufficiently wide amateur microwave frequency segment such as 10 and 22GHz.

*Henry O'Tani G80TA is keeper of [www.wlan.org.uk](http://www.wlan.org.uk)*

**SWM**



**Fig. 5: A typical low power community node.**

A typical neighbourhood omnidirectional mast with a 1.2m diameter dish and horn feed suitable for very long range interlinking to another node can be seen in Fig. 5. These two antennas connect directly to an Intel 2011B Access Point's 'twin diversity antenna' sockets. If necessary the 2011B can also regulate the transmitted power to within the limits of 'Licence Exempt Compliant Use'. Additionally these access points provides Intel's own 'WLAP protocol for

# QSL

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

**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.**

**Dear Sir**

Could you please publish this E-mail. I am writing to express my thanks to yourself and bhi for the competition prize of a bhi NES10-2 Noise Eliminating Speaker, which I won as a result of entering the competition in the October SWM. I must say that the bhi d.s.p. processing technology really does work when you are trying to reduce radio background and noise levels and interference. Thanks once again from a loyal reader.

**Ron Blackburn 2E1GYM  
Lancs**

**Dear Sir**

I am writing this to you so you can give a lot of credit to Clive Hardy. I've subscribed to PW for several years. I was in hospital for some time and the Post Office here got everything screwed up. They thought I had moved and that messed up delivery through no fault of yours.

I talked to Mr Hardy on the phone several times and with a lot of work at his end, everything is now OK. They missed several issues but he fixed it.

I subscribe to *Monitoring Times* here in the US but your *Short Wave Magazine* is the best. I really enjoy 'Attention 123', 'Decode', 'Scanning', 'SSB Utilities' and the others. Years ago I used to do a little 'Black Work', so I really enjoy this magazine. I was a Captain in the Fire Department until I was injured, now I'm on disability retirement.

So, please put a plus by Mr Hardy's name and keep up the good work.

**Larry B. McDermott  
USA**

*Larry - we've a slight problem now - Clive's having trouble getting through doorways so we're looking for a camp bed to make his stay more comfortable! - Ed.*

## topQSL

**Dear Sir**

Once again I write to you, having started my hobby with a Yupiteru MVT-7100 this time last year, December, just before being made redundant in January. After a long fight over continuous service redundancy money and won the case, I found myself with some spare cash, my partner encouraging me to get a base station after fighting the case myself.

So, after spending a couple of weeks reading through the previous 12 months of SWM, I came across an Icom IC-R75 which was featured. I now have one standing on my desk in the shack, well, there's no turning back is there!

After braving poor weather, wind and rain, to get the 20m long wire up, I can now pick up radio 'hams' - if that's what they still call themselves? So far, after a few weeks, the 40m band seems the best.

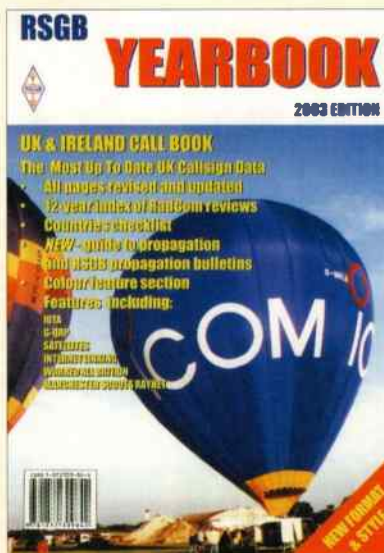
Anyway, the reason for writing is I believe there is a way of sending and receiving QSL cards for the listener only and also having a radio receiver's number. If you could possibly give me some details of this or even an address so I could write to those I receive - this part of technology has passed me by and I believe this would enhance my hobby further.

After 12 months reading your splendid magazine articles, other things are now becoming clearer and make more sense. Unfortunately, the nearest club is some 80km plus away from home according to your recent list of radio clubs in the November SWM.

Keep up the good work. I now have to leave the shack because all the outdoor Christmas lights have just come on by time switch and they are playing havoc with the rigs. I suppose we have all experienced interference at some point or other.

I look forward to the next issue - Happy New Year.

**Mike Luxton  
Powys**



*Hello Mike, many amateurs are happy to send listeners QSL cards in exchange for a reception report. It is usual to provide return postage with your report. Best to send an s.a.e. in my experience. You will need address information, a good up-to-date source is the RSGB Yearbook as listed in the SWM Book Store pages at the rear of this magazine. There are alternatives, but this 462 page book is, in my opinion, the best solution. Don't forget you can also QSL with broadcast stations too. In no time at all, you should have an impressive collection of cards - good luck! - Ed.*

# Build A NAVTEX Decoder

NAVTEX is a continual source of fascinating automated maritime information. Roger Thomas brings us the first part of his neat project, that utilises both a programmed PIC microcontroller and some PC software to convert received audio to on-screen text.

There is an international system for transmitting maritime safety information, NAVTEX - NAVigational TELeX. These transmissions are intended to give navigational warnings, weather forecasts, search and rescue, hazards to shipping and similar information to ships. This maritime text service is freely available, with the UK NAVTEX service

funded by the Maritime and Coastguard Agency (MCA).

## Part 1

### NAVTEX Background

The origins of the NAVTEX service was the use of radio teletype (RTTY) technology to

This service was provided by one of the Post Office's transmitters located at Cullercoats.

In the 1980s the NAVTEX service was extended using coastal radio stations at Portpatrick and Lands End. This increased the weather forecast coverage to include the English Channel, the Irish Sea and all the sea areas in the south-west Approaches. After operating for a year the Lands End service was closed and operation was transferred to the Niton site.

During 1999/2000 the various maritime radio services provided by British Telecommunications plc - including Morse, telegrams and ship-to-shore radio telephone - had been withdrawn due to lack of demand and the services where no longer financially viable.

From 1 February 2000 the Maritime and Coastguard

broadcasting of maritime safety information via NAVTEX from BT. The MRCC located at Falmouth is responsible for co-ordinating the NAVTEX transmissions using the three BT UK coastal transmitters situated at Niton (Isle of Wight), Cullercoats (north east England) and Portpatrick (west Scotland).

### Single Frequency

NAVTEX transmitters use a world-wide single frequency of 518kHz with all the transmitting stations allocated different times to broadcast. Allocating transmission time slots in this way prevents two stations in any one coverage area transmitting at the same time.

For NAVTEX transmission purposes the world's oceans are divided up into 16 areas, with the UK in NAVAREA 1. This area also includes the

coastal areas of Belgium, Denmark, Estonia, France, Iceland, Ireland, Netherlands, Norway, Russian Federation, Sweden.

### GMDSS

NAVTEX is an integral part of the International Maritime Organisation (IMO) - Global Maritime Distress and Safety System (GMDSS). This

Fig. 1.

NAVTEX coastal station (location of transmitter)	Range (nm)	B1 (id)	Transmission times (UTC)	Coastal area
Oostende Radio	55	T	0310, 0710, 1110, 1510, 1910, 2310	Belgium
Reykjavik Radio	550	X	0350, 0750, 1150, 1550, 1950, 2350	Denmark
Tallin	250	U	0030, 0430, 0830, 1230, 1630, 2030	Estonia
Reykjavik Radio	550	R	0250, 0650, 1050, 1450, 1850, 2250	Iceland
Malin Head (NW Ireland)	400	Q	0240, 0640, 1040, 1440, 1840, 2240	Irish Sea
Valencia (SW Ireland)	400	W	0340, 0740, 1140, 1540, 1940, 2340	Irish Sea
Niton	270	K	0140, 0540, 0940, 1340, 1740, 2140	France
Imjuiden - Netherlands Coast Guard	110	P	0230, 0630, 1030, 1430, 1830, 2230	Netherlands
Bode Radio	450	B	0010, 0410, 0810, 1210, 1610, 2010	Norway
Rogaland Radio	450	L	0150, 0550, 0950, 1350, 1750, 2150	Norway
Svalbard Radio	450	A	0000, 0400, 0800, 1200, 1600, 2000	Norway
Ørlandet Radio	450	N	0210, 0610, 1010, 1410, 1810, 2210	Norway
Varde Radio	450	V	0330, 0730, 1130, 1530, 1930, 2330	Norway
Murmansk	140	C	0120, 0520, 0920, 1320, 1720, 2120	Russian Federation
Arkhangel'sk	300	F	0200, 0600, 1000, 1400, 1800, 2200	Russian Federation
Stockholm Radio (Bjuröklubb)	300	H	0110, 0510, 0910, 1310, 1710, 2110	Sweden
Stockholm Radio (Gislovshammar)	300	J	0130, 0530, 0930, 1330, 1730, 2130	Sweden
Stockholm Radio (Grimeton)	300	D	0030, 0430, 0830, 1230, 1630, 2030	Sweden
Oostende Radio (Belgium)	150	M	0200, 0600, 1000, 1400, 1800, 2200	United Kingdom
Cullercoats (NE England)	270	G	0100, 0500, 0900, 1300, 1700, 2100	United Kingdom
Portpatrick (SW Scotland)	270	O	0220, 0620, 1020, 1420, 1820, 2220	United Kingdom
Niton (Isle of Wight)	270	E	0040, 0440, 0840, 1240, 1640, 2040	United Kingdom

Fig. 1: NAVTEX transmission timetable for NAVAREA 1 - all NAVTEX text is in English.

broadcast weather forecasts and gale warnings for the North Sea in the late 1970s.

Agency (MCA) assumed responsibility for the organisation and

system is a combination of automatic distress signal relayed via Inmarsat

Fig. 2: Sea areas covered by individual NAVTEX transmissions.

NAVTEX station	B1	Coverage area
Malin Head (NW Ireland)	Q	Shannon, Rockall, Malin.
Valencia (SW Ireland)	W	Shannon, Sole, Fastnet.
Oostende Radio (Belgium)	M	Dover Straits, Thames Estuary.
Cullercoats (NE England)	G	Viking, Forties, Cromarty, Fair Isle, Forth, Tyne, German Bight, Dogger, Humber, Thames, Dover, Wight.
Portpatrick (W Scotland)	O	Lundy, Fastnet, Irish Sea, Rockall, Malin, Hebrides, Bailey, Fair Isle, Faeroes, SE Iceland.
Niton (Isle of Wight)	E	Thames, Dover, Wight, Portland, Plymouth, Biscay, *FitzRoy, Sole, Lundy, Fastnet, Shannon.
Niton (Isle of Wight)	K	French coast - Dover Straits, Thames Estuary.
Imjuiden (Netherlands)	P	Netherlands coast and Dover, Thames, Humber, German Bight, Dogger, Fisher, Forties, Viking.

\* sea area previously called Finisterre.



Fig. 3.

Cullercoats (G) weather	Portpatrick (D) outlook	Niton (E) weather	Outlook	weather	outlook
-	0100	-	-	-	0040
-	-	-	0220	-	-
-	-	0620	-	-	-
0900	-	1820	-	0840	-
-	-	-	2040	-	-
2100	-	-	-	-	-

Fig. 4.

Cullercoats(U)	Portpatrick(C)	Niton(I)
0720	-	0520
-	0820	-
1920	-	1720
-	2020	-

**Fig. 3: The 518kHz UK weather and outlook forecast transmission times (UTC).**

**Fig. 4: The 490kHz UK inshore weather forecast transmission times (UTC).**

SafetyNET satellite, or v.h.f. radio equipped with Digital Selective Calling (DSC) where the distress call is heard by similarly equipped vessels and the alert is relayed. In the UK a GMDSS distress call is handled directly by one of the six Maritime Rescue Co-ordination Centres (MRCC).

NAVTEX provides the terrestrial communications needed to implement GMDSS search and rescue by transmitting information to all vessels in a given area. Since August 1993 GMDSS requires commercial vessels over 300 gross tonnes, mobile offshore platforms, and all passenger vessels to install equipment for reception of NAVTEX broadcasts.

## NAVTEX Schedule

The current NAVTEX transmission schedule is given in Fig. 1. By allocating transmission time slots on a four hour rota this single frequency can be used by many different stations, with each station allocated a maximum of 10 minutes transmission time.

Some NAVTEX transmissions are very short and only contain a few messages, others are more verbose and will also re-transmit all previous messages that are still in force. Similar messages can be transmitted by more than one station as there is some overlap between the sea areas covered by different transmitters. Each NAVTEX

service has its own style and the number of messages transmitted varies from day to day.

If a NAVTEX station has urgent information, such as search and rescue or a severe weather warning, then this can be transmitted at the first available opportunity. Under these circumstances the station does not have to wait for its scheduled transmission time slot.

These transmission schedules are amended from time to time. For example, the Niton transmission occasionally ran over the start of the Oostende transmission so the timing of the Niton broadcasts was changed;

Before 17 September 2002: 0300, 0700, 1100, 1500, 1900, 2300

After 17 September 2002: 0000, 0400, 0800, 1200, 1600, 2000

Also the B1 header was changed from 'S' to 'E', ('B1' terminology explained later).

## Coastal Area

Several boundary changes were made on 4 February 2002 to certain coastal sea areas around France, Spain, Portugal and Morocco, also some sea areas where renamed. These changes are designed to remove inconsistencies in the location and names of sea areas used by different countries. A similar exercise occurred some years ago for sea areas in the North Sea. To conform to IMO standards

sea areas must not straddle NAVAREA boundaries.

In NAVAREA II the Finisterre area south of Sole was renamed FitzRoy and the boundary moved 57 nautical miles north and 3 nautical miles south. The reason for this change is that the Spanish also call another sea area Finisterre. Named after Admiral FitzRoy founder of the UK's Meteorological Service who was responsible for the introduction of the gale warning service. The Niton transmitter covers NAVAREA II Fitzroy and Sole sea areas.

## Weather Forecasts

For most mariners the main reason for wanting NAVTEX reception is for the detailed weather forecasts for the sea areas around the UK, these forecasts are transmitted twice a day. Fig. 2 lists which shipping areas the weather forecast applies to from the different NAVTEX transmitters. There is overlap between the different broadcast coverage areas.

The main weather forecast is for 24 hour and comprises a list of sea areas for which gale warnings are in force, the general weather synopsis, 24 hour forecasts

for the particular area, and an outlook for a further 24 hours. The extended outlooks covers the next three days beyond the 24 hour forecast. All UK weather forecasts are supplied by the Meteorological Office.

## PIC NAVTEX Decoder

A receiver capable of s.s.b. (lower side band selected) or data reception and tuned to the NAVTEX transmission frequency of 518kHz is required. The receiver must have a minimal frequency drift. The audio from the receiver is fed into an op-amp i.c. which turns the audio into a square wave. Output from the op-amp is fed to a Schmitt triggered buffer

(74HC14), using this device ensures a clean TTL signal. The TTL output is connected to a PIC 16F877 microcontroller. The PIC's capture and compare (CCP) input is used for decoding of the NAVTEX signal.

The PIC software decoder can output received NAVTEX text to the l.c.d. (Liquid Crystal Display) or output partially decoded data to the serial port for decoding by computer software. If you want to only use a computer to display the received NAVTEX text then it is not necessary to install the liquid crystal display. An l.e.d. (light emitting diode) is connected to port pin RD0 driven by the PIC software to help in tuning the radio.

## NAVTEX Modulation

NAVTEX format is based on narrow band SITOR (Simplex Teletype Over Radio). NAVTEX text is transmitted using frequency shift keying (f.s.k.) with a shift (difference) of 170Hz. When receiving NAVTEX using an s.s.b. demodulator (lower side

band) two audio frequencies are generated. The higher frequency is referred to as the mark frequency and the lower frequency as

space frequency.

This SITOR format is exactly the same as amateur radio AMTOR mode B signals and also the same audio frequency used in European amateur radio RTTY transmissions. Not shown in the character tables are characters exclusively used for two way link control. The phasing characters have a different meaning when used for SITOR or AMTOR two way data communications. Phasing 1 signal become (alpha) idle character and phasing 2 character is the RQ (request for re-transmission) character.

*In Part Two, we'll cover the schematics and component requirement for the decoder.*

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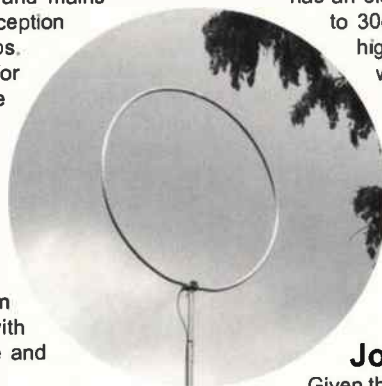
The ALA1530 loop sets new standards for the listener. For the first time it is possible to reject locally radiated and mains borne noise and still provide improved reception compared to larger antennas and Active Whips.

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See John Wilson's review ; Oct 2002 SWM

**This is what the experts say.**

**John Wilson; Nov 2000 SWM:**

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

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# Scanning Scene

Recently I was in a southern town and having downed a few beers I thought it wise to grab a taxi ride home. Most of the taxis in which I find myself a passenger seem to be piloted by short run speed psychopaths who look on every fare as an opportunity to aim the cab while demonstrating their multi-tasking abilities. This generally involves them rolling a cigarette, talking on a CB radio and engaging in a nose blowing marathon while negotiating traffic at illegal speeds.

This bloke was no exception, he was of the 'look no hands' school of motoring. His mobile 'phone rang and he hauled it out of a grubby jacket and this is where it got my attention. You see, to answer the call he extended a telescopic antenna on the set. Now this 'phone looked like pretty much every other mobile 'phone currently in use, bar the extending antenna. I had to ask him what sort of 'phone he had there.

His command of any known language was on a par with his driving skills, but I eventually established that this was 'long range cordless 'phone'. Intrigued, I questioned him more about the unit and the following day I made a trip to the house where the taxi company is based.

What these boys have is a small base unit hooked up to a telephone line and a mains p.s.u. The base unit acts as a hands free 'phone and as a charging unit for one of the telephone handsets. An antenna mounted on a pole on the side of the house takes the r.f. from the base unit to the handsets, up to ten of which can operate from one base station.

Looking at the hand-held sets revealed that they have the same functions as most mobile telephones with regard to memory management and caller identification. They can also act as intercom units to the base station and to each other as handsets have an individual identification code.

When a call is received, the base rings a few times to allow the call to be answered and if that does not occur, all the handsets start ringing and the first one to pick up the call gets it. Calls can be transferred between hand sets and back to the base unit.

Examining the base it indicated manufacture by a Chinese company called

'NANFONE'. It seemed well made and the taxi boys told me that they had purchased four mobiles and the base for £240. The price included spare batteries, hands free adapters, chargers and car charger leads. In

addition, the external antenna and a pre-amplifier were also included. They also said that the cheapest option was the base unit, antenna, etc. and two mobiles for £160.

The instruction book revealed that the sets come supplied with nine fixed channels and the tenth channel can be programmed by the user provided that it's within 500kHz of the centre operating frequencies of the units. The centre frequency for the base unit was 263.000MHz f.m. and the mobile 393.000 f.m.

These lads were using their kit on the first pre-programmed channel, the frequencies being 262.500 and 392.500 respectively. I felt that it was my solemn duty to point out that the whole kit and caboodle was, in fact, illegal, but having seen the way that they drove, I guessed that they wouldn't mind that a bit. They assured me that they were getting at least eleven kilometres from their system, but found it terrain dependant in that if they found themselves in the shadow of a hill the signal would disappear. It seems that their best DX is around 48km.

Now I always have some sort of scanner with me and when I loaded up their base frequency I found that I was hearing the calls at around 13km from their little office. I don't suppose that military airband users and the TETRA folks will be too pleased, but

for one small taxi operation, this was a very cost effective operation.

With more traffic becoming digitised, it's good to know that the Chinese are thinking of scanner users when they manufacture cordless 'phones. The picture shows the base unit with a mobile in the charging cradle.

## Military Surplus

Helmut Singer Elektronic are a German company selling military surplus equipment on the Internet. Their site is partly in English which is a boon for me as my miniscule amount of German was learned from my father and consisted of phrases entirely appropriate to allied soldiers engaged in World War Two, but of little relevance now that we are all best pals once more.

Of particular interest are some ex German army transceivers made by Standard Elektrik Lorenz AG. Known as the SEM 52A, they come complete with headsets, carry harness and an antenna. Helmut Singer's supply them working on two channels, 47.800 f.m. and 55.500 f.m. Running on six AA cells, they cost around £60 plus carriage.

I understand that these sets came into German military use in the mid eighties. I know that several sets have been imported into the UK and presumably they will be heard in use from time to time. I believe that sales are brisk. The picture shows the radio fitted to a former Red Army soldier.

## My Mail

One of the best things about putting these scribbles together is the mail that I receive from readers, you are a pretty good lot and the mail keeps rolling in.

A regular scribe who is very discrete has kindly sent a fine list of frequencies that he gleaned in connection with the Rally of Great Britain. I reckon that I'll glean a few more and put them all out prior to the next event.

A kind reader from the Northampton area sent me a cutting from the *Chronicle & Echo* newspaper referring to the conviction of a chap from Abington who was fined £100



See page 6 for details of the inventor software.



by the court for listening to police frequencies on his Icom scanner. They took a dim view of this apparently.

The hundred quid could have purchased him a decent second scanner DJ-X3 handheld from Ebay and he would still have had enough cash left for a couple of beers and a take away.

Keith from Loughton in Essex also wrote, surprised that I had never encountered the Icom 'auto squelch' before. He tells me that it's been around for a while and that his R2 receiver features this facility. You're right that I have never used the R2. I'm glad that you are enjoying your new R5 scanner. With regard to your other frequency query, I understand that the Jubilee, District and Piccadilly lines are users of that channel set, but I have information that indicates that the lower frequency is the base station transmitter. Sorry to be a bit non specific on this one, but considering the current security situation, it pays to be a tad circumspect.

Many thanks to all the people who responded to Mike Evans request for an operator manual for his PRO-2004 receiver. He should be sorted out by now, but the most interesting discovery was that so many people are still using this and other older bits of gear. I have just had a telephone natter with Maurice from Fleetwood, Lancashire, who had also offered to send a copy to Mike. Maurice has been using his PRO-2004 for years and he tells me that the thing just runs efficiently year after year.

A good mate has just purchased an ancient 10 channel crystal controlled scanner from a vendor on the Internet. My mate has the crystals for the ten most used frequencies in his area and he really couldn't go wrong for the few pounds that he paid for the old beast. He has found a use for it anyway!

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## REVIEWED!

- Go mobile with **Neill Taylor G4HLX** as he puts the Icom IC-2725 through its paces.



- **Rob Mannion G3XFD** reviews something a little different in the shape of the Roberts C9950 programmable cassette recorder.



## ANTENNAS

- Have a go at constructing a m.w. ferrite rod antenna, following **David Allen's** design.

## FEATURE

- **Glyn Jones GW0ANA** tells the tale of the Barry Amateur Radio Society's Lightship DXpedition.

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# DX Television

**F**2 reception improved during November, but it still lacked the punch and excitement of the previous year. Most reception was confined to Channel E2, notably from Iran and, to a lesser degree, Syria and Dubai. A new medium-power E2 transmitter is reported to be on-air, to the east of Jordan. This should provide an interesting catch during the next Sporadic-E season.

The *Leonids Meteor-Shower*, described as the most intense for many decades, tempted many eager enthusiasts from the confines of their warm cosy beds to indulge in some serious meteoric pleasure.

## Reception Reports

On November 4th, strong F2 signals from Iran (IRIB-2) occupied E2 between 0830 and 1000. At 0300 on the 5th, **Tom Crane** (Hawkwell) heard raspy multiple video carriers at 48.250MHz (E2) - this was probably due to sustained Meteor-Shower activity or weak, patchy Sporadic-E.

An F2 opening on the 7th lasted from 0915 until 1045. Later in the day on E2 from the south, a weak carrier just riding above noise-level was detectable between 1700 and 1800, TVGE (Equatorial Guinea) being the prime candidate. On the 10th, an opening was already established by 0905 and noted by **Peter Chalkley** (Luton).

By 1000, exceptionally strong Iranian (IRIB-2) pictures dominated E2, but had disappeared within an hour. Openings were much weaker on the 11th and 12th. By 0925 on the 13th there was a jam of signals on E2. Iranian services IRIB-1 and IRIB-2 were identified by their logos, but a third station was thought to be Dubai. By 0940, an unidentified signal on R1 emerged, possibly from the Black Sea area.

There were further sightings of the mystery south-east Asian 525-line Channel R1 pictures received by **Lt. Col. Rana Roy** in northern India. The signals appeared daily between 1430 and 1730 local time from mid-November.

## Leonids Meteor-Shower Activity

With a promise of a spectacular visual display around 0300, some DXers kept a through-the-night vigil in Band I. At 0145 on the 19th **Vincent Richardson** (Dolgarrog) saw a female announcer flash up on E2 with extensive flurries of activity around 0810. Thanks to a break in cloud cover, **Simon Hockenhill** (Bristol) was greeted with the sight of flashes in the eastern sky at around 0330.

Between 0400 and 0530, activity affected most Band I channels, with Norway and Sweden being identified. Tom Crane (Hawkwell) logged RAI UNO shortly after 0400 on Channels A and B. **Stephen Michie** (Bristol) noticed a peak in activity between 0722 and 0803 with multiple sightings of Sweden (SVT-1) on E3 airing a breakfast TV programme. **Peter Barber** (Coventry) described the *Leonids* as 'worth getting up for!' From 0400 on E3 there were weak, continuous, but indecipherable pictures.

Using a scanner, the sound of the carriers were best described as a continuous 'tinkling or jingling buzz and rattle'. Most channels were affected, although Peter noticed E4 was less productive. **George Garden** (Edinburgh) decided to investigate the f.m. band and at 0400 was rewarded with a 'super burst', lasting almost a minute from France Culture on 87.7MHz (Strasbourg 48kW e.r.p.). On the 22nd Tom noted bursts from Italy, again at 1100 on Channel A.

## Daily Reception

Meteor-Shower reception is possible on a daily basis although activity will be low and during the summer months it will be masked by Sporadic-E. Band I is mainly affected, although it is not uncommon to detect Meteor-Shower signals in Band III. The *Geminids* showers, peaking in mid-December, are usually very productive and so are the *Quadrantids*, which peak around January 3rd and 4th.

## New UK 'Freeview' Digital Channels

Since the end of October, services available without subscription include: BBC-1, BBC-2, ITV-1, Channel Four, Five, ITV-2, BBC News 24; BBC Choice (soon to be re-launched as BBC-3), BBC-4, CBBC,



Fig. 1: The DR-1 PM5534 test card received by Erik Koie (Copenhagen, Denmark).



Fig. 2: The TV Solent test pattern, photographed by Roger Bunney (Romsey).



Fig. 3: RSL station 'Southampton TV' using Channel 29 with horizontal polarisation.



Fig. 4: The expensive BBC-3 Identification Symbol. Subtle, isn't it?! And before anyone asks, no, it wasn't designed by a two-year-old chimpanzee (at least, we don't believe so!).

Cbeebies, BBC Parliament (audio with small picture insert), QVC, TV Travel Shop, ITV News, Sky News, Sky Sports News, TMF (The Music Factory), The Hits, UK History and Sky Travel. There is also BBCi - an 'interactive' TV and text channel.

Radio stations include: BBC Five Live Sports Extra, BBC Radio Five Live, BBC 1Xtra, BBC 6 Music, BBC-7, BBC Asian Network, BBC World Service, Smash! Hits, Kerrang!, KISS, Jazz FM and oneworld.

TV Channels still to come on-air include: Ch14, UK TV Channel, FTN, Ch22, Ch32, Ch44 and Community.

## Service Information

**Denmark:** Erik Koie (Copenhagen, Denmark) advises that DR-1 has abandoned the PM5534 test card in favour of showing text pages and programme information. The test card photograph featured this month is a rare showing one Sunday morning last August. DR has a second network and most transmitters are less than 1kW and operate at u.h.f. The exception is the Gladsaxe E8 (Band III) outlet with an e.r.p. of 5kW.

TV-2 is a commercial network with high-power transmitters (mainly 800kW) operating throughout the country.

**Russia:** Moscow station 'TV6 Mockba' is back on-air, but re-branded as 'TV Spektr' (TVS). Services operating nationwide include ORT, RTR and NTV. Regional services include 'Kanal 5' (St. Petersburg) and 'Kultura RTR' (Moscow). A digital terrestrial service is scheduled for 2003.

**Moldova:** Since early November, TVM has been renamed 'Moldova 1', or 'M1'. The Rumanian TVR-2 network is to be relayed throughout Moldova.

**Lithuania:** State broadcaster LRT has been broadcasting the 'Panorama' news programme in Russian, followed by a serial from Telewizija Polska (TVP) with Polish dialogue.

**Belgium:** The French-language second network 'LA2' (formerly RTBF-2) has introduced a new logo with the full service name in letters, i.e. LA DEUX.

## Keep On Writing!

Please send your DXTV, slow-scan TV and f.m. reception reports, news, off-screen photographs and information to arrive by the first of the month to: **Garry Smith, 17 Collingham Gardens, Derby DE22 4FS**. We can also use off-air pictures stored as JPG files on PC discs and good-quality video recordings.

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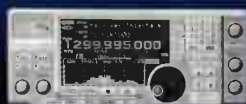


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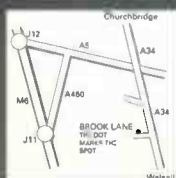
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ALINCO	DJ-X2 HANDHELD SCANNER	£99
ADR	AR-2800 SCANNER	£140
ADR	AR-3000 WIDE RECEIVER	£450
ADR	AR-3000A WIDE RECEIVER	£475
ADR	AR-3030 HF RECEIVER	£399
ADR	AR-5000 TDP CLASS RECEIVER	£999
ADR	AR-7030 TDP RECEIVER	£550
ADR	AR-8000 WIDE BAND RECEIVER	£199
ADR	AR-8200 WIDE BAND RECEIVER	£230
ADR	AR-8200mkII WIDE BAND SCANNER	£275
DRAKE	SW-2 RECEIVER	£275
DRAKE	SW-8 WORLD BAND RECEIVER	£375
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ICDM	IC-R2 HANDY SCANNER	£99
ICDM	IC-R7000 RECEIVER MINT! CONDITION	£550
ICDM	IC-R71E RECEIVER	£325
ICDM	IC-R72 RECEIVER	£399
ICDM	IC-R75 HF / 6m RECEIVER	£475
ICDM	IC-R8500 WIDEBAND RECEIVER	£899
JRC	NRD-345 RECEIVER	£299
JRC	NRD-535 HF RECEIVER	£600
KENWOOD	R-2000 RECEIVER	£225
KENWOOD	R-5000 RECEIVER	£499
KENWOOD	R-5000 RECEIVER + CONVERTER	£600
KENWOOD	R-600 RECEIVER	£175
REALISTIC	PRD 2042 1000 CHANNEL SCANNER	£175
SANGAEN	ATS-909 WORLD BAND RECEIVER	£130
TARGET	HF-3S RECEIVER	£99
TRID	R-2000 RECEIVER + CONVERTER	£300
TRID	R-1000 AC HF RECEIVER	£120
YAESU	FRG-100 HF RECEIVER	£300
YAESU	FRG-7700 HF RECEIVER	£220
YAESU	FRG-8800 RECEIVER	£285
YAESU	FRG-8800 RECEIVER INCLUDES CONVERTER	£399
YAESU	FRG-9600 RECEIVER	£200
YAESU	VR-120 RECEIVER FM/WFM/AM	£99
YAESU	VR-5000 TDP RANGE SCANNER RECEIVER	£450
YAESU	VR-500 HANDHELD SCANNER	£149
YUPITERU	MVT-225 AIRBAND SCANNER	£150
YUPITERU	MVT-7300 MULTIBAND HANDHELD SCANNER	£199
YUPITERU	MVT-8000 SCANNER	£225
YUPITERU	MVT-9000mkII MULTIBAND HANDHELD RECEIVER	£275
YUPITERU	VT-125 AIRBAND SCANNER	£120
YUPITERU	MVT-7100 HANDHELD SCANNER	£140
	500KHZ - 1650 MHZ	£140



# Attention-123!

**D**uring the cold war, the commonest language used by voice numbers stations was German. Since then, the number of German-language transmissions has drastically fallen and there are now only four active stations, see opposite:

None of these are particularly active now, however, they operate at least one weekly or monthly schedule (with repeats).

The former G2 (Swedish Rhapsody) changed from German to English and is now known as E23. G16, the BND's (German intelligence service) transmissions finally ended in 1998. After having for many years operated a vast network of stations on many frequencies, it gradually reduced its schedules until only one remained (GK) for a few months, then that too disappeared. Where have the BND's messages disappeared to? The obvious answer would be onto the Internet, nothing like as secure (for 'receiver' location can be identified), but more convenient to use, at least in the more technically-advanced countries. It is the ending of the cold war and the advent of the Internet, which have effectively killed off so many numbers stations.

## Musical Introductions

In the past, calls lasting for five minutes or more were common. (M23, E3 and E5 still use ten minute calls, although the Russians reduced most of their calls to two minutes around four years ago). Long calls were necessary in order to find stations in crowded conditions using analogue-tuned receivers - typically domestic type receivers with a short wave band included. These couldn't accurately be pre-tuned without first finding the transmission. All these transmissions were either in Morse, that's i.c.w. or m.c.w., or a.m. voice, that is double-sideband full-carrier. Single sideband (s.s.b.) wasn't generally used until the 1980s when digitally tuned receivers began to appear on the commercial market - yet many voice stations still use a.m. Also, h.f. traffic has declined drastically since the widespread use of satellites and fibre-optic communications making number stations far easier to locate. This has left empty gaps in parts of the h.f. bands, whereas at one time, just finding a completely clear channel was often impossible. This is why old recordings of numbers stations are so often accompanied by adjacent channel QRM, teleprinters, etc.

Station calls normally consisted of either of the repeating of call sign (often bogus) or schedule number for a few minutes, or a combination of distinctive tones, dots and dashes, etc., or of pieces of music. The musical stations have all but disappeared,

Family	Ref	Brief Description	Morse equivalents
<b>XIII</b>	<b>G4</b>	f three note intro repeated 5 minutes Ends 'ende'	M29
<b>Ia</b>	<b>G6</b>	f paired 5-fig groups, 3-fig DK, ends 00000	M14
<b>Ib</b>	<b>G7</b>	f single 5-fig groups, 3 or 4-fig DK	M12 (& XP)
<b>III</b>	<b>G11</b>	f 'Strich', ends 'ende'	M3

<b>E3</b>	<i>Lincolnshire Poacher</i> (electronic) with chimes before and after text.
<b>E3A</b>	A poor approximation of <i>Cherry Ripe</i> (electronic) with chimes as above.
<b>E9*</b>	Jean-Michel Jarre: <i>The Overture</i> from the album, <i>Magnetic Fields</i> .
<b>G1*</b>	German yodelling brass band music (various pieces by Franz Lang and others, four regular pieces and many more, less often). Encrypted messages followed in second part after an interval signal lasting five minutes and consisting of seven notes from the communist <i>Internationale</i> . (The intervals were shorter in the last minute).
<b>G2</b>	<i>Swedish Rhapsody</i> played on musical box for 5 mins (after 10 mins repeated tone).
<b>G3</b>	Eight notes played on gongs/chimes as used to announce the News on the DDR's military broadcast station: <b>Soldatensender</b> .
<b>G4</b>	Three rising electronic notes repeated (hardly musical!).
<b>G8</b>	Four note rising electronic scale.
<b>G9</b>	<i>Someone has Stolen my Wedding Bells</i> (a few bars played on saxophone).
<b>G10*</b>	Bert Kaempfert: <i>Wonderland by Night</i> .
<b>G14</b>	Used two sets of rising and falling scales.
<b>G15 &amp; G16</b>	Both used random series of electronic tones (not musical, many versions).
<b>G18</b>	Used a pair of ten-note rising and falling scales.
<b>G20/A</b>	Used a different instrument piece for each agent ('Spruchnummer'), including: Bach's <i>Tocatta</i> (organ). Louis Armstrong: <i>I get Ideas</i> (or <i>When we are Dancing</i> ) The Shadows: <i>Atlantis</i> Schubert: <i>Serenade</i> (unknown composer) <i>Mexican Hat Dance</i> Dave Clark Five: <i>Red Balloon</i> Brahms: <i>Lullaby</i> (played on electronic organ).
<b>G21*</b>	German pop music (vocal) with repeated Morse letter tone superimposed; one piece being <i>Du</i> by the popular Romanian singer Peter Maffay; the other unidentified.
<b>S1</b>	<i>Grand March</i> (from <i>Aida</i> ), opening bars, orchestral.
<b>S2</b>	Unidentified brisk military march (drums and trumpets).
<b>S2A</b>	Long period of lone bugle (beginning of <i>Il Silenzio</i> ) - sometimes preceded above.
<b>S10</b>	Piano piece from Tchaikovsky's <i>The Lark</i> - later five electronic notes, also rising and falling scale of eight notes.
<b>S26*</b>	<i>Zyt! Zyt! (Hush! Hush!)</i> Polish children singing.
<b>V1*</b>	<i>Ciocirlia (The Skylark)</i> fast well-known Romanian folk tune (played at least twice).
<b>V8*</b>	<i>Sahara</i> (Arabic-style popular instrumental) by a Danish composer.
<b>V19*</b>	<i>Don't Cry for me Argentina</i> (instrumental).

but their memory will ever remain. Most of these used interval signatures (like those still in use by some broadcast stations), but a few played whole pieces of music. Those listed below marked \* play whole pieces; only those underlined are still using musical introductions.

That's all for now, but I'll finish by reminding you that the two ENIGMA booklets are still available at £7.50, including postage, from the above address. Also, **ENIGMA 2000** produce a regular newsletter keeping us in touch with latest news. They can also be contacted on <http://reachus.at/enigma> Lastly, we'd very much like to know who played/wrote the tune used by G9. Has anyone heard of it? Please get in touch if you have.



■ CLIVE HARDY G4SLU, SWM, ARROWSMITH COURT, STATION APPROACH, BROADSTONE, DORSET BH18 8PW

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# Amateur Bands

Last month I looked at two locator systems - the ITU and CQ world zones. Those zones are defined by the relevant organisations and based on geographic and national boundaries. Now, it's the turn of two grid based systems. One is an international system based on latitude and longitude, the other is a very British system based on the Ordnance Survey grid reference.

It is virtually mandatory for every radio amateur to know their location under the international system, and pretty much as important for UK amateurs to know their location using the British system.

## WAB

Let's start close to home with the Worked All Britain locator. I mentioned this locator system in last September's 'Amateur Bands', but a slightly more detailed explanation follows. This locator system is based on the National Grid Reference (NGR) grids used by the Ordnance Survey for their maps of the UK. That grid system divides the map of the UK into squares which are 100 x 100km. Each of those squares has a two letter designator.

The first letter of most UK squares is S, with those in the north having the first letter N, and those east and south of the Wash having the first letter T. Each large square is sub divided into 100 smaller squares, with 10km sides. The smaller squares have two numbers as identifiers.

A station's WAB locator consists of the two letters of the large square, and the two numbers of the smaller square, plus a three letter county or local authority designator. For example, the SWM offices have the WAB locator SZ09 POO. The best way to find your WAB locator is to look on the OS *Landranger* map covering your location. The letters for the large squares are in the corners of the map, at the sides where there is a junction of two squares, and in the corners of the squares.

Having identified which large square covers your station, look for the nearest grid line to the east, or left, of your station. Follow that line to the top or bottom of the map. The first number of that two digit reference is the first number in your WAB locator. For the second number, locate the grid line immediately to the south, or below, your location. Again follow that line to the side of the map.

The first number of that two digit reference is the second WAB locator number. An alternative way is to go to [streetmap.co.uk](http://streetmap.co.uk) and enter your postcode. Under the map, select the convert co-ordinates option. Look at the LR result which consists of two letters and six digits. The letters and the first and fourth digits make up the WAB locator. On the same table, the site gives the latitude and longitude for the postcode. Make a note of it, it may come in useful later!

To fully complete the WAB locator, the NGR component is suffixed by three letters indicating the relevant county or unitary authority.

## IARU QTH Locator - Maidenhead Locator

The universal system of latitude and longitude isn't directly used by amateurs, but the International Amateur Radio Union's (IARU) system converts a station's lat/long into a locator code consisting of two letters, two numbers, and two letters.

The system divides the world map into area or

'squares' based on latitude and longitude, with each large square being 20° wide and 10° high. Starting at longitude 180° going east, each strip of 20° is sequentially allocated a letter of the alphabet. The 20° to the west of the Greenwich meridian is allocated I, the 20° to its east is J.

In a similar fashion, each 10° strip from the south pole northwards is designated a letter of the alphabet. The strip from 50 to 60° north which covers most of the UK is allocated the letter O. Like the WAB squares, the large IARU squares are divided into 100 squares numbering from 00 in the bottom left corner to 99 in the top right. These small squares are then divided again, this time into 576 squares which are 2.5 minutes high by five minutes wide.

The bottom left square is designated AA, the top right XX. These letters are often given in lower case. Converting from lat/long to QTH locator is straightforward if a little time consuming, and does require a pretty accurate plotting of lat/long for there to be certainty that the correct locator has been found.

An easier way is to use the information from [streetmap.co.uk](http://streetmap.co.uk) that I suggested might be useful and go to <http://www.amsat.org/cgi-bin/gridconv> where your lat/long will be converted to IARU locator. The SWM office IARU locator is IO90as.

## IOTA

Islands On The Air. Again I've covered this briefly before in July's column, but a quick re-cap won't go amiss. The map of the world is divided into zones. The island groups within each zone are numbered.

There are far too many islands around the world to number each one, so a group of islands, such as the Seychelles, is given one number. In this case, AF-024. Mainland UK is EU-005. There are strict definitions of what constitutes an island, even so there are thousands upon thousands out there to be worked.

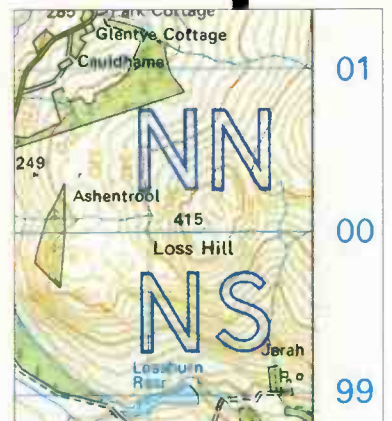
## Power Down

In the morning of November 11th, **Philip Davies** heard Australian VK3OM who was putting 400W into the feeder on 14MHz. As his QSO continued, he reduced power until his output power was down to 2W, yet still Philip was able to hear him RS 44. Fret not M3s. 10W is ample!

Other radio exotica heard by Philip: 9S1X in DR Congo (formerly Zaire), 5N0NHD in Nigeria and 3XY7C, Guinea. All three stations heard on 24MHz. Sticking with the African theme: 7X2LS, Algeria on 3.5 MHz, C56R, Gambia and XT2ATI, Burkino Faso on 20MHz, plus ZS6ADY, RSA and 5Z4DZ in Kenya on 28MHz. Guinea, West Africa, where DL7DF and his crew operated the DXpedition station 3XY7C.



Guinea, West Africa, where DL7DF and his crew operated the DXpedition station 3XY7C.



# G3

## Introducing a breakthrough

### Front Panel



An intuitive control panel features a wide variety of tuning and scan modes, memory functions, and many other facilities.

### Demodulator



The Professional Demodulator (optional) is adjustable in many respects, including the digital filter parameters.



The Professional Demodulator (optional) includes interactive block diagrams for all modes, with two real-time spectrum scopes and THD and SINAD measuring facilities.

### Spectrum Scope



The secondary wide-band spectrum scope complements the primary narrow-band one.

### Specifications

- \*Frequency range: 9 kHz to 30 MHz \*Tuning resolution: 1Hz
- \*Modes: AM, AMN, AMS, LSB, USB, ISB\*, DSB\*, CW, FM3, FM6, FMN
- \*Antenna: 50ohm (SMA) \*Dynamic range: 95dB \*IP3: +8dBm
- \*Professional Demodulator Option only

### System Requirements

- \*IBM PC compatible (CPU 500MHz or higher, PCI slot)
- \*Sound Blaster 16 (or compatible sound card)
- \*Windows 98/ME/NT/2000/XP

Specifications are subject to change without notice. WINRADIO and G3 are trade-marks of WINRADIO Communications. WINRADIO technology is protected by US Pat. No. 6,289,207 and other existing or pending patents or patent applications.  
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### UK Sales Information

Contact the authorized UK distributor

**Falcon Equipment and Systems**

Tel: (0)1684 295807

Fax: (0)1684 850011

Email: winradio@sda-falcon.co.uk

Just when you thought that there is nothing in shortwave that could surprise you anymore, here comes the new WINRADIO G303i Receiver.

This new receiver continues in the fine tradition established by WINRADIO's successful range of wide-band PC-based receivers. The "G3" stands for "the third generation": As the original, award-winning, first-generation WR-1000I receiver was the world's first commercially available wide-band receiver on a PC card when launched seven years ago, the newly introduced WR-G303i is the world's first dedicated shortwave receiver on a PC card. It is also the first commercially available receiver where the entire final intermediate frequency stage and an all-mode demodulator are entirely executed in software, running on a PC.

The advantages of this receiver are too numerous to list in this limited space: In addition to the flexible and friendly user interface of a PC-based receiver, with its numerous functions and facilities not normally available on any conventional receiver, the WINRADIO G303i Software-Defined Receiver excels particularly by the ability of its demodulators: While the Standard Demodulator provides the performance of a highly respectable shortwave receiver including synchronous AM demodulation and a real-time spectrum scope, the optional Professional Demodulator offers even more: continuous IF bandwidth adjustment (in 1Hz increments), interactive block diagrams with two additional audio spectrum scopes, and even built-in THD and SINAD measurement facilities. Additional demodulators are planned as further options, including a DRM (digital radio) demodulator.

**The WINRADIO G303i - a ground-breaking shortwave receiver that will surely amaze you.**



For more technical details please visit:

[www.winradio.com](http://www.winradio.com)

# WINRADIO

# SSB Utilities

## DTIC & ACP Documents

Following my notes about the DTIC web page in the 'SSB Utilities' December 2002, I received an E-mail from **John Stirling** saying that he was unable to access the web page. As soon as I received John's E-mail, I tried to access the web page myself, and I managed to successfully access it first time. I tried again several times over the next 10 days and all attempts were successful.

After a little research, I could still only come up with one reason as to why John was unable to see the document. The document is stored as an 'Adobe Acrobat document' (note the .pdf suffix to the last part of the web URL), and as soon as your web browser detects this, it may try to load the Adobe Acrobat program before downloading the file to your computer. This means that if you do not have the Adobe Acrobat program already on your computer, then your web browser will possibly refuse to download the file.

I would offer to download a copy of the document and make it available to readers, however, the file is very large (over 759kB, consisting of 224 pages), and you will still need a copy of Adobe Acrobat to read the file.

*Anyone, who's had problems locating the ACP113, Ships Callsign Document, can now find it located together with some other items relating to 'SSB Utilities' on the SWM website at [www.pwpublishing.ltd.uk/swm/ssbutils/](http://www.pwpublishing.ltd.uk/swm/ssbutils/) - Ed.*

## DAFIF & FIH

Last month the entire column was taken up by details of the changes to the global h.f. system operated by the US military. I mentioned that I had obtained a copy of the latest *Flight Information Handbook (FIH)*, but omitted to mention where I had got it from due to pressure of space. I downloaded my copy of the *FIH* from the Internet, from a publicly available source provided by the US Government.

The web site is that of the National Imagery & Mapping Agency (NIMA). Somewhere in the depths of their web site is a section devoted to digital products. It is now possible to download a program from this site which will allow you to create your own maps and charts containing the frequency and usage information, using information from another downloaded file. This product is known as the Digital Aeronautical Flight Information File (DAFIF).

Quoting from the web page "The Digital Aeronautical Flight Information File (DAFIF®) is an unclassified flight information database incorporating US Military-selected aeronautical data similar to that published in the DoD Flight Information Publications (FLIP)".

From the NIMA home page, I was unable to navigate through the menus down to the DAFIF pages, so I had to resort to a web search for 'DAFIF' which led me to the correct page (see 'Web Watch' elsewhere on this page for the correct URLs). Near the bottom of the DAFIF page you will see a section titled 'Planning Documents' and the all-important *Flight Information Handbook* is the penultimate item in the list.

The entire document is just under 11MB, so you will

either need a fast connection to the Internet or plenty of spare time if you want to download this file. The other documents in this part of the web page are mostly connected with v.h.f. and u.h.f. frequencies, so are beyond the scope and coverage of this column.

If you do decide to download the file, you will find that it is in the form of an Adobe Acrobat document, so you will need the Adobe Acrobat Reader program installed on your computer before you attempt to open the file. The beauty of this web page is that each time the *FIH* is updated, a new electronic version is available from the web page and can be downloaded as required.

As an aside, check out the photograph at the top of the DAFIF page which changes regularly, especially the one showing an Air France Boeing 747 landing - it is not a composite picture - and it really is that low!

## RN Frequency Changes & Callsigns

In the November 2002 *SWM* I mentioned a series of h.f. frequency changes for the Royal Navy and commented that I was not sure if the change was either permanent or temporary. Well, soon after I sent off my copy to the Editorial Offices, I heard that they were indeed intended to be permanent changes.

However, things did not quite go according to plan. After a few weeks of poor signals and communications on the new frequencies, the Royal Navy at RNAS Culdrose in Cornwall appears to have changed its mind once again and reverted back to its original frequencies!

In October **Dick Ware** alerted me to a NOTAM on the AIS web site which reported that 'Culdrose Ops' would be reverting back to using **5.696MHz** with effect from 1056 on the 21st October. Dick did say that he thought it was a strange time to report a frequency change - perhaps the RN were so unhappy with the signal conditions on their new frequency that they wanted to move back to their original frequency as soon as possible. I wonder why they could not wait the extra four minutes until 1100?

However, 'Culdrose Ops' is now firmly back on its original frequency, and the usual list of regular callsigns have all been heard since the move. However, 'Yeovil Ops' is still operating on its new frequency - **6.736MHz** - during December, so I presume that they are happier with their choice of frequencies.

I was hoping to be able to include a picture of a Royal Navy Merlin helicopter this month, but I have been unable to find a suitable picture in my filing system. Instead, I have included a suitable colourful alternative - a CH-149 Cormorant of the Canadian Forces. The CH-149 is essentially the same design as the RN Merlin, except that it is customised for SAR use in Canada.

## Web Watch

Aeronautical Information Service (AIS) -

<http://www.ais.org.uk>

DTIC web site - <http://www.dtic.mil>

Ship's callsigns -

<http://www.dtic.mil/jcs/j6/cceb/acps/acp113.pdf>

NIMA - <http://164.214.2.62>

DAFIF -

<http://164.214.2.62/products/digitalaero/dafindex.cfm>



A Canadian Forces CH-149 Cormorant SAR helicopter at the 2002 SBAC Farnborough Airshow, the Canadian equivalent of the Royal Navy Merlin helicopter.

Credit: Graham Tanner.

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# Decode

## Airnav Systems Warning

I've featured the excellent products from AirNav Systems several times in this column, but their latest offering enters a new sphere of on-line purchasing and you could easily get caught-out - one reader already has! The snag comes with their new AirNav Live Flight Tracker. This is a really powerful piece of software for aviation enthusiasts and comprises a software package that runs on your computer and interacts with on-line data servers packed with aircraft tracking information. There's a huge amount of information available and the system is probably one

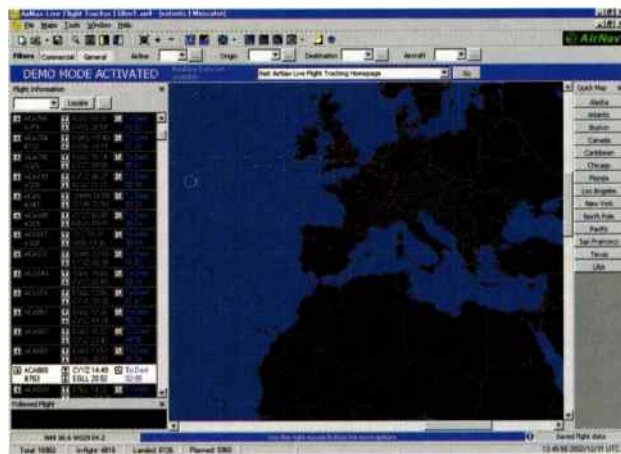


Fig. 1: AirNav live tracking in action.

of the most sophisticated tracking systems available to the enthusiast.

So where's the problem? It's all in the licence system. When you buy any of the other AirNav Systems packages you usually pay a one-off fee for a software licence. However, with the *Live Flight Tracker* you are paying a renewable registration fee that allows you to use the service for six months, but limited to 15 hours a month maximum. At \$64.95 per registration, that works out as 72 cents or 45p per hour. If you're a serious aircraft enthusiast, that's probably not too bad, but you do need to be really careful to make good use of your allowance.

If you happen to have Broadband or an Internet 'Anytime' connection that you leave open, the 15 hours ticks away all the time the software is running. As one poor unfortunate discovered, you can easily use up your entire month's usage allowance in a day or two! Using for very short periods doesn't solve the problem either, as the minimum charge is 15 minutes every time you connect. To give AirNav Systems their due, they did refund the purchase when the reader complained. If you want to see the small print, follow this link:

<http://www.airnavsystems.com/ANLV/orde.html>  
Consider yourself warned!

## Klingenfuss

It's that time of year again when the latest Klingenfuss releases hit the bookshops. The two main releases

are the *2003 Guide to Utility Radio Stations* and the *2003 Super Frequency List* on CD-ROM. The *Guide to Utility Radio Stations* continues to be the standard reference work for all serious listeners. Despite that rapidly increasing use of the Internet for information, the Utility Guide remains the most usable reference for

most listeners.

This 21st edition uses the established format, but the introduction contains some useful information of the h.f. E-mail networks that are growing rapidly. The guide is packed with a host of useful information in addition to the main 9,900 frequency main database.

One of the sections I always find particularly useful is the station list. This may not sound that exciting, but the real hidden gem is the way the list is formatted. Rather listing in station or frequency order, the list is based on countries and then sorted by service. This arrangement really speeds-up the search process. For example, if you wanted to find meteorological h.f. stations in Kenya you just look-up Kenya, then MET and you will Nairobi met listed with all its operating frequencies. This information can then be used with the prevailing propagation conditions to go straight

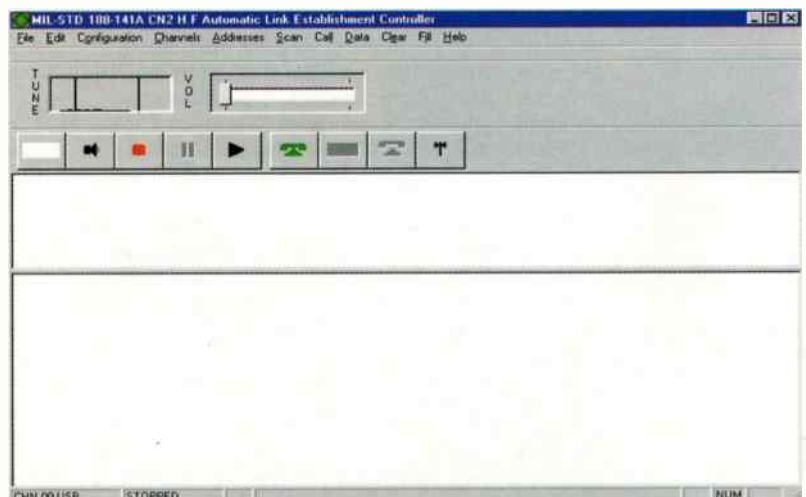
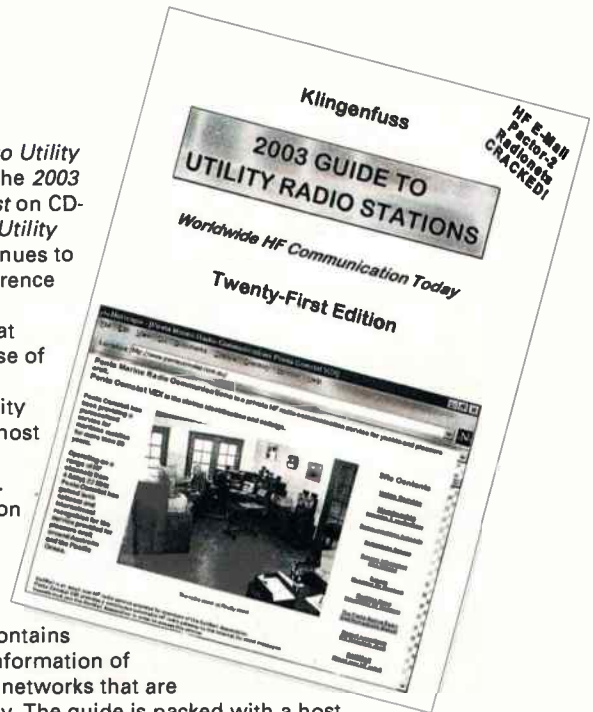


Fig. 2: Charles Brain's PC-ALE software ready to go.

to the right frequency and start receiving.

Another real timesaver is the Meteorological radiifax and radiotelex listing. This is again arranged by country, but also includes full FAX schedules, where available. The *2003 Super Frequency List* continues to improve with every edition. As well as

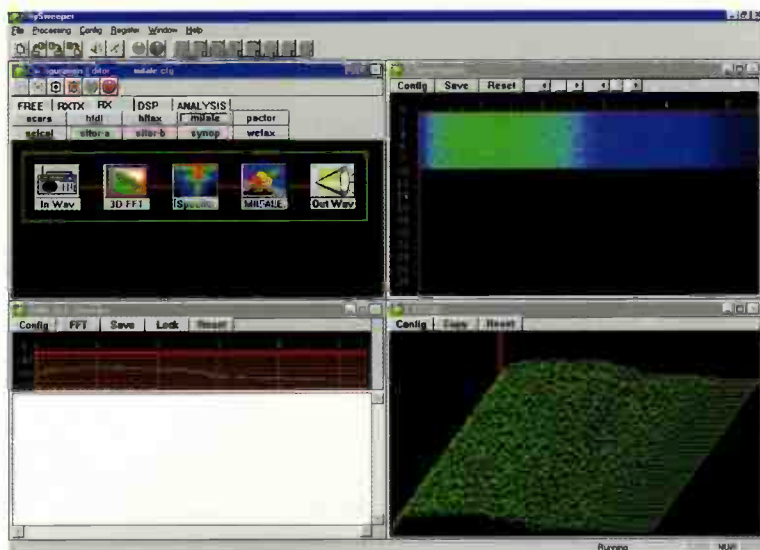


Fig. 3: Skysweeper 2.1 ready to receive ALE.

containing the huge Utility Frequency list, the CD-ROM includes the formerly active station database and the Broadcast database (2.5 to 30MHz). The original versions of the list tended to be quite slow, but this latest version is lightning fast.

The most powerful is the word search. Rather than a simple word search on a single word of phrase, you can build your own very specialised searches to dig out just what you want. For example, getting the list to search for stations with the words PACTOR and GER will extract all German PACTOR stations (five as a point of interest). This is an incredibly fast and powerful search system that really allows you to make the most of the 10,000+ frequency list.

In addition to the main frequency listings, there are a number of text files on the CD-ROM that provide details of the abbreviations used along with lots of other useful data. The *2003 Guide to Utility Radio Stations* and the *2003 Super Frequency List* is available from the SWM Book Store.

## ALE Decoding

Following-on from my ALE coverage a few months ago, I've received a number of queries from readers asking for a bit more help in getting going. If you want to try your hand at ALE (Automatic Link Establishment) the first thing to do is get yourself a decoder - the two most popular choices are: *PC-ALE* by Charles Brain - this is an unsupported shareware system that works extremely well using just a standard soundcard. The download site is:

[www.chbrain.dircon.co.uk/pcale.html](http://www.chbrain.dircon.co.uk/pcale.html)

Skysweeper, much featured in this column, Skysweeper includes MIL-ALE decoding. The download site is: [www.skysweep.com/](http://www.skysweep.com/)

Of the two, *Skysweeper* is the easier to understand and includes a host of other decoding and filtering systems, the snag being you have to pay a modest £59.99 to get a fully working version. If you want to try ALE for free, then you need to go for *PC-ALE*. This is a very capable program, but has been written for the experienced enthusiast, so you may need some help to get started.

## A Few Tips

- 1) Once you've installed the *PC-ALE*, start it up and you should see a display similar to the one shown in the screenshot, **Fig. 2**.
- 2) Next step is to check the configuration. To do this go to the menu option Configuration - Options make sure there's a tick in the following boxes. All Calls, Any Calls, Display Sounds, Listen Calls, Wild, Trace and Trace Command. This will make sure you capture just about anything that's transmitted. You can refine this later if you want to tidy the screen output.
- 3) Set your receiver to s.s.b. connect-up to your soundcard and tune about 0.4kHz below a working ALE frequency. Two fairly active frequencies to start with are 9.025 and 13.215MHz. Here are few others you might like to try: 3.137, 4.721, 5.12, 6.721, 7.632, 7.810, 8.010, 9.212, 10.392, 11.226, 13.149, 13.215, 14.580 and 15.603MHz.
- 4) The volume slider doesn't work on most systems - don't worry about this, just set the record volume on your soundcard so that the spectrum display is just starting to flicker on the background noise.
- 5) Sit back and wait for a signal. If you're not sure what you're listening for, the following link will take you to a sound sample: [www.wunclub.com/sounds/MIL-STD-188-141A.wav](http://www.wunclub.com/sounds/MIL-STD-188-141A.wav)



Fig. 4: The SCS pactor site.

Remember, you may have to be patient the level of activity varies enormously. Sometimes you will find the band alive with soundings whilst other times you may have to wait half an hour or more to get a signal.

6) Don't be confused by the right arrow play button on the program interface, this is only used if you have a compatible scanning receiver connected. The program still responds to calls even when the status line says it's stopped.

If you want to read more details there are several sites around with lots of technical data. The following link provides a clear and simple description that should get you started:

[www.hfindustry.com/ale.html](http://www.hfindustry.com/ale.html) An excellent site for ALE frequencies and network information follows: [www.chance-ortiz.org/umc/alenets.html](http://www.chance-ortiz.org/umc/alenets.html)

Of course, the WUN Club have some excellent data available at: [www.wunclub.com/files/aleinfo.html](http://www.wunclub.com/files/aleinfo.html)

■ PETER BOND, c/o EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: skyhigh@pwpublishing.ltd.uk

# Sky High

I am always grateful to our readers who send in information and questions, whether via letter or E-mail, but I must just remind everyone to please keep the information to airband related subjects. A couple of readers regularly send in lists of aircraft movements and serials, which whilst interesting, contained no callsign or frequency information and so places them beyond the scope of this column. Also, please note that all replies to letters and E-mails will be via the column.

## Searching

An E-mail from **Graham R.** suggests an interesting variation on searching for frequencies. Graham writes, "I have been an airband listener for eleven years and a reader of *Short Wave Magazine* for three years and I thought I would pass on some of the methods I use for searching the airbands, as far as I am aware I have not seen this system mentioned in the 'Sky High' column".

When Graham started out, he used an AOR AR3000 as his airband base station and four years later he added a another second-hand AOR AR3000, but this time the AR3000A model. Last Spring he was left some money which enabled him to fulfil his u.h.f. searching requirements. So, over the next couple of months he sought out two further reasonably priced second-hand AR3000A's to bring his listening post up to a bank of four radios! (I have to presume that he must be a great fan of the AOR AR3000).

As Graham says, "I realise that not everyone could afford to do this, but it is something I have always wanted to do and I still thought it was worthwhile to pass on my methods to *SWM* readers".

Several years ago Graham read a book from the library on surveillance techniques, (he can't remember the title), which gave him the following idea. Like many airband listeners, whenever exercises were taking place he would scan his preferred memories on one radio whilst searching the u.h.f. airband on the other, but the surveillance book gave him a new idea.

Graham split the u.h.f. airband spectrum into four as follows: 225.0-269.0, 269.025-313.0, 313.025-357.0, 357.025-399.975. The four frequency ranges were then programmed into the search banks of each of the four radios and each radio was then set to search. This then means that during an exercise, a full search of the u.h.f. airband is completed four times quicker than normal.

Graham comments that it can get a bit hectic during a busy exercise if all four radios lock on at once, but varying the delay settings helps you to keep track of things. He reports that this system works very well and he is very pleased with the results identifying active and occasionally new frequencies. Incidentally, he also mentioned that he tried a similar search on the much smaller civil airband, but with so many more active frequencies, there was almost too much activity to keep track of.

I use two base stations at home and logically you could of course split the search into two sections,

but it would not be as effective as four! It may well be an obvious way to proceed into the world of comprehensive searching, but as most of us do not have access to more than one or two radios, it may not be perhaps as obvious as it seems. Thanks for your E-mail Graham - now where can I get the cash to buy six R8500s?

## Coltishall

**Don W.** writes to me and comments that although he now lives and works in Cambridge, his home town is Norwich. His old local base, Coltishall, doesn't seem to be mentioned very often in the column, so on a recent trip to the family home, Don confirmed a few Coltishall frequencies for *SWM* readers. They are as follows:

MHz	Use
122.100	Tower/Ground
123.3	Radar
125.900	MATZ
254.250	PAR (2)
275.975	PAR (1)
293.425	MATZ
315.325	Approach
339.950	Tower
342.250	Radar
358.875	DATIS
387.775	Ground
233.700	6 Sqn Air/Air
255.750	41 Sqn Ops/'Redbird'
268.600	6 Sqn Ops/'Canopener'
292.450	54 Sqn Air/Air
372.350	54 Sqn Ops/'Lion'
389.350	41 Sqn Air/Air

Jaguar callsigns noted on his trips home during 2001 and 2002 have been: BLACKCAT, BOBCAT, BOXER, CANON, COLT 01-99, COLT 600-620, CRESTA, GROUSE, HAVOC, KODAK, OUZI, REBEL, RIPSAW (exercise?), SAINT, TURBO, VIKING, WILDCAT. Thanks for the information Don, if anyone can add to the list of callsigns, please let me know. Finally, according to my records, the Digital ATIS on 358.875 is a new frequency added in the Autumn of 2002.

## Swanwick

A number of recent E-mails have shown that you are all very keen to find out more about the introduction of 8.33kHz spacing into the UK. Unfortunately, I can tell you no more than the previous 'Sky High' columns have stated. The introduction is still expected after Easter 2003, (Sunday April 20th), so any new information will probably not appear until at least the April edition of *SWM*, (published late March).



The new Centre at Swanwick continues to have problems with communications to aircraft suffering from interference problems. Some frequencies have been reported as behaving erratically and even cutting out for brief periods. There also appears to be a problem reading the labels on the radar screens. The new centre, it seems, is unfortunately continuing to be plagued with a variety of problems.

## Company Freqs

Following up to requests for information in a recent 'Sky High' column from **Robby** of York. **John R.** from Tamworth confirms that Coventry are still using 130.625 as an operations frequency. The airline Air Atlantique, (or Atlantic Air Lines, ICAO code AAG), use this frequency for air/ground operations. John also comments that he uses a Fairhaven RD-500 for airband listening and feels it is worthy of a mention in the column. He says it performs admirably across all bands including v.h.f., u.h.f. and h.f. and is well worthy of consideration as an airband base station. This is not a set I personally have used, but I have heard other favourable comments, if you use an RD-500, drop me a line and let me have a brief summary of its performance on the airbands.

**David K.** reports that 122.35 Hunting Air was the company frequency for Hunting Cargo Airlines, (formerly Airbridge Carriers), operating out of East Midlands. Around 1999 they were bought out by Safair and renamed Air Contractors and now operate out of Dublin, mainly flying for DHL. As far as he is aware, they still use 122.35 as a company frequency.

**Andy B.** confirms that 129.7 is still the company frequency for Inflight at Stansted. He also adds that 131.475 is in use for airline operations at London City airport by the London City Jet Centre and is shared with Servisair. (Servisair's national operations frequency is 130.6) - thanks to all of you who replied, I have passed the information on to Robby.

## Hijack

Thanks to **Colin**, **Jim** and **Neil** who all commented on the WACARS Hijack message that I mentioned in the December issue of SWM. Colin expands at length, (too much to include here, but thanks anyway) and concludes that this is a WACARS glitch.

He notes that from his records that messages within that time period were normal with no mention of a hijack being in progress or over. Colin says, "As there has also been no mention of a hijack on any news program we must come to the conclusion that this message was either sent in error or was some kind of test, although a test would probably show a different flight number so an error looks the likely culprit".

Colin, continues, "as Ken W, the originator of the hijack message, is obviously into the hobby of ACARS, can I invite him along with any other interested SWM readers to join our ACARS news group. On this group the hijack and other ACARS subjects can be discussed at length and it is a good place to pass on your ACARS experiences to others. The owner of the group is **Mark Avey** and it can be found at [www.acarsonline.co.uk](http://www.acarsonline.co.uk) Thanks Colin.

## Mildenhall

As I write this a week before Christmas, the news is dominated by the Arms Inspectors and the Iraqi arms dossier. (How do you manage to write a report on your countries arms that runs to 12,000 pages?). I am not a betting man but if I were, I would suggest that some sort of conflict in Iraq is most likely to take place in the next few months. If that is so, then the Air Show planned for May 24 and 25th at Mildenhall will almost certainly be cancelled. With the airfield currently planned to be closed in 2004 for Runway resurfacing, we will be without the UK's second largest air show for three consecutive years - let's hope I'm wrong.

A local contact who regularly monitors Mildenhall comments that the large percentage of AMC traffic, (Air Mobility Command), especially C-17's now seem to routing through Germany rather than the UK. Ramstein and especially Frankfurt are receiving large numbers of C-5s and C-17s whilst they are almost a rarity at Mildenhall.

A quick check on one recent months movements showed just three C-5s and no C-17s passed through Mildenhall, whilst Frankfurt had 23 C-5 and 42 C-17 movements during the same period. Why the big switch in emphasis in transport movements? Is it security, work in progress at Mildenhall or just logistics? Any comments anyone?

**Our photograph this month shows an early visit to the UK by a C-22A, (Boeing 727). Seen here on the Thursday arrivals to Mildenhall Air fete in May 86, this aircraft has now retired to the AMARC.**



# 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.

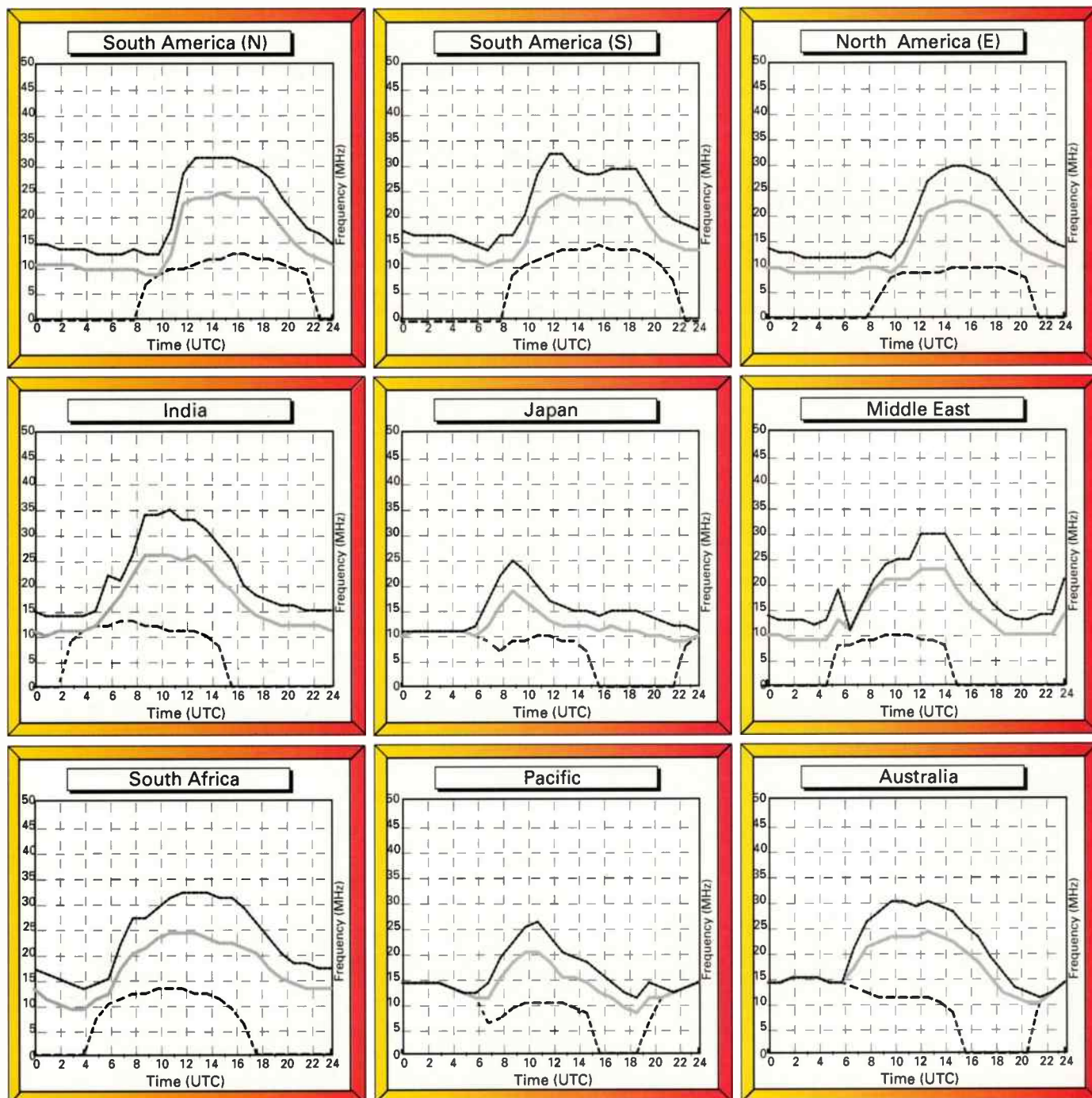
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

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.

February 2003  
Circuits to London

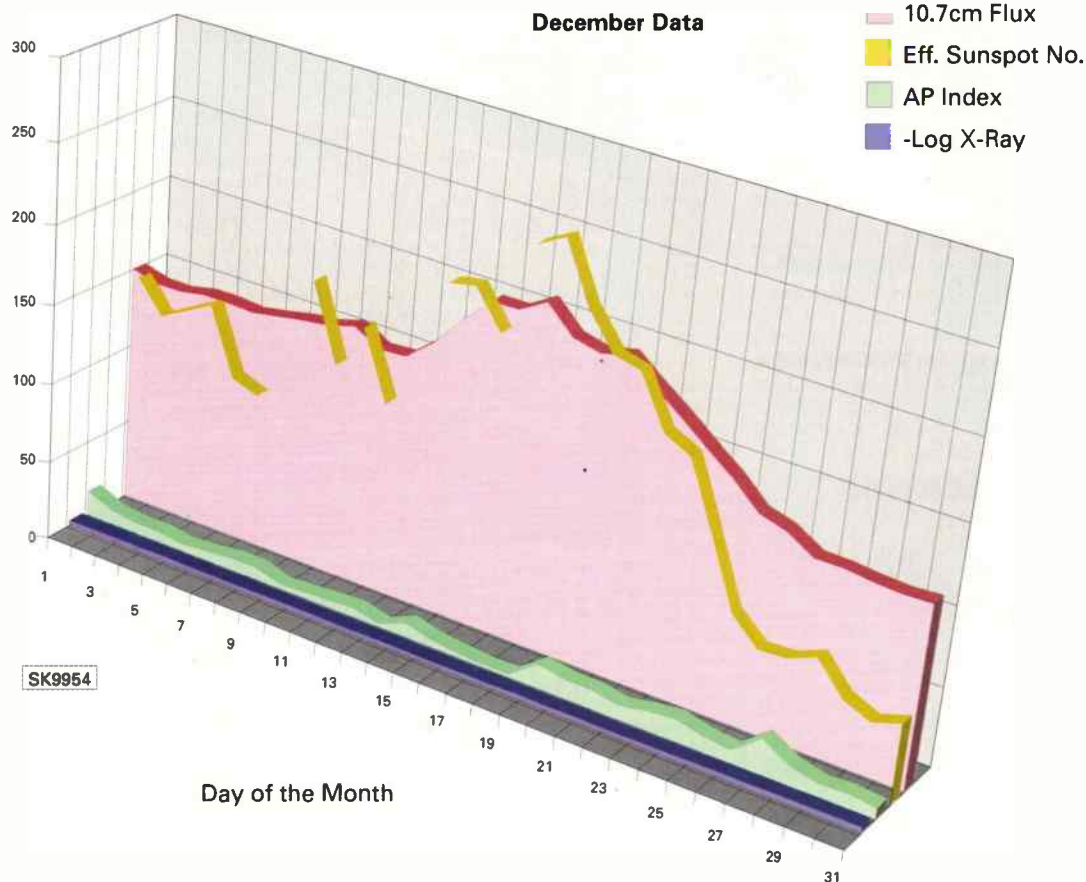
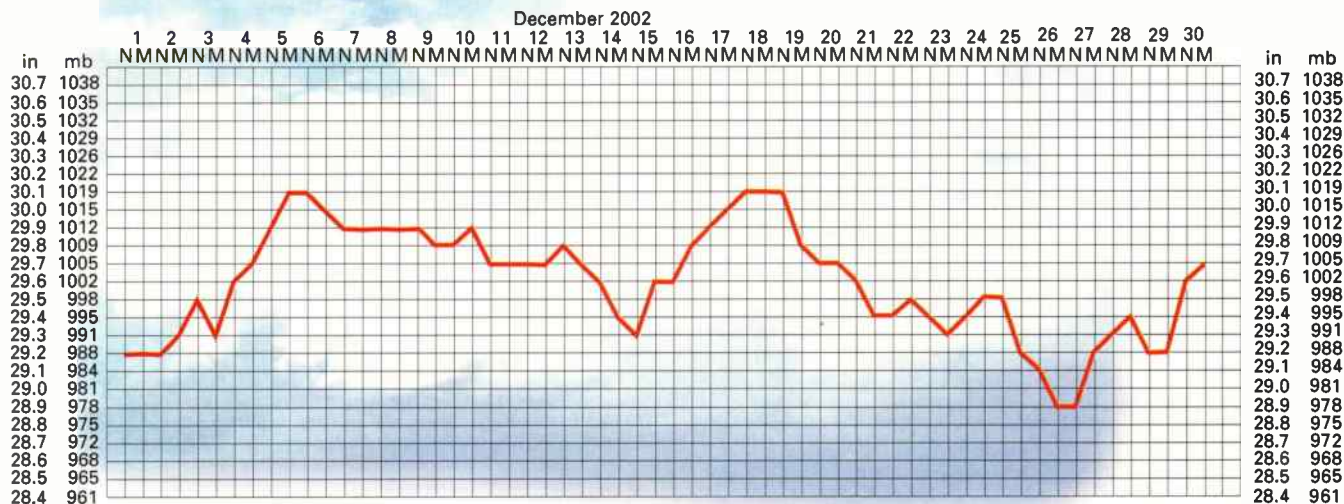


SK9953



# Propagation Extra

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

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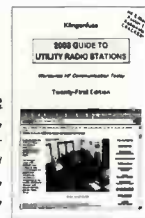
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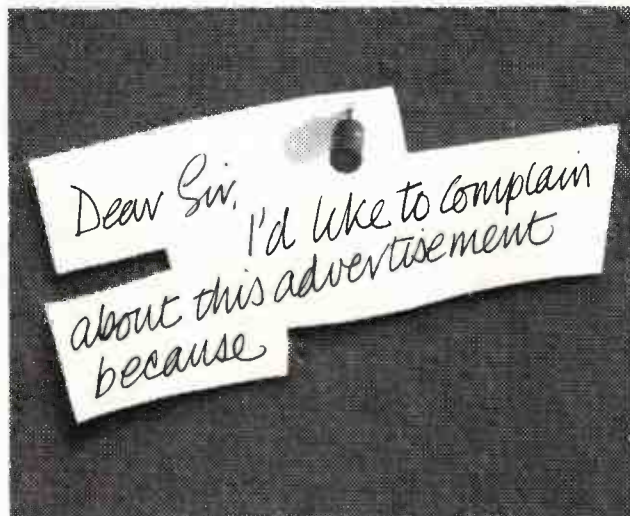
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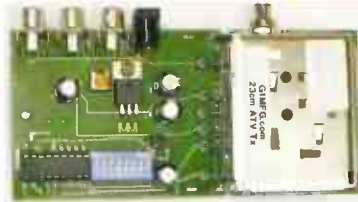
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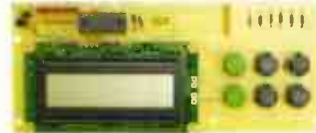
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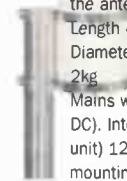
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2.5-4dB -2000MHz
- 3rd order IP** +38dBm typical  
PidB = + 22dBm
- Output impedance** 50-75 ohms coaxial
- Connector standards** N type connector at the antenna. BNC male connector to the receiver
- Power supply** 12V DC at 160mA DC. Power supply for 230V AC is delivered comes with the antenna
- Dimensions** Length 450mm.  
Diameter 90mm
- Weight** 2kg
- Accessories** Mains wall plug adaptor (230V A/12V DC). Interface unit (remote supply unit) 12m coaxial cable and mast mounting clamps



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# Info in Orbit

**T**his month I can report on the results from my new (RIG) weather satellite (WXSAT) antenna and breathe a sigh of relief that the new METEOSAT Second Generation (MSG-1) WXSAT tests are back on course.

## New WXSAT Antenna

Earlier this year I decided to buy a new antenna for receiving a.p.t. (low resolution images). Yes, I do have an h.r.p.t. (high resolution images) receiving system, but I anticipate transmissions on 137.40MHz from OKEAN and similar resources satellites becoming available again in the future. Also, *METEOR 3-5* is still active on 137.30MHz, and I don't monitor every h.r.p.t. transmission - so a new antenna has been on my shopping list for some months.

As a member of the Remote Imaging Group (RIG), I was aware that they try to keep stocks of WXSAT accessories for members, but during the summer I rang and discovered that they were out of WXSAT crossed dipoles. **Clive Finnis** now looks after the RIG shop and responded to an E-mail request sent in late November, advising me that they had plenty available, so I ordered one. By chance, a friend of his was passing near my area, so the antenna was personally

delivered the following afternoon!

The antenna package is delivered in kit form, comprising the main aluminium dipoles, with the top four already fitted to the top end of the main axis, angled for transport. The lower two dipoles are full length and are attached 'in the field'. Two lengths of 75Ω cable are included, the shorter is the phasing harness, and the other is the download connection. Instructions are included.

The first job is to prepare the ends of the harness cable by carefully cutting back the outer cover (sheath) by 35mm at each end. It is important to cut this precisely, and to carefully avoid damaging the braided copper earth wires. I used a sharp knife and slowly turned the cable until I completed a circular cut. With gentle persuasion, the outer sheath came off. The copper wire outer braid was then carefully separated all the way back to the 35mm cut, and I then carefully twisted them around to form a thicker cable. Both ends are prepared in the same manner.

The next part is to cut back a further 15mm of

the inner insulating sheath to leave the inner copper core ready for connection. The first end is connected to the top dipole, as shown in the instructions, and the other to the lower dipole connector.

I found some difficulty in trying to connect the two earths in the narrow hole in the pillar in the lower connector. The earth braids are relatively thick, so I connected one to the pillar, and then very carefully wrapped the braid from the remaining cable around the connected braid. I then crimped the braids lightly and wrapped a small piece of stretched insulating tape around the two, within the connector box. After gently tightening all the screws, I wiped some petroleum jelly around the inner plastic and around the join, and then fitted the covers. I also put a circle of insulating tape around the exposed plastic join. This tape is the special type that you pre-stretch before fitting, and it melds into itself with time, making a perfect



Fig. 1: NOAA-15 1811 28 November 2002 infra-red channel.



Fig. 2: First data bands from MSG-1 - image copyright 2002 EUMETSAT.



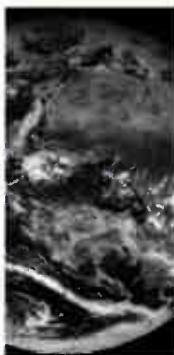
Fig. 3: MSG-1 synthesised colour - image copyright 2002 EUMETSAT.

seal.

With the cables connected, the final job was to fit a connector on the download. Back in 1985 when I constructed my first cable for 137MHz, I was told that one **had** to use N-type plugs (and sockets). Oh dear! Despite having some familiarity with soldering during my previous career, I found the preparation of H100 cable for N-type plugs

to be near impossible. The braid was surrounded by the strongest outer covering material that I had ever tried to cut. The inner copper conductor was thicker than the pin into which it had to be fitted. A quart does not fit into a pint pot!

The task was only completed by scraping some of the copper away (!) and damaging the outer braid - a very unsatisfactory process. I later bought a prepared cable, consequently discovering that there is more than one standard N-type plug! A few years later, F-type connectors were being used for satellite television cables and Timestep were



**Fig. 4: MSG-1 high resolution visible - image copyright 2002 EUMETSAT.**

incorporating them in new systems. These connectors are now easily obtained and are simplicity to fit!

I fitted one to the download; the outer cover was paired back about the length of the plug, and the outer sheath carefully separated. I then wrapped one thickness of tape around the cable in order to provide a firm grip when the plug was screwed onto the cable. The inner sheath was cut to expose a length of central core - the exact amount determined by experiment. The braid was gently eased backwards and the F-type connector gently screwed over the braid. Some small trimming was completed, and then a circle or two of stretched tape wrapped around the plug to seal the cable side.

The cable lead to the receiver already has a similar F-type connector and I found my plug-to-plug adapter dangling on the end of the old crossed-dipole. After some cleaning, the connections were completed and the antenna mounted on the ground test mast. RIG supply a mounting kit with the antenna.

The first pass was a low elevation NOAA-15 easterly pass and despite the trees and bushes that nearly surround me at low level, the a.p.t. signal was heard within a minute. I monitored the next NOAA-15 pass - see Fig. 1.

Since that pass, I have routinely collected many more. Later passes proved that the antenna works fine. Its

new destination is alone on the roof, but not before a few more tests. Meanwhile, Clive points out the new RIG address: **Remote Imaging Group (RIG Shop), PO Box 137000, Wimborne BH21 7XN, United Kingdom, Tel: +44 (01202) 894033 (0900 - 1700), Fax: +44 (01202) 893323.**

The RIG shop telephone is actually answered by staff working for a private company, but they have kindly agreed to take orders from RIG members, as long as no technical information is requested.

## Commissioning Of MSG-1 Continues

Information about the progress of the commissioning of MSG-1 (METEOSAT Second Generation) was rather slow in coming out, following the pause for problem analysis. The official handover from ESOC to EUMETSAT was

completed on 25 September 2002, but the start of commissioning phase A (the Geostationary Earth Radiation Budget (GERB), IQGSE Imaging and Image Calibration & Product Dry-runs) was suspended between 17 October and 26 November.

The first image was taken on 28 November 2002 and we were able to include it in last month's column. After reception of these first sets of SEVIRI (Spinning Enhanced Visible and Infra-red Imager) data in the EUMETSAT ground centre in Darmstadt, there will be something of a pause. Unlike satellite projects where all parameters of the transmission are known, MSG-1 data is different. A significant number of parameters have to be determined, and the processing algorithms for image rectification have to be tuned. For this reason, no rectified image data from MSG can be made available within the first two months after the

first images have been taken. Consequently, in the early phase of SEVIRI imaging, only a few selected sets of raw images from MSG are expected to be made available in the form of single 12 channel data sets via the EUMETSAT web site. During December 2002 and January 2003, the first rectification trials are being conducted. In the beginning, the images will be rectified to a sub-satellite point of 10.5°W. Some of these sets will be made available in January via the EUMETSAT web site as well.

**Figure 4** is the broadband visible channel, comparable to the current METEOSAT visible channel, but with an improved sampling interval of just 1km, compared with METEOSAT-7's 2.5km. However, don't get too excited thinking about setting up an LRIT system for this: it will only be carried on HRIT, and for all but a few, this is not likely to be a realistic proposal - at least for a few years.

The dissemination of level 1.5 images based on IQGSE (rectified images) remains to be determined. By the end of May 2003 we should reach the end of commissioning phase A, and the start of commissioning phase B (Core Imaging Tests and Image, Calibration & Product Validation Tests). The end of commissioning phase B and the start of routine operations should arrive by the end of 2003.

My thanks to EUMETSAT for providing the information and images.



**Fig. 5: NOAA-175 December 1025 from Kevin Hughes.**



**Fig. 6: NOAA-175 December 1025 h.r.p.t. close-up of Britain.**



**Fig. 7: Mike's QFH helix home-brew antenna.**



**Fig. 8: NOAA-1727 November 2002 1817 low elevation pass from Mike Grainger.**

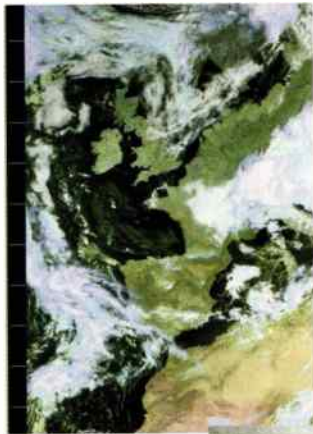
## Clear Skies

After a long run of wet weather, early December saw short runs of sunny days and some clear nights. **Kevin Hughes** of Tamworth received **Fig. 5**, an a.p.t. image from *NOAA-17* on 5 December, showing Britain basking in sunshine between two cloud systems. By chance, I collected the h.r.p.t. (high resolution) image of the same pass - see **Fig. 6**. This particular evening pass showed me that there would be at least a few hours clear skies for me to use the telescope.

**Mike Grainger** routinely records images at his station in Shropshire. He uses a **Paul Hayes Q** helical antenna (see **Fig. 7**), a Timestep pre-amp, and good quality, double-insulated satellite cable (about 10-12m) feeding a home-built RX2 (the weather satellite receiver designed and sold by RIG), plus much of **David Taylor's** software.

**Figure 8** is unusual in coming from only a 5° elevation pass-over the north-east. Mike points out that two factors - a good antenna and good quality cabling - can make a significant difference to reception. The last time that I used a pre-amp was when I first started imaging back in the mid-1980s, but within a few years, pagers and other interference persuaded me to remove it on the next antenna service. If I was a 'roof' man, I would try a pre-amp for a time, to see whether the local 'radio' environment was conducive. At £35 or so a visit, I am not sure that I want to try the experiment.

**Figure 9** is interesting. This shows clear reception from the late morning *NOAA-17* pass, starting from 1.8° elevation in the north, through 69° maximum elevation, and ending at 3° elevation in the south.



**Fig. 9: NOAA-17 24 September 2002 1037 - see text.**



**Fig. 10: Oil slick off the Spanish coast - copyright ESA.**

Radar (ASAR) onboard the spacecraft, launched by ESA last March. The ASAR was operating in its wide-swath mode covering an area approximately 400 by 400km.

ENVISAT data copyright ESA 2002. Distributed by RADARSAT International, a subsidiary of MacDonald Dettwiler and Associates (TSX:MDA). Image by Stormcenter Communications.

## Next Month

I hope to report on the December WXSAT meeting held in Florida, USA, at which the new technology for the digital WXSATs was discussed and at which new products were scheduled to be announced.

the QFH than with the 'conventional' crossed-dipole. As with any technical hobby, it can be of great interest to try both types.

Briefly, to use *NOAA-Plot* we start by producing a *wav* file from one of the recording programs, for example *wxsat*. This is processed using the registered version of *SatSignal* to produce a *telem.dat* file. The more passes you complete, the more data you get to analyse the antenna. *WxTrack* is used to obtain corresponding *pass.dat* files. The *NOAA-plot* program reads *pass* details from both *Wxtrack* and *SatSignal*, and plots signal quality as a function of the range and bearing from your location. By building up such data over a sequence of satellite passes, you can build up a picture of the antenna polar diagram, and detect any nulls in the antenna's response.

## The Oil Slick

Cloud cover lasting days, and seemingly weeks, prevented me seeing whether WXSAT images could capture a view of the oil slick that was developing off the coast of

Spain. The European Space Agency's (ESA) ENVISAT satellite acquired a radar image - see **Fig. 10** - of the oil slick, stretching more than 150km, on Sunday, 17 November at 1045. The image was captured by the Advanced Synthetic Aperture

Radar (ASAR) onboard the spacecraft, launched by ESA last March. The ASAR was operating in its wide-swath mode covering an area approximately 400 by 400km.

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a.p.t. (low-cost, low resolution reception systems)

*NOAA-12* and *NOAA-15* transmit a.p.t. on 137.50MHz.  
*NOAA-14* and *NOAA-17* transmit a.p.t. on 137.62MHz.  
 (during overlap periods, the secondary WXSAT a.p.t. may be switched off).  
*METEOR 3-5* usually transmits on 137.30MHz when in sunlight.

h.r.p.t. (high resolution systems)

*NOAA-12* and *NOAA-16* transmit h.r.p.t. on 1698.0MHz.  
*NOAA-14* and *NOAA-17* transmit on 1707MHz.  
*NOAA-15* transmits on 1702.5MHz.  
*FENGYUN-1C* and *-1D* transmit on 1700.5MHz.

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# Satellite TV News

It's a pretty violent world we live in, as I type these opening lines at 2015 December 9th there's a locked-off camera shot of Amman, Jordan - awaiting the newsmen to present his report - this downlinked via the Linx SGN unit for 'Fox News' over the Eutelsat SESAT 36°E satellite. Usually the 10.960GHz-vertical (SR3258 + FEC 5/6) downlink is uplinked out of Jerusalem, but with the 'situation' tense in Iraq, UN arms inspectors *et al*, Fox News made the decision to introduce reports from Jordan - which borders onto Iraq.

Checking the 'Iraqi Space Channel' typical output over the 26°E Arabsat downlink on 11.747GHz (SR27500+FEC 3/4) at this time only shows the usual sabre rattling, military content with Saddam ever present and prolonged studio discussions. The coalition air strikes that zapped Iraqi military positions killing four people co-incident with the UN inspectors arrival was of course given extended coverage as were the funerals.

Over this same period, the Mombassa terrorist bombings claimed nearly 200 lives, live images from the carnage were relayed into European news rooms via the 'GlobeCast Africa' lease over Europe\*Sat-1 at 45°E using 11.513GHz-V (5632+3/4), this and the Moscow/Chechyan terrorist siege makes for an ongoing violent world...if war breaks out in the Gulf then both SESAT and Europe\*Star will be prime sources to monitor for raw news feeds.

Terrorism, drama in Spain which eventually was found to be a single armed young man taking many children hostage in a school, November 18th. The Spanish Hispasat satellite slot at 30°W came to life with various downlink news feeds, coverage of the school buildings, the police, negotiators and ambulances standing ready...fortunately this didn't become another Dunblane. In total, four downlinks were noted - 11.645GHz-V 'TRADIA 6Mbps'; 11.682-V 'SERVICE 1'; 11.667-V 'TRADIA'; 12.707-H 'MTV BCN'. All ran SR4500+3/4 other than 11.645 - 5632+3/4.

The wandering 'NON CAT THAILAND' uplink that carried much of the Bali bombing footage over 45°E has appeared in recent times on SESAT 36°E both at 11.510GHz-H and 11.510GHz-H (both 6117+3/4) carrying as a specific news feed the main Pakistan TV news (PTV) in its entirety and then 'cutting carrier'. I've seen PTV at both 1900 and 2000, though a few months back when the PTV news was fed over 45°E by 'NON CAT...', the transmission appeared perhaps three to four times a day - where the signal is intended for isn't known, perhaps a cable channel?

Mid November and the Pakistani government were swearing in the new civilian administration, Roy C. caught 'PTV' Pakistan TV ex Karachi transmitting the occasion which was uplinked back into Europe over Eutelsat W1, 10°E (12.729GHz-V, 5632+3/4). 'SATLINK' this time the uplinker. Interestingly the next day W1 carried a news feed ex Beijing from the Chinese National TV channel, the content for the controversial Arabic 'Al Jazeera' TV channel. As with Pakistan, there has been a change of power within the upper echelons, wheeling in a much younger leadership and wheeling out the old guard. This feed from 'CCTV1' was on W1, 12.739GHz-V (5632+3/4).

Whilst way out orbital East, Edmund Spicer (Littlehampton) advises that there are strong signals downlinking from the 33°E slot. These originate from the older Hotbird 5 ex 13°E which now moved along to 33°E has been re-incarnated as Eurobird-2. Carriers have been received across the band, but he found 11.681GHz-H locking at SR30000 very strong - it's rumoured that the future life for Eurobird-2 will be multi-media, broadband and data/Internet and 'interactive' use rather than TV.

Perhaps indicative of assassination caution, security camera surveillance of a President Bush drive either to or from the Senate, December 2nd, was seen over 'BTBA Washington Stream 1' - 11.690GHz-H (5632+3/4) on NSS-7, 21.5°W. Unlike previous drives which have been more leisurely affairs, stopping at intersection lights, etc., the procession drove at speed with police blocking all access points, traffic lights, etc. giving uninterrupted passage for the fast moving cavalcade - in fact, the speed was such that the rear Jeep hand-held camera had great difficulty in maintaining images of the President's limo!

All presidential motorcades include video surveillance from a rear vehicle, mainly a camera wide shot on the President's car

and occasionally a switching error allows the pictures to be seen over the Atlantic circuit!

Whilst musing over the fortunes of NSS-7, a new channel bouquet appeared during late November provoking a degree of excitement! Conducting a 'scan' over the Ku-band of 21°W and activity was found at 11.490GHz-H running (SR13343 + FEC 3/4), four channels were 'up' identifying as TFC; ANC; ABS1 and ABS2. At that time, only ABS2 had video activity, namely a test card 'ABBS-CBN This is a test broadcast...'

Interestingly, a few days later this carried a large dish photo inlay and the ident 'ABS-CBN UPLINK QUEZON CITY PHILIPPINES'. A few days more and programming appeared with an inlay ident 'The Filipino Channel' and confirming yet another test transmission. A check on December 10th showed that the bouquet had disappeared.

A few months ago on NSS-7 there appeared several exotic African channels under the 'NATIONS' ident and also disappeared as mysteriously as they appeared! MPEG 4:2:2 feed signals appeared at 11.550GHz-H (13343+7/8) late November with WSHT05 and WSHT06 service idents which appeared as the usual pixelated images. Meanwhile, at 11.154GHz-H (13343+3/4), again using MPEG 4:2:2, three channels appeared - NS A1; NS A2; NS B1. At the time of writing, these are still present and offer on certain MPEG-2 receivers, a 1kHz tone + video as broken images which can be seen as a test pattern - these are 'EBU NEW YORK' news feeds (Roy Carman advises who can now resolve 4:2:2 using his computer) and have moved to NSS-7 from leased space on Intelsat 605 at 27.5°W.

Curiously in the 'old days' of a decade ago, the 'EBU NEW YORK' news feeder 11.475GHz over 27°W was a major carrier into Europe. **Please note** - the above NSS-7 receptions mention an SR13343 as locked up on my RSDs in auto search, the Nokia 9500 with Dr. Overflow locks up as SR13333. This indicates a fairly wide 'pull-in' locking range for auto SR which may not happen on all receivers.

It's an unfortunate fact that an increasing number of broadcasters are opting into MPEG 4:2:2 usage on their satellite linkups, checking on Intelsat 801 at 31.5°W recently revealed that French are now using 4:2:2 - there are no 4:2:2 receivers available in Europe at this time other than specialised 'professional' equipment which usually requires manually setting to one-off specific technical parameters and are hideously expensive.

November into December and the Islamic fasting period of Ramadan at Mecca, Saudi Arabia, was carried extensively over Arabsat 26°E capacity. Most channels carried pictures ex Mecca, Saudi TV Channel 2 (11.747GHz-V, 27500+3/4) seemed to transmit total coverage from Mecca. Excellent Arabsat 26°E quality pictures are easily received in the South UK using a 1m dish/0.5dB noise LNB - most Middle East countries are available from the 26°E slot.

'SERVICE 1', the news carrier lease for 'CNN NEWSOURCE' @ 11.563GHz-H (6117+3/4) on NSS-7 transmitted coverage of the Soyuz supplies flight docking onto the ISS and departure there from back to Earth in another Soyuz craft, the newly arrived Soyuz is seen still tethered to ISS - the ISS can therefore dock at least two Soyuz craft simultaneously. This output from NASA-TV included live output from the Russian flight control centre, Korolev.

Live pictures from ISS as the Soyuz drifted away into the blackness of space and into the two hour trip back to Earth. November 22nd and more of NASA-TV and the boarding and launch of the Endeavour Shuttle up to the ISS with an exchange crew.

November 25th launch of the latest SES Astra 1K via a Proton-K rocket ex Bakinour went 'phhuut', ending up circling some 300km high rather than the intended 35000km slot. The launch broadcast of the heaviest satellite to date was carried over several international leases including 'Astra Vision' on 19.2°E, 12.552GHz-V (22000+5/6). A late development (December 9th) suggests the 'Orbital Recovery Corp' may attempt a rescue mission via its new 'space tug' - called the 'Geosynch Spacecraft Life Extension System' - to push the ailing 1K into its correct orbital position. We wish them well.



The occasion of Ramadan at Mecca, Saudi-2 TV via Arabsat.



American ice-hockey via Atlantic Bird-1, 12.5°



Soyuz drifts into the blackness of space on the trip from ISS back to planet Earth.



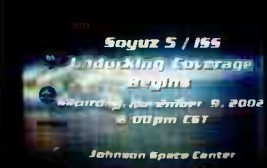
Soyuz moves away from the ISS as viewed from the docking bulkhead camera.



The Russian Soyuz/ISS control room, note adverts!



Family portrait, the Russian crew aboard the ISS.



NASA-TV caption (NSS-7)



Evening at the Cape as the Shuttle awaits lift-off.

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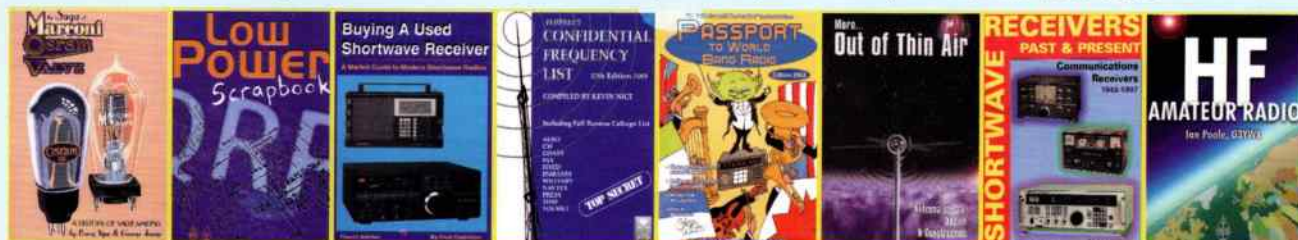


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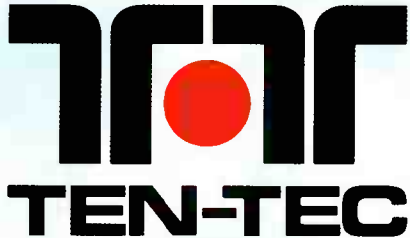
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<b>1064</b>	smart squelch for receivers .....	£16.50 (B)
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<b>1000A</b>	kit enclosure - standard .....	£13.00 (C)
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<b>1000C</b>	kit enclosure - deluxe .....	£18.95 (A)

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**RX-350:** The Ten-Tec RX-350 is a full featured, mid-price range HF DSP receiver, on-screen band activity display adds a new dimension to locating transmissions and tuning the receiver, 34 DSP bandwidths provided, noise reduction etc. *Extensively reviewed by John Wilson, SWM September 2002.* **£1,099 inc VAT\***



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*John Wilson, SWM April 2002...Third order intercept point measured at a nominal 14MHz was +15dBm with a 50kHz signal spacing... Dynamic range was 98dB... A serious HF performer, RX-320 £249 inc VAT\**



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