

# The SHORT WAVE Magazine SWM

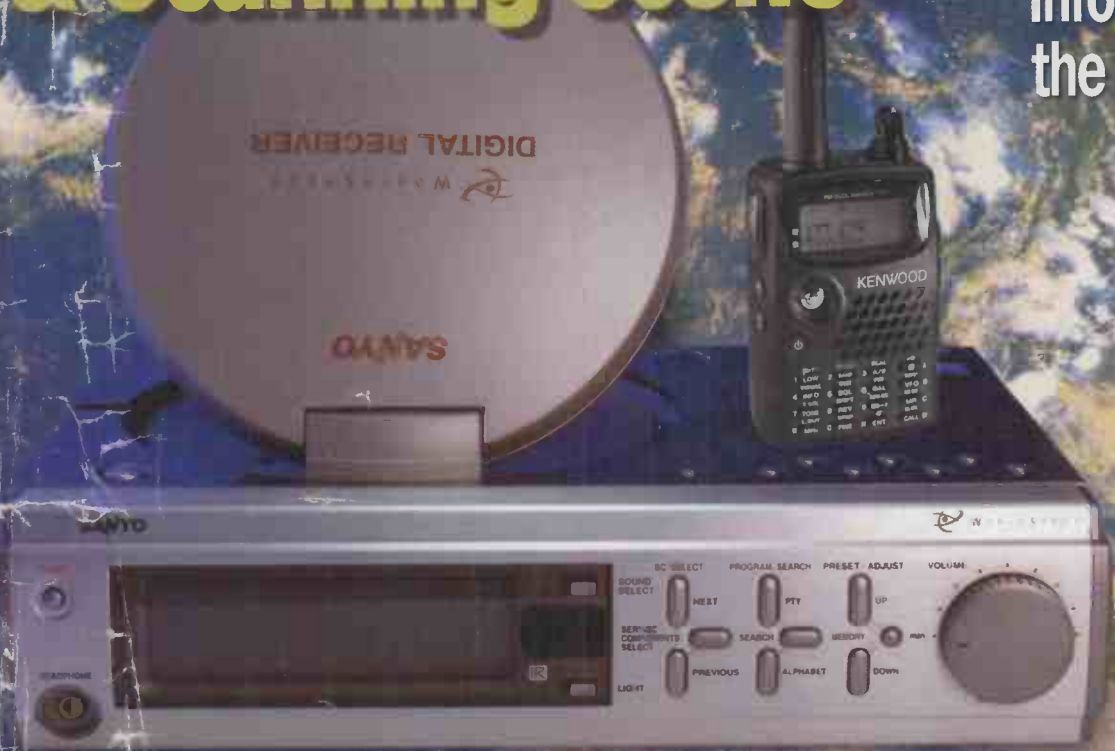
## Info in Orbit SPECIAL

### & Scanning Scene

- Setting up a WX Station
- Digital WXSATS
- 'Info in Orbit' the Column

### plus regular features...

- Broadcast
- Satellite TV
- WXSATS
- Data Modes
- SSB Utes
- DXTV
- Amateur Bands
- Propagation
- Pirates
- Numbers Stations



reviewed this month

## Kenwood TH-F7 & Sanyo WS-1000

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- S Meter
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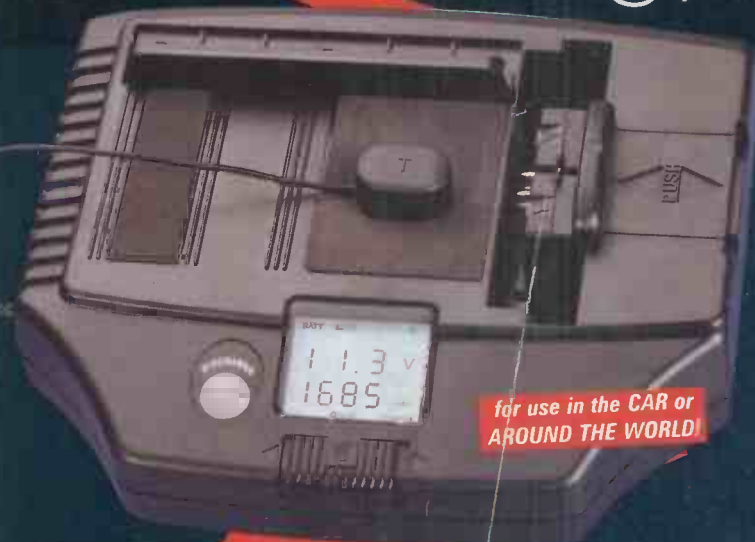
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Operation Noble Cause  
Afghanistan Update - Page 8

## features

### 16 KENWOOD TH-F7E - A CHRISTMAS WISH

Christmas isn't far off now and we reckon it's time to write to Santa with your radio wish list. However, Dave Roberts says don't make that decision final just yet - turn to page 16 first!



### 23 WHIPS & LOOPS - A SECOND LOOK

John Wilson investigates the relative strengths of two alternative antennas - the



RF Systems LF-520 and the Wellbrook Communications LFL1010. If you are even

slightly interested in antennas, you **must** read this feature.

### 42 THE OTHER MAN'S SHACK

Kevin Nice takes a look at another reader's monitoring station.

### 52 SANYO WS1000 WORLDSPACE REVIEW

Jerry Glenwright - a newcomer to satellite radio - gets to grips with the Sanyo WS1000 WorldSpace receiver.



### 55 ISLANDS OF SCOTLAND

The Islands of Scotland Award (IOSA) is to encourage amateur radio operators from around the world to contact or visit some of



the most beautiful and remote parts of Scotland. Scanster Dave Roberts shares his recent experience.

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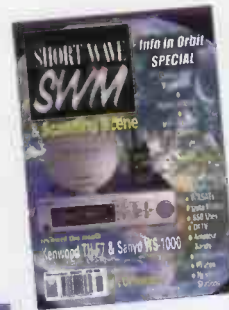
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Info



**cover subject:** Two desirables reviewed and NOAA's first infra-red image from GOES-12.



**BROADCAST 10** LM&S  
**15** Bandscan USA

## Other Features

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Back with another 'WXSAT Special', Lawrence Harris, since moving house, has had to work out how best to set-up his own WXSAT station all over again.
- 35 DIGITAL WEATHER SATELLITES - THE FUTURE BECKONS**  
An important question facing anyone currently thinking about investing money in a weather satellite reception system is that of equipment redundancy. Lawrence Harris explains all.
- 43 INFO IN ORBIT - THE COLUMN**

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### COMING NEXT MONTH IN *SWM* DECEMBER 2001

- \* **Watson WR5001/WR5002** Near field monitors Reviewed
- \* **JW** - in-depth with the **Racal RA1772**
- \* **'Satellite TV Special'** with **Roger Bunney** and friends
- \* **Modern Times** with **Bob Ellis**
- \* **2001 Index**
- \* **and much more...**

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### Components For SWM Projects

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

### Photocopies & Back Issues

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

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

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

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### Technical Help

We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by SWM, then please write to the Editorial Offices, we will do our best to help and reply by mail.

# ed's comments

**M**any of you have commented on the SWM survey forms - see me opening them in the adjacent picture - that you'd like to see antenna

reviews, especially comparative tests. This month will please those of you that asked especially, for that matter it will be of interest to everyone who wants to know more about antennas. John Wilson applies his expertise and test resources to evaluate two alternative approaches to active I.f. antennas. Read more about that on page 23.

We have now received approximately twice as many returned survey forms as we did for the 1998 survey - thanks to everyone who has taken the time - those of you still undecided, come on let me know your thoughts.

## Donnington

At the end of last month I attended to the Leicester and District Amateur Radio Show which is these days held at Donnington Park. I have always considered this the main Amateur Radio show of the year. No offence to the London Show, but I come from the Midlands. It was great to meet lots of readers and some SWM columnists too. I must say that it was well worth going, especially as it was a last minute change of plan. I had the chance to hear first-hand views from those of you who took the time to drop in on the PWP stand. Pictures taken at LDARS can be seen on the right.

The main event of the weekend had to be the Radiocommunications Agency announcement of the changes to amateur radio licensing to inject a boost into the hobby.

Essentially, it will be possible to obtain a new style Foundation Licence, which will enable enthusiasts to operate on most of the amateur bands with limited but usable

power levels, with commercially manufactured kit with one weekend's training. Additionally, though not announced at the show, but released shortly afterwards, in my opinion,

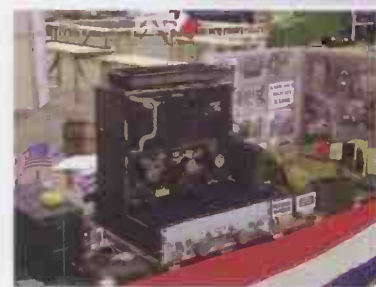
as a result of feedback from those attending the announcement; was the news that current 'Class B' licensees - such as myself - will also be able to qualify for a Foundation Licence and operate on h.f. bands by only taking the Foundation Licence Morse Assessment.

## Enduring Freedom

You cannot avoid what is currently happening in Afghanistan. The right or wrong of the allied actions of recent days will no doubt be debated for many years to come. On page 8 Ian Doyle reports on some of the activities leading up to the bombing campaign. As radio enthusiasts we will have undoubtedly been listening closely to the massively increased traffic levels on US and UK military frequencies. I'm sure all of us listening won't lose sight of this increase in traffic will lead to loss of life.

There wasn't space for the rather splendid shot of this F-15 Eagle returning to Lakenheath after a preparatory sortie, so it's here instead.

*WV 73 Kevin*





**Dear Sir**

I have just had the most awful accident, I dropped my PRO-26 scanner. With detailed inspection and testing, guess what, it's broke. I can only pick up a.m. signals (airband, etc.). I can't get any f.m. stations and the unit no longer scans because I can't turn the squelch up (tears in the eyes job).

With the worst nightmare to come I decided to take the back off the scanner and look for any visible damage, i.e. cracked board, broken wire, etc., but nothing. After sitting there for about half an hour, hang on what's this, a tuning can with no ferrite core in it. So I got a piece of paper and tipped the scanner upside down and out came all the broken bits of ferrite core - ah no! So, I 'phone various scanner shops and Maplins for spare parts and no one can help, no one even knows where part can be obtained. Even browsing on the Internet there's nothing.

I've E-mailed Tandy's head office in Australia and I got a reply saying "the unit discontinued in 1990 so there's no spare parts for the unit". So here I am with no scanner, nothing to listen to and extremely disappointed. If there's anyone out there who knows where I can possibly get another tuning can, or even just the ferrite core. Even perhaps someone with an old non-working PRO-26 sitting around please E-mail me. My advice to anyone with a PRO-26, be very careful with it, because it may be non repairable.

**M. Chamberlain**

**Northants**

**cougar9t9@hotmail.com**

**Dear Sir**

Having read your magazine for quite a number of years now, maybe with the occasional interlude where the magazine was not available at my local newsagent, I must say I have been more than happy with the general content of the magazine as a whole.

The whole concept of radio communications and related subjects, as for the period of the publication to date, in my opinion, has overwhelmingly been well catered for and for me personally, cannot seem to grasp why some of your readers who take the time to write into

your letters page find the biased concept of editorial content so upsetting.

My letter is drifting, of course, as the purpose was to try and establish whether or not any of your more reasonable readers can confirm or otherwise give some logical answer to the many sightings of so called 'Triangular Shaped UFOs Over West Cumbria' as was reported to a local newspaper recently where occasional night time sightings of such craft complete with, oh dear, flashing coloured lights.

Being of the opinion that no such intergalactic interlopers exist, it can only come down to the possible over flights of maybe routine military exercise aircraft on operational sorties, such as the American Stealth Bomber or generic aircraft.

Maybe someone who is well conversant with military operational aircraft procedures can offer some kind of explanation as to whether or not the stealth aircraft do in actual fact operate in and around West Cumbria, then we may lay to rest, once and for all, the myth that surrounds this absorbing mystical question.

Do please continue with your excellent magazine as it gives me a perfect insight into the realm of radio communications, regardless of what the minority of your readers say.

**Paul Burns**

**Cumbria**

**Dear Sir**

This letter is in two parts, firstly, the awful and sad events in America brought proof that h.f. still has a place in world-wide communications. Shortly after the attacks, two things were obvious to the h.f. bands listener/user. The North Atlantic air route frequencies were very busy, with diverting and flights. Then in contrast, very quiet due to the closure of many air space areas. Then the broadcast bands started to be dominated with news of the events. Listening to pro USA stations gave a very different view on the world when compared to, say, Iran! Radio Pakistan seems to be giving a new output reflecting its governments support for the USA. I'm sure many will join in expressing sadness and sympathy for all those affected by the attacks.

On a happier note I can recommend a visit to the Wartime Telegraph Museum at Porth Curno in Cornwall. It has many displays of early and more modern submarine cable technology and with several interactive displays, there is something for the kids too. My eight year old Sophie loved it! Although aimed at those with an interest in such things, it is well set out and not just for the radio/technology enthusiast. The staff were very helpful too. It makes a good visit if you're in that part of the world.

If you do visit that part of the country, take your scanner, there's lots of air and marine activity to listen to!

**A. Barrett**

**Newton Abbot**

**Dear Sir**

Re: Scanning Receiver Realistic PRO-2002. Having read with great interest the booklet *Scan '98*, I followed the advice given in the Introduction and acquired a receiver of the above type. Since tuning this to receive channels of local interest and activity, it has given perfect service, but has recently developed a very dim display.

May I ask if a suggestion could be put forward of a source that I may approach for information concerning a repair, i.e. is this a 'stock fault?', is there a modification or perhaps a known repair procedure. I thank you for your consideration and may I anticipate your very kind reply.

P.S. I am now retired (15 years) from a working life in the radio and TV industry and trade.

**A.S. Foster**

**S. Devon**

*Mr Foster, I'm sorry but I have no personal experience of the fault you describe. I did a quick search for Internet resources relating to this receiver and came up only with the very useful Tandy site, [www.support.tandy.com/support\\_electronics/18985.htm](http://www.support.tandy.com/support_electronics/18985.htm) There is nothing obvious on this site. Perhaps a fellow reader will come to the rescue? - via the Editorial Offices please - Ed.*

**Dear Sir**

May I bring up a few subjects which are dear to my heart? The first being the gross lack of a dedicated CB page in your publication, or hasn't anybody noticed the front cover? The next, I hope the RA were wearing their brown trousers when that 'Foundation Licence' was put forward and the last subject Monopolies.

OK, let's take the first item, being one of the pioneer fighters for CB way back in 1979 with my underground newsletter called *Bandstand*, it was at that time estimated that there were about 300,000 ready to take whatever was on offer. OK, so it was not 'a.m.' nor 's.s.b.', but at least it was CB of a type, this was in 1981, by reading reports it would seem that by 1983 that number had dropped to 30,000, while to date the number has now dropped to 14,000 renewing their licence. If this is anything to go by, with my own survey under the guise of a presenter on Irish station Radio Ozone, with my asking the listeners to report any activity in their area, it would seem that whole pockets of the UK are now void of any 'Breakers' on the band, not only that, shops have long gone and second-hand gear is nowhere to be seen, but I feel that if you as the magazine with the monopoly under the arm of PW Publishing could bring to life this

hobby, there could be a revival. Anyway, why is your publication missing it out? It is most certainly not on your front cover as a regular or irregular item. Yes I know you have a sister publication - *Radio Active* - but what is in it dealing with CB, one page if you are lucky with that writer forever talking about p.m.r. or mobile 'phones.

My next item is this new 'Foundation Licence' which I feel is going to be a thorn in many people's sides. Is this a case just like CB with numbers dropping at a rate of 500 'Silent Keys' a year. Once again, talking to a few young people it would seem, in their opinion, that the RA is hoping to drop the eradication by dangling the carrot, the only problem being how do a number of us get to meet a full licence holder for guidance? It is most certainly not going to be my luck to meet such a person, as if it was an evening, the one and only bus stops running at 5pm here, plus where are the clubs anyway in East Anglia - I have seen none advertised in Suffolk and possibly only one in Norfolk. I never see any Rallies advertised for them in *SWM* either, nor do I know of any local Hams or CBers, so if you are out there reading this and are not a million miles away from Bungy, get in touch. I was at least hoping to

start up a CB service to direct the many truckers that pass by my window asking the locals for directions, etc., but having advertised for surplus equipment, it would seem that the day of generosity in any quarter is not to be found.

**Gary Stevens**

**E-mail: [bbms4ozone@compuserve.com](mailto:bbms4ozone@compuserve.com)**

**Tel: (01986) 896658**

*Gary, a most interesting letter. It is pleasing to 'see' your enthusiasm for radio. Citizens Band has not been covered in *SWM* previously, but if the survey reveals that there is demand for coverage, then I see no reason why not. However, the format would be similar to that of other regular columns. Perhaps I should hand on to your details as potential column editor? On the 'Foundation Licence' front, I really see its introduction as a very positive step. There really can now be no excuse for anyone who is even slightly keen to acquire a licence. - Ed.*



# Communiqué

News & Products

## Operation Enduring Freedom - The Initial Build Up

Regular readers of *SWM* will be aware of Ian Doyle's recent report covering Operation Desert Shield. However, only weeks after publication of that article nobody could have imagined the horror that was to unfold in New York and the subsequent United States led military build up that consequently followed. *SWM* will endeavour to cover this story in detail as it unfolds in the coming months. In this special report, Ian Doyle covers the first few days of the campaign. He does not seek to make light of the catastrophic event in New York, but is merely a factual report related to subsequent events.

The first tangible effect of the outrage in New York in respect of h.f. listening was the immediate impact on civilian air traffic over the Atlantic. Aircraft routing West on the civilian North Atlantic h.f. NAT track Nets on the afternoon of 11 September 2001 under the control of the various controllers on Shanwick, New York, Gander, Santa Maria and Iceland, were periodically informed aircraft throughout the day that US airspace was closed. All aircraft were to either proceed to an alternate diversion airfield in Canada or Iceland whose airspace initially remained open, alternatively where possible a re-filed flight plan was input to the system to effectively turn aircraft around mid-Atlantic and return them back to Europe. This was a quite remarkable operation and a testament to the professionalism of the controllers involved as many flights simply did just that and were vectored back to their departure point. In some cases this was clearly not possible and a significant number were diverted to various airfields in Newfoundland, Nova Scotia and other airports dotted along the Canadian Eastern Seaboard. Many airports familiar to most listeners at Halifax, Goose Bay, Gander and Stephenville quickly filled up large numbers of diverted traffic.

On the military nets it was also evident that something fairly major was underway. Tuning up and down the main hailing frequency channels of 8.992 and 11.175MHz, 'Andrews' was issuing near continuous SKYKING messages, some of which were encrypted. A number of monitors on the various MilAir chat rooms speculated that these may have been recall or divert message to US military aircraft in flight, equivalent in context to the ones being issued by the civilian authorities on the North and Mid Atlantic nets. Similar messages are believed to have been passed when Iraq invaded Kuwait in 1990.

Following the outrage, speculation was rife that the US and its allies would respond, if that was the case it would almost certainly involve a consolidation of air assets in the Gulf and a possible further deployment of aircraft to the Middle East. It was reckoned that u.h.f./h.f. activity "might" be significant!

By the weekend of September 15 a build-up began to take place of various US based transport, tanker and reconnaissance routing South across the Mid Atlantic towards Moron airbase and Rota in Spain, and Sigonella, Italy for onward transit to various bases in the Persian Gulf. In the UK even the u.h.f. bands, which have been relatively quiet with

most bases stood down for summer, were also becoming exceptionally busy, this was particularly so by the evening of 18 September.

## Increased Activity

Numerous Lakenheath based F-15 Eagles were logged, amongst the callsigns noted were 'Brat', 'Attack', 'Mustang', 'Bones', 'Dragon', 'Mugger', 'Ratch', 'Stinger', etc. Most aircraft appeared to follow a set procedure operating as a pair and climbing out from Lakenheath to the Lichfield corridor and then out into the Welsh MTA, Military Training Area hailing London Mil on 275.475MHz. Many air-air auxiliary frequencies were also very active as each pair discussed tactics. Cottesmore Harriers were also up and about again operating in the Welsh MTA. There was also increased activity at Fairford around this time with 'JGO38', 'JGO39', 'JGO40', 'JGO06', all routing in and out of Fairford to Mildenhall. These are all USAF C130 transports, prompting further speculation, that they were related to the events of the 11 September. These

aircraft were in reality connected to a recent air exercise that had taken place immediately following the base re-opening and were unconnected. Many readers will realise that this callsign was used extensively during the Kosovo conflict and appear to simply relate to the general movement of passengers and cargo.

The evening of Friday 21 September proved extremely interesting and confirmed that it is always worth keeping the radio on at all times, even when you least expect something to

appear. This is especially so given the current unpredictable situation. 'Dogfish11' and 'Dogfish12' were recorded operating on 275.475MHz with the controller of one of the aircraft heard setting up a tow-line (line astern configuration) near danger area D203 (Builth Wells) in South Wales, no air-air communications were heard and the aircraft themselves were at very low level. The callsign 'Dogfish' is normally used by the RAF C130s based at Lyneham, Wiltshire and may signify a 'high profile' training exercise.

## Busiest Day

The busiest day of the campaign thus far occurred on Saturday 22 September, a number of significant movements took place at RAF Mildenhall, but this was coupled with some excellent h.f. conditions. Many monitors recorded 'Reach' traffic on 11.175MHz taking to 'Hilda' via 'Andersen' and 'Guam'. I personally heard a 'Travis' based C-5 Galaxy talking to 'Travis' meteo via 'McClellan', California.

The most unusual call however, was made on the same day when 'Eskan77' was heard talking to 'Mildenhall' Meteo with the 'phone patch being provided by Hickam, Hawaii, this was even more remarkable given that I was mobile at the time using an AOR AR8000 coupled to a CB antenna! Eskan is a callsign that relates to a KC135 tanker aircraft normally transiting through 'the Hall', on this occasion it was followed later that day by 'Eskan79'.

Throughout the day, no less than 12 additional KC-135s arrived using the callsigns, 'Raid15', '25', '35', '45', '55', '65', '75', '85', '95', '99', all being based in the USA at Grand Forks, two additional KC-135s tankers also arrived calling 'Shell75', 'Shell77'. Most aircraft checked in for a 'phone patch with

Mildenhall AMC (Air Mobility Command). Initially on h.f. 11.175MHz, two hours out, followed by an additional 'phone patch to Mildenhall Meteo for arrival time weather and then again on 370.95MHz some 40 minutes out. One of the most interesting arrivals however, was 'Reach5400'. This rather anonymous aircraft turned out to be a 'Special Ops' C141-C Starlifter, normally based at Wright Patterson. One of the most unusual calls was made during the afternoon on 11.175 when 'Quid51' a Mildenhall based KC135 Tanker made an unusual request via 'Andrews' on 11.175 to be patched to Barksdale Meteo requesting weather for air refuelling areas AR-33 and AR-34. Barksdale is of course a B-52 base prompting speculation that this may have been connected to a possible deployment. CNN had reported that morning that five B52s had been deployed overnight, so was it possible that the 'Quid' may have been on a rendezvous with these particular aircraft. Many of the US ARA areas can be found on the OhioDX web sites at

[www.ohioscan.com](http://www.ohioscan.com) and [www.ute-monitor.org/aerolist](http://www.ute-monitor.org/aerolist) but interestingly, not the two in question. Normally these aircraft are identified by the commonly used callsign of 'Doom' but no B52s were recorded at the time on any of the known h.f. civil transiting East on the Mid Atlantic NAT Tracks or the more common US mil frequencies. Also noted talking to 'Thule', Greenland was 'Hiball21' and 'Hiball22', a pair of USAF E-3 AWACS reconnaissance assets from Tinker AFB.

## Further Flurry

The following day, Sunday 23 September, at the somewhat unusual time of 0830, saw a further flurry of activity on u.h.f., with a number of Marham based RAF Tornados routing West via the Lichfield corridor. Using the callsign 'RAFAIR' the aircraft formatted with a pair of 'ASCOTs' and headed south towards MALBY on 275.475MHz. From here London Military vectored each 'Flight' for an airway joining clearance, taking them on into French Airspace. Air-air tanking was noted on 300.1MHz. Once again, 'rumour control' was in full swing with talk of an RAF deployment. This was mere speculation as these particular aircraft were part of a commitment to a combined RAF, Army and Navy operation in Oman, it remains to be seen however, whether they will have been called to arms by the time this report is published. It is my prediction that they will.



**More than 70 diverted aircraft on the Halifax International runway.** Credit Halifax airport staff 13/09/2001

'Hilda' is a static callsign for the HQ of Air Mobility Commands Tanker/Airlift Command Centre (TACC), at Scott AFB, Illinois. There are two cells, each covering a geographic area:

- **Hilda East** controls all missions operating east of the Mississippi River (including Canada east of 95°W, roughly equating to the Manitoba/Ontario border), Bermuda, Ascension Island, Europe, Africa, and Asia to the India-Pakistani border (southward along 70°E and Northwest along the China border to 80°).
- **Hilda West** controls missions operating west of the Mississippi (including the entire state of Louisiana and Canada west of 95°W, roughly equating to the Manitoba/Ontario border), Mexico, Central and South America, the Caribbean Islands (including Antigua), Antarctica, Australia, and Asia to the India-Pakistani border.

No h.f. radio? - Check out on-line h.f. broadcasts through your PC

[hamshack.ralabs.com](http://hamshack.ralabs.com)  
[www.chilton.com/scripts/radio/R8-receiver](http://www.chilton.com/scripts/radio/R8-receiver)  
[www.javaradio.com](http://www.javaradio.com)



## Pocket-Sized DJS40

Nevada are pleased to announce the release of the new Alinco DJS40 u.h.f. transceiver covering the 70cm amateur band. With an attractive rugged case and weighing in at just 100g, the DJS40 is small enough to fit in the pocket.

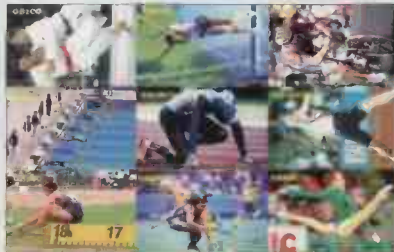
The DJS40 uses a unique dual-port 'horn' speaker system for extra clarity on receive, it also has many additional features including a theft alarm, 38 CTCSS tones, 100 memories and clone facility. In addition, there are a wide range of optional Alinco accessories enabling the DJS40 to be tailored to individual needs. The DJS40 will sell for £99.95.

For more details, contact Nevada direct on (02392) 313090 or visit [www.nevada.co.uk](http://www.nevada.co.uk)



## Special Celebration

Nine QSL cards have been produced for the special event stations operating from around Manchester to celebrate the 17th Commonwealth games. 18000 cards will be printed, that's 2000 cards for each of the special event callsigns. Around 500 of the 18000 cards will remain uncut (A3 in size) for those who may wish to have an uncut set to hang on the shack wall.



An update on the callsigns, details of the operators and their pictures can be seen at [www.geocities.com/gbgames2002](http://www.geocities.com/gbgames2002) along with information where you may find what band each operator has a preference on.

## rallies

**October 28:** The Galashiels and District ARS will be holding their annual rally in the Volunteer Hall, St. Johns Street, Galashiels, Scottish Borders. Doors open 1100 (disabled access from 1045). Admission is £2 and includes a free cash prize draw ticket. There will be all the usual attractions, Bring & Buy, traders and refreshments. **Jim Keddie GM7LUN** on (01896) 850245 or E-mail: [jimk@gm7lun.freeseve.co.uk](mailto:jimk@gm7lun.freeseve.co.uk)

**November 3/4:** The Fifteenth North Wales Radio & Electronics Show is to be held at the North Wales Conference Centre, Llandudno. The show opens at 1000 both days and the entrance fee is £2 for adults and under 14s free, when accompanied by an adult. There will be an extensive Bring & Buy and clubroom. **M. Mee GW7NFY**, Rally Secretary, on (01745) 591704 (combined telephone and FAX number).

**November 11:** The South Yorkshire Repeater Group presents the 11th Great Northern Hamfest at the Metrodome Leisure Complex, Queens Road, Barnsley, South Yorkshire. Doors open at 1000 and will feature trade stands, specialist interest groups and a large Bring & Buy. Talk-in on 145.550MHz and Morse tests on demand. More information from **Ernie Bailey G4LUE** on (01226) 716339 or (07787) 546515.

**November 18:** The Midland Amateur Radio Society (MARS) 12th Radio and Computer Rally is taking place today. Doors open at 1000 with plenty of free parking, trade and club stands and refreshments. For more information call **Peter G6DRN** on 0121-443 1189.

**November 24:** The Rochdale & District Amateur Radio Society are holding their traditional radio rally at St. Vincent de Paul Catholic Church Hall, Caldershaw Road, off the A680 Edenfield Road, approx two miles west of Rochdale, follow the orange arrows from M62, J20. Yes, this is a **Saturday** rally! Open from 1015/1030, there will be a talk in on S22, Bring & Buy, refreshments, etc. More information from **John G7OAI** on (01706) 376204 evenings, E-mail: [radars@mbc.co.uk](mailto:radars@mbc.co.uk)

**November 24/25:** The London Amateur Radio & Computer Show takes place at the Lee Valley Leisure Centre, Picketts Lock Lane, Edmonton, London N9. There will be trade stands, Bring & Buy, Morse tests, free car park, catering, licensed bar, talk-in, special interest groups, disabled facilities, camp site, and family attractions include cinema, swimming, golf and spa. Doors open 0945/1000. More information on (01923) 893929.

**November 25:** The Bishop Auckland Radio Amateurs Club (BARAC) 2001 Rally will take place at Spennymoor Leisure Centre. This venue is ideally suited for both trader and disabled as it boasts good parking and access to large ground floor hall. There will be the usual radio, computer, electronics and Bring & Buy stall, as well as catering and bar facilities. Morse tests will be available on demand. As you can imagine, there will be lots to do for all the family, within the confines of the Leisure Centre for those of the family not interested in radio. Doors open 1100 (1030 for disabled visitors), admission is £1, under 14s free of charge with adult. Talk-in on S22. **Mark G0GFG** on (01388) 745353 or **Brian G7OCK** on (01388) 762678.

**December 8:** The Worcester Radio, Electronics & Computer Rally is to be held at Perdiswell Leisure Centre, Bilford Road, Worcester. Doors open from 1000, with a £2 admission fee. There is a free car park, talk-in on S22, trade stands, flea market, special interest groups, licensed bar, catering and a free raffle. More details from **John G8MGK** on (01527) 545823/(07762) 203355 or visit [www.qsl.net/gb2tcr](http://www.qsl.net/gb2tcr)

## World DX Club

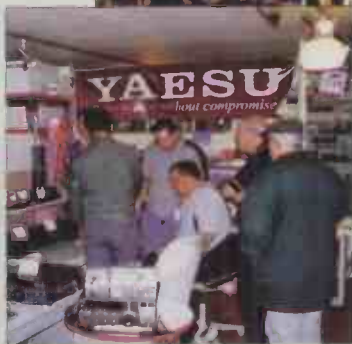
International broadcast stations will go into their winter schedules on October 28th. **World DX Club** publishes a 12 page pamphlet listing the times and frequencies of English broadcasts, in country order, which is constantly updated so that the information is always as up-to-date as possible when you order. The guide covers over 100 broadcasters. Information for the new broadcasting season will be published by mid November. Copies of the pamphlet are available for 50p or two IRCs from **Arthur Ward, 17 Motpur Drive, Northampton NN2 6LY**. The club have a website - this is at <http://www.worlddxclub.org.uk> and it contains some articles from the club's monthly magazine as well as the latest members logbook section.

## The Low-down on W&S Open Day

September 1st 2001 saw the first Waters & Stanton Open Day at the Lowe Electronics premises at Matlock. In addition to the usual well-equipped showroom, there was a marquee with stands by Icom, Kenwood and Yaesu. The marquee also houses a bargains stand, where PMR446 seemed particularly popular.

As well as lots of radio equipment to try out, there were all sorts of bargains, including radios and books. However, perhaps the best bargain (because it was totally free) was the excellent range of food on offer to visitors.

Staff at the Open Day included **Roger G3YBO**, well



known to countless amateurs via rallies and showrooms of Jack Tweedy, SMC, Lowe and W&S; **Richard G3OQT** of Lowe Electronics and **Peter G3OJV** of W&S. Richard and Peter were working on the bargains stand and eager bargain hunters made sure that these gentlemen had little spare time!

## Surplus Sale

At 2000 on Wednesday 7th November 2001, the **Bangor & District Amateur Radio Society** are holding their annual Surplus Sale. This excellent event is always a popular way to make some space in your shack. There will be a small admission charge to the Surplus Sale, but there is no charge for the tables. The sale is to be held at Crawfordsburn Country Club - not the usual venue. More information from **Mike G14XSF** on 0284-277 2383 or visit the club's website at <http://www.welcome.to/bdars>

# LM&S



If you use 'LM&S' as a guide when searching the broadcast bands, please bear in mind that some of the short wave data herein may be 'no longer applicable' soon after this article is published on October 25 because quite a few of the broadcasters will implement their 'Winter' transmission schedules on October 28.

Many listeners, both here and overseas, help to make 'LM&S' a success by sending reception reports to me either on a regular basis or from time to time. If you would like to join them, please post the details of your latest logs and/or any s.w. schedule changes which you have encountered, to reach me at the above address not later than the end of the first week of the month following reception. Please ensure that the times you quote are in Universal Time Co-ordinated (UTC), which for most purposes is the same as Greenwich Mean Time (GMT).

## Long Wave Reports

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

Good conditions were observed during some nights in August. During the early hours of the 9th **Ernie Strong** (Ramsey, Cambs) heard for the first time Van, Turkey on **225.0kHz**, which he rated SINPO 22332 at 0150UTC; also Krasnyy Bor, Russia on **234.0**, noted as 12242. On several other occasions he listened until 0200UTC for the broadcasts from Rikisutvarpid (RUV) in Reykjavik via their 100kW outlet at Eidar, E.Iceland, on **207kHz**, but was unable to hear them due to co-channel interference from DLF via Munich (500kW).

Over in Co.Down **Eddie McKeown** (Newry) found the conditions to be good around midnight on the 12th and logged the RUV transmission from Gufuskalar, W.Iceland, on **189kHz** as 44243 at 0027UTC. Following other SWM listeners' lead, he checked **207.0kHz** and was pleasantly surprised to hear RUV via Eidar, E.Iceland, which rated 32232.

Several nights during August proved to be interesting for **Simon Hockenull** (E.Bristol). Around midnight on the 1st and 10th he picked up the sky waves from Gufuskalar,

W.Iceland on **189.0**, which he rated SINPO 25443 and on the 17th and 23rd he heard Sasnovy, Belarus, on **279.0**, peaking 34343 at 2023UTC.

During the evening of the 26th **Sheila Hughes** (Morden) heard faintly under DLF via Donebach on **153.0kHz** co-channel Bod, Romania, with a broadcast of light music and singing. The transmission rated 22212 at 2130. At 2230 she re-checked and listened to ballad type songs in Romanian.

The 'classical portions' of the broadcasts from RTL R.Luxembourg on **234kHz** attracted the attention of **Harry Richards** (Barton-upon-Humber) between 2330 and 0030UTC. They reminded him of pre-war days when he was a regular listener to RTL.

## Medium Wave Reports

The listeners who searched the band after dark for the sky waves from m.w. stations in the Middle East, N.Africa, Europe and Scandinavia sometimes found the conditions to be above average.

August was a popular month for holidays. Some listeners took a portable receiver with them so that

they could explore the band from their chosen location.

While in the German Rhineland **Geraint Gill** (LLanfairfechan) searched the band on August 8 & 9 between 2030 & 2200UTC, i.e. after dark. He used a Grundig Yacht Boy 400 portable to compile an interesting and quite extensive log - see chart.

Whilst in Charmouth **Philip Miller Tate** (Walton-on-Thames) searched the band during some evenings with a pocket sized Sony SW100 portable. His entries in the chart were received after dark on the 24th. He says "Not surprisingly, the list is dominated by France and Spain and I seem to have heard every Spanish network and independent, for the first time, all in one session! Kvitsoy, Zadar, Slovakia, Marcali and Algeria are all in there, I was a bit surprised not to hear Solvesborg."

Particularly good conditions were observed during the early hours of the 24th, 25th & 26th by **Ernie Strong** and several broadcasters were heard for the first time. He found the most difficult station to identify was Kermanshah, Iran (200kW) on 1278kHz.

During daylight the ground waves from some local radio stations were received in quite distant places. Those from fifty-four stations were picked up by **George Millmore** in Wootton, Isle of Wight. Some travelled over long sea paths to reach him, but quite a few involved a long path overland and only a short sea crossing to the island - an example being BBC R.Merseyside on 1485kHz.

Whilst backpacking on the Isle of Wight, **Brian Keyte** (Gt.Bookham) searched the band for an hour at Culver Cliff. He used a small, rather insensitive, Alba TR2500 portable, but by holding it close to a very long wire fence running east-west he was able to log some quite distant stations - see chart.

During another weekend Brian visited Messingham, Norfolk. He used a small home-built loop ahead of his AOR AR7030 receiver to search the band. He says "The fairly central position in the country brought in a good local radio count more easily than usual. I was surprised to hear both NorthSound Two from Aberdeen and Classic Gold from Exeter around the middle of the day". A total of eighty-four local radio stations were logged.

Down in N.Bristol **Francis Hearne** took what he described as "a quiet morning's ramble across the medium wave band". He picked up the ground waves from thirteen stations - see chart.

## Short Wave Reports

The occupants of the **25MHz (11m)** band in the months ahead will be known when the broadcast schedules for the winter period are published on October 28. At the time of writing (September) the only broadcaster known to be using the band on a regular basis is Radio France International (RFI), with daily broadcasts to listeners in E/C.Africa on **25.820** (Fr 0900-1300).

During a sporadic E opening at 0900 on August 27 their transmission peaked SINPO 55545 in E.Bristol, but under more normal conditions reception in the UK tends to be unreliable because it is dependent upon back scatter and other modes. The ratings noted in the reports from some UK listeners were 34423 at 0900 by **Vic Prier** in Colyton; 45344 at 0933 in Newry; 24222 at 0948 by **Thomas Williams** in Truro; 25232 at 1038 by **Fred Pallant** in Storrington; 25342 at 1128 by **Fred Wilmshurst** in Northampton.

In contrast, many broadcasters are taking advantage of the propagation conditions in the **21MHz (13m)** band to reach listeners in chosen areas. Quite a few of their transmissions can be received well in the UK too, although the effects of solar activity result in disruption at times.

The most distant broadcaster to reach the UK in this band is Radio Australia. Their early morning transmission to Pacific areas from Shepparton on **21.725** (Eng 0200-0900) was rated 43333 at 0510 by **David Hall** in Morpeth & 34323 at 0707 in Colyton. At 0900 they change frequency and beam heading for a broadcast to Asia via Shepparton on **21.820** (Eng 0900-1400), rated 25343 at 1203 in Northampton.

## Long Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener
153	Bechar	Algeria	1000	F*,H*
153	Donebach DLF	Germany	500	A*,B*,C,D,E,F*,H*,J*,J
153	Bod	Romania	1200	B*,H*
162	Allouis	France	2000	B*,C,D,E,F*,H*,J*,J
171	Nador Medi-1	Morocco	2000	A*,F*,H*
171	B'shakovo etc	Russia	1200	D*,E*,H*
171	Lyov	Ukraine	500	H*
177	Oranienburg	Germany	500	B*,D,E,F*,H*,J*,J
183	SaarLouis	Germany	2000	C,D,E,F*,H*,J*,J
189	Gufuskalar	W.Iceland	150	A*,D*,H*
198	Droitwich BBC	UK	500	B,C,D,E,H*,J
207	Munich DLF	Germany	500	A*,D,E,F*,H*,J*,J
207	Eidar	E.Iceland	100	A*,D*
207	Azilal	Morocco	800	H*
216	Roumoules RMC	S.France	1400	A,B*,C,D,E,F*,H*,J*,J
216	Ganca	Azerbaijan	500	H*
225	Polskie R-1	Poland	?	A*,B*,D*,F*,H*,J*
225	Van TRT-1	Turkey	600	H*
234	Beidweiler	Luxembourg	2000	B*,C,D,E,F*,G,H*,J*,J
234	Krasnyy Bor	Russia	1200	H*
243	Kalundborg	Denmark	300	A,B,C,D,E,F*,H*,J
252	Atlantic 252	Eire	500	C,D,E,F*,H*,J*,J
261	Burg(R.Ropa)	Germany	85	E,F*,H*,J*
261	Taldom Moscow	Russia	2500	B*
270	Topolna	Czech Rep	1500	A*,B*,D*,E,F*,H*,J*,J*
279	Sasnovy	Belarus	500	A*,B*,D*,F*,H*,J*

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

### Listeners:-

- (A) Simon Hockenull, E.Bristol.
- (B) Sheila Hughes, Morden.
- (C) Rhoderick Illman, Oxted.
- (D) Eddie McKeown, Newry.
- (E) George Millmore, Wootton, IoW.
- (F) Fred Pallant, Storrington.
- (G) Harry Richards, Barton-upon-Humber.
- (H) Ernie Strong, Ramsey, Cambs.
- (I) Thomas Williams, Truro.
- (J) Fred Wilmshurst, Northampton.



## Tropical Bands Chart

Freq (MHz)	Station	Country	UTC	DXer
2.310	ABC Alice Springs	Australia	2120	J
2.325	ABC Tennant Creek	Australia	2110	J
3.230	SABC Meyerton	S.Africa	1906	G
3.255	BBC via Meyerton	S.Africa	1905	G,J,K
3.270	Nambian BC, Windhoek	Namibia	2033	D,E,J
3.316	SLBS Goderich	Sierra Leone	2007	G,K
3.320	SABC (RSG) Meyerton	S.Africa	2036	E,G,J,K
3.365	GBC R-2	Ghana	2003	G,J,K
3.365	AIR Delhi	India	1825	G
3.915	BBC via Kranji	Singapore	2131	F,J,J,K
3.955	R.Taipei via Skelton	England	1800	B,E,F,H
3.975	R.Budapest	Hungary	2140	A,B,I
3.975	R.Korea via Skelton	England	2100	B,F,H,J
3.985	Nexus, Milan	Italy	2039	F,J
3.995	DW via Julich	Germany	2046	F,I
4.005	Vatican R.	Italy	1822	E,E,J
4.755	R.Educ CP Grande	Brazil	0020	K
4.760	ELWA Monrovia	Liberia	2139	K
4.770	FRCN Kaduna	Nigeria	2041	E,G,J,K
4.780	Pakistan BC	Pakistan	1828	E
4.783	RTM Bamako	Mali	1940	G,J,K
4.790	Azad Kashmir B.	Pakistan	1823	F,G,K
4.800	AIR Hyderabad	India	0026	G,K
4.800	LNBS Maseru	Lesotho	2134	K
4.815	R.diff TV Burkina	Duagadougou	2017	G,K
4.820	R.Botswana, Gaborone	Botswana	1924	K
4.820	La Voz Evangelica	Honduras	0516	K
4.820	AIR Calcutta	India	1827	G
4.830	R.Tachira	Venezuela	0324	D
4.835	RTM Bamako	Mali	2016	E,G,J,K
4.840	AIR Bombay	India	0028	K
4.845	RTM Kuala Lumpur	Malaysia	1817	G
4.845	ORTM Nouakchott	Mauritania	1922	F,G,J,K
4.850	R.Yaounde	Cameroon	2043	F
4.860	AIR Delhi	India	1830	E,E,G,K
4.885	R.Clube do Para	Brazil	0114	F,K
4.885	KBC East Sc Nairobi	Kenya	2045	J
4.890	RFI Paris	via Gabon	0408	D,K
4.890	R.Port Moresby	Pap.N. Guinea	2005	G
4.910	Tennant Creek	Australia	2144	K
4.910	AIR Jaipur	India	0033	K
4.915	R.Anhangera	Brazil	0604	K
4.915	GBC-1, Accra	Ghana	2011	E,G,J,K
4.920	R.Quito, Quito	Ecuador	0453	K
4.920	AIR Chennai	India	0035	K
4.925	R.Nacional, Bata	Eq.Guinea	2212	K
4.940	AIR Guwahati	India	1831	G
4.950	R.Nacional, Mulvenos	Angola	2219	K
4.950	VDA via Sao Tome	Sao Tome	2011	F,G,K
4.960	VDA via Sao Tome	Sao Tome	0509	K
4.965	Christian Voice	Zambia	1831	G,K
4.975	R.Uganda, Kampala	Uganda	2012	E,F,G,K
4.980	Ecos del Torbes	Venezuela	0330	D,F
4.985	R.Brazil Central	Brazil	0412	C,D,K
5.005	R.Nacional, Bata	Eq.Guinea	1925	G,K
5.009	R.TV Malagasy	Madagascar	1834	G
5.010	AIR Thiru' puram	India	0040	K
5.020	La V du Sahel, Niamey	Niger	1924	F,G,J,K
5.025	R.Parakou	Benin	1843	E,K
5.025	R.Uganda, Kampala	Uganda	1835	G,J
5.030	AWR Latin America	Costa Rica	0513	K
5.030	RTM Kuching	Saravak	2013	G
5.050	AIR Aizawl	India	0203	D
5.050	R.Tanzania	Tanzania	1829	G
5.100	R.Liberia, Totota	Liberia	2014	G

DXers:-

- (A) Bernard Curtis, Stalbridge.  
 (B) Stan Evans, Herstmonceux.  
 (C) Bill Griffith, W.London.  
 (D) David Hall, Morpeth.  
 (E) Rhoderick Illman, Oxted.  
 (F) Eddie McKeown, Newry.  
 (G) Fred Pallant, Storrington.  
 (H) Clare Pinder, while in Appleby.  
 (I) Peter Pollard, Rugby.  
 (J) Vic Prier, Colyton.  
 (K) Richard Reynolds, Guildford.

Also noted in this band during the morning were Swiss R.Int via Sottens **21.750** (Fr, Ger, It, Eng to Near East, Africa 0600-0800), rated 44444 at 0756 by **Rhoderick Illman** in Oxted; also on **21.770** (Eng, It, Ger, Fr to Near East, Africa 0830-1030), noted as 45544 at 0835 by **Stan Evans** in Herstmonceux; DW via Wertzachtal, Germany **21.790** (Eng to Australia, Asia 0900-0945) 55555 at 0900 by **Gerald Guest** in Dudley; R.Japan via Yamata, Japan **21.755** (Jap, Eng to Oceania 0800-1100) 44323 at 0920 in Colyton; R.Pakistan **21.465** (News in Eng 0800-0803, Ur to Eur 0803-1100) 54445 at 1000 by **Bill Griffith** in W.London; DW via Wertzachtal, Germany **21.780** (Eng to Africa 1100-1145) 44444 at 1105 in Morden; R.Portugal Int via Sines? **21.830** (Port to S & E.Africa 1000-1200) 33333 at 1115 by **Robert Hughes** in Liverpool.

After mid-day, Channel Africa, Johannesburg **21.725** (Eng to Africa, Eur? 1300-1455) was 45544 at 1300 in E.Bristol; HCJB Quito, Ecuador

**21.455** (Eng [u.s.b.]) was rated 44444 at 1352 by **Vera Brindley** in Woodhall Spa; BBC via Ascension Is **21.470** (Eng to E/S.Africa 1300-1900) 44444 at 1400 in Truro; BSKSA Riyadh, Saudi Arabia **21.705** (Ar to W.Eur 0600-1500) 55545 at 1440 by **Bernard Curtis** in Stalbridge; R.Canada Int via Rampisham, UK **21.570** (Eng to Africa 1800-1859) 34233 at 1827 by **Peter Pollard** in Rugby; R.Nederlands via Bonaire, Ned.Antilles **21.590** (Eng to C/W.Africa 1830-2025) 44434 at 1925 in Newry.

A few broadcasters are using the narrow **18MHz (15m)** band to reach listeners in some areas. They include R.Norway Int. on **18.950** (Norw to N.America 1200-1229), rated 33233 at 1155 in Stalbridge; R.Denmark via R.Norway **18.950** (Da to N.America 1230-1300) 44444 at 1230 in Truro; R.Sweden **18.960** (Eng, Sw to N.America, Lat.America 1130-1430) 55344 at 1138 in Newry, 55555 at 1230 in Herstmonceux & 55545 at 1410 in E.Bristol; Family R, WYFR via

Listeners:-

- (A) Francis Hearne, N.Bristol.  
 (B) Simon Hockenhuil, E.Bristol.  
 (C) Sheila Hughes, Morden.  
 (D) Rhoderick Illman, Oxted.  
 (E) Brian Keyte, while in Messingham, N.Lincs.  
 (F) Brian Keyte, while at Culver Cliff, IoW.  
 (G) Eddie McKeown, Newry.  
 (H) George Millmore, Wootton, IoW.  
 (I) Clare Pinder, while in Appleby.  
 (J) Ernie Strong, Ramsey, Cambs.  
 (K) Fred Wilmshurst, Northampton.

## Local Radio Chart

Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener	Freq (kHz)	Station	ILR BBC	e.m.r.p (kW)	Listener
558	Spectrum, London	I	0.00	B,C,E,F,H,J,K	1359	Cl.Gold 1359, C'try	I	0.27	C,E,J,K
585	R.Solway	B	2.00	E	1359	R.Solent,Bournemouth	B	0.85	FH
603	C.G.Litt'rne	I	0.10	E,F,H,J,K	1359	Touch AM, Cardiff	I	0.20	A
630	R.Bedfordshire(3CR)	B	0.20	A,B,C,E,H,J,K	1368	R.Lincolnshire	B	2.00	E,J,K
630	R.Cornwall	B	2.00	EH	1368	Southern Counties R	B	0.50	C,H
657	R.Cornwall	B	2.00	E,H,J,K	1368	Wiltshire Sound	B	0.10	H
657	R.Cornwall	B	0.50	H	1377	Asian Sd. Rochdale	I	0.10	E
666	Cl.Gold 666, Exeter	I	0.34	A,B,E,G*,H,J,K	1413	R.Gioucester via?	B	?	A,E,J,K
666	R.York	B	0.80	E,J	1413	Premier via?	I	0.50	E,H
729	BBC Essex	B	0.20	E,H,J,K	1413	Fresh AM, Skipton	I	0.10	E,G*,J
738	Hereford/Worcester	B	0.037	B,H,J,K	1431	Breeze,Southend	I	0.35	C,E,J
756	R.Cumbria	B	1.00	E,G,I	1431	Cl.Gold, Reading	I	0.14	C,E,H,J,K
756	The Magic 756,Powys	I	0.63	E,H,J,K	1449	Asian Netw'k P'boro	B	0.15	E,J,K
765	BBC Essex	B	0.50	E,F,H,J,K	1458	R.Cumbria	B	0.50	G,H
774	R.Kent	B	0.70	E,F,H,J,K	1458	R.Devon	B	2.00	FH
774	R.Leeds	B	0.50	E,J	1458	1458 Lite AM Manch'	I	5.00	E
774	Cl.Gold 774, Glos	I	0.14	A,H,J	1458	R.Newcastle	B	2.00	E
792	Cl.Gold 792, Bedford	I	0.27	E,J,K	1458	Sunrise, London	I	50.00	E,F,H,J,K,I*
801	R.Devon	B	2.00	A,B,C,E,G*,H,J	1458	Asian Netw'k Langley	B	5.00	E,J,K
828	Cl.Gold 828, Luton	I	0.20	B,E,J,K	1485	Cl.Gold, Newbury	I	1.00	B,C,E*,J*,K
828	Magic 828, Leeds	I	0.12	E	1485	R.HumberSide (Hull)	B	1.00	E,G*,J
828	Asian Netw'k Sedgley	B	0.20	E	1485	R.Merseyside	B	1.20	B*,G*,H
828	Cl.G 828 Bournemouth	I	0.27	FH	1485	Southern Counties R	B	1.00	C,H
837	R.Cumbria/Furness	B	1.50	E	1503	R.Stoke-on-Trent	B	1.00	E,G*,H*,J,K
837	Asian Netw'k Leics	B	0.45	A,E,H,J,K	1521	Breeze, Reigate	I	0.64	B*,D,E,H,J,K
855	R.Devon	B	1.00	A,F,H	1530	R.Essex, Southend	B	0.15	E,J
855	R.Lancashire	B	1.50	G*,J	1530	Cl.Gold via?	I	?	J
855	R.Norfolk, Postwick	B	1.50	E,J	1530	Cl.Gold W Yorks	I	0.74	E,G*
855	Sunshine 855,Ludlow	I	0.15	B,E,K	1530	Cl.Gold Worcester	I	0.52	E,H,K
873	R.Norfolk, W.Lynn	B	0.30	E,H,J,K	1548	R.Bristol	B	5.00	H
936	Brunel CG, W.Wilts	I	0.18	A,H,J,K	1548	Capital G, London	I	97.50	E,F,H,J,I*
936	Fresh AM, Hawes	I	1.00	F	1548	Magic AM, Sheffield	I	0.74	E
945	Cl.Gold GEM, Derby	I	0.20	E,J,K	1557	R.Lancashire	B	0.25	E
945	Capital G, Bexhill	I	0.75	D,F,H,J	1557	Cl.Gold 1557, N.hant	I	0.76	E,G*,J,K
954	Cl.Gold 954 via?	I	?	A,J	1557	Capital G, So'ton	I	0.50	FH
954	Cl.Gold 954, Torquay	I	0.32	FH	1566	CountySnd,Guildford	I	0.50	B*,E,G*,H,J
954	Cl.Gold 954, H'ford	I	0.16	B,E,K	1584	London Turkish R	I	0.20	B*,J
963	Asian Sd, E.Lancs	I	0.80	E	1584	R.Nottingham	B	1.00	E,G*,J,K
963	Liberty R, Hackney	I	1.00	D,E,H,J,K	1584	Tay, Perth	I	0.21	E
972	Liberty R, Southall	I	1.00	D,E,H,J,K	1602	R.Kent	B	0.25	E,F,H,J
990	R.Aberdeen	B	1.00	E					
990	R.Devon, E.Devon	B	1.00	B,H					
990	Magic AM, Doncaster	I	0.25	E,J					
990	Cl.G. Wolverhampton	I	0.09	J,K					
999	Cl.Gold GEM Nott'ham	I	0.25	E,J,K					
999	Magic 9-99 P'stn	J	0.80	E					
999	R.Solent	B	1.00	D,F,H					
999	Valley R, Aberdare	I	0.300	B					
1017	Cl.G.WABC, Shr'shire	I	0.70	E,J,K					
1026	R.Cambridgeshire	B	0.50	D,E,J					
1026	R.Jersey	B	1.00	B,F,H					
1035	RTL C'try(Ritz)1035	J	1.00	D,E,H,J,K					
1035	R.Sheffield	B	1.00	E,J					
1035	N.Shed 2, Aberdeen	J	0.78	E					
1116	R.Derby	B	1.20	E,J,K					
1116	R.Guernsey	B	0.50	H					
1152	Cl.G Amber, Norwich	I	0.89	E,J					
1152	LBC 1A AM	I	23.50	D,H,J,K					
1152	Cl.G, Birmingham	I	3.00	A,E,K					
1161	R.Bedfordshire(3CR)	B	0.10	C,E,J,K					
1161	Brunel Cl.G, Swindon	I	0.16	A					
1161	Magic 1D, Boxhill	B	0.35	E					
1161	Southern Counties R	B	1.00	C,D,H					
1170	Cl.G Amber, Ipswich	I	0.28	J					
1170	Magic 1170, Stockton	I	0.32	E,J					
1170	Capital G, Ports'm'th	I	0.50	FH					
1170	Signal 2, Stoke-on-T	I	0.20	E					
1170	1170AM, High Wycambe	I	0.25	K					
1242	Capital G, Maidstone	I	0.32	H					
1251	C.G Amber, Burv St'Ed	J	0.76	E,J					
1260	Brunel CG, Bristol	I	1.60	H					
1260	SabrasSnd, Leicester	J	0.29	E,J,K					
1260	R.York	B	0.50	E					
1278	Cl.Gold 1278 W.York	I	0.43	E,J					
1296	Radio XL, Birmingham	I	5.00	B,E,H,J,K					
1305	Magic AM, Bamsley	I	0.15	E					
1305	Premier via 7	I	0.50	E,H,J,K					
1305	Touch AM, Newport	I	0.20	A,H					
1323	Capital G, Southwick	I	0.50	D,E*,H,K					
1323	SomersetSnd, Bristol	B	0.63	E,J					
1332	Cl.Gold 1332, P'bo	I	0.60	E,J,K					
1332	Wiltshire Sound	B	0.30	E,H					
1359	Breeze, Chelmsford	I	0.28	C,J					

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



LM&S *continued*

Okeechobee FL, USA **18.980** (Eng to Africa, Eur 1600-2200) 34423 at 1730 in Colyton & 33333 at 1910 in Rugby; Christian Science Herald via WSHB Cypress Creek, USA **18.910** (Fr, Eng to E/C.Africa 1600-2200) 35343 at 2020 in Northampton.

Good reception from R.Australia has been noted in the **17MHz (16m)** band by listeners in the UK during the early morning. Their transmission to Asia via Shepparton on **17.750** (Eng 0000-0500, 0600-1100) was rated 45344 at 0605 in Rugby & 35553 at 0805 by **David Edwardson** in Wallsend.

Other occupants of this much used band include Swiss R.Int via Julich, Germany **17.685** (Fr, Ger, It, Eng to M.East, Africa 0600-0800), rated 34433 at 0755 in Oxted; Israel R, Jerusalem **17.535** (Heb [Home svce relay] to W.Eur, N.America) 34333 at 1000 in Truro; R.Finland via Pori **17.670** (Eng to W.Eur, N.America 1230-1300) 44433 at 1250 in Herstmonceux; Channel Africa via Meyerton **17.770** (Eng to Africa, M.East 1500-1530) 33333 at 1505 in Woodhall Spa; R.Romania Int **17.805** (Eng to W.Eur 1700-1800) 44444 at 1715 in Colyton; R.Canada Int via Sackville? **17.820** (Eng to Eur, Africa 1800-1900?) 33333 at 1800 by **Clare Pinder** in Appleby; WHRI via

Maine, USA **17.650** (Eng to Eur, M.East, Africa 1600?-2200?) 34222 at 1822 in Newry; Channel Africa via Meyerton **17.870** (Eng to W.Africa 1800-1830) 24343 at 1827 in Storrington; R.Philippines, Philippines **17.720** (Filip, Eng ?-1930) 34243 at 1837 in Newry & 55534 at 1917 by **Richard Reynolds** in Guildford; VOA via Morocco **17.895** (Eng to Africa 1600-1900) 55544 at 1845 in Northampton; HCJB Quito, Ecuador **17.660** (Eng to Eur 1900-2200) 34433 at 1900 in Dudley; BBC via Ascension Is **17.830** (Eng to W.Africa 0800-2100) 35433 at 2027 in E.Bristol; R.Canada Int via Sackville **17.870** (Eng to Eur, Africa 2000-2200) 54445 at 2045 in Stalbridge; WEWN Birmingham, USA **17.595** (Eng to Eur, America 2100-0000) 44444 at 2235 in Morden.

There is also a high level of activity in the **15MHz (19m)** band and good reception from many areas has been reported by listeners in the UK. Radio New Zealand has reached the UK on **15.160** (Eng 1850-2100) and was rated 34333 at 2033 in Woodhall Spa. R.Australia's broadcasts via Shepparton have been received in the UK on the following frequencies: **15.240** (Eng to Pacific, E.Asia 0000-1000), rated 34333 at 0512 in Morpeth & 34543 at 0805 in Wallsend; **15.415** (Eng to E/SE.Asia 0600-0900) 44333 at 0800 in Morden;

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

- (A) Geraint Gill, while in German Rhineland.  
 (B) Francis Heame, N.Bristol.  
 (C) Simon Hockenhufl, E.Bristol.  
 (D) Sheila Hughes, Morden.  
 (E) Rhoderick Ilman, Oxted.  
 (F) Brian Keyte, while in Messingham, N.Lincs.  
 (G) Eddie McKeown, Newry.  
 (H) Philip Miller Tate, while in Charnmouth.  
 (I) George Millmore, Wootton loW.  
 (J) Clare Pinder, while in Appleby.  
 (K) Clare Pinder, while in Glasgow.  
 (L) Ernie Strong, Ramsey, Cambs.  
 (M) Fred Wilmshurst, Northampton.

## Medium Wave Chart

Freq (kHz)	Station	Country	Power (kW)	Listener	Freq (kHz)	Station	Country	Power (kW)	Listener
526	Vatican R	Italy	5	*	819	S.Sebastian(ED)	Spain	5	G*.I.*
531	Ain Beida	Algeria	600/300	H*.I.	828	Rotterdam	Holland	20	A*.G.*
531	Torshavn	Faeroe Is.	100	F	837	Nancy	France	200	G*.I.*
531	Berg	Germany	20	G*.	837	COPE via ?	Spain	?	H*.I.*
531	RNES via ?	Spain	?	G*.I.LM*	846	Rome	Italy	1200	A*.C*.G*.H*.I*.M*
531	Beromunster	Switzerland	500	A*.H*.LM*	855	RNEI via ?	France	?	G*.G*.H*
540	Wavre	Belgium	150/50	A*.D*.G*.I.LM*	864	Paris	France	300	G*.I.*
540	Sidi Benour	Morocco	600	G*.I.*	864	Socuellamos(RNEI)	Spain	2	H*.I.*
549	Les Trembles	France	600	D*.I.	873	Frankfurt(AFN)	Germany	150	A*.E*.G*
549	Sasnovy	Belarus	1000	*	873	Zaragoza(SER)	Spain	20	G*.I.*
549	Nordkirchen (DLF)	Germany	100	A*.	873	Enniskillen(R.U.I.)	UK	1	G*.
549	Thumau (DLF)	Germany	200	L*.M.	882	COPE via ?	Spain	?	G*.I.*
549	Espoo	Finland	50	G*.I.*	882	Washington(BBCWales)	UK	100	A*.E*.FG*.I.K.L.M*
558	RNES via ?	Spain	?	G*.H*	891	Algiers	Algeria	600/300	G*.I.*
558	Cima di Dentro	Switzerland	300	A*.	901	Hulsberg	Netherlands	20	A*.G*.I.*
567	Tullamore(RTE1)	Ire	500	C.D.F.G*.H*.I.LM*	900	Bmo(CRo2)	Czech Rep	25	G*.
576	Muhlacker(SDR)	Germany	500	A*.G*.I.LM*	900	Milan	Italy	600	A*.C*.G*.H*.I.*
576	Riga	Latvia	500	L*.	900	COPE via ?	Spain	?	L*.
576	Barcelona(RNES)	Spain	50	G*.I.*	909	B'mans(PBBCS)	UK	140	A*.I.LM*
585	Paris(FIP)	France	8	D.G*.I.L	918	Domzale	Slovenia	600/100	A*.G*.I.*
585	Madrid(RNE1)	Spain	200	G*.H*.I.LM*	918	Madrid(R.Int)	Spain	20	G*.H*.I.*
585	Dumfries(BBCScot)	UK	?	EG*	927	Volwermert	Belgium	300	G*.I.*
584	Frankfurt(HR)	Germany	1000/400	A*.G*.I.*	936	Bremen	Germany	100	G*.I.*
594	Oujda-1	Morocco	100	L*.	936	RNES via ?	Spain	?	H*.I.*
603	Lyon	France	300	G*.H*.I.*	945	Toulouse	France	300	A*.G*.H*
603	Sevilla(RNES)	Spain	50	G*.I.*	954	Bmo(CRo2)	Czech Rep.	20	G*.I.*
603	Newcastle(BBC)	UK	2	EG*.I.	954	Madrid(EL)	Spain	200	G*.H*.I.*
612	Athlone(RTE2)	Ire	100	C.F.G*.I.L	963	Pori	Finland	600	G*.H*.I.*
612	RNEI via ?	Spain	10	G*.	963	Victoria(EI)	Spain	10	L*.
621	Wavre	Belgium	80	A*.D*.G*.H*.I.LM*	972	Hamburg(NDR)	Germany	300	A*.C*.H*.I.*
621	Barcelona(OCR)	Spain	50	G*.	972	RNEI via ?	Spain	?	G*.
630	Vigra	Norway	100	G*.I.*	981	Alger	Algeria	600/300	A*.C*.H*.I.*
630	Tunis-Djeida	Tunisia	600	C*.G*.I.*	990	Berlin	Germany	300	G*.I.*
639	Praha(Libfice)	Czech	1500	G*.I.L.M*	990	R Bilbao(SER)	Spain	10	G*.I.*
639	RNEI via ?	Spain	?	G*.H*	999	Schwenin(RIAS)	Germany	20	G*.
648	RNEI via ?	Spain	10	G*.	999	Madrid(COPE)	Spain	50	G*.H*.I.*
648	Orfordness(BBC)	UK	500	A*.C.F.G*.I.LM*	1008	SER via ?	Canaries/Spain	?	L*.
657	Napoli	Italy	120	A*.	1008	Flevo(Hiv-5)	Holland	400	A*.E.G*.H*.I.LM*
657	Madrid(RNES)	Spain	20	G*.I.*	1017	Rheinsender(SWF)	Germany	800	A*.G*.H*.I.*
657	Wrexham(BBCWales)	UK	2	EG*.I.LM*	1017	RNES via ?	Spain	?	G*.I.*
666	Messkirch(Pfdr(SWR)	Germany	150	A*.G*.I.LM*	1035	Milan	Italy	50	G*.I.*
666	Sitkuna(R.Vilnius)	Lithuania	500	G*.	1035	Lisbon	Portugal	120	G*.
666	Lisboa	Portugal	135	L*.	1044	Dresden(MDR)	Germany	20	G*.I.*
675	R10 FM	Holland	120	A*.C.D.G*.H*.I.LM*	1044	Sebaa-Aioun	Morocco	300	L*.
684	Sevilla(RNE1)	Spain	500	G*.H*.I.*	1044	SER via ?	Spain	?	H*.
693	Droitwich(BBC)	UK	150	I.LM*	1044	S.Sebastian(SER)	Spain	10	G*.I.*
702	Flensburg(NDR)	Germany	5	G*.	1053	Talk Sport via ?	UK	?	A*.G*.I.LM*
702	TWR via Monte Carlo	Monaco	300	G*.H*.I.LM*	1062	Kalundborg	Denmark	250	A*.C*.D*.G*.H*.I.*
702	Presov	Slovakia	200	L*.	1062	R.Uno via ?	Italy	?	L*.
711	Rennes 1	France	300	C*.G*.H*.I.LM*	1071	Cairo	Egypt	100	L*.
720	Langenberg	Germany	200	A*.I.*	1071	Bilbao(EL)	Spain	5	G*.H*.M*
720	Lisnagarvey(BBC4)	N.Ireland	10	C*.	1071	Talk Sport via ?	UK	?	G*.I.LM*
720	Lots Rd,Ldini(BBC4)	UK	0.5	EL.LM*	1080	Ajedabia	Libya	40	L*.
729	Card(RTE1)	Ire	10	G*.I.L	1080	SER via ?	Spain	?	G*.H*.I.*
729	RNEI via ?	Spain	?	G*.H*.I.LM*	1089	Talk Sport via ?	UK	?	A*.G*.I.LM*
738	Paris	France	4	G*.I.*	1098	Nitra(Jarok)	Slovakia	1500	A*.C*.G*.H*.I.*
738	Barcelona(RNE1)	Spain	500	A*.G*.H*.I.LM*	1098	RNES via ?	Spain	?	L*.
747	Flervo(Hiv2)	Holland	400	A*.C.F.G*.H*.I.LM*	1107	AFN via ?	Germany	10	A*.G*.
756	Braunschweig(DLF)	Germany	800/200	A*.G*.I.LM*	1107	RNES via ?	Spain	?	L*.
756	Bilbao(EL)	Spain	5	G*.H*.I.*	1107	Talk Sport via ?	UK	?	G*.I.LM*
765	Sottens	Switzerland	500	A*.G*.H*.M*	1116	Bari	Italy	150	L*.
774	Abis	Egypt	500	L*.	1116	Pontevicral(SER)	Spain	5	G*.I.*
774	Enniskillen(BBC)	N.Ireland	1	G*.	1125	La Louviere	Belgium	20	G*.I.L*
774	RNEI via ?	Spain	?	G*.H*.I.LM*	1125	Deanovec	Croatia	100	C*.
783	Leipzig(MDR)	Germany	100	C*.G*.I.*	1125	El Beida	Libya	500	L*.
783	Barcelona(COPE)	Spain	50	H*.I.*	1125	RNES via ?	Spain	?	L*.
792	Limos	France	300	A*.G*.H*	1125	Llandrindod Wells	UK	?	EL*
792	Lingen(NDR)	Germany	5	G*.	1134	Zadar(Croatian R)	Croatia	600/1200	C*.G*.H*.I.*
801	Munchen-Ismaning	Germany	300	A*.G*.I.*	1134	COPE via ?	Spain	2	G*.I.*
801	RNEI via ?	Spain	?	H*.I.*	1143	AFN via ?	Germany	?	G*.H*
810	Madrid(SER)	Spain	20	L*.H*.I.*	1143	Bolshakov(Moscow)	Russian	150	L*.
810	Westerglen(BBCScot)	UK	100	A*.C*.E*.FG*.H*.LM*	1143	COPE via ?	Spain	2	G*.I.*
819	Batra	Egypt	450	G*.I.LM*	1179	SER via ?	Spain	?	C*.H*.I.*
1179	Solvesborg	Sweden	600	A*.C*.G*.I.L.M*	1179	Solvesborg	Sweden	600	A*.C*.G*.I.L.M*
1188	Kuurne	Belgium	5	G*.I.M	1188	Kuurne	Belgium	5	G*.I.M
1188	Szolnok	Hungary	135	A*.G*.H*.I.*	1188	Szolnok	Hungary	135	A*.G*.H*.I.*
1197	Munich(VOA)	Germany	300	A*.G*.H*	1197	Munich(VOA)	Germany	300	A*.G*.H*
1197	Virgin via ?	UK	?	G*.I.LM*	1197	Virgin via ?	UK	?	G*.I.LM*
1206	Bordeaux	France	100	C*.G*.H*.I.L	1206	Bordeaux	France	100	C*.G*.H*.I.L
1215	Kaliningrad	Russia	500	A*.	1215	Kaliningrad	Russia	500	A*.
1215	Virgin via ?	UK	?	G*.I.LM*	1215	Virgin via ?	UK	?	G*.I.LM*
1224	Vidin	Bulgaria	500	L*.	1224	Vidin	Bulgaria	500	L*.
1224	Lelystad	Holland	50	A*.G*.H*.I.*	1224	Lelystad	Holland	50	A*.G*.H*.I.*
1224	COPE via ?	Spain	?	G*.I.*	1224	COPE via ?	Spain	?	G*.I.*
1233	Nitra	Slovakia	40	G*.	1233	Nitra	Slovakia	40	G*.
1233	Virgin via ?	UK	?	G*.I.LM*	1233	Virgin via ?	UK	?	G*.I.LM*
1242	Marseille	France	150	G*.H*	1242	Marseille	France	150	G*.H*
1242	Virgin via ?	UK	?	G*.I.*	1242	Virgin via ?	UK	?	G*.I.*
1251	Marcail	Hungary	500	G*.I.*	1251	Marcail	Hungary	500	G*.I.*
1251	Huisberg	Netherlands	10	G*.H*	1251	Huisberg	Netherlands	10	G*.H*
1260	Rhodes(VOA)	Greece	500	L*.	1260	Rhodes(VOA)	Greece	500	L*.
1260	SER via ?	Spain	?	G*.I.*	1260	SER via ?	Spain	?	G*.I.*
1269	Neumunster(DLF)	Germany	600	A*.C*.G*.H*.I.L.M*	1269	Neumunster(DLF)	Germany	600	A*.C*.G*.H*.I.L.M*
1269	COPE via ?	Spain	?	L*.	1269	COPE via ?	Spain	?	L*.
1278	Dublin(Cork(RTE2))	Ire	10	EG*.LM*	1278	Dublin(Cork(RTE2))	Ire	10	EG*.LM*
1278	Strasbourg	France	300	A*.H*.I.*	1278	Strasbourg	France	300	A*.H*.I.*
1278	Kermanshah	Iran	200	L*.	1278	Kermanshah	Iran	200	L*.
1287	RFE via ?	Czech Rep.	?	A*.G*.	1287	RFE via ?	Czech Rep.	?	A*.G*.
1287	Lerida(SER)	Spain	10	A*.G*.	1287	Lerida(SER)	Spain	10	A*.G*.
1296	Valencia(COPE)	Spain	10	L*.	1296	Valencia(COPE)	Spain	10	L*.
1296	Orfordness(BBC)	UK	500	A*.E*.G*.I.	1296	Orfordness(BBC)	UK	500	A*.E*.G*.I.
1305	Constantine	Algeria	20	L*.	1305	Constantine	Algeria	20	L*.
1305	RNES via ?	Spain	?	L*.	1305	RNES via ?	Spain	?	L*.
1314	Kvitsoy	Norway	1200	A*.C*.G*.H*.I.LM*	1314	Kvitsoy	Norway	1200	A*.C*.G*.H*.I.LM*
1323	W'brunn(V.Russia)	Germany	1000/150	A*.G*.M*	1323	W'brunn(V.Russia)	Germany	1000/150	A*.G*.M*
1332	Rome	Italy	300	A*.G*.M*	1332	Rome	Italy	300	A*.G*.M*
1341	Lisnagarvey(BBC)	N.Ireland	100	C*.D.F.K.L.M*	1341	Lisnagarvey(BBC)	N.Ireland	100	C*.D.F.K.L.M*
1341	Tarasa(SER)	Spain	2	L*.	1341	Tarasa(SER)	Spain	2	L*.
1350	Cesvaine(Kuldira)	Latvia	50	L*.	1350	Cesvaine(Kuldira)	Latvia	50	L*.
1359	Madrid(RNE-5P)	Spain	600	G*.H*.I.*	1359	Madrid(RNE-5P)	Spain	600	G*.H*.I.*
1368	Foxdale(Manx R)	Is of Man	20	D*.F.G.J	1368	Foxdale(Manx R)	Is of Man	20	D*.F.G.J
1368	RAI via ?	Italy	?	A*.	1368	RAI via ?	Italy	?	A*.
1377	Lille	France	300	A*.C*.G*.H*.I.LM*	1377	Lille	France	300	A*.C*.G*.H*.I.LM*
1386	Bolshakov	Russia	2500	A*.C*.D*.G*.I.LM*	1386	Bolshakov	Russia	2500	A*.C*.D*.G*.I.LM*
1395	TWR via Filake	Albania	500	G*.	1395	TWR via Filake	Albania	500	G*.
1395	Lopic	Netherlands	120/40	G*.I.	1395	Lopic	Netherlands	120/40	G*.I.
1404	Brest	France	20	A*.G*.H*.I.LM*	1404	Brest	France	20	A*.G*.H*.I.LM*
1413	RNES via ?	Spain	?	G*.H*.I.*	1413	RNES via ?	Spain	?	G*.H*.I.*
1422	Heusweiler(DLF)	Germany	1200/600	A*.C*.G*.H*.I.LM*	1422	Heusweiler(DLF)	Germany	1200/600	A*.C*.G*.H*.I.LM*
1440	Marnach(RTL)	Luxembourg	1200	A*.G*.I.LM*	1440	Marnach(RTL)	Luxembourg	1200	A*.G*.I.LM*



**15.515** (Eng to N.America, Pacific 0100-0700) 22422 at 0607 in Rugby.

Also noted during the early morning were the BBC via Ascension Is **15.400** (Eng to W.Africa 0700-1130, 1500-2300) rated 32422 at 0737 in Colyton; Swiss R.Int via Julich, Germany **15.545** (Fr, Ger, It, Eng to M.East, Africa 0600-0800) 34434 at 0745 in Oxted; KTWR Guam **15.330** (Eng to Australia? 0800-0930) 34132 at 0815 in Newry; V of Greece, Athens **15.630** (Gr, Eng to Eur, Australia? 0900-1000) 33333 at 0930 in Truro; BBC via Singapore **15.360** (Eng to E.Asia 0000-0330, 0500-1030) 34433 at 1002 in E.Bristol.

After mid-day LBC via Ekala, Sri Lanka **15.425** (Eng to Asia 1230?-1630?) was 22222 at 1315 in Stalbridge; R.Oman via Thumrait **15.140** (Eng to M.East 1400-1500) 33223 at 1400 in Dudley; Africa No.1, Gabon **15.475** (Fr to W.Africa 1600-2100) 34333 at 1818 in Storrington; R.Philipinas, Philippines **15.190** (Filip, Eng 1800?-1930) 35343 at 1838 in Newry & 55444 at 1914 in Guildford; R.Canada Int via Sackville? **15.325** (Eng, Fr to Eur 2000-2200) 45343 at 2010 in Northampton; Voice of Indonesia, Jakarta **15.150** (Eng to Eur, Africa 2000-2100) 55544 at 2055 in Guildford; R.Korea Int, Seoul **15.575** (Eng to Eur 2100-2200) 44333 at 2100 in Appleby.

Good reception from some areas has also been noted in the **13MHz (22m)** band by listeners in the UK. Mentioned in the reports were Croatian R, Zargreb **13.830** (News to Eur), rated 54444 at 0830 in Truro; Radio Australia via Shepparton **13.605** (Eng to Pacific areas 0800-1200) 34333 at 1015 in Morpeth; R.Austria Int via Moosbrunn **13.730** (Eng to Eur 1130-1200) 55555 at 1145 in Herstmonceux; R.Prague, Czech Rep. **13.580** (Eng, Cz to Eur, Asia 1300-1357) 44444 at 1324 in Woodhall Spa; Croatian R, Zargreb **13.830** (Cr, Eng to Eur, Africa) 25532 at 1415 in E.Bristol; UAER, Dubai **13.675** (Eng to Eur 1600-1640) 45444 at 1625 in Northampton; AIR via Bangalore **13.620** (Ar to M.East, Africa 1730-1945) 44434 at 1825 in Colyton; Swiss R.Int via Sottens **13.770** (It, Ar, Eng, Ger, Fr to Near East, Africa 1830-2130) 44333 at 2008 in Rugby; Voice of Vietnam, Hanoi **13.740** (Eng, Fr to Eur 2030-2130) 33333 at 2030 in Appleby; VOIRI Tehran **13.745** (Eng to Asia, Australia 2130-2230) 35232 at 2144 in Newry; All India R. (AIR) via ? **13.605** (Eng to Far East 2245-0045) 54445 at 2245 in Stalbridge; R.Australia via Darwin **13.620** (Eng to SE.Asia 2200-0000) 35543 at 2300 in Wallsend; RCI via Sackville, Canada **13.670** (Eng to America 2300-0000) 44333 at 2300 in Morden.

During the morning both R.New Zealand and R.Australia have been reaching the UK in the **11MHz (25m)** band. R.New Zealand's 100kW transmission from Rangitaki, N.Island on **11.725** (Eng 0500-0700) was rated 32222 at 0600 in Stalbridge & 32433 at 0630 in Guildford. At 0700 they move to the **9MHz (31m)** band - see below. Later, R.Australia's broadcast to Asia via Shepparton on **11.880** (Eng 0900-1100) may be heard - it was rated 34333 at 0925 in Truro.

Also mentioned in the reports were HCJB, Quito via ? **11.680** (Eng to Eur? 0600-0800), noted as 54444 at 0605 in Morpeth; WYFR Family R. via Okeechobee FL, USA **11.580** (Ger, Eng to Eur, Africa 0600-0800) 55445 at 0620 in Rugby; World Harvest R. (WHRI) via Maine, USA **11.730** (Eng to Africa 0800-0900) 45544 at 0828 in Northampton; R.Prague, Czech Rep **11.615** (Eng to N.Eur 1030-1057) 44433 at 1054 in Oxted; R.Jordan via Al Karanah **11.690** (Eng to W.Eur, E.USA 1400-1730?) 44433 at 1450 in Herstmonceux; R.Japan via Sri Lanka? **11.970** (Eng to M.East? N.Africa? 1700-1800) 32233 at 1700 in Dudley; R.Finland via Pori **11.755** (Fin to Eur) 43544 at 1746 in Colyton; R.Pakistan, Islamabad **11.570** (Ur to Eur 1700-1900?) 45444 at 1808 in Storrington; R.Kuwait via Kabd **11.990** (Eng to Eur, N.America 1800-2100) 44444 at 1839 in Woodhall Spa; Israel R, Jerusalem **11.605** (Eng to Eur, N.America 1900-1930) 44444 at 1900 in Appleby; Voice of Mediterranean, Malta via Russia? **12.060** (Eng to Eur, N.Africa 1900-2000) 44444 at 1900 in Newry; DW via ? **11.865** (Eng to W.Africa? 2100-2150) SIO 444 at 2116 in N.Bristol; Voice of Turkey **11.845** (Eng to Eur, USA 2200-2250) 44433 at 2205 in Morden; R.Taipei Int via WYFR? **11.565** (Eng to Eur 2200-2300) 35543 at 2215 in Wallsend; R.Yugoslavia **11.870** (Eng to N.America 0000-0030) 44544 at 0005 in E.Bristol; R.Brasil Central, Goiania, Brazil **11.815** (Port 0700-0300) 31333 at 0203 in W.London.

As mentioned above, R.New Zealand may be heard in the **9MHz (31m)** band from 0700. Their transmission on **9.885** (Eng 0700-1100) was rated 25552 at 0740 in Wallsend. Later, R.Australia is active on two frequencies from Shepparton - **9.475** (Eng to Asia 1330-1858), rated 31222 at 1730 in Colyton; also **9.500** (Eng to Pacific areas 1900-2130) noted as 33443 at 1945 in Storrington & 44444 at 2030 in Rugby.

During the morning good reception was noted from quite a few broadcasters including HCJB in Quito, Ecuador on **9.745** (Eng to America 0500-0600), rated 54444 at 0513 in Guildford; WTJC Newport NC, USA **9.370** (Eng to N.America 24hrs) 54444 at 0605 in Morpeth; R.Slovakia **9.440** (Eng to Australia 0700-0730) 44444 at 0700 in Morden; TWR Monte Carlo, Monaco **9.870** (Eng to Eur 0655-0800) 55455 at 0744 in Newry; Herald Christian Science via WSHB Cypress Creek, USA **9.860** (Sp, Eng to Eur 0800-1000) 55545 at 0825 in Stalbridge; R.Vilnius, Lithuania **9.710** (Eng to Eur 0930-1000) 54544 at 0935 in Herstmonceux; R.Mediterranean Int, Morocco **9.575** (Ar, Fr to N.Africa, S.Eur 0500-0100) 34433 at 1030 in Oxted; R.Nederlands via Wertachtal **9.860** (Eng to Eur 1030-1225) SIO 333 at 1132 in N.Bristol.

Later, the Voice of Russia **9.775** (Eng to Eur 1800-2100) was a potent 55444 at 1800 in Appleby; VOA via Woofferton, UK **9.760** (Eng to N.Africa, M.East 1800?-2200) 44444 at 1836 in Woodhall Spa; BBC via Cyprus **9.410** (Eng to Eur, N.Africa 1600-2200) 55534 at 1904 in E.Bristol; R.Tirana, Albania **9.540** (Eng to Eur 2130-2200) 55343 at 2148 in Northampton; R.Cairo, Egypt **9.990** (Fr, Eng to Eur 2000-2245) 32222 at 2215 in Truro; CBC North Quebec via Sackville, Canada **9.625** (Eng, Fr, Inuk, Cree 1155-0610) 33333 at 0105 in W.London.

Noted in the **7MHz (41m)** band were R.Nederlands via Madagascar **7.120** (Eng to Africa 1730-2025), rated 34333 at 1830 in Colyton & 32232 at 2007 in E.Bristol; Voice of Nigeria, Ikorodu **7.255** (Fr to W.Africa 1800-1900) 33333 at 1839 in Storrington; R.Diff TV Guineenne, Conakry **7.125** (Fr, Ethnic 0555-0800, 1200-0000) 54534 at 2323 in Guildford; WJCR Upton, KY, USA **7.490** (Eng to N.America) 43433 at 0455 in Morpeth; BBC via Ascension Is **7.160** (Eng to W.Africa 0300-0700) 44444 at 0600 in Morden.

Also mentioned in the reports were some of the broadcasts to Europe. They came from WYFR Family R. via Okeechobee FL, USA **7.355** (Ger, Eng 0600-0800, also to Africa), rated 35333 at 0632 in Newry; R.Japan via Woofferton, UK **7.230** (Eng, Jap 0500-0700) 55455 at 0600 in Rugby & 55544 at 0650 in Herstmonceux; Sudwestfunk via Rohrdorf **7.265** (Ger 24hrs) 34433 at 0934 in Oxted; Vatican R, Italy **7.250** (Various, Eng 1615-1630) 44444 at 1625 in Woodhall Spa; R.Thailand, Udorn Thani **7.155** (Eng 1900-2000) 33333 at 1945 in Truro; DW via ? **7.130** (Eng 2030-?) SIO 444 at 2011 in N.Bristol; Voice of Greece **7.430** (Gr, Eng) 45544 at 2140 in Northampton; AIR via Bangalore **7.410** (Hi, Eng 1745-2230) 43334 at 2205 in Stalbridge.

Some of the many broadcasts to Europe in the **6MHz (49m)** band originate from R.Japan via Skelton, UK **5.975** (Eng 0500-0600), rated 55555 at 0555 in Rugby; Voice of the Mediterranean, Malta via Russia? **6.110** (Eng 0600-?) 34433 at 0620 in Stalbridge; R.Vlaanderen Int via Julich, Germany **5.985** (Eng 0700-0730) 44444 at 0700 in Appleby; Voice of Hope via Julich, Germany **5.975** (Eng 0700-0800) 55544 at 0732 in Northampton; Deutschland R, Berlin **6.005** (Ger 24hrs) 44333 at 0732 in Oxted; Bayerischer Rundfunk, Germany **6.085** (Ger 24hrs) 44444 at 0745 in Oxted & 44434 at 1700 in Colyton; Swiss R.Int via Julich, Germany **6.110** (Ger, Fr, It, Eng 1730-1930) 55544 at 1910 in Herstmonceux; RAI Rome **5.970** (Eng 1935-1955) 43544 at 1937 in E.Bristol; R.Canada Int via Skelton, UK? **5.995** (Eng 2000-2100) 55555 at 2000 in Dudley & SIO 444 at 2006 in N.Bristol; R.Sweden **6.065** (Sw) 33333 at 2020 in Truro; R.Japan via ? **6.055** (Eng 2100-2200) 44344 at 2110 in Newry.

Some to other areas may also be received here after dark: R.Diff.TV Congolaise, Brazzaville **5.985** (Fr 1700?-?), rated 53444 at 2158 in Guildford; CKZN St.John's, Newfoundland **6.160** (Eng [relays CBN] 0930-0500) 43334 at 0100 in W.London; WEWN Birmingham, USA **5.825** (Eng to N.America 2200?-1400?) 44444 at 0510 in Morden; American Forces Network (AFN) via Puerto Rico **6.458** (Eng [u.s.b.]) 44444 at 0530 in Morpeth.



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

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

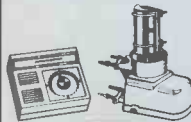
£99.95

**LOG PERIODIC MLP32**

Freq. Range 100-1300MHz  
Length 1420mm Wide Band 16 Element directional beam which gives a maximum of 11-13Db Gain Forward and 15Db Gain Front to Back Ratio. Complete with mounting hardware. (The Ultimate Receiving Antenna - a must for the Dedicated Listener.)

**ROTATOR AR-300XL**

- \* Rotation Torque-222Kg
- \* Vertical Load-45Kg
- \* Mast Size - 28-44mm
- \* Control Box-230v AC
- \* Cable-3 core
- \* Direct Compass Bearings (Ideal for Light to Medium Beams, i.e. LOG PERIODIC above.)



£49.95



**6" STAND OFF BRACKET**

Complete with 'U' Bolts  
9" stand off bracket £9.00

£6.00

**MD37 SKY WIRE (LONG WIRE BALUN KIT)**

25 METRES OF ENAMELLED WIRE INCLUDES 10M PATCH LEAD & INSULATOR

FOR USE ON WITH RECEIVER 0 - 40 Mhz. ALL MODE NO ATU REQUIRED 2 "S" POINTS GREATER SIGNAL THAN OTHER BALUNS. MATCHES ANY LONG WIRE TO 50 OHMS IMPROVED RECEPTION

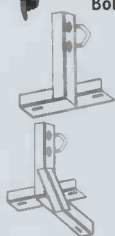


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**5' SWAGED POLES**

Heavy Duty Ali (1.2mm wall)

- SINGLE 1 1/4" .....£7.00
- 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



**T&K BRACKETS**

Complete with 'U' Bolts

- 12" - £11.95
- 18" - £17.95
- 24" - £19.95
- 36" - £29.95

**CONNECTORS**

- PL259/9..... 0.75 each
- PL259/6..... 0.75 each
- PL259/7 for mini 8 1.00 each
- BNC (Screw Type) 8 1.00 each
- BNC (Solder Type) 8 1.00 each
- N TYPE for N58 .....2.50 each
- N TYPE for RF213 .....2.50 each
- SO239 to BNC .....1.50 each
- PL259 to BNC .....2.00 each
- N TYPE to SO239 ...3.00 each

**CABLE**

- RG213 MILITARY 0.85 per mtr.
- MINI 8 ..... 0.70 per mtr.
- RG58 STANDARD 0.35 per mtr.
- RG58 MILITARY 0.60 per mtr.

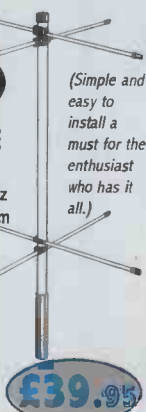
**WEATHER SATELLITE ANTENNA**

**TURNSTILE 137**

Freq. 137.5 MHz  
Length 1000mm

This Antenna is designed for external use to receive weather satellite signals.

Complete with mounting hardware.



£39.95



**UK SCANNING DIRECTORY**

7th edition

£19.50

**MRW-40 (Rubber Duck)**

Dedicated for Civil & Military Airband VHF/UHF RX & TX Capabilities  
Length 215mm. PP £2.00

£19.95

**MRP-2000 (Preamp)**

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

£49.95

**G. SCAN II**

Freq. Range 25-2000 MHz.Length 620 mm.

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

£24.95

**MWA HF Wire Antenna Mk11**

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

£59.95

**SWP 2000 FREQ. 25 - 2000 MHz. Length 515mm.**

Multiband good sensitivity for its small size. Fitted with two suction cups for ease of fitting to any smooth surface (i.e. inside of car window) comes with 5 metres of mini coax and BNC connector. (Good for the car user who doesn't want an external antenna.)

£29.95

**SWP HF30**

Freq. Range 0.05-30MHz Length 770mm

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

£39.95

**TRI SCAN III**

Freq. Range 25-2000MHz Length 720mm

Desk Top Antenna for indoor use with triple vertical loaded coils. The tri-pod legs are helically wound so as to give it its own unique ground plane. Complete with 5mts of low loss coax and BNC plug. (Ideal for Desk Top Use.)

£39.95

**ROYAL DISCONE 2000 (Stainless Steel)**

Freq. Range Receive 25-2000MHz Transmit 50-52MHz 144-146MHz 430-440MHz 900-986MHz 1240-1325MHz

Length 1540mm Connector-N TYPE The Ultimate Discone Design.

4.5DB GAIN OVER STANDARD DISCONE! Highly sensitive, with an amazing range of transmitting frequencies, comes complete with mounting hardware & brackets (The Best There is).

£49.95

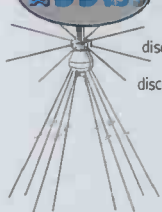


**SUPER DISCONE**

Freq. Range 25-2000MHz Length 1380mm

Internal or External use (A Tri-Plane Antenna). The angle of the ground planes are specially designed to give maximum receiving performance within the discone design. The Super Discone gives up to 30db Gain over a standard conventional discone. Comes complete with mounting hardware and brackets. (Ideal for the Experienced Enthusiast.)

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**MRW-100**

(Super Gainer) (Rubber Duck) Wideband extra sensitive Dedicated VHF/UHF all mode Length 400mm. PP £2.00

£19.95

**MRP-125 (Preamp)**

Freq Range 118-137 Mhz 9-15v input (Battery not included) 14 db Gain Complete with lead and BNC connectors.

£44.95

**CIVIL AND MILITARY RECEIVING ANTENNAS**

- AR30 (Length 1000mm GAIN 3.6 & 6.5) .....Price £39.95
- AR50 (Length 1500mm GAIN 5.0 & 7.5) .....Price £64.95



ADD £6 P&P PER ORDER



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# Bandscan USA

It's all about money. The many blows short wave broadcasting has received in recent months all seem to boil down to a lack of money. It's certainly the villain in the recent loss of one of the long time Canadian private stations. CHNX (6.130) in Halifax, Nova Scotia has left the air. The old transmitter finally emitted its last signals and died. And there's no money to buy a new one, so that is the end of that. Perhaps, though, the real culprit is not just lack of money, but also lack of money and desire. Given enough of the latter, the former might well be found. CHNX, which has been on the air practically forever, is now history.

Despite his occasional threats to close down the station, Steve Anderson continues to keep his United Patriot Radio on the air most evenings, airing news of militia activities in various states, as well as some far right wing programming. This unique broadcaster is well heard between 0000 and 0400 on 6.900 upper sideband. Unfortunately, he has no interest in issuing QSLs. We don't know of anyone who has had any success in changing his mind on that score.

XERTA, Radio Transcontinental, in Mexico, has been bouncing around lately, showing up on 4.870 briefly and then more or less settling down on 4.815MHz. However, you should not rely too much on its being there - or anywhere - on any given evening. Activity seems to be spotty.

## Quite Disheartening

Exploring sixty metres in the North American evenings can often be quite a disheartening experience. We toured the area from 4.750 to 4.995 around 0200 one evening and did not find a single broadcast signal! It may have been the fault of poor propagation but, even so, it was a condition we've never experienced before. There have been very few signals evident in the evenings through the recently ended summer season.

Voz Evangelica in Honduras on 4.819 and Radio Quito, Ecuador on 4.919, both usually well received regulars, have been down in strength and, oddly, for some time both have been operating one kHz lower than their assigned frequency. Two Venezuelans - Radio Tachira (4.830) and Ecos del Torbes (4.980) have been active only sporadically. Not like the 'old days' when there was a station every 5 or 10kHz!

## A Major Player

The United States will have yet another short wave broadcaster in the months ahead. WWCV (World Wide Christian Voice) in Tennessee looks as though it will be another religious broadcaster and it looks to be a major player to boot. It is to have several high power transmitter/antenna combinations.

Usually these stations start out 'small', with just a single 50 or 100kW unit. They may have tested or be testing by the time you read this. Eventually they hope to be broadcasting in Arabic, Hebrew and Farsi (Persian). We'll try and keep you posted on developments and future time and frequencies.

A number of North American DXers are still struggling to catch the new Christian Voice transmissions from Darwin, Australia. Most, if not all of the broadcasts seem to be in the 21MHz band and airing during North American evenings, which is not a power combo for North America.

The old Uruguay station, Radio Sarandi del Yi, is now called Radio Banda Oriental and is active on 6.155 and has been heard briefly or poorly by a few outside of Latin America itself. Programs, of course, are all in Spanish. Uruguay has never been a hot bed

of short wave activity, but a few other stations are active, including Radio SODRE on 6.125, Radio Monte Carlo on 6.140 and Radio Ciudad de Montevideo on 9.650. In most cases, they are on the air as late as 0300. Even with the helpful schedule, they are all very difficult to hear in North America.

## New Station

Alaskan short wave broadcaster KNLS is to be joined by a new station operated by Aurora Communications International, which is going to put a station on the air from Ninilchik, Alaska. No word yet on call letters or what the programming might be, but if you guess 'religious', you'd probably be spot on.

Meantime, KNLS is out to expand their facility with a second 100kW transmitter. The station's operator - World Christian Broadcasting - is out to raise \$7 million for that purpose plus an accompanying antenna system. The new facility would focus on China.

US broadcaster WRNO - the first in the flood of private short wave broadcasters we've seen come online over the past twenty years or so - was sold to an organisation called Good News World Outreach. WRNO Short wave had experienced a good deal of technical devolution in the past years and is operating now with very low power. Look for that to change when the new owners start spiffing things up.

## Now Reactivated

One of the toughest Brazilians to hear is Radio Sao Carlos in Sao Carlos, Sao Paulo state on 2.420. This one has been reactivated so your chances are better than they were! But, being on the 120m band makes reception entirely dependent upon favourable propagation, which doesn't seem to happen all that often in that part of the short wave spectrum. The station is operating 24 hours per day so you can check it any time the band is likely to be open.

Radio Esperanza, in Chile, is far from being as easy a log as Voz Cristiana in Santiago, but it, too, has been reactivated. The main nemesis here is Caribbean Beacon and Dr. Gene Scott's University Network on 6.090, which, it almost goes without saying, is also Radio Esperanza's frequency. If both are adhering to last year's schedules, Anguilla is off the air between 1000 and 2200 while Esperanza, but for a half hour break at 1200, is on the air all the time. Some recent receptions have been the result of propagation-enhanced Esperanza strength, enabling it to be heard underneath the Gene Scott broadcast.

## New Radio Band

The American Radio Relay League (ARRL) is petitioning the Federal Communications Commission to authorise a new amateur radio band in the range of 5.200 to 5.400 which, if approved, will make several out-of-band Peruvians and Bolivians which use that area a lot more difficult to hear. Our wager is that the amateur operators will get their way.

WJCR, the religious broadcaster in Upton, Kentucky, has been operating with far less than their normal power, after suffering considerable water damage. By the time you read this though, both of their transmitters should be back up to snuff and in full operations.

Look for a new, as yet unnamed, Voice of America service coming to a short wave radio near you in the future. It seems the VOA is going to give special attention to the Middle East with an 'all-Arabic-all-the-time' service. It is still a way from being a reality, but it is definitely coming.

That should do it for now. Until next time, good listening!



**WRNO should show up with stronger power and a new set of call letters before long.**



**American DXer Rick Barton of Arizona is the proud owner of two all-time classic receivers: a Zenith Trans Oceanic and Hammarlund SP600.**



**'Angel 1' - one of the four short wave transmitters of WHRI, Noblesville, Indiana.**

# Kenwood TH-F7E

## A Christmas Wish

I expect some of you have already thought of a few things you'd like for Christmas this year, radio wise. However, Dave Roberts says don't make that decision just yet...read on!

### Dear Santa,

I thought that with Christmas on the way I should write to you at the North Pole with a suggestion regarding any presents that you may be thinking of delivering this year. The socks and Y-fronts that you brought last year were very useful as were the pack of hankies (well you know how much I sneeze when I've had a few beers). This year could I have a radio please. It's called a Kenwood TH-F7E. You ask why? Here's why Santa...

This is a very little radio indeed. It fits in the shirt pocket of the pyjamas that you brought me the year before last. It has a very very good handbook which is actually written in Spanish and English. I don't know how the Spanish matches up, but the English side of the book is written in proper readable understandable English which actually makes sense. Most radio instructions are written in some sort of pidgin lingo which is pretty much incomprehensible throughout the English speaking world. Not so the Kenwood book of the TH-F7E. If you follow the instructions the radio will do what you want it to.

The Kenwood is sold as a dual-band hand-held transceiver with receive capability on the secondary band of between 0 and 1300MHz. All mode. The radio transmits up to 5W of f.m. in the UK 2m and 70cm amateur bands. The version of this TH-F7E marketed in the US is the TH-F6A and has some additional features including transmit capability on the 220MHz band which is not open for amateur use here in Britain. Don't think that the Euro version is the poor relation of the Stateside set

simply fitted with different software. This is not the case and the unit itself is clearly marked as an F7 and as a dual-band radio.

### Testing, Testing

The handbook features a quick guide to getting going and having looked at this, I thought it best to go and try the radio out in the field. After all it is a portable radio and is built to some sort of American

military standard which means it should keep a shower of rain out. Accordingly, I hiked up to the top of the cliffs about kilometre from my home. While strolling up the hill I had a natter on 2m band with my mate GM3JJJ who was also out walking near his place on the Isle of Lewis. Now Jon and I live around 64km apart across a stretch of ocean called The Minch. So we have a pretty good path for signals.

Jon was out hiking with his







dogs and he agreed to sit on a rock in the rain with his 5W hand-held set until I had scaled the cliff. I arrived at the top and as we were already talking on v.h.f. with S7 signals both ways, we switched first to 70cm band where the signals read around S6 in each direction. Now, Jon's little set has 1296MHz on board too. The TH-F7 will receive on that frequency and so we thought it would be worth a try.

Jon transmitted to me on 1296 and his signals came booming out of the speaker with a signal strength of S3 which I thought was pretty good. It was raining hard by now and Jon headed back home. I was able to fire up the local repeater, GB3IG on v.h.f. and access it easily on the 5W. From this location the repeater is around 80km or so away, but I can usually get in on any 5W hand-held radio from the cliff by the old RAF Chain Home radar site.

It seemed to me that performance on transmit and receive on v.h.f. and u.h.f. was the same as any other similarly powered handy talkie. I also had the opportunity to try the Kenwood in the south of

England the following week and the results from the crowded south were exactly the same as other radios of the same output that I have used. Accessing the local repeaters, GB3VA and GB3AL on v.h.f. and GB3HZ on 70cm was a reliable and easy experience. It does seem to me that people in England hardly converse any more on f.m. as I found no one to talk to on simplex frequencies, despite being in a very built up area. Where are you all?

### Fitted As Standard

Anyway, the HZ repeater is a somewhat different unit in that to access it requires a 77Hz CTCSS tone. This presents no problem for the TH-F7 as it has CTCSS fitted as standard, together with DCS and DTMF in addition to a 1750Hz tone button. From the amateur point of view this is an extremely competent pocket radio. The power comes from a supplied 7.4V Lithium-Ion rechargeable battery pack.

The supplied charging unit is a moulded plug top type. The battery appears to give around nine hours intermittent transmit and

constant receive use. I must confess that I wasn't too sure about this as time just flew by when using this radio. Charging up the battery takes around six and a half hours and the two little orange l.e.d.s on the set's top extinguish when the charge is completed. Overcharging will damage these batteries and they aren't cheap, so may I suggest using a timer switch to prevent brewing up the power pack.

### A Problem

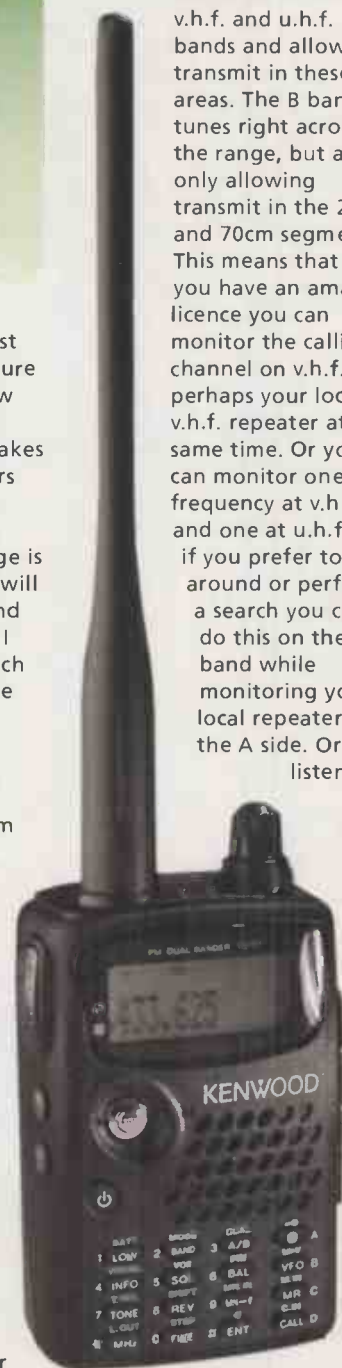
Here lies a glaring problem with the F7. You have to charge the battery with it fitted to the radio and you can't run the radio when the battery is charging. This means that for the charge period the radio is out of commission. The only way round this is to buy the empty battery tray and bung some AA cells in it so that you can change packs when the Li-ion pack goes flat and then pop it on charge when you next hit the sack.

This is a tiny radio in size, but not in features or

performance, but this does mean that the controls are small. They are, however, well laid out and obviously very well thought out so that having used the radio for a few hours their use becomes instinctive. The most innovative control is a 'menu' button which is in fact a 5-way joystick type device. This is particularly useful when tuning h.f. Yes h.f.!

As the specification says, the radio tunes from 0-1300MHz on receive on the B band. The F7 being a true dual-band rig has two bands available for display and use. Both at the same time if you require. The A band will only

tune in UK amateur v.h.f. and u.h.f. bands and allows transmit in these areas. The B band tunes right across the range, but again only allowing transmit in the 2m and 70cm segments. This means that if you have an amateur licence you can monitor the calling channel on v.h.f. and perhaps your local v.h.f. repeater at the same time. Or you can monitor one frequency at v.h.f. and one at u.h.f. Or if you prefer to scan around or perform a search you can do this on the B band while monitoring your local repeater on the A side. Or listen to



continued on page 22

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N.B. Picture of radio above is not the latest model.

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

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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.

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(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.

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

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Ready assembled wire antenna offering low noise reception on long, medium, short wave (100kHz-40MHz) 12.5mtrs long. Magnetically coupled transfer system ensures reduced static noise levels and allows unwanted build-up to leak harmlessly to earth without damaging the receiver. (Subject to recvr. being earthed).

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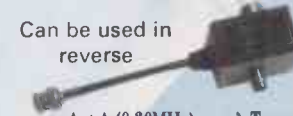
### MLB (R.F. SYSTEMS)



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

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Can be used in reverse  
Ant A (0-30MHz) } To receiver low  
Ant B (30-2000MHz) } insertion loss  
Allows two antennas to be connected to one receiver without interaction. P&P £3.50

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Starter kit includes charger & 4 x AA cells. £14.99 + £3.00 P&P.

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Can be used in reverse

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



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Extremely versatile all mode receiver (530kHz-2040MHz).

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2 YR G'EE Latest UK version

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2 YR G'EE

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Superb DSP HF receiver. As new.

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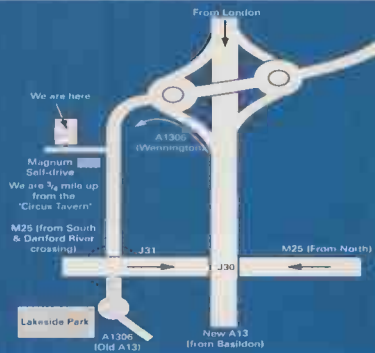


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**HEAR SIGNALS FROM OUTER SPACE**

## WORLDSPACE ANTENNA



Picture for illustration only

4 element yagi (outdoor). Under 12" long! (You don't need a huge antenna like the one shown!). Supplied as a complete kit with 25m of coax plus a low noise amplifier. Easy to fit.

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ACE-30  
AN-100

PSU for above .....£24.95  
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Just for Santa and anyone else who wants to buy one, the TH-F7 is priced around £289 and is available from all leading radio dealers.

Radio 4 while waiting for a call on two or seventy. Pretty impressive, eh?

There are 400 channels to programme with your favourite frequencies and 10 search bands to load up too. There are call frequencies to programme and heaven knows



what else. Receive performance on the bands from low v.h.f. to 1296MHz seems to me to be really excellent and separate squelch levels can be set for each of the two bands. Believe me there are a mass of scan parameters which can be set up.

As I said earlier this radio receives h.f. too. The supplied rubber antenna is really only useful for monitoring h.f. broadcast signals in the dark hours. You can't alter the laws of physics I'm afraid (although I think Kenwood are working on that as well) and the internal bar antenna for medium and long wave reception was only very effective when closer to a m.w. or l.w. transmitter. Although one night I could hear a French broadcast station on it.

But the h.f. works well when you hook up a different antenna to the SMA socket on the top. All the hand-held radios that I have tried perform to some extent when connected to an additional antenna. The thing with this set is that it is actually on frequency. Wide-band scanners

have always displayed a frequency somewhat different to that being received. This is one of the problems in making a set to be all things to everyone. Not so the Kenwood. Put it on 5.680MHz u.s.b. and hear the rescue frequency. Right on the

button. Likewise through the amateur bands and the military frequencies. Always on frequency. Believe me this is no mean feat for the constructors. Wire this radio to a dipole or long wire and you will really need the built in attenuator.

But this isn't the true test. This is a small portable set for portable use.

Reasonably strong readable signals. Likewise through the h.f. Oceanic air traffic frequencies and military stuff. The amateur bands on 20 and 17m were rolling with traffic and I heard a **big** pile up on the IOTA frequency of 14.260MHz. This is where the small stick control comes in handy, just keep your thumb on it and it will roll up or down through the frequencies for you.

I listened to the rescue channel on h.f. while monitoring amateur traffic on v.h.f. All at the same time. I tried the same set-up in the open air with better results. You'll have to experiment a bit with wire lengths to see which suits your listening priorities, but you won't be disappointed.

### First Rate

I have now taken up too much space writing about this set and I've not really scratched



Anyone who is using this on the road, in a tent or bivvy bag, or in a hotel room isn't necessarily going to have a darn great dipole antenna hanging from a handy tower. I grabbed around 5m of wire from a drawer and wired it via a connector or two to the TH-F7's antenna socket. I draped this wire around the room. Yes, there was 5.680 loud and clear. Up to the 7MHz amateur band. Sure enough,

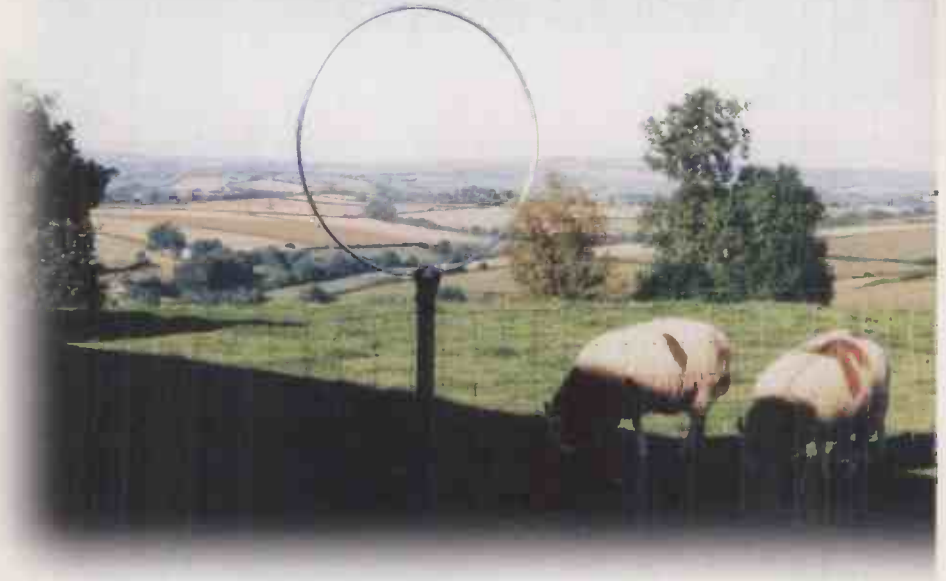
the surface of it's features. It's a first rate scanner, receiver, transceiver. Anyone who tries one will want to have one handy all the time. It's well thought out, well built and it works just fine.

So Dear Santa...forget the ruddy aftershave and the St. Michael shirts. Please get me a Kenwood TH-F7E plus a carry case and battery tray. Or there'll be no sherry or mince pies for you my lad. **SWM**



This month John Wilson investigates the relative strengths of two alternative l.f. antennas - the RF Systems LF-520 and the Wellbrook LFL1010.

Green and pleasant lands. Not much by way of electrical noise to be found here.



# Whips & Loops

## A second look

**T**his may sound like an invitation to a slightly unusual party, but is in fact further delve into the relative performance of the two major types of active antenna found in the market place today; the H-field loop antenna and the E-field whip or rod antenna, both types having their particular band of followers. Those of you who read my first encounter with the active loop antenna will remember how impressed I was with its performance compared to an expensive professional active rod antenna and also to a 'typical' 10 metre long wire fed through a 'magnetic balun' matching transformer. I followed this up with a more detailed assessment of the low noise performance and E-field rejection qualities of the loop after a reader complained to me that he found the loop antenna unsatisfactory when compared to his own long wire (75 metres long), and it was during this assessment that I found the exceptional ability of the loop when

listening for low level signals close to the receiving system noise floor. At the same time I began to find an interest in l.f. and v.l.f. listening and discovered that the loop in question (Wellbrook ALA1530) seemed to perform well below its stated lower frequency limit of 500kHz. The outcome

***"When assembled, with the four curved capacitive elements in place, the LFA-520 looks rather like one of the 'onion' pinnacles on top of the Kremlin"***

of this was that Wellbrook designed and manufactured a fully E-Field screened active loop that I could use as a second measuring antenna alongside an expensive Rohde & Schwarz HFH2-Z2 professional active loop in my day to day EMC measurements of radiated emissions down to 10kHz. Because of the

stipulation in the marine test standards I was using, the loop diameter was limited to 600mm, but when I had the Wellbrook l.f. loop calibrated to UKAS requirements I found that it performed every bit as well as the Rohde & Schwarz antenna and I thought then that it wouldn't be too long

before we would see a new Wellbrook active loop covering the v.l.f. frequency spectrum. By a bit of good fortune (for this reviewer) the eventual arrival of a sample of the new LFL1010 loop coincided with the announcement of a v.l.f. active whip antenna from RF Systems in Holland, so here was a real

opportunity for me to test the antennas side by side and let you know what I found.

### Mechanical Construction

The RF Systems LFA-520 antenna is typically well constructed and consists of a 2.1 metre long white plastic tube, 32mm in diameter and quite flexible. I would hazard a guess that the tube is a piece of standard white plumbing pipe of the type used for drainage from washbasins and baths, since RF Systems have already used plumbing parts in, for example, their MLB magnetic balun which is constructed from two 40mm grey plastic 'stop ends' cemented back to back. The plastic tube is securely fixed at each end into aluminium sections, that at the top having four fixing holes for the curved metal rods which make up the capacity 'hat', and at the bottom the metal section contains the active amplifier with a PL-259 socket for connection of the coaxial feed to the receiver. When



## Whips & Loops

### A second look

assembled, with the four curved capacitive elements in place, the LFA-520 looks rather like one of the 'onion' pinnacles on top of the Kremlin. A mast clamp is

system is a coupling unit again made out of a section of plastic pipe, with a short length of RG-58 coaxial cable at one end, terminating in a PL-259 plug, and an SO-239

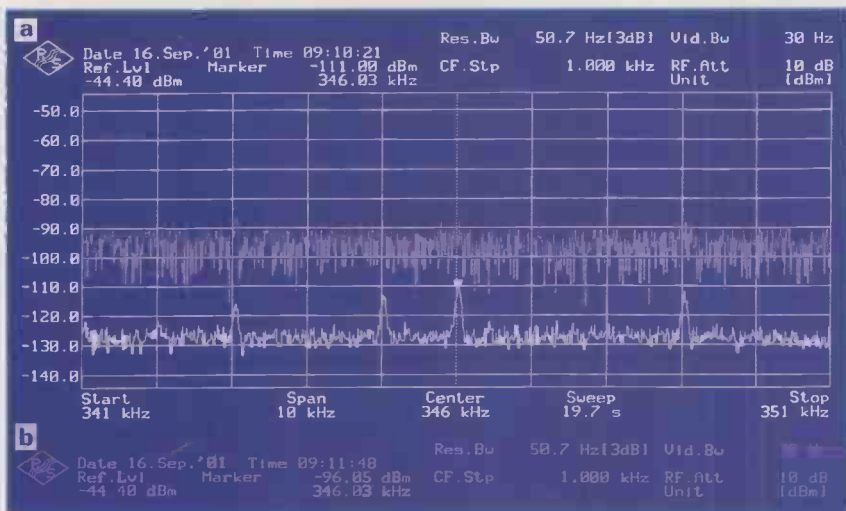


Fig. 1(a) The Wellbrook shows the spectrum between 341 and 351kHz, with the marker set to call sign LHO at 346kHz at a signal level of -111dBm and a noise floor of about -128dBm. Fig. 1(b) shows the same spectrum from the RF Systems antenna one minute later, with no sign of the beacon and a noise floor of about -95dBm.

provided to enable the user to mount the antenna on a metal pole, but in the sample I had I found that the clamp was seriously corroded, looking as though it had been in damp

socket at the other end which connects to the coaxial cable going to the active whip. Low voltage d.c. power is fed into the side of the coupling unit from a mains power supply,

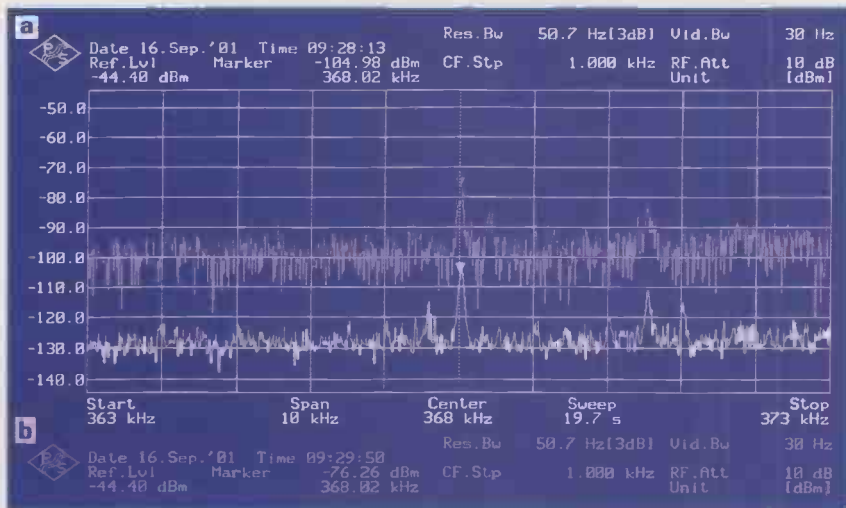


Fig. 2(a) The Wellbrook LFL1010 and Fig. 2(b) from the RF Systems LFA-520 with a slightly stronger signal from Waterford (WTD) on 368kHz.

storage for a long time, and was in any case a clamp for connecting tubes at right angles and not in line as required by the LFA-520, so useless for the purpose.

At the receiver end of the

which in the case of the sample unit was of the type having the continental two pin and no earth type of mains connector. I would hope that UK supplies would have the correct 13A UK plug fitted

because using the continental type in a typical mains adapter results in the weight of the power supply pulling itself out of the adapter every few minutes, as well as being a potential mains voltage hazard. A little practical observation is that the d.c. power is carried on quite thin twin flex which is taken directly into the coupling unit

without using a connector.

In my experience, this thin flex is very prone to breakage at such a point and a break would entail dismantling the coupling unit to effect a repair. The unit itself appears to be firmly sealed, and I would recommend to RF Systems that they change this aspect of the design to avoid calls

from irate owners when the d.c. lead breaks - as it surely will. Also buried inside this coupler are low pass filters to remove incoming signals above 500kHz, and I will

return to this later in the review.

The Wellbrook LFL1010 looks virtually identical to their existing ALA1530, and consists of a 1m diameter (actual measurement 1.1m) loop element made from 19mm diameter hard aluminium tube, giving strength and rigidity to the whole

structure. The ends of the loop are terminated in a standard plastic conduit box within which is the balanced amplifier system totally potted in waterproof compound. The location of the amplifier

**"A little practical observation is that the d.c. power is carried on quite thin twin flex which is taken directly into the coupling unit without using a connector"**

relative to the loop makes for a completely balanced electrical layout and a symmetrical radiation pattern. The coaxial feeder is connected into the amplifier box via a professional BNC connector, and as in the LFA-520, d.c. power is 'phantom' fed via the coaxial cable. Mounting the LFL1010 is either by passing two long screws through the holes provided in the amplifier housing, or by using the supplied metal adaptor which converts the flat surface of the housing into a threaded pipe fitting - again an electrical conduit fitting for convenience. Unlike the LFA-520 which specifies that you **must** mount the antenna on a securely grounded metal mast, even if this is on a chimney stack (how does one achieve this?), the Wellbrook (actual measurement 1.1m) loop element made from 19mm diameter hard aluminium tube, giving strength and rigidity to the whole

At the receiver end of the Wellbrook system is the necessary coupler to allow d.c. to be fed up the coaxial feeder to the antenna amplifier, and this is contained in a rectangular plastic enclosure with one metre of RG-58 coaxial cable terminated in a BNC connector to feed the



receiver, and a BNC socket to connect the coaxial cable feeding the antenna. Power is fed in via a proper concentric connector, and a fuse holder allows proper protection against short circuits on the antenna feeder. Changing a blown fuse in the LFA-520 involves dismantling the mains power supply unit (according to their instruction leaflet). The mains power supply provides regulated 12V d.c., and is one of the 'wall wart' blocks having an integral 13A UK mains connector (and therefore doesn't fall out of the mains socket). I know that some readers find the BNC connectors a bit fiddly to assemble, but if you use the type having a compression gland to hold the cable, and stay away from the type requiring a crimp tool to terminate, they are almost as easy to use as the ancient PL-259 and infinitely longer lasting, with a low v.s.w.r. performance extending into the GHz spectrum, perhaps not the most demanding requirement at the frequencies we are considering here, but important nonetheless.

This entire preamble is just for information; what you want to know is how they performed when connected to a receiver and used for real listening. Are you ready?

## Measured Performance

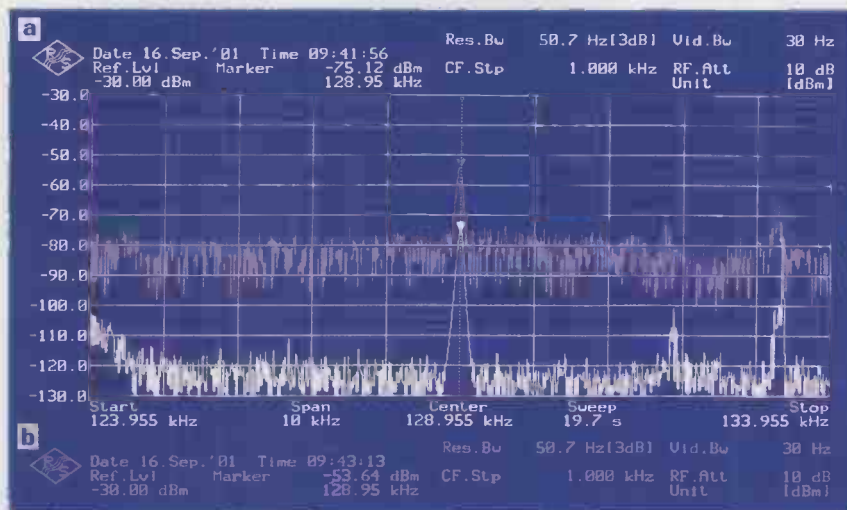
I mounted the LFA-520 on a grounded metal mast as

recommended by RF Systems, and mounted the Wellbrook loop as described earlier, by simply taping it to the top of a wooden fence post about 1.5m above ground. Both antennas were located some 20m from the building housing my test equipment. I ran identical lengths of RG-58 coaxial cable from both antennas into my

mention the test equipment because some of my findings and conclusions may be seen as controversial and I want to establish the measurement validity right from the start. As always, I placed myself as a substitute for an average listening enthusiast, and concentrated on what, and how well, I could hear and interpret real off-air signals.

to callsign LHO at 346kHz at a signal level of -111dBm and a noise floor of about -128dBm. The plot **Fig. 1(b)** shows the same spectrum from the RF Systems antenna one minute later, with no sign of the beacon and a noise floor of about -95dBm, some 30dB higher than the Wellbrook. Right away you begin to understand the difference

between E-field and H-field antennas in the real world. I repeated the measurements on the other beacons seen by the Wellbrook at 345kHz (callsign LN), and 349kHz (callsign RS), with the same results, i.e. in the clear and audible on the Wellbrook, inaudible on the RF Systems LFA-520. I then went trawling for a slightly



**Fig. 3(a)** and show the 129kHz signal measured, note the other signals at 131.8kHz and 133.3kHz clearly visible on the Wellbrook and **Fig 3(b)** they are barely present on the LFA-520.

measurement lab so that I could make instant comparisons between the two antennas, and used a Rohde & Schwarz FSA spectrum analyser to provide print-outs, with AR7030 and Racal RA1772 receivers to do the audible tests. Signal to noise ratio was measured using an HP 8903B analyser and/or an HP 3400A true r.m.s. meter. I

I began listening and measuring in the band allocated to low power non-directional beacons (NDBs) between 190 and 400kHz, precisely because these are usually weak and difficult to hear, being close to the system noise floor. The plot **Fig. 1(a)** of the Wellbrook shows the spectrum between 341 and 351kHz, with the marker set

stronger signal and found Waterford (callsign WTD) on 368kHz as seen in **Fig. 2(a)** with the Wellbrook and **Fig. 2(b)** from the RF Systems. Once again you can see the noise level from the LFA-520 is some 30dB higher than that from the Wellbrook, but of course you can also see that the signal level of the Waterford beacon is 28dB

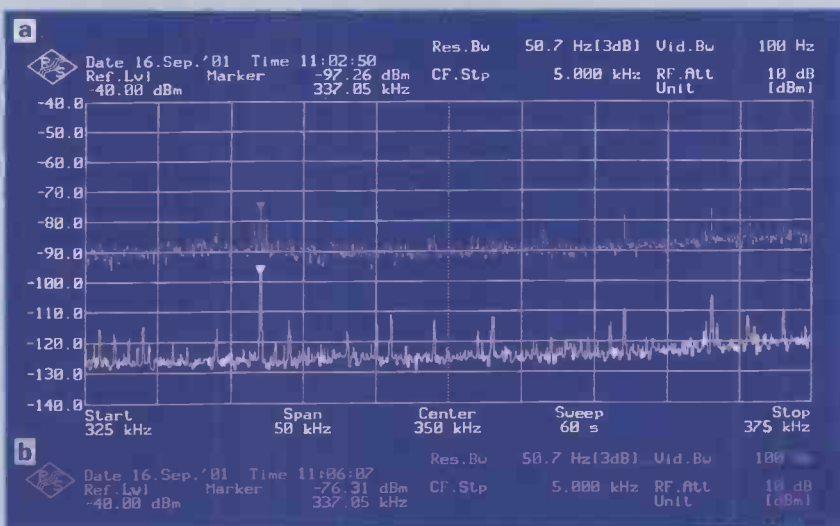
higher from the LFA-520. However, if you compare the signal level above noise in both cases, the S/N ratio of the Wellbrook is about 26dB whilst that of the LFA-520 is about 16dB, so the Wellbrook provides a better signal to noise ratio and a quieter background.

I again trawled for a stronger signal and located an RTTY carrier on 129kHz

**Fig. 4(a)** shows the Wellbrook, and **Fig. 4(b)** the RF Systems LFA-520 with a spectrum sweep from 325 to 375kHz. There are many identifiable signals from the Wellbrook loop but only a few visible above the noise level from the LFA-520. The following beacons were identifiable:

kHz	Wellbrook	RF Systems
326	MVC	-
326	RSH	-
328	HAV	-
329	JW	-
334	GMN	-
337	EXEX	-
339	BIA	-
343	OC	-
345	LN-	-
346	LHO	-
349	RS-	-
352	SB	-
357	LP-	-
358	LOR	-
359.5	CDN	-
361	GRB	-
362	OB	OB
368	WTD	WTD
370.5	AB	-

- signifiys not heard.





# Whips & Loops

## A second look

which was idle for several seconds in between giving a single 'gobble gobble', presumably a callsign. This enabled me to take SINAD measurements using the 8903B analyser which came out at 33dB for the signal from the Wellbrook and 12dB for the signal from the LFA-520, even though the LFA-520 signal was some 20dB higher in level. This 20dB difference kept appearing throughout all my tests and suggests that far too much gain has been designed into the LFA-520 in order to make received signals impressively high, and it's true that when first connected to a receiver one gets the impression that the signals are bouncing in. Unfortunately, the extra gain also increases the background noise to the point of pain, and the RF Systems brochure actually states that background noise will be up to S8, and I for one do not want to have a constant S8 background roar in my ears. The Wellbrook loop by comparison has a background noise level around 30dB lower, making life much more pleasant, and incidentally enabling you to actually hear signals which are inaudible on the LFA-520. The plots **Fig. 3(a)** and **Fig. 3(b)** show the 129kHz signal measured, and you should note the other signals at 131.8kHz and 133.3kHz clearly visible on the Wellbrook and barely present on the LFA-520.

### So Far So Good

You have noticed that the noise shown on the LFA-520 traces is much more 'spiky' than that from the Wellbrook, and this is probably because it results from E-field noise spikes which are simply not received by the Wellbrook H-field antenna. In order to look at performance in more detail I used the averaging facility on the spectrum analyser to 'average-out' the

non coherent noise spikes whilst 'averaging-in' the coherent real signals. This gives an advantage to the LFA-520, but I really wanted to

***"In order to look at performance in more detail I used the averaging facility on the spectrum analyser to 'average-out' the non coherent noise spikes whilst 'averaging-in' the coherent real signals"***

find out what the underlying performance was like. I set up a spectrum sweep from 325 to 375kHz and having obtained clear signals present, listened to each one using both the AR7030 and RA1772 receivers so that I could identify them by their callsigns. The Wellbrook results can be seen in **Fig. 4(a)**, and the RF Systems LFA-520 are those shown in **Fig. 4(b)**. It's once again plain to see that there are loads of identifiable signals from the Wellbrook loop but only a few visible above the noise level from the LFA-520. I listened to and identified the following beacons on the Wellbrook: 326kHz (MVC and RSH), 328kHz (HAV), 329kHz (JW), 334kHz (GMN), 337kHz (EX), 339kHz (BIA), 343kHz (OC), 345kHz (LN), 346kHz (LHO), 349kHz (RS), 352kHz (SB), 357kHz (LP), 358kHz (LOR), 359.5kHz (CDN), 361kHz (GRB), 362kHz (OB), 368kHz (WTD), 370.5kHz (AB). Listening on the same frequencies using the RF Systems antenna I could only hear and identify 337kHz (EX), 362kHz (OB) and 368kHz

(WTD), the rest being obliterated by noise and completely inaudible. Out of 19 identified beacons from the Wellbrook, I managed only three from the LFA-520. Having pursued the low signal performance of these antennas in the beacon band, I thought it wise to widen the study and look at other parts

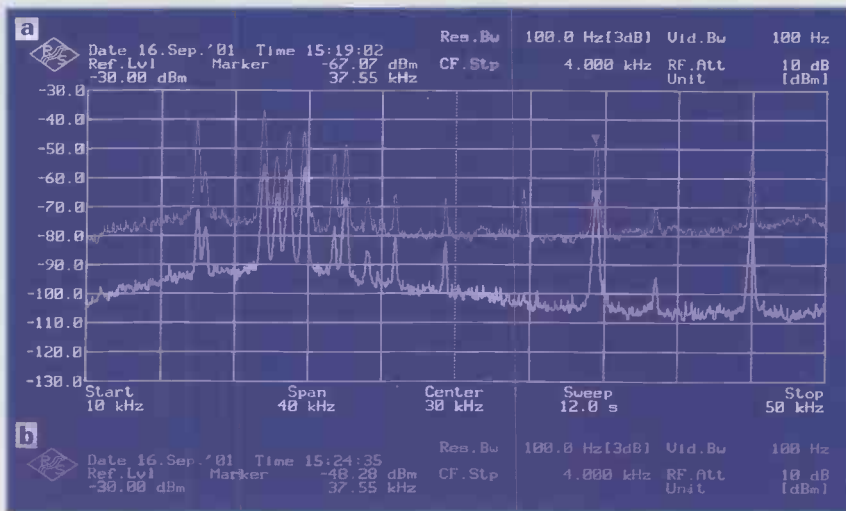
overtaken the LFA-520 both in terms of lower noise and higher signal to noise ratio, and from then on we have the 30dB lower noise floor from the loop. Note also that the LFA-520 noise level between 10 and 30kHz is the equivalent of S9 (-73dBm) on a normal receiver. Moving into the Long Wave broadcast spectrum, **Fig. 6(a)** and **Fig 6(b)** show signals between 150 and 300kHz. Once again the background noise level is 30dB higher from the LFA-520, and listening to the two stations visible at 207 and 216kHz revealed that they were loud and clear from the

Wellbrook and virtually inaudible from the LFA-520.

Finally (which may be a relief for you) **Fig. 7(a)** and **Fig. 7(b)** show what happens

of the l.f. spectrum, although I had a sinking feeling that results would be equally unflattering for the LFA-520.

Bear in mind that all the



**Fig. 5(a) LFL1010 and Fig. 5(b) LFA-520, show signals from 10 to 50kHz and you will note that the station on 16kHz is received at a higher level and with a better signal to noise ratio using the LFA-520. However, by the time we reach 37kHz, the Wellbrook has overtaken the LFA-520 both in terms of lower noise and higher signal to noise ratio.**

subsequent measurements were made with spectrum analyser averaging on, which suppresses the peak noise and leaves only the average level. In real listening, the peak E-field noise from the LFA-520 would be higher than indicated. Both **Fig. 5(a)** and **Fig. 5(b)** show signals from 10 to 50kHz and you will note that the station on 16kHz is received at a higher level and with a better signal to noise ratio using the LFA-520. However, by the time we reach 37kHz, the Wellbrook has

from 500kHz to 1.5MHz, and it is easy to see the effect of the low pass filtering built in to the LFA-520 coupling unit where the noise output from the antenna dives down to the measuring system noise floor. I measured the filter characteristics and found that it gave essentially minimum loss from 10 to 500kHz, then dropped by 3dB at 520kHz and 35dB at 800kHz, so it performs its stated function very well indeed. However, this means that the LFA-520 is very specifically tailored for use



only below 520kHz, whereas the Wellbrook LFL1010 carries on acting as a good H-field antenna up to 10MHz, and you can see the difference by looking at the medium wave signals above 500kHz. What do we make of all this?

## Fair Test?

First of all, have I been fair in my test procedures? I believe I have, in that I compared these two antennas under identical conditions using accurate measuring equipment, and also listening to them as an average enthusiast would. Have I missed something in the basic use of the two antennas? Again I have to say that I can't see that I have, but I'm always open to properly informed comment. The results of my tests, and I carried out many more spectrum sweeps than I have shown here, confirm my belief that for low frequency listening, the E-field rejection of a good loop antenna will always make it a better antenna, since it is readily acknowledged (even by RF Systems) that most near field interference exists in the E-field. My experiences with a number of active loop and active rod antennas both in the professional and hobby environments have confirmed in every case that the H-field antenna will produce better results, except where the loop area becomes very small relative to the wavelength being received, and this can just be seen in the

Exmoor at some 19km distant. This incidentally means that if you install an active rod antenna such as the LFA-520 in a more built-up location, its performance would be even worse than that shown in these tests.

## Conclusions

I can see no good reason why, given the choice, a listener would not choose the Wellbrook LFL1010 every time. The loop is easier to install,

features which make it special or different from other, similar products. The leaflet from RF Systems is at best misleading, and at worst disgraceful in that it uses quasi-scientific language to make a case for the superiority of E-field antennas over H-field antennas, i.e. the loop. Let me quote:

"The electromagnetic radio waves, vertically polarised by most long wave transmitters, consist of an electrical field component and a magnetic

Frankly, this is utter nonsense. The  $120\pi$  referred to is the accepted value for the impedance of free space ( $377\Omega$ ), and has nothing to do with the relative strength of E and H fields. What matters in an antenna is the power density, and as a rule of thumb a loop antenna having an aperture area of one square metre will produce the same induced power as a rod antenna of one metre in length. All antenna systems rely on both induced voltage and current. However, this is all in the far field which is normally taken to exist at a distance of  $\lambda/2\pi$ , or approximately one sixth of a wavelength from an antenna. RF Systems assume the far field to exist at a distance of one wavelength from the antenna, which is being suitably cautious. In the near field, the relationship between E and H fields changes, with the E-field impedance rising to several thousand ohms which increases the E-field signal strength, so any local

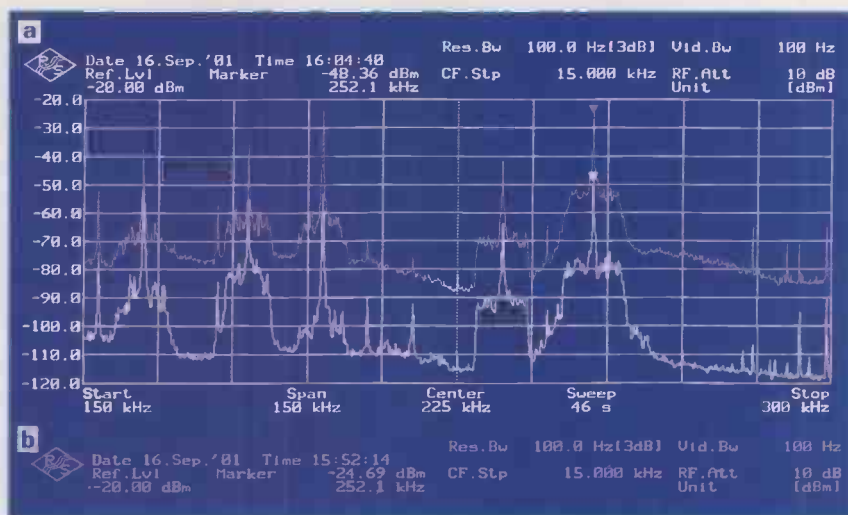


Fig. 6(a) Wellbrook and Fig. 6(b) RF Systems, show signals between 150 and 300kHz.

has no grounding requirements, and has a not-mentioned advantage in that it has two extremely deep nulls in its response which can be used to notch out unwanted signals, which is an excellent facility when you are beacon hunting with two or more beacons on the same frequency. Yes, it means that you have to buy a lightweight rotator, but it's still a hugely powerful operating

field component. These have in the far field a fixed ratio of strength with respect to each other. The electrical field component is  $120\pi$  (377 times) stronger compared to the magnetic field component at distances of more than one wavelength from the transmitting antenna. The active E-field antenna responds only to the electrical field component of the radio waves, while the magnetic

E-field noise will rise above the H-field component (for which the impedance falls), and severely degrade the signal to noise performance of an E-field antenna. All this has been covered in many professional studies, and confirmed by practical experience over too many years to count.

RF Systems then go on to admit that the E-field antenna is prone to locally generated interference. I quote:

"Not only radio transmitters produce electromagnetic waves, also many household appliances like light dimmers, thermostats, TV sets, fluorescent lighting and computers produce electromagnetic radiation. This is called man-made noise. The E-field from these man-made noise sources at a distance more than one wavelength is sometimes even stronger. This means that an E-field antenna like the LFA-520 must be placed as far as possible from noise and interference sources like TV

***"I can see no good reason why, given the choice, a listener would not choose the Wellbrook LFL1010 every time"***

performance of the Wellbrook loop at 16kHz compared to the active rod antenna from RF Systems. Perhaps I tested the two antennas in a noisy E-field environment? Take a look at the photograph of the installed loop antenna at my home and you would agree that it could hardly be more rural. The far horizon is

advantage. The loop incidentally performs equally well at ground level. I'm almost embarrassed to go on, but I simply must mention the operating leaflet which came with the RF Systems LFA-520.

There is nothing wrong with a manufacturer saying nice things about his own product, and pointing out

loop (or ferrite rod) antenna responds only to the magnetic field of the radio waves. As the E-field is 377 times stronger, the advantage of an active E-field antenna (like the LFA-520) is that this type of antenna delivers a much higher signal strength compared to a loop or ferrite rod antenna."



# Whips & Loops

## A second look

sets, FL(TL) lighting, computers and so on, to obtain the highest possible signal to noise ratio. In most situations this type of antenna performs at its best if it is placed high, preferably at least one metre above the roof of the building. Even better is the placement on a pole or shed in the garden, as far away as

noise, and suggest placement at one wavelength from noise sources. At 60kHz one wavelength is five kilometres, or more than three miles. That's a hell of a long feeder run to get away from the noise source. The statement that cities are "not suited for long wave reception" is almost unbelievable. What is really

"The advantage of the magnetic field antenna is that this type of antenna is less sensitive to the E-field interference generated by electrical household appliances...This rejection works fine for short wave loops but for frequencies below 300kHz there is a problem. For these low frequencies it is nearly impossible to maintain the symmetry of the loop, because all metal objects and buildings within one wavelength (600 metres or more) from the

facts. Another quote from IEEE-291 on page 13, talking about measurements of field strength below 30MHz:

"Measurements using electrically shielded loop antennas are usually influenced less by surrounding objects than those using rod antennas." Which is the exact opposite of the statement from RF Systems. On a simple practical note, why is it that aircraft DF systems use loop antennas mounted close to, or even inside the hull of the aircraft? Surely if loop antennas were disturbed by nearby objects they would be a totally unsuitable antenna for aircraft applications?

### You Choose

If you think I am being rather savage with my comments, it stems from the fact that I spent more years than most as a leading retailer in this hobby, and one of our company principles was that if a product was less than satisfactory, we would say so, and not try to hide behind techno-babble. There is more rubbish printed by advertisers about antennas than in any other field of listening activity, and I simply will not support false or misleading claims.

I leave you to make up your own mind which antenna to choose if you want to listen below 500kHz. I already have. *Caveat Emptor.*

**SWM**

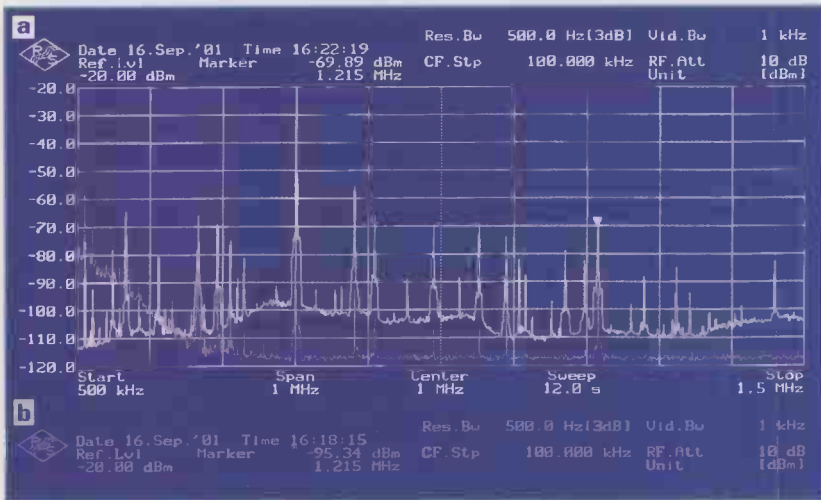


Fig. 7(a) LFL1010 and Fig. 7(b) LFA-520 show what happens from 500kHz to 1.5MHz.

possible from houses. Then there is no need to place the antenna high: three metres is mostly sufficient. It is not possible to use the antenna indoors. Locations with a high man-made noise level such as the middle of big cities, with tram and overhead power lines, neon lighting and so on, are in fact not suited for long wave reception. The LFA-520 cannot alter that situation. Besides that, the standing pole on which the LFA-520 is mounted must be grounded. At the other hand: if there is not much local man-made noise, the LFA-520 delivers a superior reception with high signal strengths from long distance stations due to the 377 times stronger E-field of e.l.f. and v.l.f. radio stations."

I hope you all read that very carefully, because it reveals several pertinent facts. First of all, RF Systems are admitting that an E-field antenna is sensitive to locally generated

being stated is that the LFA-520 antenna is not suitable for use within a normally noisy environment. How can they blame the city for being noisy? A loop antenna will perform

**"On a simple practical note, why is it that aircraft DF systems use loop antennas mounted close to, or even inside the hull of the aircraft?"**

extremely well in noisy E-field environments without any excuses.

There are many more examples in the leaflet attempting to denigrate the H-field loop whilst excusing the inadequacies of the active E-field rod, such as the following, which actually starts out with a positive view of loops:

calibration of loop (and other) antennas. On page 21 covering accuracy of receive loop calibration using a standard single turn transmitting loop we read:

"An antenna separation distance  $d$  of one to two metres is normally used. Since the induction field strength decreases essentially as the inverse cube of  $d$ , the distance to the nearest reflecting object need only be two or three times the antenna separation distance." In other words, about two to six

metres away.

Precision measuring loop antennas are normally calibrated at two metres above ground and are often used in this configuration above a solid metal ground plane in a metal screened room. The RF Systems statement about 600 metre distances is simply not true, and is not supported by the

I wish to thank both RF Systems and Wellbrook Communications for the loan of their respective products for review. You can buy the LFA-520 from the RF Systems UK agents **Haydon Communications**, Unit 1 Thurrock Commercial Park, Purfleet Industrial Estate, London Road, Nr. Aveley, Essex RM15 4YD. Tel: **(01708) 862524**, price £199 plus £15 P&P. The LFL1010 costs £160 plus £10 P&P and is available from **Wellbrook Communications**, Wellbrook House, Brookside Road, Bransgore, Christchurch BH23 8NA. Tel: **(01425) 674174** or Web: **www.wellbrook.uk.com**



# My Weather Satellite Station Up, Up And Away



Back with another 'WXSAT Special', Lawrence Harris, since moving house, has had to work out how best to set up his own WXSAT station all over again.

## Starting Over

Late summer - the time when the weather satellite 'WXSAT Special' takes form - and I am part-way into a complete re-installation of all my WXSAT equipment. Confirmation that the move was scheduled for Friday 13 July, gave the cue to disconnect equipment. The entire station was dismantled for transport from Plymouth to Southampton (for family and job-hunting reasons) - and not without problems. I realised I had to work out how best to set up a new station all over again, so it seemed a good opportunity to review what does what - and how it could be done better!

My satellite monitoring started back in the mid-1980s, and since that time, I have managed to set up hardware to monitor the four main types of WXSAT telemetry: automatic picture transmission (a.p.t.), high resolution picture transmission (h.r.p.t.), WEFAX (weather facsimile) and Primary Data. What are these systems and why might we be interested? If you are not a beginner, you may wish to skip a few paragraphs - or perhaps you will humour me?

## The Hardware

My collection of equipment went into boxes for transport. It included one crossed-dipole with the cable chopped off, one quadrifilar helix antenna (QFH) also cut off in its prime, two PROscan a.p.t. receivers, a WEFAX dish and Yagi, WEFAX receiver and down-converter, a large 1.8m PDUS dish and receiver, several low-noise amplifiers, an h.r.p.t. dish, mount, controller, receiver and modules and my Icom R8500 utility receiver and log periodic Yagi.

Also packed were several long, high quality, low-loss cables used for antenna feeds and three computers. Things I ditched: several modems

bought for silly prices several years ago, but which may still work (at 1200 and 2400 baud) - if I found an ISP to support them!

## Weather Satellites Background

Although there are several satellites within the AMSAT (amateur radio satellite) group that periodically transmit images that an amateur can receive and decode, these are not discussed here. It is the WXSATs that provide us with routine images of our environment - my monthly column 'Info In Orbit' deals with both polar orbiting and geostationary WXSATs. These include the American NOAAs, the Russian METEORs and RESURS, the Ukrainian OKEAN and SICH and Chinese FENGYUN polar satellites. Geostationary WXSATs include the American GOES and European METEOSAT systems, Japanese GMS, and the (now defunct) Russian GOMS.

The world of WXSATs is in a state of impending change. For decades, both types have provided at least one data stream in a format first developed in the 1960s. We are approaching a period of transition that will ultimately see the end of analogue transmissions, together with their relatively low resolution content and a move towards digital transmissions and enhanced quality images - but at a cost. Current receivers are unlikely to be capable of modification to meet the new specifications because so much is going to change.

If we look back at earlier stages of WXSAT systems development, image decoding was achieved by knowledgeable hobbyists who developed systems and published articles on how their work could be duplicated and then by entrepreneurial electronics engineers. Today we can buy a system costing around two thousand pounds, that will receive

high resolution images.

Just ten years ago such systems cost more than ten times that amount. I therefore believe that the news of the forthcoming move to digital WXSATs is not all bad! Remember also that the time scale is significant. Widespread digital transmissions do not start tomorrow, or even next month.

EUMETSAT originally scheduled the launch of its first digital data satellite - MSG-1 - for 2000, but it did not happen. Schedules are changed when unforeseen circumstances develop. A Control Centre scheduled to be ready by a certain date, may take longer to be de-bugged if component parts are not delivered until months later than expected.

I believe it remains perfectly reasonable for a beginner to look closely at current WXSATs and decide what is worthwhile and within budget. The accompanying article takes a closer look at the details and official schedules for the transition to digital WXSATs.

## A Time To Stand & Stare

Standing in the new Southampton garden was a salutary experience. I thought that it faced south-to-south-east. In fact, it is east-to-south-east and there is a huge sycamore tree due south! METEOSAT!

After discovering that neither of the loos worked properly, and that there was no telephone, my task was to decide which system to set up first: the polar orbiter a.p.t., h.r.p.t., WEFAX or the PDUS system. Each was available, but a varying time was required for assembly. The loos won the day!

## Polar Orbiter Reception

I decided to install the a.p.t. (automatic picture transmission)



**Fig. 1: Temporary mast mount - the crossed-dipole at the top of a temporary mast fixed to the shed.**



**Fig. 2: Tree and dishes - the WEFAX dish (lower right) and the h.r.p.t. look towards the tree due south.**



**Fig. 3: NOAA-15 a.p.t. image at 0816UTC 17 August from Kevin Hughes.**

reception system first. This is the common transmission format for most of the polar WXSATs (the exception being the Chinese FENGYUN). It is provided continuously from NOAA WXSATs and during the sunlit part of the orbit from METEOR and RESURS

WXSATs. Good reception requires the use of a suitable antenna, a low-loss feeder and a properly designed receiver. Mast-head pre-amps are sometimes used.

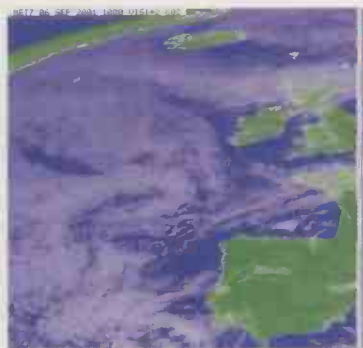
To decode and display the telemetry, you also need a computer, an interface to take the a.p.t. and suitable software. Alternatively, you can simply monitor (listen to) the a.p.t. signal without decoding it - many hobbyists do this as part of a general satellite signal monitoring

interest. If this is the case, a more appropriate antenna can be used, such as a Log Periodic Yagi that can receive over a much wider frequency range. This is the reason for my having an Icom receiver and Log Periodic Yagi - both still in packing boxes!

I have two antennas for quality a.p.t. reception: a crossed dipole from Timestep and a quadrifilar helix (QFH) built by Paul Hayes. During dismantling, the cable fitting the QFH was damaged, so I shall obtain a new one. Meanwhile, I fitted a temporary mast to the end of the shed and then fixed the crossed dipole at the top. Why a crossed dipole? It is because of the nature of the signal transmitted by NOAA satellites. They are stabilised by spinning, and this results in the signal being circularly polarised. A normal dipole would still receive plenty of signal, but it would be varying in strength, particularly when near the horizon. The use of a well-constructed crossed dipole minimises this variation.

The second dipole is placed at 90° to the first, and connected to it by a phasing harness. This is a (specific) length of coaxial cable that introduces a delay of a quarter wavelength between the two dipoles. The resulting antenna responds preferentially to right-circularly

**Fig. 5: NOAA h.r.p.t. image showing Corsica and Italy.**



**Fig. 4: Europe 6 September 1000UTC - WEFAX C02 format.**

polarised transmissions - provided the harness is wired correctly! The 'gain' (the amount of signal enhancement when compared to a non-directional - isotropic - antenna) can be further enhanced by fitting a pair of reflectors under the crossed-dipole. At an optimum separation - about 0.37 of a wavelength - the reception pattern of the antenna is improved, favouring the forward (upward) direction.

For best all-round reception, the antenna should be mounted as high as possible. Although mounting on a roof-top is probably the best location, it is advisable to do initial checks nearer ground level to permit fault-finding. The cable needs to be a good impedance match to both receiver and antenna - nominally 50Ω at 137MHz - so a suitable length of low-loss coaxial cable is required. The antenna man cut off my original cable, leaving it fixed to the house (!), but fortunately I had a comparable length of spare cable, so this was used instead.

Ten years ago, N-type connectors were considered best for low-loss satellite signal feeds. F-type connectors, as used for satellite television cables, have become popular, and these are easy to fit. They must be carefully sealed against moisture ingress because once mounted, they are likely to remain aloft for perhaps a decade! The cable was fed from the upstairs room, out of the window and straight to the antenna on the shed, pausing only to coil the surplus in a neat pile at ground level. The antenna may be re-mounted on the roof of the house in the future.

Back indoors, the cable was connected to the (polar) WXSAT receiver - a purpose-designed PROscan, optimised for WXSATs. The complete system includes an interface and software to analyse the signal. I was very pleased to receive the first pass with the new set-up. Even from the height of the shed roof, most of the eastern half of the local horizon was available. The western horizon is largely hidden

by the house until the antenna is re-positioned.

So that was my a.p.t. system back in operation. What systems are available? There is a limited choice now. If you are keen to set-up a system, you really should join the **Remote Imaging Group (RIG)**. They have a number of WXSAT hardware components available from time to time. The group is run by volunteers, so patience is appropriate when making enquiries.

**Timestep Weather Systems** is probably the only UK firm still providing complete systems and individual components. There are firms in Germany and America producing systems, and I have heard favourable comments about some, negative comments about others. RIG price guide (members only): Crossed dipole (turnstile) in kit form - £31.

An a.p.t. signal can be recorded by a sound-card in the computer and software is available that can digitise this and save it as a file for later decoding. Programs such as *Recall* (available from <http://www.broadcast.co.uk/recall.htm>) can automatically record a.p.t. signals for later analysis using software such as that issued free by **David Taylor**. This eliminates the problem of trying to schedule recordings from infrequently operating satellites such as OKEAN and SICH. Visit <http://www.satsignal.net> to download David Taylor's a.p.t.-decoding software.

Given a perfect local horizon, you should get good pictures from the WXSATs. In practice, hills and buildings may be in the way, so your antenna may pick up reflections and radio interference. Despite these problems, you should still obtain several minutes of good imagery from most WXSATs. You can expect transmissions from two or three NOAA WXSATs (potentially NOAA-12, NOAA-14 and NOAA-15), together with two Russian WXSATs (METEOR 3-5 and RESURS 01-N4). This varies due to overlapping footprints, changing orbital characteristics and periodic problems with the satellites.

### Long-term APT Operations

I plan to continue monitoring a.p.t. transmissions until they eventually cease - please refer to the schedule tables included with the other article - page 35. After I install the antenna on the roof, I hope to collect the OKEAN passes that others occasionally report, yet which I missed out while 'hidden' behind hills in the south-west. If you have no equipment and only a minimal budget, I would suggest monitoring the



Internet forums where occasionally you may find second-hand WXSAT equipment advertised. If you are better funded, you could consider buying a complete system.

WXSAT hobbyists have a choice - a.p.t. or WEFAX - and frequently set up complementary reception systems for both types. A closer look explains why.

## WEFAX

Polar WXSATs transmit a continuous image line-by-line as they pass over the earth below; WEFAX transmissions are also 'live'. The METEOSAT WXSATs are in geostationary orbit and controlled by EUMETSAT, the European organisation responsible for their day-to-day operations. *METEOSAT-7* is the prime European geostationary WXSAT, but some previous satellites in the series are also operational, including *METEOSAT-5* which provides images from its location over the Indian ocean.

From geostationary orbit, *METEOSAT-7* (and other WXSATs such as GOES and FENGYUN) monitor the whole of the hemisphere that faces them. Each is maintained over a specific longitude, from where it produces a whole-disc image of the earth at high resolution, called Primary Data. This image requires relatively expensive hardware to receive and decode, and for a large number of users, particularly weather forecasters, such high resolution is not essential.

Researchers, however, do require the best resolution available, and budget accordingly. This divergence of interests led to the production of two data streams from many of the geostationary WXSATs - high resolution (Primary) data and low resolution (WEFAX) data.

The setting up of a METEOSAT Primary Data User Station requires greater effort, as well as a large budget. My WEFAX dish, complete with mounting, was easy to set up, so this became my second project.

## The WEFAX Installation

The large tree situated two gardens down, turned out to be due south. After realising all that this implied, I decided to at least test reception. The dish and mount were positioned on the ground, pointed west of the tree, and the cables lowered carefully from the upstairs window. The next stage involved a decision. WEFAX reception and decoding can be done in different ways.

First - the antenna. Unlike Primary Data reception, the WEFAX user has a choice: Yagi or dish. A multi-element Yagi can be used for reception at 1691MHz (METEOSAT WEFAX). I originally bought mine some years back to use for monitoring GOES WEFAX (on the same frequency) from Plymouth; in practice, this became difficult when an

absent neighbour let a bush grow rampant. At 3° elevation, this curtailed the signal from *GOES-8* to an unusable level. I also had a small dish, hand-made from chicken-coup wire, based on a since lost design. The beauty of home-made dishes for METEOSAT reception lies with the high tolerance levels: errors of 10mm or so should not materially affect signal reflection, as long as the overall shape is accurate enough to focus the signal on the dipole feed. That dish was replaced by the small RIG/Timestep dish. Like the Yagi, the dish requires a proper mounting, but it remains fixed.

Decision time! WEFAX and a.p.t. have one significant common factor - both signal formats are based on a similar process of modulation. An image of the earth below (showing cloud, sea and land) is produced by the satellite's optical system - a telescope - and scanned on a line-by-line basis, in the same way that television images are composed of individual lines. They consist of bright and dark elements and are converted into an analogue signal that then amplitude modulates a 2.4kHz carrier. It is this carrier that essentially limits the resolution of the final image.

The modulated carrier is used to frequency modulate the main (r.f.) carrier of 1691MHz in the case of *METEOSAT-7* and 137MHz in the case of the polar orbiters. Because the resultant double-modulated (a.m./f.m.) signal has been generated in a similar manner in both cases, WEFAX and a.p.t. can be decoded using essentially the same system. WEFAX transmissions have start and stop tones added that are used to synchronise image display.

Reception of the WEFAX 1691MHz signal can be made using a direct 1691/1694.5MHz receiver, or by using a combination of down-converter/a.p.t. receiver. This is the decision to be made. Both methods have merits: a WEFAX receiver should have an optimised i.f. (intermediate frequency) bandwidth. A down-converter converts the 1691MHz composite signal down to 137.50MHz and this can be fed to your polar WXSAT



**Fig. 6: Primary Data dish awaits assembly.**

receiver, saving part of the cost of the WEFAX receiver.

Down-converters normally have a built-in pre-amplifier, saving the potential cost of a low-noise pre-amp that might otherwise be needed for direct reception. The main benefit of a direct receiver is its independence: you can operate two systems - one for continuous METEOSAT imagery, the other for polar WXSATs.

RIG price guide (members only): refer to RIG for equipment specifications

RIG/Timestep down-converter - £100.50  
RIG/Timestep active-feed - £68.20  
RIG/Dartcom down-converter - £162

Using the down-converter/a.p.t. receiver option and powering up my WEFAX system, I immediately obtained a loud, clear signal from *METEOSAT-7* - despite the casual method by which I had simply

*Continued on page 34*



positioned the dish. The images were fine and I continued to run the system while planning the next stage setting up the new station.

To complete the background

**Fig. 7: Meanwhile back at the computer - amongst chaos.**



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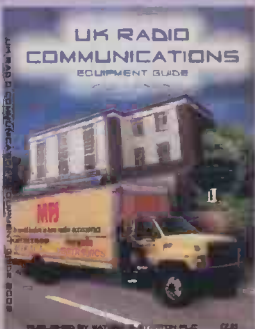
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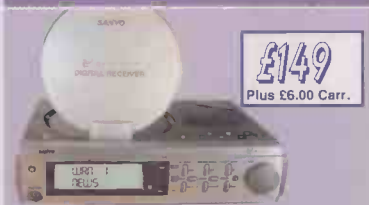


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The New Sanyo Satellite receiver is ideal for tabletop use. Comes complete with detachable mini flip-up dish and with 5m of cable. Receives digital broadcasts from the WorldSpace Satellite. Runs from supplied AC mains adaptor or optional batteries.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

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

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The IC-R8500's all mode capability allows reception of a variety of different modes, from the world over: SSB (USB, LSB), CW, AM, FM, and WFM are included, along with several 'specialty' modes, CW narrow, AM wide, AM narrow and FM narrow are available (Requires optional FL52A).

## IC-R75 RECEIVER

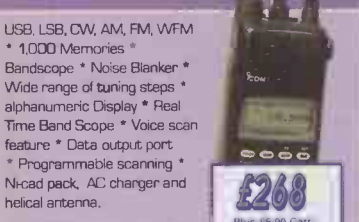
30kHz - 60MHz



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

## ICOM IC-R10E

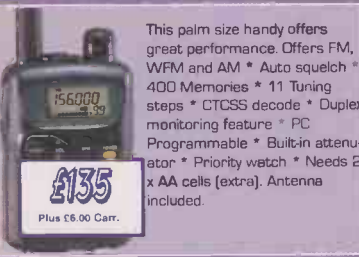
500kHz - 1300MHz



USB, LSB, CW, AM, FM, WFM \* 1000 Memories \* Bandscope \* Noise Blanker \* Wide range of tuning steps \* alphanumeric Display \* Real Time Band Scope \* Voice scan feature \* Data output port \* Programmable scanning \* Ni-cad pack, AC charger and helical antenna.

## ICOM IC-R2

500kHz - 1309MHz



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

## ICOM IC-R3

**Also receives 23cm amateur FM-TV**

- \* Full UK TV coverage
- \* 0.495-2450 MHz
- \* Advanced Lithium battery
- \* ALL DAY battery life
- \* 450 Memories
- \* FM / WFM & AM
- \* 2" TFT colour display
- \* Bandscope & automatic squelch
- \* B background colour choices
- \* Size 61 x 120 x 33mm

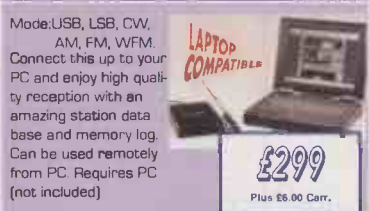


**RADIO SCANNER + TV BROADCASTS**

**Phone** Plus £6.00 Carr.

## PCR-1000 10kHz - 1300MHz

COMPUTER CONTROLLED RECEIVER

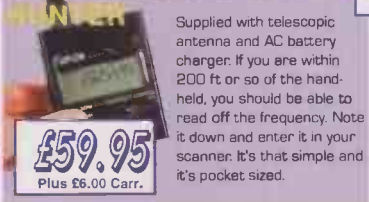


Mode: USB, LSB, CW, AM, FM, WFM. Connect this up to your PC and enjoy high quality reception with an amazing station data base and memory log. Can be used remotely from PC. Requires PC (not included).

## CAPTURE THAT FREQUENCY!

10MHz - 36Hz

Hunts down Frequencies



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

## NEARFIELD MONITORS

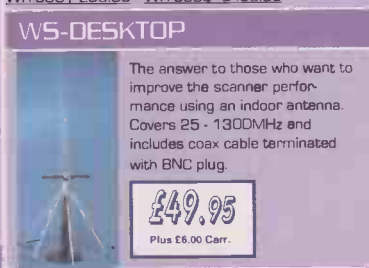
### Zoom into Any Frequency between 30MHz - 900MHz



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

**WS-DESKTOP**

The answer to those who want to improve the scanner performance using an indoor antenna. Covers 25 - 1300MHz and includes coax cable terminated with BNC plug.



## WS-MOBILE ANTENNA

Just 0.9m high with magnetic base and 4m cable terminated with BNC plug. Covers 25 - 1300MHz and is the ideal choice for scanner users.



## SWL OX-1 HF ANTENNA

Covers 1.5 - 30MHz and is 50cm long. With 10m feeder wire back to receiver. An ideal general purpose antenna. £25.95 Plus £6.00 Carr.

## OPTOELECTRONICS OS-1000

DIGITAL COUNTER



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

## ROBERTS R-827

SPECIAL OFFER



FM-STEREO / MW / LW / SW  
PLL DIGITAL WORLD RADIO  
\* AM, FM, FM Stereo, SSB & CW  
\* 45 Station presets  
\* Direct keypad tuning  
\* Rotary tuning  
\* BFO for SSB & CW  
\* Selectable wide / narrow AM  
\* FM stereo via earphones  
\* Digital clock  
\* Alarm/timer functions  
\* Complete with AC Adaptor

## GLOBAL AT-2000

ANTENNA TUNER



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

**Bulk Purchase-Tracker II**  
Licence Free 2-way Radio



Single earpiece headset plus belt mounted transceiver. Includes Hands-Free voice operation plus PTT. 49MHz FM with 1/2 mile range. Ideal for wide range of activities. Need PP3 battery (not supplied)

## MFJ-461 MORSE CODE READER

The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays CW on the 32 character high contrast LCD. It has automatic speed tracking, a serial port - if you wish to connect to a computer to display the text on a bigger screen. It can also be connected to your receiver's audio if required. Truly pocket sized at 57 x 82.5 x 25.5mm and 156g. £84.95 Plus £6.00 Carr.

## TrackAir VHF Airband Radio



Here's a compact handheld VHF airband, plus broadcast radio. We have sold many hundreds of this radio, and can now offer it at nearly half its original selling price. Requires 2 x AAA cells (not supplied).

Maplin catalogue price £49.95 (2000/2001 edition)

## Ten-Tec RX-340

Professional DSP HF Communications Receiver



I found this receiver to be the closest thing to perfection that has passed through my test facility over the last 10 years — and I heartily recommend it to you John Wilson - Short Wave Magazine.

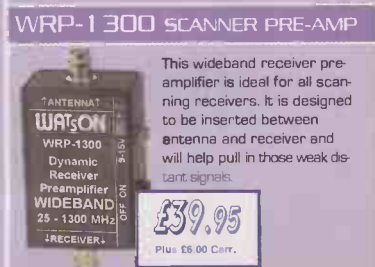
The Ten-Tec RX-340 is a multi-mode, professional grade, general coverage synthesized receiver. It utilises extensive Digital Signal Processing (DSP), which brings the performance of commercial grade communications receivers into the affordable top end of the amateur market.

## WEP-300B Earpieces



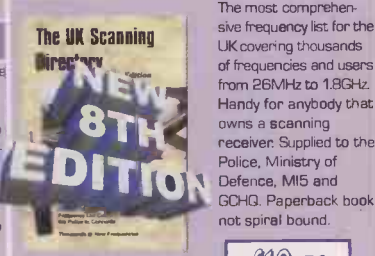
Over-the-ear earpiece, popular for security and emergency use. Its low cost and firm mounting even in arduous conditions make this a popular item. Kenwood version fitted with 2.5mm jack plug, and the RA version with 2.5mm right-angled mono jack plug.

## WRP-1300 SCANNER PRE-AMP



This wideband receiver pre-amplifier is ideal for all scanning receivers. It is designed to be inserted between antenna and receiver and will help pull in those weak distant signals.

## The UK Scanning Directory



The most comprehensive frequency list for the UK covering thousands of frequencies and users from 26MHz to 1.9GHz. Handy for anybody that owns a scanning receiver. Supplied to the Police, Ministry of Defence, MI5 and GCHQ. Paperback book not spiral bound.

**£19.50** Plus £2.00 Carr.



## My Weather Satellite Station

Up, Up And Away

information for beginners, the nature of WEFAX reception can be described. There is a near-continuous flow of images on channel 1 (1691.0MHz), together with additional selected formats on channel 2 (1694.5MHz) from *METEOSAT-7*. A schedule is published showing the sequence of formats such as C02, the European visible-light image. Transmissions repeat the formats at intervals, so these can be animated.

WEFAX software should include an animation option as standard. Obtaining a sequence of C02 or D2 (European infra-red) images provides an effective method of weather monitoring. Although your needs may be met by conventional television weather forecasts, having your own real-time system provides far more of interest than just 'forecasting'. Some formats are obtained from *METEOSAT-5*, *GOES* and *GMS*. WEFAX will eventually end - see the accompanying article.

### High Resolution Picture Telemetry

NOAA WXSATs are busy birds. Although the vast majority of users receive the a.p.t. transmission because of its relatively low cost of acquisition, this form of telemetry is only a small portion of the original product. The scanner image is produced by a system called the Advanced Very High Resolution Radiometer (AVHRR) that uses an optical telescope that any amateur would be proud to own. This produces a set of images in various spectral bands having (at best) a resolution of about 1.1km. This data is transmitted as h.r.p.t., and requires a unique receiving system, using a tracking dish for the 1700MHz band signal, a special receiver for the wide bandwidth, and the software necessary to extract and display individual spectral bands.

For the production of a.p.t., the data streams from these high resolution channels are degraded to reduce the resolution, and therefore the bandwidth required for their transmission. After conversion to a.p.t., the data is transmitted simultaneously with h.r.p.t., but from a different transponder.

I bought a complete h.r.p.t. system in May 2000 and although the dish was mounted at ground level in my back yard, under significant obstruction, I was happy with the results. Problems struck in March when a strong gust blew the dish over, after I had been making some small adjustments and had forgotten to fully re-position the support weights. The unit was ready for re-installation a few days after transfer to Southampton.

Dish positioning is everything for h.r.p.t. reception. Physical obstructions limit signal strength, so care must be

taken in selecting the location. I had to check-out the entire system before final positioning, so I set the dish mount near the house, on the eastern side. Running the cables down from the window, I connected them to the rotator on the mount, powered up, and found everything to be operational. The dish was re-mounted, though I made the mistake of trying to do this with the dish vertical, putting excessive strain on the mounting bolts, two of which sheared the threads.

Replacement U-bolts were obtained from a nearby garage, and this time, the dish was mounted while horizontal. It was very easy, and Marion and I recalled the effort that had been required while preparing the original review of this equipment last year. This time we fitted the brackets to the dish, and simply bolted the brackets to the horizontal axle rod - a doddle!

The first pass was *NOAA-16*, and after completing the preliminary calibration run, the system was left to automatically track (and hopefully acquire) the WXSAT. It rose above neighbourhood roofs, and signal lock was achieved around 6° elevation. Yes - actual lock! Subsequent passes were good, enabling me to confirm that the system was working, and that I could receive excellent views of Europe - previously denied me by the Plymouth house and hills. The next stage is to fit a steel mast to the back of the shed to replace the temporary mast, and to then re-mount the dish and rotator.

### METEOSAT Primary Data

The remaining WXSAT image format is that of high resolution data from *METEOSAT-7*. I bought a system - called a Primary Data User Station (PDUS) - about ten years ago. Frankly, the images are absolutely superb. They are obtained every 30 minutes by *METEOSAT*, though are transmitted in their highest resolution mode just once per day, at 1134UTC, a process that takes over 20 minutes. PDUS images are comparable with NOAA h.r.p.t., but

of lower resolution due to the greater distance. Three channels are available - visible, infra-red and near infra-red. *METEOSAT* also re-transmits selected formats from other WXSATs - *GMS*, *GOES* and *METEOSAT-5*.

An additional complication that adds approximately £550, is that self-produced images are mostly encrypted; only synoptic hour images (0600, 1200, 1800 and 0000UTC) are transmitted in the clear. To obtain a decryption box you need to complete an application form and then pay for the box and the system manufacturer's interface.

I brought the 1.8m dish to Southampton, but due to the pressure to attend to urgent house problems (not identified by the survey), and ongoing writing projects, this final system has not yet been installed. Its components also include a low-noise pre-amp, the PDUS receiver and several metres of low loss cable. The main problem that I anticipate is determining the best position for the dish. It has to point at *METEOSAT-7* and have an uninterrupted line-of-site. It has to be either next to the house (to avoid the tree!) or further down the garden. Tests await - updates will appear in my monthly column.

### Conclusion

Apart from already having the necessary equipment, I really felt that I was virtually starting from scratch, having to work out equipment location, cable routing and antenna positioning all over again. The easiest system to re-install was definitely WEFAX - made easy by the ground-stand that came with the dish. You only need to connect a small speaker to hear WEFAX tones, and these allow optimum dish pointing.

How long before the equipment becomes redundant due to the onset of digital satellites? The accompanying article reveals all that is known! We have some years before any of these systems will be placed in the bin. Enjoy!

**SWM**

### Frequency Summary

APT:  
137.30,

Typical a.p.t. usage:

WEFAX:  
HRPT:  
14),  
PDUS:  
Reference:

137 to 138MHz, with spot frequencies of 137.40, 137.50, 137.62 and 137.85MHz sometimes in use.

*NOAA-12* and *NOAA-15* on 137.50MHz; *NOAA-14* on 137.62MHz; *METEOR 3-5* on 137.30MHz; *RESURS 01-N4* on 137.85MHz; *OKEAN-0*, *OKEAN-4*, *SICH-1* on 137.40MHz sometimes, for short bursts of imagery.

1691 and 1694.5MHz.  
Spot frequencies 1698.0 (*NOAA-12* and *NOAA-14*), 1702.5 (*NOAA-15*), 1707.0MHz (*NOAA-16*).  
1694.5MHz.

RIG membership: Nigel Evans  
[membership@rig.org.uk](mailto:membership@rig.org.uk)



# Digital Weather Satellites The Future Beckons



An important question facing anyone currently thinking about investing money in a weather satellite reception system is that of equipment redundancy. Lawrence Harris explains all.

**W**e know that digital transmissions will eventually replace our beloved low-cost analogue imagery, so what should we do? In this article, I look at the latest information from the World Meteorological Organisation, NOAA and EUMETSAT. These organisations have kindly supplied all requested information concerning the transition from analogue to digital, and I am indebted to them.

## Background

America has provided continuous weather satellite (WXSAT) data from its NOAA series of polar orbiting meteorological satellites, and from its geostationary (GOES) WXSATs for decades. Russia has also maintained a series of WXSATs - the METEORs - in polar orbit. EUMETSAT operates Europe's geostationary WXSATs (*METEOSAT-7* & *METEOSAT-5*). Many of us receive real-time analogue imagery (a.p.t. and WEFAX) several times each day, from one or more of these WXSAT constellations.

The cost of analogue systems has fallen during recent years and my other article in this 'WXSAT Special' deals with system prices.

America is scheduled to combine its present parallel systems of civilian (NOAA) and defence satellites (called the DMSP or **Defense Meteorological Satellite Program**). They will merge in 2008 to become the **National Polar Operational Environmental Satellite System (NPOESS)**. From that time, there will be three polar satellites in the joint

operational system, with pass times evenly spaced throughout the day to ensure availability of global data at intervals no longer than four hours.

## Collaboration - the Initial Joint Polar System (IJPS)

In 1998, EUMETSAT decided to join America in providing a combined system of operational meteorological satellites in polar orbit. This **Initial Joint Polar System (IJPS)** means that responsibility for operations in polar orbit is expected to be shared from 2005 when the EUMETSAT Polar System (EPS) becomes available. The IJPS will comprise the continuation of the current NOAA satellite series (with *NOAA-N* and *-N'*), together with the new EUMETSAT polar satellite series *METOP-1*, *-2*, and *-3*, the first of which is currently scheduled for launch in 2003. EUMETSAT then takes over operational responsibility for the 'morning orbit' with the METOP satellites, while America continues to maintain its NOAA satellites in the 'afternoon orbit'. The satellites will be produced independently by Europe and the USA respectively.

It is important to realise the significance of this. The phrase "the continuation of the current NOAA satellite series with *NOAA-N* and *-N'*" does not mean a switch-off of the a.p.t. service! The **IJPS** will therefore include one NOAA and one METOP satellite in complementary orbits designed to ensure complete global data coverage at intervals of no more than six hours.

Both satellites - METOP and NOAA - will carry a core set of nearly identical instruments to ensure operational data continuity, and coherence of the key

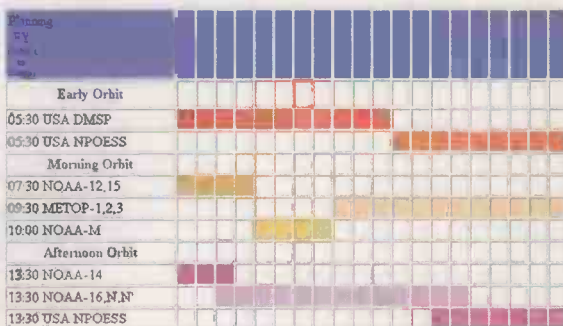
meteorological observations. This core set includes the latest versions of the following systems:

## Common Systems to be carried (NOAA & METOP)

**AVHRR** - Advanced Very High Resolution Radiometer, currently used for producing the two image formats (high resolution and a.p.t.) from NOAA WXSATs.

**HIRS/4** - High Resolution Infrared Radiation Sounder: provides temperature

The Coordinated USA and European Plans for Polar Meteorological Satellite Coverage.



**Fig. 2:** Coordinated Plans for Polar Satellite coverage.

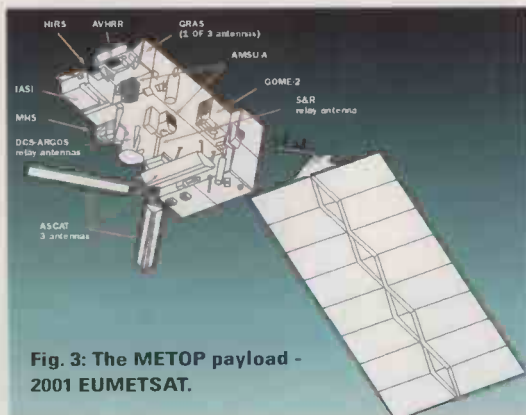
and humidity profiles of the global atmosphere and ozone, under cloud-free conditions. There are 19 infra-red channels and one visible-light.

**AMSU-A** - Advanced Microwave Sounding Unit: produces temperature and humidity soundings of the global atmosphere in all weather conditions.

**MHS** - Microwave Humidity Sounder: measures humidity and precipitation rate of the global atmosphere in five bands.

The Space Environment Monitor (SEM), ARGOS (data collection from earth platforms) and SARSAT (Search and Rescue Satellite Aided Tracking System) are also included on both satellites.

Continued on page 38



**Fig. 3:** The METOP payload - 2001 EUMETSAT.



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## Bearcat

### UBC 3000XLT



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

NEVADA PRICE- £199.95

### YAESU VR120



- PROFESSIONAL GRADE WIDEBAND POCKET SCANNING RECEIVER
- 100kHz - 1299.995MHz
  - AM/FM/WIDE-FM
  - 640 Memory channels
  - Preset 'Quick Tune' mode
  - Selection of scanning modes
  - 'Channel Counter' feature measures frequency of local signal
  - Clone capability

NEVADA PRICE- £159

### ICOM R3

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REVOLUTIONARY NEW HANDHELD!

- 495kHz - 2451MHz
- 450 memories
- Modes: FM, AM, WFM, AM-TV, FM-TV
- Alpha tagging
- CTCSS with tone scan
- 2" colour TFT display
- Video audio output

- SUPPLIED C/W
- telescopic antenna
  - belt clip
  - charger
  - LI-IION battery pack

NEVADA PRICE- £449

### YUPITERU MVT 3300



- 66 - 88MHz, 108 -170MHz, 300 - 470MHz, 806 - 1000MHz
- MODES: AM/NFM
- STEPS: 5, 6.25, 10, 12.5, 25kHz
- MEMORIES: 200
- BAND MEMORIES: 10 (user re-programmable)
- PRIORITY CHANNELS: 10
- SCAN/SEARCH SPEED: 30/second
- Requires 4 x AA batteries
- SUPPLIED WITH: Antenna, Earpiece, Carrying Strap and built-in Desk Stand

NEVADA PRICE- £154 £149

### YAESU VR500



SPECIAL!

- ULTRA COMPACT RADIO
- 100kHz - 1300MHz
  - FM, Wide FM, USB, LSB, CW, AM
  - 1091 Memory channels
  - Weight 220g
  - Comes complete with Antenna, carrystrap, Belt clip
  - Optional Charger: NC60

- Optional Accessories
- FNB-59 NiCad battery pk
  - NC-60 AC adaptor
  - CSC-72 Soft case
  - EDC-5B DC cable with cigar lighter plug
  - EDC-6 DC cable
  - CT-35 Cloning cable

NEVADA PRICE- £244 £199

### ICOM IC-R2

SPECIAL!



One of the smallest radios we have ever seen, Palm size wide band size is not everything. Packed in this receiver's small package are some pretty big features.

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

NEVADA PRICE- £154 £139

### YUPITERU MVT 7100



Probably the most popular high end Scanner. It's easy to use and can receive just about anything!

- 530kHz-1650MHz
- AM/FM/WFM/SSB/CW
- 1000 memories
- Steps 50Hz, 100Hz for tuning LSB & USB
- 155H x 64.4W x 32Dmm
- Weight - 320g
- Supplied with NiCads, mains charger, 12VDC cigar lead, belt clip, carry strap

NEVADA PRICE- £244 229



### UBC 220XLT

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

NEVADA PRICE- £149.95



### UBC 120XLT

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

NEVADA PRICE- £129.95



### UBC 60XLT

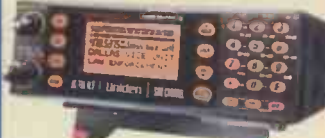
- A brand new low cost scanner that covers MARINE, LAND MOBILE and more!
- 66 - 512 MHz (with gaps)
  - 30 memories
  - Channel or Freq display
  - Priority Channel
  - Channel Lockout
  - Scan Delay

NEVADA PRICE- £79.95

NEW Bearcat

### UBC 780XLT

TRUNK TRACKER Radio for Europe



- 25MHz - 1300MHz with gaps
- 500 memories
- CTCSS/DCS
- S Meter
- PC control with RS232 port

Call for LATEST INFO!

### UBC 9000XLT



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

NEVADA PRICE- £269

### MAYCOM AR108

Palm sized Airband & VHF Scanner



- Airband: 108 - 136.975MHz
- VHF: 136 - 180MHz
- Selective Channel Steps: 5, 10, 12.5, 15, 25, 1MHz
- Modes: AM or FM
- Memories: 99
- Dual Watch Function
- Key Lock
- Battery Save Function
- Battery Voltage Indicator
- Supplied C/W Belt Clip, Carrying Strap

Mains Charger £8.95 £7.75 ppv

NEVADA PRICE- £69.95

### YUPITERU MVT 7300



- 520kHz -1.32GHz
- 1000 Memories
- 8.83kHz Airband
- Duplex reception
- Descramble function
- Clock timer
- Signal strength meter
- Auto memory write
- Supplied c/w Mains adaptor, NiCads, Belt clip

NEVADA PRICE- £284 £259

SPECIAL!

### AR 8200 MkII



- 530kHz-204MHz
- All Mode inc. 8.33kHz AM
- 1000 Memories
- Plus LOTS MORE!

LATEST model!

WE CARRY THE FULL RANGE OF ACCESSORIES here's just a few!

- CT8200...CTCSS .....£69.90
- EM8200...External memory £59.90
- RUB200...Record/Play Back £59.90
- TE8200...Tone eliminator.....£39.90
- VI8200...Voice inverter.....£59.90
- SC8200P...Padded soft case...£19.95

NEVADA PRICE- £434 £399.95

### YUPITERU MVT9000EU



FLAGSHIP MODEL, with a range exceeding 2000MHz, a real time bandscope.

- 531 kHz - 2039MHz
- 1000 memory channels
- W-FM, FM, N-AM, AM, LSB, USB, CW
- Scanning steps 50Hz-125kHz
- Duplex receive capability
- Fast tune facility
- Built-in ferrite rod antenna for AM broadcast reception

OP90 Soft Case £26.95 £2.75 ppv

NEVADA PRICE- £369



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**9.30am - 4pm**

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- Free car boot sale
- 2mtr talk in
- Refreshments
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**All the LEADING BRANDS under one roof!**

**GRUNDIG SATELIT 800**

The ultimate in features, performance, convenience, and sound. It's incredibly powerful, technologically sophisticated, yet easy and intuitive to use. Whether you're an experienced Shortwave listener or a newcomer to the world of international broadcasting, this is the radio to get.

- Frequency Range:**
- 100-30,000kHz (0.1-30MHz) for AM Broadcast and Shortwave
  - 87-108MHz for FM Broadcast
  - 118-137MHz for Aircraft Band
- Modes:**
- AM, USB, LSB modes (0.1-30MHz)
  - AM mode only for 118-137MHz
  - WFM mode only for 87-108MHz
- Tuning:**
- Direct Input digital key pad combined with manual tuning
  - Synchronous detection
  - Excellent sensitivity and selectivity
  - Three built-in bandwidths for SW
  - You aren't limited to SW signals.
  - Sure direct keypad digital tuning
  - 70 user memory presets
  - Two timer clocks keep track of time
- EU version features**
- 240V AC mains adaptor & Deluxe Headphones included
  - Full UK warranty
  - CE Approved



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- Analog 5-Meter
- Line Audio output
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NEVADA PRICE ~~£399.95~~

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MOBILE WIDEBAND RECEIVER

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- Multi mode
- Real time band scope
- Optional DSP bandpass, notch & noise reduction
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All mode wideband base RX

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- Optional slot cards

OPTIONAL PSU AVAILABLE

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- Ideal for BBC World Service
- Clock/alarm facilities

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NEVADA PRICE ~~£99.95~~

**GRUNDIG YE400**  
 PORTABLE SW RADIO



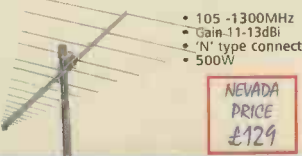
- General coverage RX (144kHz - 30MHz)
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- SSB reception
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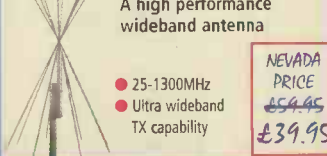


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- Gain-11-13dBi
- 'N' type connector
- 500W

NEVADA PRICE ~~£129~~

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- Post them to us, enclosing your name & address & we will (subject to status) send your goods immediately.

MINIMUM ORDER: £99





Continued from page 35

**Table 1: Status for transition to digital transmissions for polar and geostationary WXSATs - valid as at 21 August 2001. (Copyright World Meteorological Organisation).**

**Status For LRIT Conversion, Satellites In Geostationary Orbit**

Operator	Satellite	Launch (M/Y)	Service	Start	End
EUMETSAT	METEOSAT-5	Mar 1991	WEFAX	Mar 1991	
	METEOSAT-6	Nov 1993	WEFAX	Nov 1993	
	METEOSAT-7	Feb 1997	WEFAX	Jul 1997	Dec 2003
	MSG 1	Jan 2002	LRIT	Oct 2002	2008
	MSG 2	2003	LRIT	2004	2010
	MSG 3	2008	LRIT	2008	2014
India	INSAT 1-d	Jun 1990	None		
	INSAT 1I-a	Jul 1992	None		
	INSAT 1I-b	Jul 1993	None		
	INSAT 1I-e		None		
Japan	GMS-5	Mar 1995	WEFAX	Jun 1995	2003
	MTSAT-1R	2003	WEFAX	2003	2005
			LRIT	2003	2008
USA	MTSAT-2	2004	LRIT	2008	2013
	GOES-8	Apr 1994	WEFAX	Nov 1994	
	GOES-9	May 1994	WEFAX	Jan 1996	
	GOES-10	Apr 1997	WEFAX	Jun 1997	
	GOES-11	May 2000	WEFAX	Sept 2000	
	GOES-M	Aug 2002	WEFAX	Oct 2002	
Russian Federation	GOES-N	2002	WEFAX/LRIT	See footnote*	
	GOES-O	2005	WEFAX/LRIT		
	Elektro-1	Nov 1994	WEFAX		
	Elektro-2	2004	WEFAX		
China	Elektro-3	TBD	LRIT		
	FY-2B	Jun 2000	WEFAX	Jan 2001	
	FY-2C	2003	LRIT	2003	
	FY-2D	2006	LRIT	2006	
	FY-2E	2009	LRIT	2009	

**Footnote:** During January 2002, a LRIT test signal will be provided for a few weeks through a GOES spacecraft other than the operational GOES-East and GOES-West. During that period, GOES-East and GOES-West will continue to provide routine WEFAX data. This LRIT test signal will allow users to test new or modified receiver equipment without disrupting normal WEFAX transmissions. Around November 2002, GOES-East will be converted from WEFAX to LRIT transmission and will cease transmitting WEFAX data. The conversion of GOES-West to LRIT will be based on the needs of the users. The date for GOES-West conversion will be announced as soon as practical.

**Status For LRPT Conversion, Satellites In Polar Orbit.**

Operator	Satellite	Launch (M/Y)	Service	Start	End
EUMETSAT	METOP-1	Dec 2005	LRPT	2006	
	METOP-2	Dec 2009	LRPT	2010	
	METOP-3	Jun 2015	LRPT	2015	
USA	NOAA-9	Dec 1984	APT	Dec 1984	Aug 1995
	NOAA-12	May 1991	APT	May 1991	
	NOAA-14	Dec 1994	APT	Dec 1994	
	NOAA-15	Aug 1997	APT	Aug 1997	
	NOAA-16	Sep 2000	APT	Sep 2000	
	NOAA-M	Apr 2001	APT	Apr 2001	
	NOAA-N	Dec 2003	APT	Dec 2003	
	NOAA-N'	Jul 2007	APT	Jul 2007	
	NPOESS-1	2010	Tentative: AHRPT and X-band		
	NPOESS-2	2011	Tentative: AHRPT and X-band		
	NPOESS-3	2013	Tentative: AHRPT and X-band		
	NPOESS-4	2015	Tentative: AHRPT and X-band		
	NPOESS-5	2017	Tentative: AHRPT and X-band		
	NPOESS-6	2018	Tentative: AHRPT and X-band		
China	FY-1C	May 1999	No APT or LRPT. CHRPT only		
	FY-1D	Dec 2001	No APT or LRPT. CHRPT only		
	FY-3A	2004	AHRPT and X-band only		
	FY-3B	2006	AHRPT and X-band only		
Russian Federation	METEOR-2-21	Aug 1991	APT	Aug 1991	
	METEOR-3-5	Aug 1991	APT	Aug 1991	
	Resourse-01-N4		APT		
	METEOR 3M-1	2001	APT		
METEOR 3M-2	2003	LRPT	2003		

### Additional Equipment

In addition to the core set of common instruments, both satellite series will carry additional instrumentation, summarised here:

NOAA WXSATs will carry the latest SBUV - the Solar Backscatter Ultra-Violet spectral radiometer.

METOP WXSATs will carry:  
IASI - Infra-red Atmospheric Sounding Radiometer: produces enhanced temperature and ozone measurements.  
GRAS - Global Navigation Satellite System Receiver for Atmospheric

Sounding: measures the temperature of the upper troposphere and the stratosphere with high vertical resolution. ASCAT - Advanced Scatterometer: measures near-surface wind speeds over the oceans. GOME-2 - Global Ozone Monitoring Experiment-2: monitoring the profiles of ozone and other atmospheric constituents.

Russia plans to provide a follow-on to its *METEOR-2* and *METEOR-3* series of polar meteorological satellites. The People's Republic of China operates experimental polar meteorological satellites with an enhanced imaging capability comparable to that of AVHRR, though without a p.t.

### A Closer Look At METOP

The EUMETSAT Polar System (EPS) includes the METOP spacecraft, payload, command and data processing and data delivery. It is designated as an operational system with the intention to ensure data continuity over an initial period of at least 14 years. The

technology and different phasing of the systems, transmission format details will differ. METOP will use a state-of-the-art packetised data transmission standard conforming to the recommendations of the Consultative Committee for Space Data Systems (CCSDS). In order to make efficient use of the data transmission channels, the data will be compressed - making it incompatible with current h.r.p.t. receiving systems.

Access to the data will be selectively encrypted in accordance with the corresponding EUMETSAT policy, so a licence will be required from EUMETSAT. Special conditions of use may apply in some cases, so potential users should contact EUMETSAT for further information before implementing new data reception facilities. 'Info In Orbit' will provide guideline information as this becomes available.

These new digital data transmission services will require an enhanced receiving station, specifications for which are published on web sites: <http://www.eumetsat.de> and [http://discovery.osd.noaa.gov/IJPS/IJPS\\_doc.htm](http://discovery.osd.noaa.gov/IJPS/IJPS_doc.htm)

The METOP High Resolution Picture Transmission (HRPT) system will provide data for large scale user stations. It will carry data from all METOP instruments, including those provided by the USA, but will *not be compatible with the system of the same name* currently flown on NOAA satellites. The Low Resolution Picture Transmission (LRPT) system will provide digital data for relatively small user stations and will be the long-term replacement, using digital technology, for the analogue automatic picture transmission (a.p.t.) system in current use.

For the time being, NOAA satellites will continue to use their current transmission standards. As a consequence, users of METOP direct broadcast transmissions will need new frame synchronisers, reception hardware and software packages for data processing.

Sources: **EUMETSAT, Am Kavalleries and 31, D-64295, Darmstadt, Germany.**

### Digital WXSATs Communications

The communication flow between NOAA's Spacecraft Operations Control Centre, EUMETSAT and their associated ground stations and satellites, includes both payload (equipment) data, command and telemetry.

W-CDA:	NOAA ground station at Wallops Island, Virginia.
F-CDA:	NOAA ground station at Fairbanks, Alaska.
EPS-CDA:	EUMETSAT ground station.
EUMETSAT:	European Organisation for the Exploitation of



**Fig. 4: Successive orbits of METOP - 2001 EUMETSAT.**



Meteorological Satellites, Darmstadt, Germany  
 NOAA, Suitland : NOAA Satellite Operation Control Centre (SOCC) and the Central Environmental Satellite Computer System (CEMSCS), Suitland, Maryland.

## IJPS Products - What Will Be Available?

Looking in detail at the list of data and transmissions scheduled to be provided by NOAA-N and -N', METOP-1 and -2 - the first four satellites of the IJPS gave me a surprise or two! NOAA WXSATs will continue to provide a.p.t. and h.r.p.t., the latter of course already being digital data - and this is scheduled to last until about 2012! METOPs will be transmitting their own digital EPS h.r.p.t., though at a much higher data rate, and consequently at a much higher frequency.

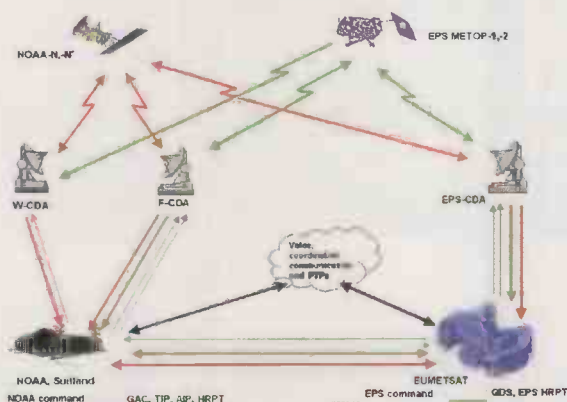


Fig. 5: Data flow for IJPS - courtesy NOAA.

METOP l.r.p.t. will be transmitted by both METOP satellites, disseminating five channels of image data giving a resolution of 4km via compressed data. Who will be the first 'amateur' to successfully receive and decode METOP l.r.p.t.? I can think of at least three Americans who could be first.

Data from NOAA satellites are transmitted to ground receiving stations by one of three 5.25W, S-Band transmitters coupled to one of three quadrature antennas. The S-Band, real-time data consists of a split-phase p.s.k. digital bit stream at 665.4Kbits



Fig. 6: MSG satellite in orbit - 2001 courtesy ESA.

per second at 1698 or 1707MHz, right hand circular polarisation. Recorded data (Global Area Coverage and Local Area Coverage) will continue on the NOAA's, and is implemented on the METOPs as the Global Data Stream and with complete data storage.

## Meteosat Second Generation (MSG-1)

The IJPS comprises polar-orbiting WXSATs. MSG-1 will be EUMETSAT's geostationary WXSAT that will replace the METEOSAT series. With enhanced systems, it brings us full digital imagery and ends the era of WEFAX.

## Imaging Mission

The objective of the MSG mission is the multi-spectral imaging of cloud systems, the Earth's surface, and the radiance emitted by the atmosphere, with improved resolution - as compared to the first generation METEOSATs. Imaging will be performed by the main payload of the MSG satellite - the Spinning Enhanced Visible and Infra Red

Imager - SEVIRI. This imager will have two scan modes, controlled by commands from the ground station. Nominal (the normal) mode will be the full disc scan, with the additional capability of a limited scan. The duration of a full disc scan will be 12 minutes - about half that

required by METEOSAT.

For the limited scan, the number of scan lines is programmable, the duration proportional to the number of scan lines. Retrace (during which the satellite returns to its original start-of-scan position), and on-board calibration will take three minutes. This defines a nominal repeat cycle of 15 minutes for the full disc image and a shorter, programmable repeat cycle for limited scan operations.

Sampling distance - the distance between centres of adjacent instantaneous fields of view at the sub-satellite point - is 3km for the VNIR (visible and near infra-red) channels, and 1km for the broadband visible channel (HRV).

Data rates lower than 150Kb/s are classified as 'low rate'; those higher than 500kb/s are classified as 'high rate'. There is increased horizontal resolution, a larger number of channels, and more sensors, so the overall data rates become much higher.

Until the availability of the Ground Segment can be assured and launcher

issues are resolved, MSG-1 cannot be launched. The current new planning date for the launch is in mid 2002. To assure continuity of EUMETSAT's geostationary satellite services, parallel operations between the METEOSAT and the MSG system are agreed until at least the end of 2003.

Table 2: Launch Schedule - Geostationary & Polar (courtesy NOAA).

Satellite	Launch Date
NOAA-15	May 13, 1998. Morning orbit.
NOAA-16	Sept 21, 2000. Afternoon orbit.
NOAA-N	Aug 2002 (mid-morning orbit)
NOAA-N'	Jun 2004 NPOESS Preparatory Project - Dec 2005
NOAA-N'	March 2008
GOES-M	Jul 23, 2001
GOES-N	late 2002
GOES-O	early 2005
GOES-P	early 2007
GOES-Q	late 2008
DMSP S20	Nov 2001
Landsat-7	Apr 15, 1999
EUMETSAT Meteosat Second Generation (MSG-1) - June 2002	
METOP-1	late 2005
METOP-2	mid 2010
Russia GOMS-2	2003
Meteor 3M-1	Nov 2001
Japan Multifunctional Transport Satellite (MTSat)	
MTSat-1R	early 2003
MTSat-2	mid 2004
China FY-1C polar orbiter	May 10, 1999
China FY-2B geostationary satellite	Jun 26, 2000
China FY-1D polar orbiter	late 2001

## World Meteorological Organisation (WMO)

It can be noted that recent information from Scanex, (a private Russian WXSAT equipment supplier), is METEOR 3M-1 will not carry an a.p.t. transponder.

## WMO & Equipment Suppliers

Satellite operators are co-ordinating their plans, time schedules and services through a body called **Coordination Group for Meteorological Satellite (CGMS)**. The WMO will provide advice and recommendations to members concerning the expected timetable of key events. The database of user stations maintained by WMO will greatly help in this task. Suppliers of data receiving and processing systems need to be prepared before the transition commences.

## WEFAX & APT Services Termination

The important dates concerning the termination of WEFAX and a.p.t. services are likely to be as follows:

WEFAX from METEOSAT-7 scheduled closedown December 2003.  
 APT from NOAA WXSATs - well beyond July 2007, probably up to 2012.  
 APT from METEORS - no scheduled closedown - probable replacement in 2003.

## Further Information

A large amount of documentation has been issued by NOAA/EUMETSAT, and is available for immediate download on the following site:

[http://discovery.osd.noaa.gov/IJPS/IJPS\\_doc.htm](http://discovery.osd.noaa.gov/IJPS/IJPS_doc.htm)

## Conclusion

Analogue transmissions have served us well for decades. The equipment is relatively cheap to buy and has provided hobbyists and forecasters with excellent results. New horizons have opened and the digital future beckons. Many of us may have to wait before equipment prices (as yet unknown) drop - as they inevitably will - towards hobbyist levels. Meanwhile, a.p.t. will be around for many years yet! WEFAX, however, has entered the time-frame in which I believe that careful thought has to be given before the purchase of new equipment.



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# The Other Man's Shack

Kevin Nice heads of to the South West this month on his quest for the low-down on readers' listening outposts.

**T**his month we take a trip down to Tavistock in Devon for an enlightening tour of the very neat and well equipped radio room belonging to D. Jenks G1RFQ. There is no shortage of capable gear here. With contenders from Kenwood, JRC, AOR, Yaesu, Lowe, Radioshack, Fairhaven and more providing hand-held and base station coverage of a huge chunk of r.f. spectrum. The capability within the shack is matched by the collection of

antennas in the garden. G1RFQ has the following to choose from - two long wires, a marine band whip, a grand total of three discones, a 900MHz whip and a 2m vertical. For two metre amateur operation, the station enjoys the use of a 5-element Yagi which shares the rotator with a 70cm array. My thanks go to G1RFQ for sharing his pride and joy with all of us. Please don't forget, if you would like to show fellow readers your receiving station,

even if it is not as well groomed as this one, then I'm quite sure there are many fellow readers who would love to see it.



Any submissions of pictures and descriptions of the gear you use should be sent to Kevin Nice, *The Other Man's Shack*, Short Wave Magazine, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW.

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## Looking forward to the next issue of *Practical Wireless*? Take a look at what's on offer!

### REVIEWED!

- **Richard Newton G0RSN** gets his hands on the new Kenwood TH-F7E dual-band transceiver/ scanner

### IT'S A RESULT!

- The winners of the 2001 *PW* & Kenwood Club Spotlight Competition are announced

### TIPS & TOPICS

- **Tex Swann G1TEX** presents more handy hints and tips from your suggestions

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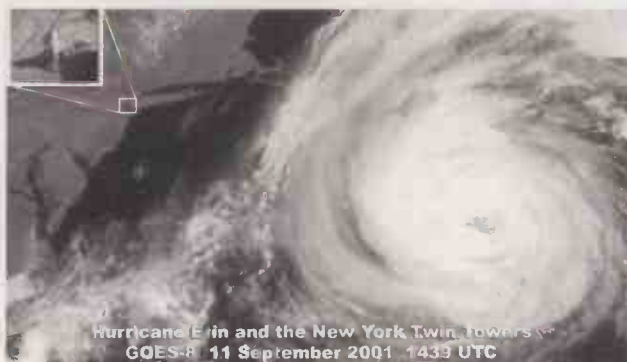
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# Info in Orbit - the column

The theme of this year's 'WXSAT Special' is the transition to digital imagery. I spent some time reading the various official publications during summer, and suspected that there was a wide audience wanting to see the plans. My requests to the World Meteorological Organisation and EUMETSAT were most helpfully responded, and my thanks go to Dr



**Fig. 1: GOES-E image Hurricane Erin and the New York twin towers disaster 11 September 2001 1439 UTC, courtesy NOAA.**

Donald Hinsman (of the WMO) and the people on the EUMETSAT User Service Help desk for giving permission for the use of their data, pictures and tables.

Data from NOAA (National Oceanographic and Atmospheric Administration) was also freely available. I asked EUMETSAT whether they had any simulated digital data that I could publish, and they most kindly sent me a CD-ROM. This will have to be studied before I can use the included software to process their data to produce a simulated image, so hopefully by next month, I may be able to show readers what we can expect!

Meanwhile, the New York WTC twin towers terrorist attack disaster

was quickly imaged by many of the commercial satellites, including IKONOS, SPOT and LANDSAT. I am including an image taken by the GOES-E geostationary WXSAT, that captured not only the aftermath of the attack, but also the hurricane that later delayed rescue attempts.

## METEOSAT Digital - Good News

John Tellick, secretary of the Remote Imaging Group, informed me of developments following his discussions with EUMETSAT and the UK's Meteorological Office, regarding amateur access to digital data from MSG-1 (METEOSAT Second Generation). John advises me that amateurs will have full, free access to both MSG LRIT (low rate information transmission) and HRIT (high rate) data. Users will be required to apply to the UK Meteorological Office where every application will be dealt with on an individual basis, though users will be required to pay a one-off fee for the MSG 'key' called an SKU. This is currently 700 Euros.

John points out that although we will have free access to HRIT (high rate information transmission), reception is probably out of the question due to the required dish size - about 2m or more - and the data rate. METEOSAT-7 WEFAX is guaranteed until at least the end of 2003 and will run in parallel with MSG. MSG-1 is now due for launch mid 2002 and operational from the end of 2002 - see the accompanying article.

## Current WXSATs

I received what I think was one of the first transmissions from METEOR 3-5 when it was re-activated around mid-September, following its switch-off some weeks earlier; image quality was not good. RESURS 01-N4 also stopped transmissions during August, but this was unexpected so I contacted ScanEx and the Sputnik staff, who often know the background to such

**POLAR SPACECRAFT SUBSYSTEM STATUS (INSTRUMENTS) AUGUST 2001**

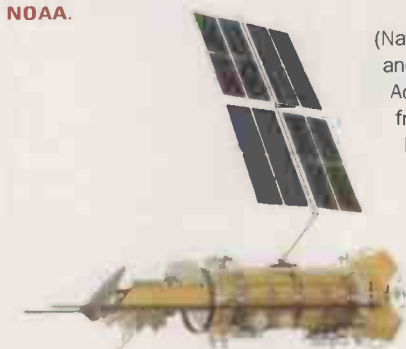
POLAR ORBITING ENVIRONMENTAL SATELLITE (POES) STATUS					INSTRUMENT
NOAA 11	NOAA 16	NOAA 18	NOAA 19	NOAA 15	
●	●	●	●	●	DCS DATA COLLECTION SUBSYSTEM
●	●	●	●	●	SSU STRATOSPHERIC SOUNDING UNIT
●	●	●	●	●	MSU MICROWAVE SOUNDING UNIT
●	●	●	●	●	HIRS HIGH RESOLUTION INFRARED SOUNDER
●	●	●	●	●	AMSU-A1 ADV. MICROWAVE SOUNDING UNIT
●	●	●	●	●	AMSU-A2 ADV. MICROWAVE SOUNDING UNIT
●	●	●	●	●	AVHRR ADV. HI RESOLUTION RADIOMETER
●	●	●	●	●	SARR SEARCH & RESCUE REPEATER
●	●	●	●	●	SARP SEARCH & RESCUE PROCESSOR
●	●	●	●	●	ERBE EARTH RADIATION BUDGET EXPERIMENT
●	●	●	●	●	SBUV SOLAR BACKSCATTER UV RADIOMETER
●	●	●	●	●	SEM SPACE ENVIRONMENT MONITOR
●	●	●	●	●	AMBI-D

KEY	
RED	Not Operational
YELLOW	Operational with limitations (or Standby)
GREEN	Operational (or capable of)
BLANK	Not installed on Spacecraft

**Table 1: NOAA polar WXSATs systems status.**

things. Eugene Flitman replied that officially RESURS was operating, but it had onboard control of the a.p.t. transmitter, and that sometimes it would switch itself off for over 10 days! Another contact advised me that RESURS should be back transmitting with a few days, though as at mid-September, I have yet to hear a consistent signal.

NOAA-12 (backup morning WXSAT) and NOAA-15 (prime morning WXSAT) continue a long period of overlapping footprints, so NOAA-12 is not transmitting a.p.t. until November when they separate. The h.r.p.t. transmissions remain active, as usual. Regrettably, this period has coincided with NOAA-15



**Fig. 2: OKEAN-O spacecraft.**

**Fig. 3: OKEAN-O Ukraine space data and receiving centres.**



**Fig. 4: QFH antenna used for the 137MHz band transmissions.**

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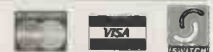
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	Alinco AL-203 2m hand-held.....	£65.00
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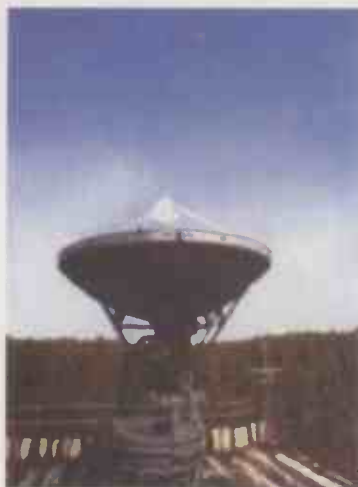
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**Fig. 5: Large X-band dish in Chernigiv, Ukraine.**

once more having image synchronisation problems, resulting in days with no morning WXSAT a.p.t. transmissions.

## NOAA Polar Status

The NOAA WXSATs are packed with environmental sensors that measure, as well as image, planet earth. NOAA has issued a table showing the status of the individual systems onboard each NOAA WXSAT, from NOAA-11 to NOAA-16 - as at August 2001.

## OKEAN-O At Work

By way of thanks to **Volodymyr Astapenko**, the Ukraine scientist who has provided much information about the OKEAN and SICH remote sensing satellites, a copy of *Short Wave Magazine* was posted to the Ukraine. I understand that it arrived just in time to be included in their great exhibition of space technologies that took place in Kyiv - see **Fig. 3**. The exhibition marked the tenth anniversary of Ukrainian independency on 24 August 2001. The exposition of remote sensing technologies of the Earth was central in this event.

Occasional reports of transmissions from OKEAN-O show that the satellite is still providing imagery. **Figure 3** shows the location of OKEAN-O data processing centres:

- 1) Obryi State Research and Production Enterprise.
- 2) Center of Aerospace Researches of the Earth, Institute of Space Researches, and Pryroda State Research and Production Enterprise.
- 3) Yangel Yuzhnoye State Design Office, Dniprococosmos State Company and Orbita Research and Production Enterprise.

- 4) Kalmykov Centre of Radiophysical Sensing of the Earth.
- 5) National Control and Test Centre of Space Facilities.
- 6) Marine Hydrophysical Institute.

Several of the Centres have names that may be recognised from association with Russian WXSAT operations. One of the first booklets that I ever received, listing details about Russian METEOR WXSATs, came from location 6 - the Marine Hydrophysical Institute, and listed all of the imaging and other systems carried by the various METEOR series of satellites.

The OKEAN-O Mission Control Centre is in Korolev, in the Russian Federation. Data from OKEAN-O is received directly by autonomous receiving stations using the 137MHz band. These stations utilise a quadrifilar helix antenna - see **Fig. 4** - which many users around the world have adopted.

X-band transmissions (8.2GHz transmitting at 15.36Mbits/s) require larger, more accurately figured dishes, such as those manufactured by the Russian firm **ScanER**. The highest data flow is the 61.44Mbits/s at 8.2GHz, and this is received by the Chernigiv ground station - see **Fig. 3** - in the Ukraine, and also at Obninsk in the Russian Federation. All these receiving centres pass their data through the Internet to the Mission Control Center in Korolev - see the picture of this Center in a previous edition of this column.

The satellite itself scans the earth below in visible, infra-red and microwave bands and **Fig. 6** shows the geometry of the measuring equipment swaths telemetered in the X-band downlink. The satellite carries two radar units - called RLSBO(L) and RLSBO(R), positioned to the left and right, that allows complete coverage of the earth. This is the data sometimes seen also in the 137.40MHz transmissions in the past.

The radar wavelength is 30mm, producing a resolution of 2.5 x 1.3km with a swath width of 455km. Data published for the storage capacity (of onboard data) shows a limit of six minutes for the highest data rates, so this presumably explains the cut-off often observed after we have monitored an OKEAN pass over Europe when radar imagery has been transmitted. It was my earlier understanding that the six minutes limit was due to onboard power supply limitations - so perhaps that is not the case.

**Figure 6** shows central sub-satellite track in this simulation, and

геометрія смуг огляду вимірювальної апаратури радіолінії 8.2 ГГц)

Geometry of the measuring equipment swaths X-band downlink)



**Fig. 6: OKEAN-O imaging from orbit.**

the flight direction (northwards). The yellow swath shows coverage of the MSU-SK2 - the multi-spectral medium resolution scanning radiometer. There are two such units - MSU-SK1 looks forwards and MSU-SK2 looks backwards. The radiometer has five bands with resolutions of about 245 x 157m along and across track. Delta-2D is a similar radiometer, but uses longer (8 to 43mm) wavelength bands. R600 is a microwave radiometer operating at 60mm and R225 operates at 22.5mm. Their swaths are correspondingly small. Trasser-O is a polarisation radiometer.

I have selected **Fig. 7** to illustrate a product of the imaging system. Volodymyr Astapenko sent hard-copy showing several examples of the high quality imaging done by OKEAN-O, leaving me spoilt for choice.



**Fig. 7: OKEAN-O image showing the boundary territory between Iraq and Kuwait.**

## GOES-12 On-line

NOAA's newest geo-stationary WXSAT satellite was re-named **GOES-12** after reaching its operational orbit. Launched as **GOES-M** from Cape Canaveral Air Force Station, Florida, on 23 July, the satellite is the last in the current series of five advanced weather satellites operated by NOAA and designed to improve forecasting of Earth and space weather.

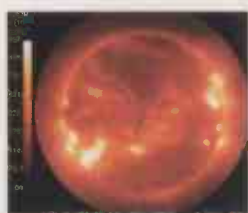


**Fig. 8: GOES-M before launch.**





**Fig. 9: GOES-12 first image 1800UTC 17 August courtesy university of Wisconsin.**



**Fig. 10: Solar x-rays from GOES-E at 2104UTC on 7 September 2001.**



**Fig. 11: Contrail over California - NOAA-15 from Pat Lunney.**

**Fig. 12: NOAA-16 infra-red (channel 4) h.r.p.t. image from Arne van Belle.**



GOES-12 will remain in operational storage until called upon to replace either of the two older geo-stationary satellites - GOES-8 or GOES-10 - that could expire in the next year or two.

NOAA operates two geo-stationary and two polar-orbiting satellites that provide meteorologists with information vital to timely and accurate forecasts. GOES-12 is the first of the series to have a sophisticated operational instrument - the solar x-ray imager - for detecting solar storms. This is the most advanced instrument of its kind, able to take a full and detailed snapshot of the sun's atmosphere each minute.

The new images from GOES-12 will be used by NOAA and the US Air Force to forecast the intensity and speed of solar disturbances that can potentially destroy satellite electronics, disrupt long-distance radio communications, or cause surges in power grids. The imager enables forecasters to better protect billions of dollars worth of American commercial and

government assets in space and on the ground.

### Internet Site Updates

GOES web sites are featured this month:

The 'opsummary' site provides a summary of geo-stationary and polar WXSAT subsystems, and these are usually updated regularly: <http://www.nnic.noaa.gov/SOCC/opsummary.html> and <http://www.oso.noaa.gov/operation/polar-instr.htm>

The polar-bus site lists the individual onboard systems on each NOAA WXSAT, and acknowledges the failure of NOAA-16's a.p.t. <http://www.oso.noaa.gov/operation/polar-bus.htm>

The latest news from the Office

of Satellite Operations about GOES WXSATs can be found at:

<http://www.oso.noaa.gov/news/index.htm> and

<http://www.oso.noaa.gov/operation/goes-satellite.htm>

When I realised that GOES-M was renamed GOES-12, I could not recall GOES-11's status. GOES-11 is one of the two GOES WXSATs to be held in 'on-orbit' storage, as the Americans call it.

GOES-12 also carries an x-ray imager - the first such system on a GOES WXSAT. Following a request from a 'wxsat-l' member, the NOAA staff have agreed that routine images from this instrument may be included into the schedule of daily transmission from GOES-E. Figure 10 is a one second exposure with no filter (OPEN). The 585V indicates an optimum 'gain' setting was used. For a detailed description and more images, check out <http://sxi.ngdc.noaa.gov/>

Data from the GOES x-ray imager (SXI) are sent in real time to NOAA's National Geophysical Data Center (NGDC) where they are immediately made available to the public, and preserved in a secure archive for future research. The geosynchronous orbit of GOES allows it to have direct line-of-sight observations of the Sun, 24 hours/day, seven days/week, except near the equinox when GOES enters Earth's shadow for up to one hour each day. SXI will collect an image once per minute and the exposure settings follow a sequence optimised to observe three primary phenomenon - coronal structures, active regions, and solar flares - as they are observed in the Solar atmosphere.

### Contributions From Correspondents

Patrick Lunney of Technology Service Corp (TSC), Colorado, sent me an h.r.p.t. (high resolution) image from NOAA-15 received earlier this year, showing a contrail. It is a false colour image using bands 1, 2 and 4 (as red, green and blue) for display. The image was taken from a morning pass, (0900 local time) while orbiting from north-east to south-west over

western America. The majority of the image shows California, with the state of Nevada to the east. The contrail itself extends from the San Francisco Bay area south-eastward to almost the latitude of Los Angeles. "That is what amazes me the most" wrote Pat, "is how well the contrail maintained its continuity throughout the flight of the aircraft generating it, and how it cast such a distinct shadow on the ground below".

Arne van Belle is the Co-ordinator of the Radio Observers of the Dutch Remote Imaging Group Werkgroep Kunstmanen and sent an h.r.p.t. image from NOAA-16 received in late May showing numerous contrails south of the UK and Sweden. Arne wondered whether the vertical trail over the eastern side of Britain was also a contrail, and whether anyone knows if there is a flight path or corridor at that location?

### International Space Station - Component Launch Schedule

The passage of the ISS and Shuttle over Britain during mid-summer evenings was particularly interesting because the separation of the Shuttle from the ISS coincided with clear skies! I was one of many to watch during the days around 10 August.

STS-108 Endeavour is scheduled for launch on 29 November for the 12th flight to the ISS. There will be a crew rotation, and the payload is the Multi-Purpose Logistics Module Raffaello. STS-109 Columbia is scheduled for launch on 17 January 2002 on a non-ISS flight.

### Kepler Elements

If you want a computer disk file containing recent elements for the WXSATs, AMSATs and others of general interest, together with a large file holding elements for thousands of satellites please enclose 50p with a PC-formatted disk and stamped envelope. A print-out is included that identifies NASA catalogue numbers for the WXSATs. The disk file is ideal for automatic updating of tracking software.

### Frequencies

NOAA-12 and NOAA-15 transmit a.p.t. on 137.50MHz (except during footprint overlap).

NOAA-14 transmits a.p.t. on 137.62MHz.

NOAA-16 has an unresolved faults with a.p.t.

NOAAs transmit beacon data on 137.77 or 136.77MHz.

METEOR 3-5 uses 137.30MHz.

OKEAN-0, OKEAN-4 and SICH-1 use 137.40MHz for brief transmissions.

RESURS O1#4 transmits a.p.t. on 137.85MHz.

METEOSAT-7 (geostationary) uses 1691 and 1694.5MHz for WEFAX.



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# AR8600

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The AR8600 is an extremely versatile **all mode** receiver (530kHz - 2040MHz) which can be used virtually anywhere, mobile, base or trans-portable... powered from an external 12V d.c. power supply, optional d.c. lead from a 12V vehicle or from an optional internally fitted NiCad battery pack. A strong twin metal case with die cast front panel characterises the multi-purpose role. All mode receive capability is provided including Single Side Band with programmable tuning steps down to a resolution of 50Hz with the frequency established by a highly accurate Temperature Compensated Crystal Oscillator



(TCXO). An RS232 port further extends the capabilities with free supporting control software available from the AOR web sites.

Although many microprocessor features have been adopted from the trendsetting AR200 Series-2 hand portable receiver, **the AR8600 RF front-end is an all new (\*high sensitivity) design with a first rate switched attenuator and preselection around VHF to ensure the highest levels of adjacent channel rejection with software spuri cancellation.** In addition to a hinged telescopic whip aerial, the AR8600 is supplied with a **detachable plug in medium wave bar aerial** which locates on the rear chassis of the receiver for localised medium wave monitoring. An additional BNC socket is mounted on the rear chassis so that **10.7MHz i.f. output** may be extracted for use with external spectrum display and vector analyser units such as the AOR SDU5500. The TCXO ensures **high stability** with **minimal internal spuri** and is usually only seen in top of the range (more expensive) models such as the AR5000 and AR7030.

The chassis is manufactured from two metal compartments, effectively a **metal chassis inside a metal cabinet...** this provides excellent screening characteristics and great robustness highlighting its multi application role. The **front panel** is also manufactured from **die-cast aluminium**. Size is 155(W) x 57(H) x 195(D) excl. projections, weight less than 2kg.

The all important **8.33 kHz airband channel step is correctly implemented. Computer control** is available via a standard 9-pin RS232 D-type connector on the rear chassis, just a standard RS232 cable is required for connection to a PC, the extensive RS232 command list is printed in the operating manual. In addition, **'optional internal SLOT CARDS'** (which fit into the rear chassis of the AR8600) extend the capabilities even further, five cards may be fitted with two operational simultaneously. **Supplied with:** Swivel base telescopic whip aerial, MW bar, comprehensive illustrated operating manual with RS232 listing, d.c. lead.

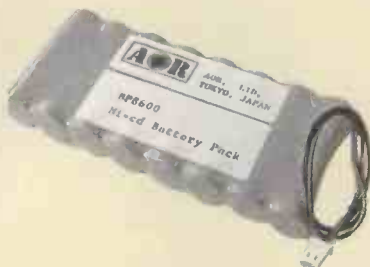
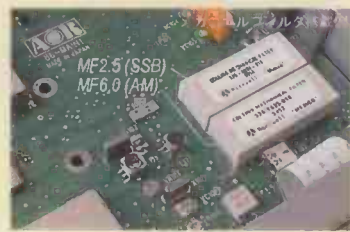
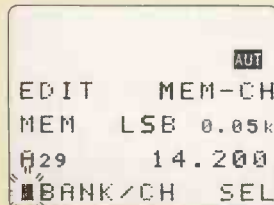
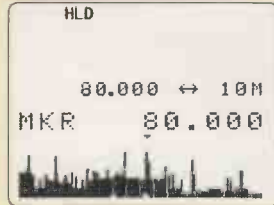
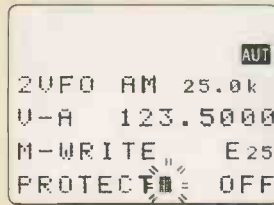
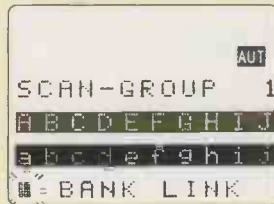
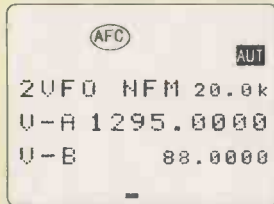
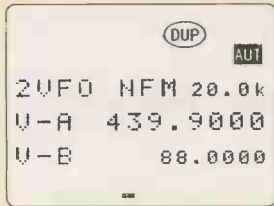
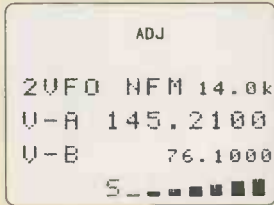
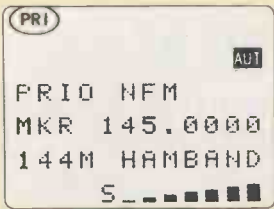
## AR8600 - up to FIVE HOURS portable operation from the BP8600 optional internal battery

There are many qualities which make the AR8600 a unique award winning package, as a trans-portable receiver the optional internal battery pack (BP8600 £49.00 inc VAT, carriage extra) extends the versatility even further. When travelling to an airport, airshow, racetrack or wherever, the ability to remove the receiver from the vehicles power and carry on monitoring without the need for a separate hand-portable receiver is a great plus point.

Initially designed to provide up to two hours of operation, tests have shown that once the internal battery has been **fully charged** using an optional **15V regulated DC power supply**, the monitoring time extends to around **FIVE HOURS** (with back-lit LCD lamps off).

There are many other options available: mobile mounting bracket (MM8600), tape record lead (CR5000), RS232 lead (8600PC), free PC software from the AOR web site (or available on CD-ROM priced at £5), five slot cards (CTCSS, tone eliminator, record/playback, external memory, analogue voice inversion), Collins mechanical substitute IF filters for SSB and AM. If you are undecided whether you need a hand-portable receiver or a base station, take a closer look at the AR8600... virtually two concepts in one compact cabinet.

*Note: Operational times are for guidance but depend upon the style of operation (volume level, backlight, scanning etc) and are not guaranteed.*





# AR200 SERIES-2

NEVER BEFORE HAS ONE HAND PORTABLE OFFERED SO MUCH



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

## AR5000

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

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

## AR5000+3 - Sync AM, AFC, NB

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

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

## 'REAL' SHORT WAVE LISTENING



The AR7030 is tremendously popular **still beating off the competition.** AR7030, **the professional choice.** Excellent strong signal handling, low noise local oscillator (producing extremely low reciprocal mixing figures) and excellent audio fidelity demonstrates the attention to detail carried through design and into manufacture. Receiver of the Year 1996/97 WRTH, 5-star award and editors choice Passport to World Band Radio for several successive years.

The AR8200 represented a beacon when first released, technology marches forward with the NEW AR8200 SERIES-2 keeping the innovative concept and forward thinking alive and bright. It has not been easy improving on what many thought to be the ultimate, however the NEW AR8200 SERIES-2 does provide even more with nothing taken away.

A Temperature Compensated Crystal Oscillator (TCXO) now forms the heart of the AR8200 SERIES-2, this ensures **high stability** with **minimal internal spurious**. Performance too has seen the AOR R&D team fine tuning the design for **best sensitivity and strong signal handling** over the extremely wide coverage of 530kHz to 2040MHz (all mode receive without gaps). The aerial has also been replaced by a **telescopic whip** on a swivel base, this ensures the best results, a medium wave bar aerial is also provided as standard. The design team have certainly been taking account of customers wishes, the keyboard ZERO key has been swapped in position with the DECIMAL to match the telephone layout, LCD illumination has been increased (for improved visibility) and following requests for longer operation between charges, the **4 x AA size NiCads have been increased in capacity**, again reflecting improvements in modern technology. The obvious change has been left for last... the **cabinet colour** has been changed from green to **black!**

The list of features is vast, tuning step sizes are programmable in all modes down to 50Hz with comprehensive step adjust and correctly implemented 8.33kHz for the new VHF airband spacing. Connection to a computer is possible with the optional 8200PC lead/interface with free PC software available from the AOR web site. Unique optional slot cards further enhance features (CTCSS, tone eliminator, record / playback, external memories, voice inversion).

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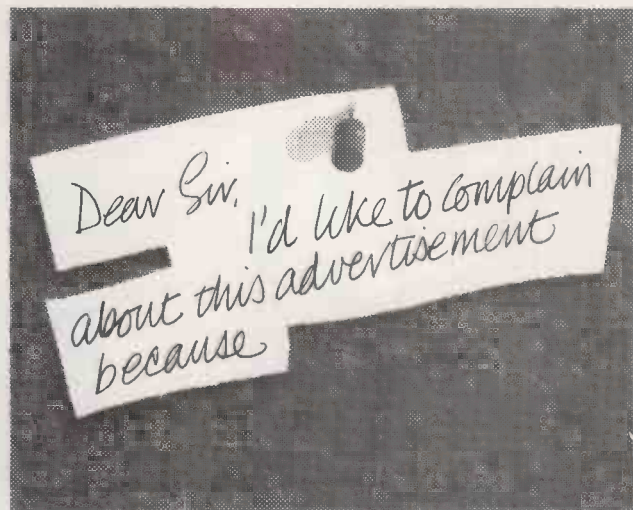
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Jerry Glenwright, a newcomer to satellite radio, gets to grips with the Sanyo WS1000 WorldSpace receiver.

# Sanyo WS1000

## WorldSpace Review

**R**egular readers of the 'ShackWare' column know that I love finding and collecting old computers and squeezing the most from them in the shack, but my first love is very definitely radio. There's nothing I like better than listening late into the evening, everything from utility data stations to Radio 4, medium wave DXing to maritime beacons (though I confess that my principal listening interest lies with the short wave broadcast bands).

I'm not adept at assessing the finer technical qualities of receivers (like the more technical of *SWM's* reviewers), but I do own many receivers, I know what I like and I can report my findings as a consumer. That's how I've approached reviewing the Sanyo WorldSpace DSB WS1000, a receiver which is aimed squarely at non-technical consumers.

### Now Commonplace

Digital audio broadcasts (DAB) and satellite-delivered 'radio' services such as WorldSpace are relatively new concepts, but a logical - and inevitable - step in the delivery of programming for international broadcasters. Though we're in a period of high sunspot activity at the moment, the eleven-year cycle

means that when the low point comes, international broadcasters on short wave fight for space in the usable bands in order to be heard around the world. What's more, traditional analogue radio broadcasts require a relatively large amount of bandwidth if they're to be of acceptable quality, large antenna farms and lots of watts.

Though firmly in the realms of science fiction just a few decades ago, when the visionary writer Arthur C. Clarke predicted a ring of 'stationary' satellites able to broadcast to any part of the Earth (located in what is now known as the Clarke Belt in honour of the man and his idea), satellite transmission to domestic homes is now no more exciting or futuristic than VCRs, CD players and digital watches - commonplace in fact!

### Three Satellites

WorldSpace operates three satellites - *AfriStar*, *AsiaStar* and *AmeriStar* - in the 1452-1492MHz band which it makes

available to international broadcasters, everyone from the BBC to African Dance Radio. The broadcasts are, naturally, digital, and the audio quality is extremely high - no fading here! In fact, quality ranges from roughly a.m. at a resolution of

you're one of *SWM's* many overseas readers).

### What's It Like?

The DSB WS1000 is housed in a two-tone grey plastic case with a brushed aluminium front

panel and an l.c.d. 'screen' sporting a highly-visible Indiglo-like backlight. Out-of-the-box operation is entirely possible for those who like to leave manuals until the

moment when all else fails, but if you're new to satellite communications, some of the inscriptions on the receiver's controls will not make much sense - satellite communications is not intuitive. So it's a case of open the manual, scratch your head a few times and begin to decipher the instructions contained therein...

First step is to attach the mini-dish antenna. This, in fact, is not a dish at all, but a hinged, circular plate-like antenna about 150mm in diameter and around 25mm thick which clips to the receiver once you've removed a protective cover (in place when making use of the optional Yagi - more later). Orient the antenna correctly according to an illustration in the manual,



16-bits to 128-bit CD-quality audio which, from a receiver such as the one reviewed here, can be piped into a hi-fi system for truly superior listening.

The Sanyo DSB WS1000 is as neat a receiver as you'll find anywhere and with a host of smart features. In the box is the set itself, a tiny 'dish' antenna, a remote control, a d.c. adapter, strap for mobile operation and what appears to be a hefty handbook. This latter is somewhat deceptive however, for in the way of these things, most of its pages are taken up with instructions in languages other than English (though welcome if





clip it to the receiver and attach its cable to a socket on the side of the set.

## Ready To Operate

The Sanyo operates from a mains adapter or two C-cells and two AA-cells. For a first attempt, and guessing that there might be a certain amount of moving around involved in locating a satellite, I installed batteries. With a suitable power source in place, you're ready to attempt reception.

A good idea is to have a compass and protractor to hand, because you'll need to work out elevation (angle of the antenna from the horizontal) and attitude in order to acquire a satellite. WorldSpace broadcasters have bandwidth on satellites broadcasting to North and South America, Asia and Africa but it's the latter - the *AfriStar* satellite - which those in the UK are interested in. Specifically, the west beam - beam 1 - of the *AfriStar*.

The handbook gives no details of how to orient the set for locations in the UK, but working it out is simple. There are charts showing the footprints of the satellites and, using these, you can see that pointing low, and roughly south-west, will get you a signal. Using the compass, I oriented the Sanyo, hoisted the dish to angle of about 55° and switched on. Nothing. At least, no broadcasts, but there was a cheery message that welcomed me to WorldSpace (there's a random choice of three welcome messages) followed by another suggesting I 'check antenna'.

## Acquiring A Signal

Working slowly through the instructions on acquiring a signal, I pressed the Beam Select button on top of the set until AFRI-1, the *AfriStar* west beam, appeared in the display. Then I moved the Sanyo around slightly until suddenly, a little satellite icon appeared in the top right corner of the display and I heard a second or two of music. You know what it's like at this point, you step back thinking to yourself 'ah well, on the right tracks anyway!' Now you can press the Beam Check button for an indication of signal strength (a row of asterisks on the display - it's a relative indication).

If you find that the receiver is difficult to locate and still retain

a signal lock, it's entirely possible to detach the antenna, unwind its generous five metres of cable and position it remotely, thus enabling you to site the set where it's most comfortable and convenient.

A bit more fiddling with position and antenna angle, and I soon had the Sanyo trilling



away to Ngoma, the African Dance Radio station. I listened for a few minutes to the excellent audio reproduction and then pressed on exploring the program (known as 'service components' possibilities).

## Station Search

WorldSpace broadcasters are defined according to the type of service component they offer - info, news, jazz, country, talk, children, education and so on. By selecting options from menus accessed from the front-panel buttons (the remote only works when the receiver is powered from the mains adapter) I was able to narrow my station search to those broadcasting news.

Within a few seconds, I was stepping through available programmes. It's also possible to refine a search to stations broadcasting in a specified language including such obscurities as Tagalog, Swahili, Mandarin and Bahasa. Most s.w.l.s will want to listen to broadcasts in all languages because station idents can be easily translated for the most part (though that's not strictly necessary on the WorldSpace band of course, where discovering exactly what you're listening to is as simple as checking out the name of the station on the receiver's display!)

## Excellent Audio

Audio quality is truly excellent and there's none of the waxing and waning listeners to the short wave bands know (and love), though occasionally the signal will drop out for a fraction of a

second. The Sanyo features a bass enhance button which toggles a deeper bass response - useful when listening to stereo music broadcasts with headphones or via an existing hi-fi, and the display indicates whether reception is mono or stereo. You can search for a particular station by entering its name, channel number or broadcast type.

The DSB W51000 offers all the usual 'consumer-product' features such as timer control, sleep modes, 32 service component presets and an interesting 'extra' port in the form of a digital optical output connector to enable you to attach the receiver to existing optically-driven domestic equipment for high-quality audio. The manual suggests that pay-per-listen broadcasts will become a possibility in the future requiring listeners to register with a provider and acquire a password. All the broadcasts I listened to were free and there's no cost involved other than buying the receiver.

I live in Norwich, a city which in parts is densely populated. Where I live there are lots of houses, lots of trees - essentially, lots of obstructions. The Sanyo receiver operated very well on the WorldSpace band, but those who buy one and find it difficult to lock to the

*AfriStar* satellite using the set-top antenna can purchase an optional Yagi. This resembles the Yagis of domestic TV reception but in extreme miniature - approximately 350mm long in fact! The antenna is shipped with all necessary mounting

hardware, plenty of cable and a neat little masthead amplifier.

## Sit On A Shelf

The Sanyo comes with a shoulder strap but, despite its robust construction, I believe this is a receiver that, once oriented correctly, will sit on a shelf in your shack. Unless you're travelling in one plane, you'd lose the signal every time you

changed direction or were shielded by an obstruction. However, setting up while outdoors, but at rest would be easy, and would present an ideal opportunity to acquire the satellite with a minimum fuss and have quality listening away from base.

WorldSpace is an incredible medium and the Sanyo an excellent set but...well, call me old fashioned, it's just that I like to tune a radio by feeling my fingertips delicately nudging its dial, not just by 'pointing' it at a digital channel/service component using a remote control. I enjoy surmounting the difficulties associated with short wave listening - I like tweaking my antennas, messing about with baluns, winding my own a.t.u. coils using enamelled wire and loo paper tubes to try and improve reception. For me, WorldSpace is just one step too far from what I think of as radio. But that's not to denigrate the service, the broadcasters and programming it offers or the audio quality, all of which are first class.

The Sanyo receiver too, I found to be sturdy, robust, easy to operate (when compared with today's average scanner) and with many useful features. And why shouldn't you control a receiver with a remote? If it simplifies the operation while enhancing the actual and all-important process of listening, then that's got to be a step in the right direction!

Well, I'll be trawling the short wave bands for a good few years yet I fear, but I heartily recommended WorldSpace and the Sanyo DSB W51000 to anyone considering satellite 'radio' reception. The two make a winning combination, there's plenty to listen to and, once set up, the system requires little or no maintenance.

**SWM**

My thanks to Waters & Stanton PLC, 22 Main Road, Hockley, Essex S55 4QS, Tel: (01702) 206835/204965, FAX: (01702) 205843, www.wsplc.com who very kindly - and promptly - provided me with a replacement set when the first was found to be faulty.

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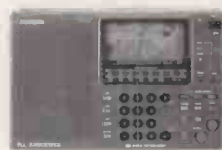
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# Islands Of Scotland



The old ruined salmon bothy on Staffin Island, Inner Hebrides. Island activated for IOSA on 14th August 2001 by GM0HBF, MM0BGQ and 2M1WEZ.

The Islands of Scotland Award (IOSA) is to encourage amateur radio operators from around the world to contact or visit some of the most beautiful and remote parts of Scotland. Scanster Dave Roberts shares his recent experience.

**W**hen that pretty blonde weather lady on the TV tells you about just how horrid it's going to be at the weekend and how much rain will fall on your only day off in weeks, she often uses the phrase "throughout the British Isles". What's your conception of the British Isles? The mainland and Ireland and the Isle of Wight perhaps? Anglesey and the Isle of Man?

I know that living a busy life anywhere means that your mind becomes concentrated on the areas in which you and your family and friends live. However, if you get hold of a good map of the British Isles (put that road map away it only shows places with...well roads!) and shuffle through the pages, you'll see that off Britain's coastline there are an incredible number of islands. From Lundy in the south to Unst in the north, the UK has a phenomenal amount of offshore acreage.

By far the greatest number of these lie north of the England/Scotland border. Some of these islands are of considerable size and are home to large populations with all the facilities, and problems, that occur anywhere else in the Kingdom. Others are wild, isolated lands whose only inhabitants are sea birds, seals, rodents and sometimes sheep and deer.

In the town of Stornoway on the Isle of Lewis you can

shop in Woolworths, Boots and Safeway stores. On Sula Sgeir, about the only thing to do is wade around knee deep in very smelly guano (a polite word for bird crap). Oh, the other thing you could do is take a radio set with you and operate on the amateur bands.

## The Islands

You see, since the mid nineties, Scotland's only DX foundation, the GMDX Group, has run an award to encourage radio amateurs to operate from, and make contact with, a number of Scottish Islands selected from the vast number off the nation's coast. Currently there are 210 islands which are valid for participation in the Islands Of Scotland Award programme. For administration purposes they are listed in 10 island groups based on their geographical location around the Scottish coast.

The groups comprise islands in the Clyde, Firths of Forth and Lorne, the Solway Firth, the Shetlands, Orkneys, Inner and Outer Hebrides and a Coastal group of islands around the north and north west coastline. Finally, there are a group of four islands the GMDX group call 'Outliers'. These are the islands of North Rona and Sula Sgeir and the small clusters of islands known as the



The tent and antenna on Flodigaray Island likewise put on air by GM0HBF, MM0BGQ and 2M1WEZ on 13th August 2001. The other land visible is an outer islet where all the seals live.



Setting off from Staffin Pier, Isle of Skye on 14th August 2001.



The Island of Little Bernera taken from Gt Bernera (Outer Hebrides). Both islands put on the air by GM30FT and GM3VLB at the end of August 2001.



Overlooking Skye from Staffin Island. It's a ruined boat in the foreground, not a beached whale.

Flannan Isles and St. Kilda, way out to sea.

At this point I guess you are wondering about Rockall, that lump of rock sticking out of the ocean in the far west. Well, Rockall used to be on the list, but was removed due to

immediately assume that whoever wants to operate a radio from an offshore island will turn up with a massive transmitter and a container full of Prodigy CDs. Of course, apart from the groupie chicks, radio amateurs don't travel like that do they.

As I have said, operation from many of these islands can be combined with a family holiday to any of the more populous places. The

***"Believe it or not even some of the wild places are now within mobile 'phone coverage and so if you have one, don't leave it at home"***

**Me (MM0BGO) operating from the comfort of the truck on Raasay (off Skye), Inner Hebrides in 1997.**



the sheer danger of operating there. (Does anyone remember the operation from there by Tom MacLean some years ago? That bloke must have nerves like railway tracks. Did Tom have an amateur licence or was it a commercial operation?). With seas regularly washing right over the rock, the Group thought that it would be wrong to encourage anyone to activate the place on the air. Quite right too!

### Remote Location

Although many places listed in the directory are no more difficult to visit than hopping in the Mondeo with a mobile rig and driving there, many are very remote indeed. In



remote islands, however, require an element of self sufficiency. Once an activator has ensured that he or she has permission to operate from the island, negotiations have to begin with someone who has a boat suitable for the journey and the experience and knowledge to sail it safely.

One group of intrepid activators obtained permission

riveting monitoring for readers of the 'SSB Utilities' column.

On another occasion, a crew were somewhat inebriated and when the unsuspecting radio amateur got back on the boat following a successful operation, they all fell off the vessel and into the sea. This left the poor amateur in a bit of a state as his only prior water borne experience was driving a cabin cruiser on the

GM4CHX, who travels pretty light and has activated many of the islands in most island groups. His operations have not been without incident. Two years ago he was transferring from the fishing boat, that had collected him, to a dinghy to make landfall at Plockton on the Scottish mainland and he ended totally immersed before popping to the surface like a cork to be hauled aboard again. More recently I spoke with him on the 40m band and he was lying in the shingle on a beach in the Shetland Isles in the rain wearing his immersion suit. This game isn't all smoked salmon and whisky you know.

But it can be...the fact is that many of the islands that are included in the IOSA programme are within easy reach of the less intrepid traveller. Skye, perhaps the easiest to travel to by virtue of it's controversial toll bridge, is one of the islands in the scheme. Skye is well connected to the chain of islands that comprise the Outer Hebrides by virtue of the ferry services operated by the Government owned company Caledonian MacBrayne.

As regulars on the IOSA nets are aware, a large number of activators are able to put these islands on the amateur bands without hardly leaving their cars, courtesy of the ferries that ply the oceans around the Scottish coast. Off the northernmost edge of Scotland P&O and other operators provide the same services to the Orkney and Shetland Islands, both of which have fascinating islands to use radio as an excuse to visit.

### You Will Need

Imagine that you are intending to operate from a remote uninhabited land and intend to stay a few days. You will need a radio and suitable antenna, some spare parts, wire and possibly a tuner unit. A waterproof bag will be

Thames between Windsor and Oxford. A different ball game you might say!

### Necessary To Plan

Some activators prefer short operations with lightweight kit, getting on and off the island in an hour or two and contacting as many stations as possible in that time. Others like to spend as much time as possible on an island and therefore have to take much more equipment with them.

In many cases it's necessary to plan for a stay of several days - whatever your initial plans. You see the weather around Scotland is a fickle companion and a morning that starts bright and calm can change into a full gale accompanied by raindrops the size of tea cups, and all in the space of around forty minutes. In these cases, the boat may not be able to attend to make the pick up and an enforced stay is on the cards.

Recently there have been short operations by Jim

## ***"Currently there are 210 islands which are valid for participation in the Islands Of Scotland Award programme"***

addition to this difficulty, in many cases the islands have no automatic right of access and permission to land and operate amateur radio must be obtained from the owner(s) and in some cases from those who have purchased the right to graze sheep there.

Quite often it's necessary to stress the purpose of amateur radio as some owners

to operate and camp on an island. They negotiated with a chap who said that he could deliver them and pick them up. It all seemed to be going well until having got there, it became apparent that the bloke didn't know an awful lot about the job and lacked essential gear. The weather worsened and the subsequent rescue no doubt provided



essential to keep this gear dry. A tent is a must for if it rains (and it rains a fair bit up north) the rig and log must be kept dry. A generator and fuel must be taken and more often than not a lead acid battery for the genny to float charge.

Sleeping kit, food and especially fresh water are essentials as are cooking kit, torches, matches and other accoutrements. Spare rope is always handy and a bag of dry clothes should be carried. Don't forget a small shovel or trowel and personal kit.

Believe it or not, even some of the wild places are now within mobile 'phone coverage and so if you have one, don't leave it at home. If you have a radio that can hear 156MHz it's nice to be able to hear the coastguard weather forecasts on marine band. Unlike the pretty blonde at the beginning, their forecasts are usually pretty good.

## Getting Contact

The award is valid for contacts on bands between the 1.8 and 28MHz bands and 2m, although it must be said that most island activators do not operate on the 2m band other than for hand-held radio contact between themselves when on an island.

If you enjoy camping and

like to hear rain on the roof while talking with island chasers all over the world, then activating one of the more isolated islands could be just the thing for you. The experience of isolation is one that's denied to most people in Britain these days so to be able to travel to some of the most diverse locations in the world is a privilege to which few people can aspire and radio amateurs have an advantage here. If you prefer fine foods

listen to the pile ups when an island is on air you will hear stations from all over Europe and Russia with many participants in the programme coming from much further afield than that. Listening to the radio traffic on 40m (anywhere there's a gap) or 80m (around

taking place have no intention of claiming any awards, but

Trodday Island with the Shiant's in the distance.



Staffin Island on the right and Flodigarry Island to its left in the distance, taken from Skye.



just enjoy the contact or are pleased to have heard the activation and perhaps collect a QSL card.

As the introduction to the IOSA directory says, "We hope this award will

and sumptuous living, then again there are Scottish Islands

3.772MHz) in mornings or evenings or near 14.260MHz

encourage Amateur Radio operators from around the

***"If you are a short wave listener, then the award is open to you as well in the same way as those that contact the islands"***

there that will fit the bill.

If you don't feel like travelling there or if you lack the time or resources then the IOSA programme encourages contacts with the islands. If you are a short wave listener then the award is open to you as well in the same way as those that contact the islands. The basic award consists of working or monitoring contacts with ten islands in six different island groups.

There are a number of different awards available. Scottish Island chasers are scattered, literally, all over the world. If you

the rest of the time you will hear the same stations time after time. Both the island activators and the chasers are pretty keen individuals.

Although most notifications of forthcoming islands activations now take place via the Internet, there are occasional natter nets on 3.772MHz in the evenings and those without E-mail can sometimes hear news of weather conditions and gossip from around the Scottish Islands.

You do not need to be a member of the GMDX Group to participate in the IOSA programme and you don't need to purchase a directory to work or monitor and QSL many stations on the islands. Many folk that are regulars on nets when activations are

world to contact or visit and activate some of the most beautiful and remote parts of Scotland."

It seems to have worked well so far. **SWM**

## Frequency Details

Finally, here are a few frequencies that may be useful to people with an interest in the region: 3.772, 3.774, 7.060MHz+ all l.s.b., 14.260 - 14.270 u.s.b., all amateur frequencies favoured for Scottish Islands operation.

## Rescue frequencies (all.u.s.b.)

MHz	Comment
2.596	
2.660	St. Kilda range. (callsign Kilda Bay)
3.864	
4.718	
5.680	Primary
5.699	
7.470	
7.777	Secondaries

## Hebrides Radio (u.s.b.)

1.866	Shore
2.534	Ship

## Stornoway Coastguard (u.s.b.)

1.743	
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## Important Information

GMDX membership details are available from **Rob Ferguson GM3YTS, 19 Leighton Avenue, DUNBLANE, Perthshire FK15 0EB.**

Islands Of Scotland Directories, including details of all the awards, are available from **Charlie Wilson GM4UZY, Goldenacre, 1 Borrowfield Crescent, Montrose DD10 9BR** at a cost of £6.

If you have Internet access take a look at: <http://www.gmdx.org.uk/>

Also for further information on Scottish Islands in general, you could do worse than look out for Hamish Haswell-Smith's fine book *The Scottish Islands*. Published by Canongate Books, Edinburgh - it's twenty five pounds, but there is a cheaper paperback version around.

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

# Satellite TV News

I had intended to finish writing this column week ending September 15th, but events overtook these intentions. September 11th will remain a day to remember, the day that terrorists hijacked four jet passenger planes and kamikazed them into the World Trade Centre blocks, the Pentagon and a thwarted attempt at 'Air Force One' ending in a smoking crater near Pittsburgh.

The Atlantic circuits were full of news and report feeds, locked-off camera pictures showing the smoking pyres of the World Trade site and their occupants, a mass tragedy of man by man. CNN output was taken freely by many European channels which provided updated pictures and news from New York. The sheer scale of perhaps 5000 people being massacred - live on TV - still seems beyond comprehension - we've all seen the recent pictures of New York...I'll not provide further commentary on this apocalypse.

A few weeks ago I just happened to mention about my lack of not receiving the Dutch TV amateur P16ALK on *Eutelsat W2 @ 16°E*. **George Price**, **Nick Brigden** and **Nick Harrold** all contacted me to say that P16ALK could be seen transmitting @ 12.729GHz-H (SR 2000 + FEC 3/4). I checked the frequency the next evening at about 2100 and up whacked a 100% signal strength followed a split second later with a clear picture of a seated gent holding court in his 'shack', the picture had small picture inlays around the sides showing other Dutch amateurs, test cards, etc.

Remember, this is live and if there had been a 'Trop opening' things would have been dramatic. A scrolling caption bottom frame advised that from late August P16ALK would move to 12.472GHz-H, SR 2000 + FEC 5/6 though on the same bird - check him out!

Excitement on September 6th with colour bars and caption 'GOODWILL GAMES BRISBANE' alternating with 'PAS-2 15K/7C', but carried over the American GlobeCast uplink from the 'States - this outside broadcast was a live relay from Australia carried over PAS-2 @ 169°E (Pacific) into the West coast USA, then either fibre or satellite hop to the East coast and then the final hop into Europe over *NSS-K*, 21.5°W. Picture quality was truly excellent as was the first volleyball match with four pretty, bikini clad girls playing the match, this OB over 11.590GHz-V, SR 20145 + FEC 3/4.

Late August - also on *NSS-K* - featured golf, not unusual for PGA action, but this was from the Royal Canadian Golf Association and a tournament ex Montreal, preceded with test card and id 'ATLANTIC SATELLITE', 11.487GHz-H, 5632+3/4 from 1800.

The most unusual action seen this past period was captured live from *NSS-K* by the 'Fox News Channel' and was quite remarkable, sufficient for *BBC News* to take edited 'highlights' from the ensuing footage. We have a paraglider man who has attached a motor and propeller to his back and is attempting to land in the spectators torch, carried aloft on the Statue of Liberty's outstretched hand. The result is that the aviator is entangled on the torch itself and is left dangling in the breeze below the statue's hand.

The *News 7* from Channel 7, NY, appears and offers TV pictures from the air as are the media press below on the ground. The NY Fire Dept eventually appear, clamber up the inside of the statue and haul the aviator into the spectators gallery to safety, and in due course, bring him to ground level - where he is immediately arrested and handcuffed - Fox News over the Reuters lease, 11.462GHz-V, 5632, August 23rd. Less than three weeks later, the Statue of Liberty would witness the World's worst terrorist action...

'A Day at the Races' and August 18th proved interesting with a *Eutelsat 2F3*, 21.5°E afternoon offering from Deauville, France, several races were encrypted though betting and paddock previews were in the clear - odd! (11.663GHz-H, 5632+3/4).

That same evening a more dramatic horse event on *NSS-K*, the Arlington Park Illinois meet and the 'Arlington Million', this a major race with a \$500,000 first prize and indeed a major event with dual commentators, the full glitzy presentation of a major

American OB event. Interesting that the meeting also marked the opening of their new grandstand, the previous one having burnt down with footage of the fire shown during the opening montage (titles), frequency the same as the Brisbane OB as above.

A final horse race meet, that of the August Bank Holiday from Epsom August 27th, this on *2F3*, 11.653GHz-H, 5632+3/4 with service ident '8MHz 5.632MBS'. Interesting that two separate commentaries were carried, one for the TV pictures and another seemingly for a radio network. In the late Southern TV years I worked on an Epsom August Bank holiday ITV network OB - how time flies!

**Edmund Spicer** (Littlehampton) uses only a 600mm dented Amstrad dish, but still achieves worthwhile results, the other day he entered 11.060GHz-H, SR 18386+3/4 into his Humax sat receiver and cranked his dish to the West and eventually discovered *Telstar-12 @ 15°W* - ever the optimist since a 900mm dish is the minimum necessary according to 'the lists'. Achieving 40% signal levels on his screen he found several encrypted transponders, but other checks revealed 'Iran TV Network', Simaye Azadi' and 'Pars TV' - all Iranian channels in the clear - 12.520GHz-V, SR8700+3/4.

Tracking back to his favourite 13°E *Hot Bird* slot, Edmund stopped off at 5°E and checked across Sirius, one evening signal that appeared was the 'Intertrack Greyhound Racing' channel, 12.341GHz-H, 27500+3/4 - and in the clear. Odd that on this particular night between races the camera panned to a 'Swindon Stadium' hoarding though the trackside ads and podium all mentioned Romford! Edmund couldn't find *Telecom 2B* and 3°E, hardly surprising as early September the bird was being moved eastwards - somewhere - even with a small dish and modest means you're still in the running for interesting signals.

I've often reported Anglia TV and Meridian TV using 'BT TES-42' and 'BT TES 43' respectively for the early evening sat links into their magazine programme over *Intelsat 801*, 31.5°W and they always use a symbol rate (SR) 5632 and Forward Error Correction (FEC) at 3/4. Late August and TES-43 (only) is suddenly appearing as a blank screen with inlaid 'SIGNAL ENCRYPTED', most odd.

After several evenings of 'ENCRYPTION' I investigate further and 'auto search' the Meridian downlink frequency, 10.988GHz-V resulting in normal signal lock and picture! Checking the logged-in parameters I find that the SR is clocking 5750 from the norm 5632 - the latter is in memory and only a 118 difference seemingly prevented the signal locking. A couple of days later and we're back to 5632! Now who's playing games?

**Roy Carman** (Dorking) found something new recently, 'Sat Vision PLC, North West Teleport Centre, Manchester, England - [www.satvision.co.uk](http://www.satvision.co.uk)', this caption on *Europe\*star-1 @ 45°E*, 11.618GHz-V SR 3003 + FEC 5/6, the downlink eventually carried a programme detailing the life, times and songs of Mariah Carey!

August 29th and high drama over *NSS-K* when **Nick** from Sutton watched a CNN 'NewsSource' feed, 11.558GHz-V August 28th, a Beechcraft twin-prop light airplane has problems with his undercarriage and reports 'not getting all the greens' as he circles over Van Nuys airport, California, using up fuel. Eventually lowers the landing gear and lands on Van Nuys longest runway, cuts engines and rolls eventually to a halt not using brakes, the two occupants escape as the 'plane is surrounded by fire trucks - pictures into CNN from KCAL-TV.

An active and harrowing month in the Clarke Belt.

Comment...my son staying with friends in Harlem spoke briefly late one night on the 'phone, he saw the planes hit the World Trade Centre towers, impressions - the flames and the twin smoke trails extending into the distance, rubble, a grey relentless dust, people wandering around seemingly lost, standing, weeping, a dead city, sirens, it resembled a film portrayal of a city after a nuclear bomb attack - but this was for real...



New York burns and PTP-TV Moscow takes the live feed ex CNN.



The 'Goodwill Games' live from Brisbane via *NSS-K*.



TV amateur P16ALK downlinking on *Eutelsat W2, 16°E*.



The crew in the ISS floating around waiting for the relief crew about to enter through the hatch from Challenger, live via NASA-TV on *NSS-K*.



Press conference for the space mission about to commence.



Pretty journalist awaits her live report from Harlow Police Station concerning a missing teenager, via *Eutelsat 2F3, 21.5°E*.



A very active news circuit from Jerusalem carried on *Hot Bird, 13°E*.



Paraglider pilot has his strings caught on the Statue of Liberty.



NY Fire Department rescue the aviator, via *NSS-K*.



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# DX Television

**T**he Sporadic-E season continued in full-swing throughout August. Highlights included an Arabic station on E3 on the 5th and a 50MHz path into Chad on the 7th. And, surprise, surprise, the Spanish TVE-1 Madrid Channel E2 outlet remained on-air!

## Reception Reports

An intense all-day opening materialised on August 2nd, with signals from Slovenia, Croatia, Spain, Sweden, Norway, Russia, Belarus, Lithuania, Slovakia, the Czech Republic, Switzerland, Italy, Hungary and Albania.

The 5th was another spectacular day with an opening lasting from midday until early evening. At 1459 **Stephen Michie** (Bristol) resolved pictures from the elusive Slovakian STV-1 Bratislava R2 transmitter. By 1514, NOVA TV from the Czech Republic occupied R1 and R2, with co-channel signals from the Ukrainian YT-2 network. This was identified by its 'I+1' logo. At 1815 Arabic script appeared on E3, possibly from Jordan's Suweileh 100kW transmitter.

**John Lees** (Cheltenham) encountered extremely strong signals for around three hours on the 10th from Austria, Italy and the Czech Republic. In addition there were many other unidentified stations on E2, E3 and E4, some with sound. On the 12th Spain dominated E2, E3 and E4 with the occasional perfect picture from Portugal at levels outperforming the local BBC according to John.

On the 21st Stephen Michie discovered RUV Iceland on E4 displaying text pages. We haven't heard reports of the E3 outlet being received this season, but presumably it is still active. **Peter Barber** (Coventry) also identified RUV E4, but on the 11th at 1857. Peter describes the broadcast as an interview being conducted across a rather basic four-legged wooden oval table in a bare studio. Obviously a very low-budget programme!

Spanish and Portuguese broadcasts ruled the roost on the 25th during an intense opening from midday until late evening. **Simon Hockenhull** (Bristol) reports the sighting of RTP-1 on E4 from the 35W Valenca Do Douro relay. We've also heard that its RTP-2 counterpart on E2 also been received this season.

The 27th provided lots of central European activity including a German regional programme 'Bayern Studio' logged at 1513 on E2 by Stephen Michie. The rare Swiss E4 SSR-1 outlet (La Dôle) was also seen during the opening. Earlier at 1235 TVSH Albania on Channel C (Tirano) were showing subtitled pictures.

**Lt. Rana Roy** (India) ventured on a very long tour of Gujrat and the Union Territories of Daman and Diu both located in the far west of India on the Arabian Sea. Dubai E2 and Abu Dhabi E3 usually appeared between 0600 and 0830 and from 1830 until 2000 almost every day. Dubai was very clear, but Abu Dhabi was about P3.

## FM Reports

On the 2nd Stephen Michie (Bristol) logged Italian signals on 87.80 and 89.00MHz. On the 8th between 1218 and 1240, while tuning around near Gourcock using a Sony MDX5200 RDS car radio, **Trevor Goodenough** (Scotland) identified strong signals from 'IMPLUS' (Czech), 'GORA POLSKI RADIO' (Polish) and 'RadioZET' (Polish), between 87.50 and 89.00MHz.

An opening on the 10th at 2055 produced Spanish f.m. up to 89MHz for Simon Hockenhull. Between 1300 and 1545 on the 27th Simon heard Italian f.m. stations up to 95MHz using a Ford 3000 car radio. One station 'Power Hit Radio' on 100.60MHz remains unidentified.

An Arabic station on 87.6MHz, possibly Moroccan, was heard by **Peter Chalkley** (Luton) on the 25th at 1623. Spain was around in Band I at the time.

On the 3rd around midday, **Les Griffiths** (Sheffield) monitored Russian and French f.m. repeater-type stations between 33 and 43MHz using an Alinco DJ-X1 scanner and its helical antenna.

Simon Hockenhull has noticed Sporadic-E affecting the h.f. bands, though its effects are not so obvious as on v.h.f. frequencies. On the 27th between 0900 and 0935 Radio France International was heard on 15.300, 21.620 and 25.820MHz.

## Service Information

**Romania:** TVR-1 has a new logo in the upper-right of the picture, but we have different descriptions. **Tom Crane** (Hawkwell) describes it as a '1' logo with a dark body and a white 'crosspiece' facing to the left. However, Stephen Michie describes a black vertical '1' inside white circle.

**Russia:** Stephen has noticed a new logo on R3 belonging to a Russian station. It resembles a vertical rectangle with a curved shape inside, a small '1' in the upper-right and a station name below the box. A square clock is shown by ORT before the BPEMR News at 1700.

**Czech Republic:** A star or comet has been added to the NOVA TV logo.

**Latvia:** At the end of July **David Bocca Corsico Piccolino** (Italy) received a PM5534 from Latvia on R1 with the word 'PAL' at the bottom and 'LVRTC' at the top. Maybe Latvia is experimenting with PAL instead of using SECAM. Estonia are already using the PM5534 and also the FuBK, so maybe this has set a trend for other CIS countries to abandon their original test cards.

**Austria:** There were reports that the Austrian ORF-1 E4 outlet at Patscherkofel had already closed, but Stephen Michie saw it towards the end of July. Just to complicate matters, we have had a report that Slovenia has been displaying the ORF-1 logo, in addition to its own!

**Slovakia:** During a recent opening, Simon Hockenhull and Stephen Michie saw the Slovakian PM5534 variant on R2. Stephen comments that the frequency gratings extend fully to the circle, i.e. they are similar to the version used by the BBC known as Test Card 'G' which is featured in this month's 'Down Memory Lane' spot.

**Hungary:** The unidentified 'shopping channel' with telephone numbers on R2 many DXers have been unable to identify is RTL KLUB. Around 0900 the shopping channel is shown, but without the RTL logo.

**Australia:** **John Faulkener** (NSW) advises that digital terrestrial TV has been snubbed. In the seven months a service was running, only fifty set-top boxes were sold in Sydney.

**Italy:** Analogue broadcasts are planned to end in 2007.

**United Kingdom:** The Wenvoe transmitter broadcasts HTV on E41 with a modified vestigial sideband (PAL I/1). Test Card 'J', a modified version of Test Card 'F', is currently being radiated by BBC Parliament via Sky Digital but not via the terrestrial digital channel. The ITV network now identifies as 'ITV-1'.



Fig. 1: Unidentified Arabic caption on E2, possibly Syria.



Fig. 2: Weather forecast from Moldova received by Stephen Michie.



Fig. 3: BBC Test Card 'J'.



Fig. 4: This month's 'Down Memory Lane' item: the BBC Test Card 'G' (based on the PM5544, but with a modified grey-scale and central black bar), photographed in the Seventies.

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# Amateur Bands

**T**his month it's a change of columnist so I'll take the opportunity to say 'Hello'. I won't need an introduction to all of you though. Regular readers might recognise that I'm part of the SWM staff already, looking after the Book Store.

I've been a radio amateur for around 20 years, although my activity level has varied greatly over the years. I feel in many ways that I'm more of a licensed listener. After a few years of virtually no activity, things are very much on the up amateur radio wise, and before long I might even get back to warming some output transistors!

## Radio Hot Spots?

Whilst politics and amateur radio shouldn't be mixed, it's impossible to ignore what's going on in the world. As I write this, it is only a couple of weeks since the attack on New York and there is much focus on the Middle East. Who knows what will be happening and when, but it might be useful to be reminded on the call prefixes of countries in the area. Whatever those countries' official position on amateur radio activity may be, who knows what events might throw up?



Afghanistan	YA
Iran	EP-EQ
Pakistan	AP
India	VU
Turkmenistan	EZ
Uzbekistan	UJ-UM
Tajikistan	EY
Iraq	YI

## New To Radio?

Quite a few callers to the office are new to listening, and often ask advice on the merits or otherwise of particular

receivers. In many ways the advice is easy, 'Buy the best receiver you can afford that's designed to do the job you want it to do'. Whilst the first part of the advice is fairly obvious, the second part may not be so.

Listening to the amateur bands requires a receiver that can smoothly tune to any frequency in the band, because transmissions may be anywhere within the band allocation. Tuning to the fixed frequencies of broadcast or utility stations only requires, in effect, dialling in the numbers. So for the h.f. amateur bands it has to be a communications receiver with smooth continuous tuning. As for other features, more in future columns. And as far as for buying the best you can afford, a look at the second-hand market is always worthwhile. I often say that buying your first receiver is a bit like buying your first car. And it's only after you've driven it for a while that you know what features you really want.



## Band Activity

Look out for VP8DBR on the Falklands during November. The operator will be Roger G0SWC who will be at Mount Pleasant airport on East Falkland.

As I wasn't sure if I'd get any logs for the column I listened with a little more purpose for a while. All on s.s.b. I found A71BY in Qatar working W6QKB on 14 and on 21MHz, Alex A45WD (home call YO9HP), in Oman working VK6NTE, Ted near Burberry, Western Australia, and later Paul VE7AVV on Canada's west coast.

9K2USA being used by Bob, in Kuwait. I say 'being used' as all Kuwait stations were able to use the USA call during September as a gesture of support for Uncle Sam. Closer to home, JW5X, (home call LA5X) on Svalbard.

## Closing Address

I don't know how things will develop with this column in the future. Paul has put a lot of hard work in over the years and I hope to keep up his good work. If readers have any views about what they'd like to see in the column please let me know. Do keep the logs rolling in please, and address them to **Clive Hardy G4SLU, SWM, PW Publishing Ltd., Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW** or to **clive@pwpublishing.ltd.uk**. If you write, a daytime 'phone number would be very helpful.



■ DAVE ROBERTS *of* SWM EDITORIAL OFFICES, BROADSTONE

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Folks that scan the airwaves, whatever part of the spectrum, are often party to information that is not available to others until much later - if ever. That puts us in a position of some responsibility should we receive transmissions that may be of use to the authorities.

The attacks in New York and Washington on 11th September will result in a heightened awareness of security issues throughout the western world. This may eventually be reflected in communication procedures. Any of us that receive any signals that we think could be of use to our security forces have a duty to assist in any way that we can. In practical terms, this means logging the signals with date/time, content and signal strength. Any accented speech or background noises should be noted. A recording of some sort would be even better.

No doubt there are people in the UK that rejoice whenever a terrorist attack is successful against us or our friends. Some of these people will be using radio communications, not just mobile 'phones. Our interest in radio has more immediacy and relevance to matters of security and intelligence than any other pastime. It would be a waste if this resource was not available to prevent terrorism.

## Problems

In the July Edition of *Constabulary* Magazine there was a letter from an officer in Lancashire police who highlighted the problems that forces are having with their new Airwave TETRA radio system. The main points were: 1) There isn't 100% coverage, 2) Officers still favour u.h.f. and don't like the new system, 3) Access to busy talkgroups is difficult, 4) The radio's design is not good and 5) An officer's mobile 'phone switched itself off in proximity of the TETRA set.

This has pushed panic buttons and Britain's senior police officers are circulating memos to their staff pointing out that the Lancashire system is a pilot project and that in their own forces things will be a whole lot better than this. They are pointing out to officers that by 2006 the current u.h.f. frequencies will not be permitted to be used and that a new radio system will be required in any case. There are rumours that some forces are looking at alternative systems to TETRA and it



seems that although the old frequencies will go, there is no consensus on the replacement.

## Thanks To

Thanks to **Geoff Taylor** for his response to my query on the book *Transmitter Hunting and Direction Finding Simplified*. He has found the book extremely useful with a wealth of technical information. He actually used information from the book to locate an interfering signal near him. Geoff, I've passed on your comments to the original enquirer who is buying a copy.

## Listen In

People in the USA read *SWM* too you know. A very helpful letter from **Larry McDermott** in Santa Cruz, California. (I haven't been in Santa Cruz for five years - the Mystery Spot frightened me!). Larry says that if anyone ever hears users on the California Highway patrol 'Blue' channel (Base 42.18MHz, Mobile 42.340MHz f.m.) using callsigns in the 5800 series, then it's the California Department of Corrections, that's prisons to us. I have never heard the CHP at all from the UK yet, although I live in hope.

Conditions are supposed to be getting better at these frequencies as the year closes, but I doubt it. I used to monitor many utilities on v.h.f. low frequencies in the late seventies and eighties, but more often than not these days the bands are quiet. I have amateur 10m band precursor channels loaded in a scanner here, but they rarely fire up. I shall continue monitoring.

## Disappeared!

No sooner had the September copy of *SWM* gone to print than the website that I quoted in the article on *PDW* Pager Decoder, disappeared! Websites seem to have the permanence of a choc ice

on a hotplate. I'm really sorry about that. The latest version of the software was made freeware before the site went west and I have a copy here.

If anyone wants *PDW* v 1.10 and you have access to E-mail, then send me a mail with the request and I'll wait until a few weeks have passed and I have collected all the messages and I'll send the program to everyone that wants it in one go. So far I have sent around twenty different mails with the file attached. The program works really well in any case and is simple to set up.

## Cordless 'Phones

On a different tack, anyone thinking of buying a cordless 'phone for home or business use should be aware that not all of those that claim to be 'digital' in fact send digital signals.

Listen for the base frequencies on 31.0375, 31.0625, 31.0875, 31.1125, 31.1375, 31.1625, 31.1875 and 31.2125. The handset frequencies are 8.9MHz higher. All are f.m. The old cordless 'phones can also often be heard with channels as follows:-

Channel No	MHz	
	Base	Handset
1	1.642	47.45625
2	1.662	47.46875
3	1.682	47.48175
4	1.702	47.49375
5	1.722	47.50625
6	1.742	47.51875
7	1.762	47.53125 (or 47.49375)
8	1.782	47.54375

## James Bond?

Give some folks a two-way radio and they turn into James Bond with all the resources of a modern state at their fingertips. This seems to apply to security guards at a bacon processing factory in Thetford. The story is that Bernie who runs the Norfolk scanning site on the Internet

([www.scan.norfolk.to](http://www.scan.norfolk.to)) was sat at his home in that area with a new PMR446 radio. His son also has a set. This was in the evening of Tuesday 4th September. Bernie's son gave him a shout on the PMR446 set to say that he was just getting off the bus from his college and that he would be home in ten minutes. This is just what the PMR446 service was designed for.

Imagine Bernie's surprise when an abrupt voice came from the little radio's speaker, "Who's messing about with the radios?" says the voice. Bernie called him back and said that he and his son were using PMR446 radios and did the caller want them to change channels.

Mr Authority then called back to state that if Bernie kept interfering with the security at the bacon factory (I've omitted the name) that the police would be called.

Now Bernie, being a patient sort of chap and wanting to avoid trouble, explained that this was a licence free band open to public use. Oh dear the reply was not friendly, "We have a detector car here and it's coming to trace you and you'll be arrested".

Pause for a minute and think...security is such high priority at the bacon plant that the guards get the very best in communications, i.e. PMR446 sets. Security staff training and awareness is so high that they have no idea that their communications on this licence free band is not secure and that anyone can legally use the channel. Anyhow it seems that the security bod may have been telling porkie pies as, surprise surprise, no 'detector car' turned up despite the 'security' guard telling Bernie and his son to keep talking so that the car could detect them.

I don't reckon that these guys could detect their own backsides in the dark using both hands. In any case, Bernie and his lad were not arrested and taken back to the bacon plant for a good grilling. The chaps must have heard some crackling on the radio and thought it was radio 'hams'. I could go on in this vein, but I'll desist.

Anyhow the frequency in use by the Thetford equivalent of the SAS was Channel 6. (446.06875) and tone 6 (82.5Hz) in case anyone hears them. Oh and look out for their 'detector car' it'll probably be on Danish plates.

# London COMMUNICATION & COMPUTER SHOW

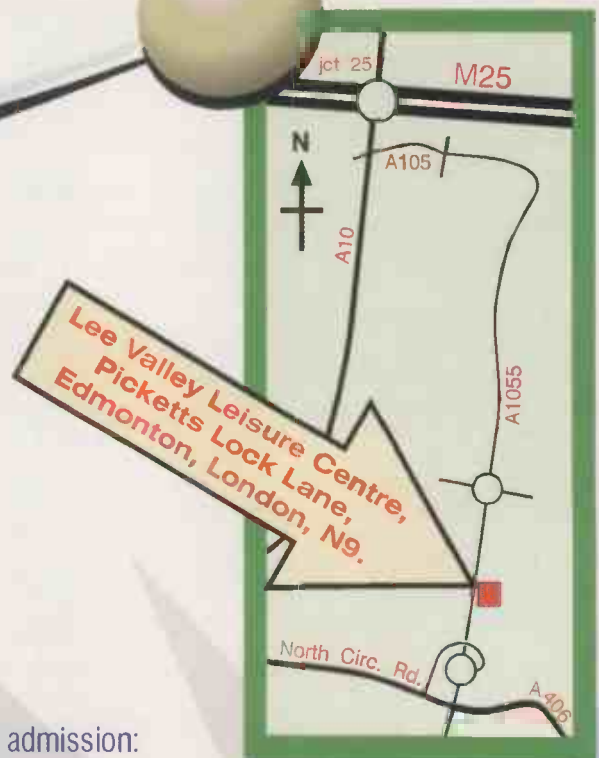


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# SSB Utilities

## African Network

In the August 2001 issue I wrote about the AFI-3 aeronautical network covering the African continent and how it provides a radical change to North Atlantic traffic. This has prompted a letter from **Lennart Wennberg** in Sweden who spends many hours listening to 11.300MHz and wanted to share his experiences.

Lennart made a short trip to Accra (Ghana) in February 2000, and since then has been listening to 11.300MHz almost every night. He says that he loves the 'African flavour' on this frequency - that's a perfect description of the style of radio that I was trying to describe in my original article. After a while you recognise the different voices and styles of the operators. For instance, one can hear a male operator in Nairobi who greatly exaggerates the sound of the letter 'R'. He pronounces words like this: 'Nairrrobi' or 'affirrmative'. Another is the hysteric and shouting lady in Khartoum with her high-pitched voice, causing some irritation among pilots and other ATC operators.

Lennart continues to say that in August 2000 he flew with Kenya Airways flight KQ117, from Amsterdam to Nairobi. He was able to visit the cockpit of the aircraft while in flight, and able to meet the pilots. In the cockpit he met Capt. Chris Harrison and First Officer Barbara Green from Kenya Airways and he explained to them that he listened to 11.300MHz and the hysteric lady in Khartoum. The crew knew exactly who Lennart was talking about, and Barbara Green made a perfect imitation of her. Much to their surprise, when it was time to call Khartoum, the same 'hysteric lady' was on duty. It was a truly magic time in the cockpit, watching other aircraft and exchanging some flashes with the landing-lights and passing a few words to each other over v.h.f. radio.

Back home in Sweden after his holiday in Kenya, Lennart says that he continues to listen to 11.300MHz, but now concentrates on Kenya Airways flight KQ117 which flies every night from Amsterdam to Nairobi. A few weeks after returning from Kenya Lennart was listening to a KQ117 flight and heard the voice of First Officer Barbara Green who was a member of the flight crew on his trip to Nairobi.

Well Lennart, that is certainly an interesting angle on utility listening. Surely not too many listeners can claim to have had similar experiences with flights and ATC stations and have met the voices that they hear on h.f.

Another reader who has been listening to the AFI Network is **Roy Walker** who also wrote in with some comments following the August 2001 column. He has also been monitoring the AFI-3 Network on 11.300MHz in the evenings. He comments that it does sound chaotic, but asks is it not simply because of the propagation differences, they simply cannot hear one another, but we can hear all of them?

Well Roy, that is certainly a possibility, but there is always a good case for making your voice sound distinctive so that it can be heard above the background noise and other stations. Roy says that he has never heard them using or testing SELCALL tones on the AFI Network, and he wonders if they do not use them in that part of the world?

Well Roy, I have heard a few aircraft passing their selcall codes to ATC and I even remember one flight asking for (and getting) a selcall check. I can't remember which flight it was, or which ATC agency provided the tones. At the time it did not occur to me as being extraordinary, otherwise I would have made a note about it.

## NAT Changes

Although this column will not arrive on your doormats until late October (or even later if you're overseas), those of you who listen to aeronautical traffic on the NAT tracks should have noticed some new reporting points in the north-eastern Atlantic. With effect from 4th October the 10°W oceanic entry points have all been given 'names' replacing their lat/long positions, they are listed at the top of the next column.

61°N-010°W becomes RATSU  
60°N-010°W becomes ATSIX  
59°N-010°W becomes BALIX  
58°N-010°W becomes ERAKA  
57°N-010°W becomes GOMUP  
56°N-010°W becomes MIMKU  
55°N-010°W becomes NIBOG  
51°N-008°W becomes LESLU  
(Formerly BANLO)

All of these are to the north of Ireland, except for the last, which is off Lands End. Those off the west coast or Ireland already have 'names' - MASIT, BABAN, BURAK, DOLIP, GIPER, KENUK and GUNSO respectively from north to south. Full details of the changes can be found on Page 4 of the Jeppesen website (EUR-MED HI) at

[http://www.jeppesen.com/download/cht\\_notam/ermhi.pdf](http://www.jeppesen.com/download/cht_notam/ermhi.pdf)

Although I am writing this column during mid September and these changes are yet to take place, I am sure that there will be a period of time while flights get used to the new 'names'. I fully expect that the flights and radio-operators will be using a mixture of both the old and new terminology.

## RAF C-17A

At the end of August the RAF took delivery of the last of its four C-17A Globemaster III aircraft leased from the United States Air Force. The fourth aircraft was handed-over to the RAF at Long Beach in California on 24th August, and arrived at RAF Brize Norton during the morning of the 26th August using a now familiar 'Ascot 6700' series callsign.

With all four aircraft having been delivered they have been kept busy flying around Europe and beyond. They even made the news in late August when they flew to Macedonia with NATO troops. All four aircraft have been heard on h.f. working 'Architect' or Shanwick, and the selcall codes for all four aircraft are now known (see elsewhere on this page). What came as a surprise to me is that the aircraft are equipped with standard ALE (Automatic Link Establishment, or MIL-STD-188-141) equipment and have been heard communicating on the USAF ALE network using their originally assigned aircraft USAF tail-numbers as their ALE address rather than their RAF registrations.

The first digit of the ALE address indicates the type of aircraft (in the USAF network at least), with the number '2' indicating a C-17A aircraft - note how at least one of the aircraft has the wrong prefix programmed into the 'black box'. The RAF does not yet operate an ALE network, although they were testing some ALE equipment a few years ago from RAF E-3 aircraft."

## This Month

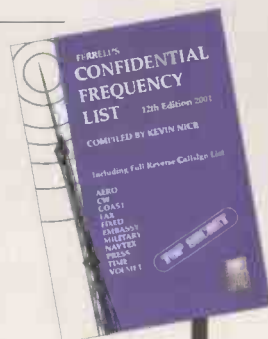
This month I have spent many hours listening to the 'Architect' network, trying to hear the new RAF C-17As. All that effort eventually paid-off, as I managed to hear the last of the four aircraft about a week after its delivery, and also managed to get selcall tie-ups for all four aircraft.

One evening while listening to the CCF on 6.913MHz I heard a signal on an adjacent frequency. I managed to tune into the weak signals on 6.9145MHz and heard a flight from South Africa talking to a ground station and passing details of their flight. Although the signals were weak, I was able to hear that flight 'ZS-SEA' was expecting to land at 1955. I was able to find this aircraft registration via the Internet, but an E-mail to the company that owns the aircraft in South Africa has not elicited a response yet.

Research into the ground station in *Ferrell's Confidential Frequency List* shows that Harare ACC in Zimbabwe operate on 6.915MHz, so I suspect that this is the ground station that I heard. This is certainly a 'new' station for me and I think that this is the first time that I have heard signals from Zimbabwe.

## RAF C-17As - Selcalls & ALE Addresses

	Selcall	ALE Address
ZZ171	JK-ES	200201
ZZ172	JM-BQ	000202
ZZ173	KP-DF	200203
ZZ174	KP-DG	200204







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- 20 search bands
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108 - 170MHz  
300 - 470MHz  
806 - 1000MHz
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- HF receiver
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- VHF
- Large easy to use base/portable
- Suitable for all ages

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## USED EQUIPMENT

MAKE	MODEL	PRICE
AEA	PIC 88 TNC	£80.00
ALINCO	ADI-446 70cm MOBILE 35w	£189.00
ALINCO	DJ-61 HANDY 2M WIDE RECEIVER	£129.00
ALINCO	DJ-G5EY 270W WIDE BAND TRANSCEIVER	£200.00
ALINCO	DR-930 DUAL BAND MOBILE	£175.00
ALINCO	DR-935 DUAL BAND MOBILE	£175.00
ALINCO	DR-707 100W MOBILE / HF	£299.00
ALINCO	DX-107H TRANSCEIVER	£475.00
ALPHA	87A FULLY AUTOMATIC AMP	£3,250.00
AMERTRON	QSK-5 2.5kw QSK SWITCH	£199.00
ADR	AR-2002 BASE SCANNER	£199.00
ADR	AR-3000A RECEIVER	£495.00
ADR	AR-5000 RECEIVER	£1,199.00
ADR	AR-7030 REMOTE CONTROL RECEIVER	£595.00
ADR	AR-8000 HANDY RECEIVER	£199.00
ADR	AR-8200 MK1 HANDY RECEIVER	£260.00
DAIWA	PS-120N/K11 10amp PSU	£50.00
DAIWA	PS-304M11 20amp POWER SUPPLY	£85.00
DATONG	F2 FILTER	£30.00
DIAMOND	GSX-3000 PSU	£100.00
DIAMA	CNW 516 2KW CROSS METER ATU	£199.00
DIAMA	ROTATOR MR-750U HEAVY DUTY	£250.00
DRAKE	DRAKE 2700 ATU 2.5KW (MINT CONDITION)	£295.00
DRAKE	DRAKE L7 LINEAR AMP (MINT CONDITION)	£399.00
DRAKE	R-8 RECEIVER (MINT)	£550.00
HEATHERLITE	2M EXPLORER 2m AMPLIFIER	£399.00
ICOM	IC-207 DUAL BAND MOBILE	£210.00
ICOM	IC-229H 2M MOBILE	£120.00
ICOM	IC-251E AC 2M Multi-mode	£325.00
ICOM	IC-275H 2M 100W BASE TRANSCEIVER	£550.00
ICOM	IC-34 UHF MINI HANDY	£89.00
ICOM	IC-475E AC 25W MULTIMODE 70CM BASE	£325.00
ICOM	IC-706MK1 TRANSCEIVER	£499.00
ICOM	IC-706MK1 DSP TRANSCEIVER	£599.00
ICOM	IC-706MK11G (AS NEW)	£799.00
ICOM	IC-725 HF MOBILE 100w	£400.00
ICOM	IC-728 HF MOBILE 100w	£425.00
ICOM	IC-729 TRANSCEIVER HF/50MHz	£425.00
ICOM	IC-735 HF 100W	£450.00
ICOM	IC-746 HF/50/2M 100w	£399.00
ICOM	IC-756 HF/6M BASE TRANSCEIVER	£1,050.00
ICOM	IC-W21E DUAL BAND HANDY	£175.00
ICOM	PCB-1800 PC RECEIVER SSB/FM/AM	£200.00
ICOM	PS-15 POWER SUPPLY	£100.00
ICOM	PS-55 PSU 20 amp	£120.00
ICOM	PS-85 POWER SUPPLY	£175.00
ICOM	R10 HANDY SCANNER	£199.00
ICOM	R2 HANDY RECEIVER	£110.00
ICOM	R-7000 25 2000MHz ALL MODE RECEIVER	£575.00
ICOM	R-72 RECEIVER AC	£450.00
ICOM	R-72 RECEIVER DC	£400.00
ICOM	R-75 RECEIVER	£450.00
ICOM	SP-21 EXTENTION SPEAKER FOR IC-706 etc	£45.00
ICOM	TBE HANDY 2700m	£199.00
ICOM	W-21E DUAL BAND HANDY	£199.00
JRC	JR-535 RECEIVER	£375.00
JRC	JR-545 DSP RECEIVER	£399.00
KANTRONICS	KAM PLUS TNC	£220.00
KENWOOD	AT-200 ATU	£125.00
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KENWOOD	TM-455E 70CM MOBILE MULTI MODE TRANS	£495.00
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KENWOOD	TM-V7E DUAL BAND TRANSCEIVER	£250.00
KENWOOD	TR-851E HF 70cm Multi-Mode	£325.00
KENWOOD	TS-140S HF 100w BASE/MOBILE	£399.00
KENWOOD	TS-880 HF 6M BASE/MOBILE	£395.00
KENWOOD	TS-890 SAT TRANSCEIVER HF/6M	£595.00
KENWOOD	TS-811E 70cm MULTI MODE TRANS	£400.00
KENWOOD	TS-850 SAT 100w HF BASE TRANS	£350.00
KENWOOD	TS-870 DSP HF/6M BASE TRANSCEIVER	£399.00
KENWOOD	TS-945SAT HF BUILT IN ATU BASE	£750.00
KENWOOD	TS-950 SD DIGITAL 150W TRANSCEIVER	£1,250.00
KENWOOD	TS-950S HF 150W BASE BUILT IN ATU	£999.00
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KENWOOD	LINEAR AMP EXPLORER AMP	£399.00
LOWE	HF-225 RECEIVER	£225.00
MAYCOM	AR-108 AIRBAND HANDY	£50.00
MFJ	1278 TNC Incl SSVT	£225.00
MFJ	MFJ-2598 ANTENNA ANALIZER	£175.00
MFJ	MFJ-7848 DSP FILTER	£190.00
MFJ	MFJ-362 3KW ATU	£175.00
MFJ	MFJ-389 ATU 3KW INPUT	£220.00
M MDDS	Microwave mod's 144.100 100w 2m	£120.00
MIRAGE	0310 430-450MHz AMPLIFIER 100W	£200.00
NAG	144XL 2M BASE AMPLIFIER 400W	£325.00
PACCOM	320 TNC	£99.00
PACCOM	TINY 11 PACKET TNC	£99.00
PAKRATT	PK-232 MODEM	£140.00
REALISTIC	PRO-2005 25-1300MHz BASE SCANNER	£110.00
REALISTIC	PRO-2026 SCANNER	£99.00
S.E.M	TRANSMATCH	£90.00
SONY	CRF-V21 World band radio built-in printer MINT	£399.00
TARGET	0-30MHz HF RECEIVER	£100.00
TIMENAVE	DSP-50 DSP FILTER	£150.00
TOKYO	HT-180 80m HF SSB TRANSCEIVER	£200.00
TOKYO	HY-POWER HL 165V 6m 180w	£195.00
TRIO	TR-9130 25 Multi-mode 2m	£225.00
WATSON	OPS 2012 PSU	£70.00
YAESU	SP-6 SPEAKER	£85.00
YAESU	FL-110 AMP 100w HF	£120.00

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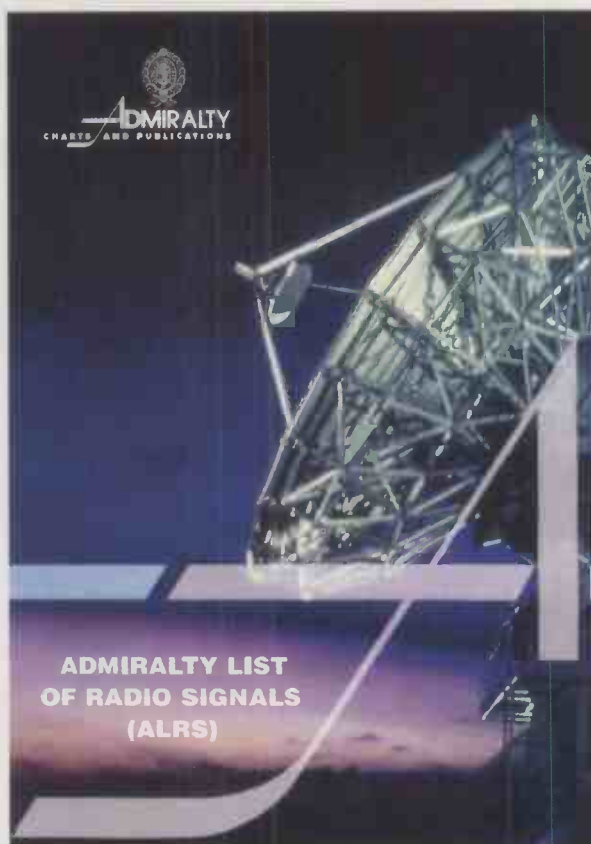
# Decode

The new look Admiralty List of Radio Signals.

## E-mail Virus

First let me start with an apology to anyone who was affected by the Outlook Worm virus that planted itself in my PC during August and early September. The bug was a particularly nasty beast known as W32.Sircam. This arrives as part of an E-mail message and quickly relocates itself onto your PC. Once it's in place, the worm uses its own E-mail engine to start replicating itself to all the E-mail addresses listed on your PC. This causes your Internet connection to slow down as the virus continually sends E-mails whilst you are on line.

An even more serious side effect is its ability to delete all the folders and files on drive C: if the computer uses the D/M/Y date format and the date is October 16. Fortunately, removal is straightforward using a fix that's available from the Symantec site as follows: <http://www.symantec.com/avcenter/venc/data/pf/w32.sircam.worm@mm.removal.tool.html> The site contains full instructions, but you basically download the tool, disable your virus protection and then run the tool to cleanse your system of the bug.



## Interference

Prompted by a question from **Dougie Coull**, I thought it was about time I covered the thorny topic of eliminating interference. I suppose elimination is the wrong word really because what we usually manage to achieve is to reduce the impact of the interference to a more acceptable level.

The first rule when tackling an interference problem is to use a logical, systematic approach. Darting about trying odd things at random usually results in frustration and wasted time, rather than affecting a cure. Whilst combining modern computer software with a good receiver has transformed h.f. utility listening, the two systems are not really compatible.

While the receiver has been designed to clearly detect the weakest of r.f. signals, the computer generates huge quantities of r.f. noise right through the radio spectrum. Just about every part of the computer generates noise, right from the switch-mode power supply through to the monitor and printer - there's no escape!

Most of this interference is radiated, so one of the first things to do is to get the best antenna you can and place it as far away as possible from your computer. This basic exercise will not only minimise the interference levels, but will probably give you a stronger wanted signal thereby reducing the effect of the interference.

One particularly good design for the listener is the Magnetic Loop antenna, such as the excellent Wellbrook ALA1530. The fine performance of these antennas combined with the built-in rejection of man-made noise make them ideal for helping to solve interference problems.

If, having sorted the antenna, you still have a problem, you need to check to see how much noise is coming from the mains. First rule here is to make sure you at least power your receiver from a different socket to your computer.

The UK Hydrographers Web Site.

The screenshot shows the website header with the Admiralty logo and navigation tabs for 'FREE TIDAL PREDICTIONS!', 'sofas commercial', 'leisure', 'fishing & other workboats', and 'corporate data'. A sidebar on the left contains a list of links: 'Notices to Mariners', 'Products & Services', 'Whats New', 'About Us', 'Contacts', 'Media Centre', 'Personnel', 'Trade Partners', and 'Workboats'. The main content area features a large image of a ship's mast and rigging, with the text 'ADMIRALTY LIST OF RADIO SIGNALS (ALRS)' overlaid. Below the image is a welcome message from the United Kingdom Hydrographic Office (UKHO), followed by a paragraph describing the office's role in supporting safe navigation and providing charts and publications. The footer includes the copyright notice '© Crown Copyright 2001' and links for 'Related Sites', 'Links Policy', and 'Terms & Conditions'.



If your receiver can be battery powered, try this first, as it will give you some idea of how much noise reduction you can achieve by sorting the mains leads. If the benefit appears worthwhile, try powering your receiver from a different mains socket - ideally on a different ring main.

If this doesn't fix it, you need to think about investing in a mains filter. See if you can borrow one to start with and try it in the lead of each of the mains power units in turn (PC, Printer, Monitor, etc). That way you will see whether you can get away with just one on the main PC or if you have to splash-out on several filters.

The next area to look at is the interconnecting leads between the monitor, printer and perhaps most importantly the link to the receiver. A good way to see the influence of each of these potential sources is to disconnect them one at a time and check the result. If you find one or all of these are contributing to the problem, there are a number of things you can do.

The simplest technique is to increase the inductance of the leads to help resist the flow of r.f. currents. This is much simpler than it sounds and can be achieved by winding the leads around a length of ferrite rod. A more effective alternative is to wind the lead through a toroidal ferrite ring.

Finally for thin leads, such as the audio lead from your receiver, you can use one of the ready-made clip-on ferrite rings. You will find these on most computer leads, such as keyboards, etc. I found several lying around on unused video leads and they're really easy to unclip and re-use in your decoding set-up. I've included a photo so you can see what I mean.

One area I haven't covered so far is screening. If you find that having tried all these cures you still have an unacceptable level of interference, you may be suffering radiation from a poorly screened monitor or PC. In the early days of computing this was a serious problem, especially with monitors.

Thanks to the introduction of fairly tight FCC emission rules most manufactures have tidied their act and produce relatively quiet peripherals. If you have an older monitor and don't want to change it, you may have to consider improving the screening. The most effective way to do this is to spray the inside of the case with a conductive paint. Most of the larger component suppliers stock this paint. However, this is not for the faint hearted, as you have to completely remove the electronics from the case and be able to deal effectively with the risk of flashovers from the e.h.t. circuits. To be honest, I would recommend changing the monitor.

That completes this quick round-up of interference cures, but if you have achieved success, why not drop me a line so I can pass-on your tips.

## Frequency News

A couple of months ago **Alan Pudsey** reported on a Philippines press station operating on 16.8MHz using FEC. Several people confirmed the report, but nobody had any details of the station until now. **J. Feysac** was involved in a professional capacity surveying radio stations in the Philippines a few years ago and has written with some



Inside a clip-on ferrite choke.

interesting details.

He believes the signal is coming from Manila radio station, which, at that time, had just been completely refurbished with JRC h.f., v.h.f. and FEC equipment. The main transmitters were 5kW transistorised units coupled to an equally impressive antenna farm. The present news broadcasts supply a selection of news items to Philippine ships at sea.

Another interesting report comes from **Derek Roberts**. He has spotted a Chinese FAX station that transmits on 16.971 and 17.431MHz from 1400UTC daily. Instead of the usual FAX chart, this station sends images of Chinese newspapers. If you spot any of these or have any further information, please drop me a line.

## Web Site Update

Those of you who like to experiment with new software may have wondered what has happened to Oliver Welps excellent web site. I thought it had closed down, but the good news is it's just relocated. The site can now be found at:  
<http://home.wanadoo.nl/nl9222/software.htm>

## Admiralty List of Radio Signals

If you have a particular interest in maritime communications you may be interested to know that the UK Hydrographic Office have just completed some major updates to Volume 3 *Maritime Safety Information Services* and some of the other volumes. As well as providing updated content, the changes have brought a much simpler layout with colour coded tags to help navigation (through the books that is!). They don't come cheap at £25 per volume, but they are the definitive source of maritime data. If you want to take a look at a copy you will need to visit a good marine chandler or you could pay a visit to the UKHO web site at: [www.ukho.gov.uk](http://www.ukho.gov.uk)

■ PETER BOND, c/o EDITORIAL OFFICES, BROADSTONE

■ E-MAIL: skyhigh@pwpublishing.ltd.uk

# Sky High

The monthly  
look at Civil  
and Military  
Airbands  
with Peter  
Bond

## Tragedy

The first occasion that I can recollect that I was taken as a young lad to watch aircraft was at the Biggin Hill, Battle of Britain display in September 1960. In the 40 plus years that have followed, I have travelled to many countries to watch and photograph aircraft. In that time I have witnessed some amazing aviation spectacles and very rarely, some tragic events, but never in my worst nightmares could I have imagined that I would witness anything like the horrifying events in the United States on the 11th September 2001.

The whole event was very personal for me as a close relative worked in the World Trade Centre, but I had no idea as to which tower, so it was a long agonising wait until we knew she was safe. I was later to discover that she worked on the 24th floor of the South Tower and that her boss, (a decorated Vietnam veteran pilot), made the instant decision to evacuate their offices when the North Tower was hit. His immediate and instinctive decision, (apparently against some advice), was to save the lives of all of his 80 plus staff. Most of their group had just cleared the building by about 150m when the second aircraft hit their Tower - a life saving decision for a few, but tragically not for thousands of others.

Several statesman have already commented that the world will never be the same again after this event and there is little doubt about that. Without forgetting the terrible cost to human life, this event will also be a major turning point in the history of aviation. With just a week having passed, already, the cost to the aviation industry is predicted to run into Billions. Many airlines have already reported bookings down by up to 35%, aircraft are to be grounded, routes withdrawn and cuts in staff are already in the tens of thousands.

In addition, manufacturers such as Boeing and Airbus have announced large job losses and a reduction to future aircraft production. Reports indicate that UK Air Traffic movements were down by about 20% in the days after the Hi-Jacking, but after eight days, had recovered to just 2-5% down. For both the worlds of Civil and Military aviation, it will be a sad, testing and turbulent year ahead.

As I write this on the 20th September, it seems that a prime suspect has been identified and US President Bush has indicated very strongly that some form of action by the USA and its Allies will take place in the not too distant future. A great deal of negotiations are taking place between nations and Aircraft and Ships have started to deploy to the region under 'Operation Noble Cause'. With a five or six week lead time for my copy for the 'Sky High' column, much may have happened by the time you read this, but it would be remiss of me not to make the following comments.

In the weeks, months and most likely years after these hi-jacks, the state of security at airfields in

the UK and around the world will, quite rightly, be dramatically increased, (especially at Military installations). I am certain that all aviation/radio enthusiasts will be interested to see what activity takes place on the airwaves and at UK bases in the coming months. But a word of warning, if you are out and about with radio and camera in hand, please, please, please use common sense and discretion. Don't forget that, (if needed), under the terms of the Prevention of Terrorism Act, the powers of on-base security forces can be extended to a much wider perimeter than just the base fence.

In the likely event of UK military airfields being used in any military action, I would suggest that if you are posting information to Internet aviation/airband newsgroups that you only post past information, in other words, information that relates to operational missions that have already been completed. I would strongly advise against posting any information which contains rumours or details of current missions, for very obvious reasons. It is most likely that group moderators will impose a ban on such postings, but it should not be forgotten that the Internet is a world-wide tool which can provide information to all parties, so please take care. I suspect that the coming months may be an interesting but difficult time for the aviation enthusiast.

## Fairford

Whilst work on the airfield continues, the runway at Fairford has now re-opened with the arrival of a B-1 and a KC-135 to mark the occasion. The second stage of the work to the fuel storage tanks, hardstands and taxiways should be completed by October 2001 and the final stage will see similar work to the Southeast of the airfield currently on schedule for completion by April 2002. When the work is completed, the airfield will have the capability to launch almost double the number of aircraft sorties than it could previously. The finished work will also see the fuel storage capacity increased by around 500%. With the current situation, it is quite possible that Fairford may see more activity than they would have expected before the completion of the construction work!

The 600mm thick runway will be strong enough to accommodate any aircraft type including the Space Shuttle, which can use it as an emergency landing strip. (Although knowing the landing distances needed for the Shuttle, I would not want to be on the far end of the Runway after it touched down!). Looking to the future, hopefully, with all that extra aircraft parking space we should have a fantastic RIAT 2002!

## Architect

Following on from my comments in the September column, there seems to be a further development



regarding the United States Global HF Network, (GHFS). Aircraft calling the GHFS, using the common callsign, MAINSAIL, in particular on the frequencies 8.992 and 11.175, have been answered by the UK RAF Flight Watch Centre. The standard reply being, 'This is ARCHITECT guarding MAINSAIL, go ahead'. This appears to have started around the beginning of September and was still in operation almost three weeks later, (September 18th). The regular GHFS stations such as Andrews and Thule, (Greenland), were operating in parallel on the same frequencies.

It has been reported from one source that the callsign Croughton was still in use on the 14th September, but I have been listening regularly over the last few days and have not heard them. I did hear several aircraft call Croughton but with no response, but a further call to 'any station' brought a response from Architect or Thule. Dedicated GHFS operations at Croughton were ended in December 2000 and have been run remotely from Andrews since then. Consequently, the logical assumption could be that the RAF has taken over monitoring MAINSAIL calls for the UK area or that Andrews/Croughton has been under a period of maintenance and will return in the future. Stop Press: 19th September After several calls to Architect, Andrews and Thule this morning at 1130 on my sixth day of listening, Croughton suddenly responded to a MAINSAIL call for a 'phone-patch to Ramstein, no other calls were heard on that day or the following morning? Leaving me, 'Confused of Short Wave Magazine'.

## London Control

As promised last month, opposite is a rundown of the London Control frequencies currently in use at West Drayton. The spare frequencies are allocated to London Control, but are not currently in use on any sector, also it can be seen from the table that the standby frequencies can be shared by more than one sector. The new on-route centre at Swanwick is still expected to go live on the 27th January 2002, it will be a direct copy of LATCC, and from present available information no changes are expected to Sector boundaries or frequencies. This means that the introduction of any 8.33kHz spaced frequencies remains to be decided at a future date, after the successful launch of the new London Air Traffic Centre at Swanwick.

## Information Problems

A major crash of my computer recently meant that I was without its use for some time and a major re-load of software and data was needed. One thing that could not be recovered was all my E-mails and newsgroup messages, (over several months), which has rather left my communications in disarray. If you have sent in some information in recent months and a response does not appear in the column, then I do apologise but it may have been one of the many E-mails that were lost - sorry. (In theory, anything after the 5th September should be OK?).

Lastly, my thanks to **Ian B** for the pictures attached to an E-mail, (I understand the reasons for

## London Control - Frequency Allocations

MHz	Location	Comment
126.075	Berry Head	Primary
127.7	Berry Head	Standby
132.95	Berry Head	Lands End
135.25	Berry Head	Standby
129.375	Bristol	Strumble
133.6	Bristol	Brecon
134.75	Bristol	Primary
118.475	Clacton	West 2
127.825	Clacton	West 1
133.45	Clacton	East
133.525	Clacton	Standby
120.025	Daventry	Standby
127.1	Daventry	Northbound 1
127.875	Daventry	Northbound 2
129.2	Daventry	Southbound 2
131.125	Daventry	Southbound 1
128.425	Dover	Lydd East
134.45	Dover	High
134.9	Dover	Low
129.1	Lakes	Sector 3
131.05	Lakes	Sector 4
126.875	Lakes & Wirral	Standby
134.425	Lakes & Wirral	Standby
132.45	London Middle	West
132.6	London Middle	East
127.425	London Upper	East
135.425	London Upper	West
120.025	London	Standby
136.6	London	Standby
121.325	North Sea	Beeno Low
126.775	North Sea	Beeno
128.125	North Sea	Goles
133.525	North Sea	Standby
135.575	Wirral	Sector 7
129.425	Worthing	Hurn West
132.3	Worthing	Hurn Low
135.05	Worthing	Hurn East
135.325	Worthing	Seaford
136.6	Worthing	Standby

## London Control Spare Frequencies

129.025	Spare
129.05	Spare
134.25	Spare
136.2	Spare
136.275	Spare
136.55	Spare

the file sizes Ian!). In future, can I ask that only data files are sent as attachments and not JPG pictures, etc., as they can take forever to download - thanks.

The contents of this month's column were significantly changed at short notice due to the tragic events in the USA, world events permitting, I will catch up with what correspondence I have remaining next month.

# 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.

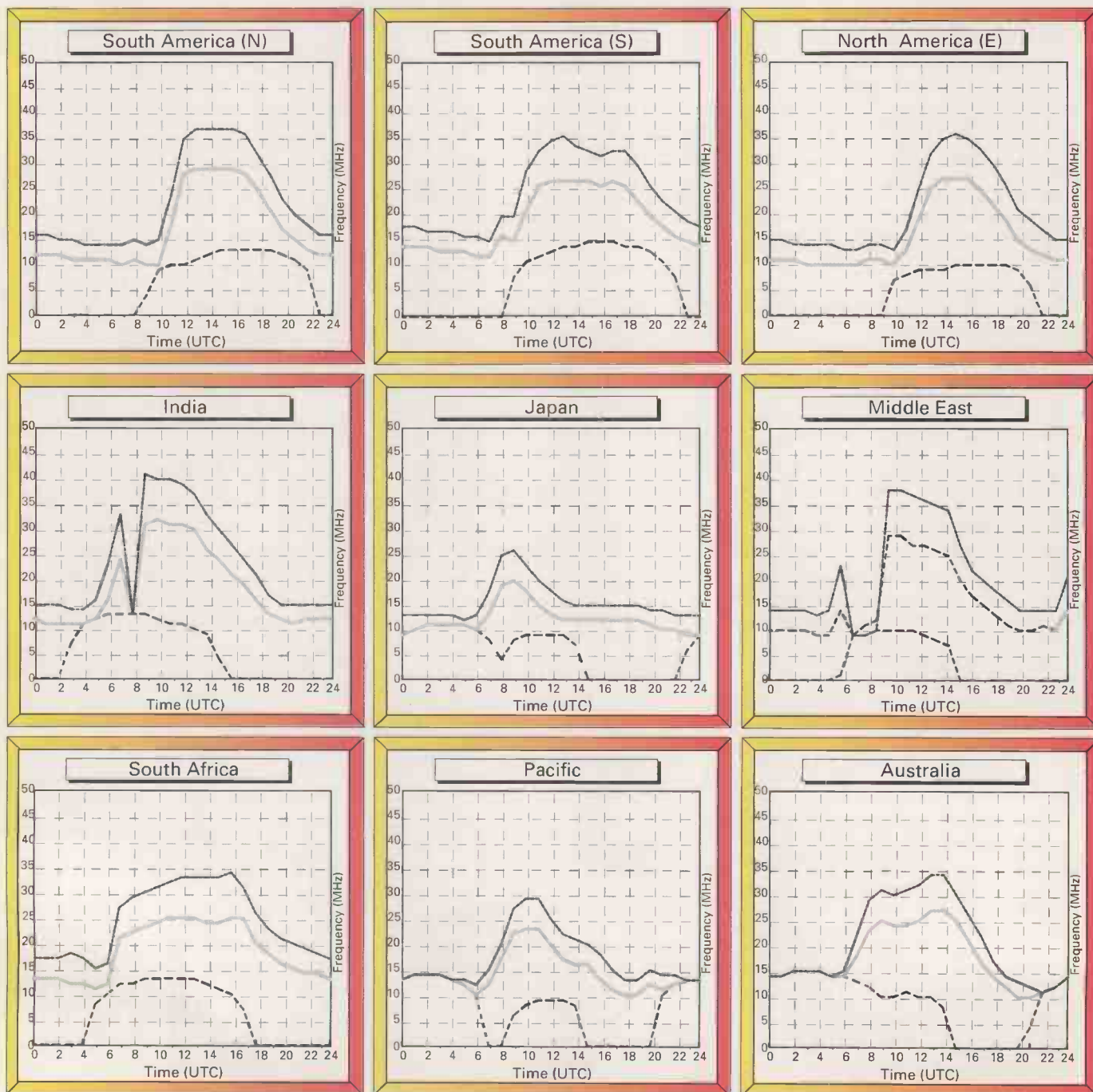
Lastly, the upper dashed line represents the maximum usable frequency (MUF), a 50%

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.

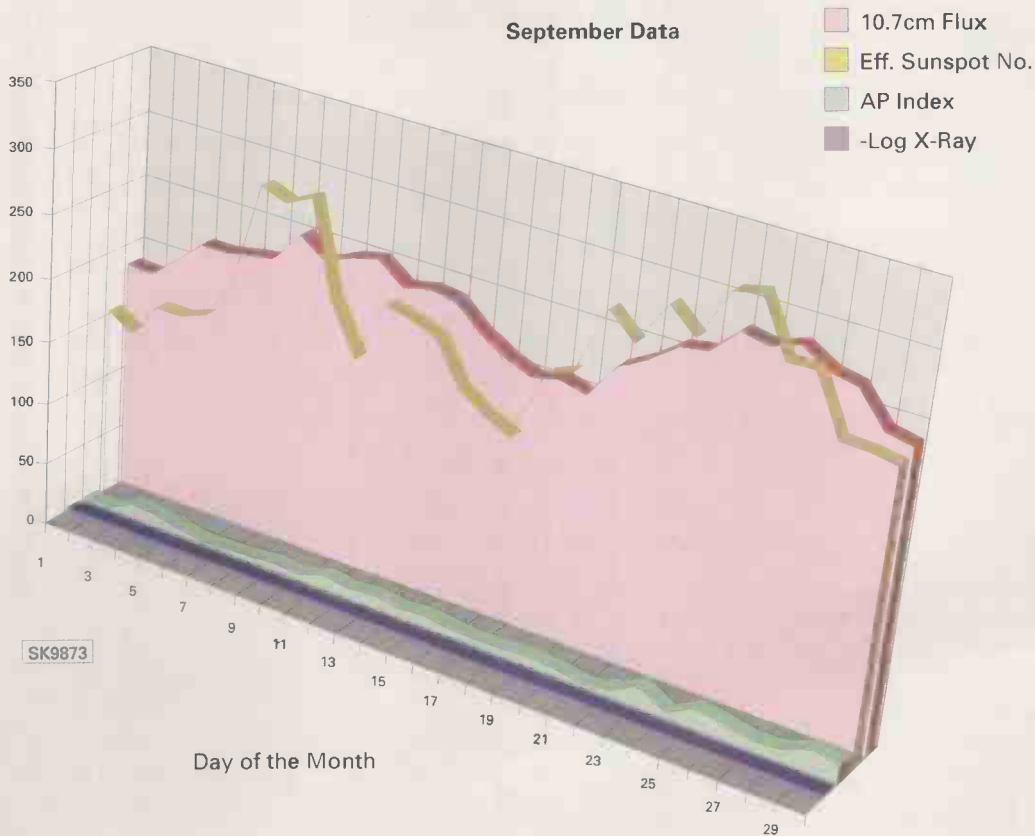
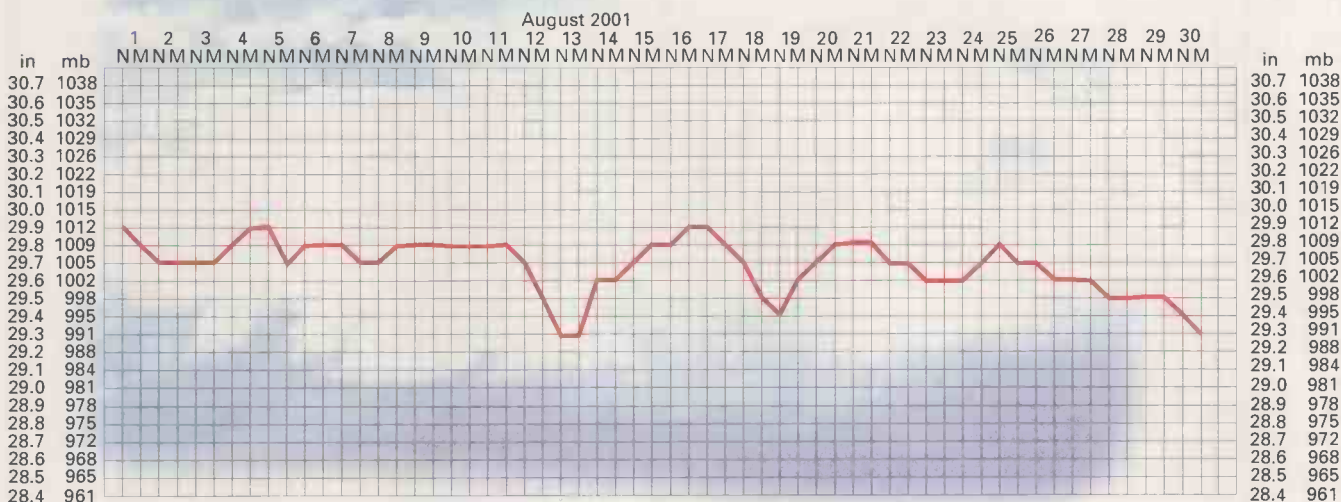
November 2001  
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# Propagation Extra

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



## guide to the chart

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

The K and AP indices are measures of geomagnetic activity.

The K index ranges from zero (very quiet) to nine (severely disturbed). K values of five or greater correspond to geomagnetic storm conditions that can relate to poor propagation conditions.

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

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# Shackware

**H**ello and welcome to 'ShackWare'. Increasingly as the evenings close in, I find myself spending less time lying under the Land Rover fiddling with rusted nuts and bolts that don't want to come undone and more time in the shack tuning across the bands. It's about this time of year that my mailbag starts to pick up after the hiatus of the summer months. So without further ado, let's press on to the mailbag...

## Your Letters

First up is **Dan Wright** of Colchester who has been given an Oric Atmos computer, but which is incomplete. Dan writes: "The Atmos has a lead for the TV, a few items of software including a database program which I'd like to use and appears to be in good order but I don't have a power supply for it. Can you tell me what it requires?"

Easy Dan, 9V d.c. with a positive tip, regulated, and with an output of an Amp or so. Any regulated OE mains p.s.u. ought to work. Alternatively, have a look for a discarded power supply from a Sinclair Spectrum/ZX81 at boot sales which have the same output and ought to be relatively plentiful given the number of Sinclair machines which passed over shop counters in the early 1980s!

**Bob Crawley**, a teacher who lives in Hove, East Sussex, saved three old Apple Macs from certain doom in the school skip. He writes "As I walked to my car I noticed some computer monitors in the skip. It was raining lightly so my first thought was 'oh well, they won't work now'. However, I couldn't resist having a peek over the side..."

As he did, Bob was rewarded with the sight of three Macs - two LCIIIs and a 6100, complete with keyboards and mice, and three monitors, two 12in screens to suit the LCs and a 13in Apple hi-res display for the 6100. Needless to say, Bob fished out the machines and took them straight home.

"I didn't dare plug them in because they really had had a thorough soaking. Instead, I put all three together with their monitors in the airing cupboard where I left them for the best part of a week. When I retrieved them, they seemed to have dried out nicely. I thought I'd start with one of the LCs because I had a spare if anything went wrong. I took the mains cables from mine and my neighbour's kettle to power the computer and monitor (!), plugged in and switched on. To my utter amazement, the computer worked perfectly! In fact, after testing each of them, all three machines worked fine.

I now have some proper computer mains cables that I bought from Maplin in Brighton (*I know it well!* - JG). The LCs have colour monitors, 40Mb hard drives and 4Mb RAM memories. The 6100 has a 1.2Gb hard drive and 36Mb RAM. Now - inevitably - I want to know what I can do with them in my shack. I listen to aircraft, utilities and broadcast stations, but I'd like to try my hand at some of the data modes".

While not the first choice for decoding, the Mac does come with analogue to digital circuitry built in and can be used to decode with suitable software and without any other hardware. One of the first programs which came to light for the Mac and which has been mentioned in 'ShackWare' many times before is Juri Munkki's *RadFax*, a program that can be described as looking a bit long in the tooth now, but which still supports older machines such as your LCs and which will decode FAX transmissions with ease.

FAX is arguably the easiest mode to try your hand at as a novice - it's very forgiving and possible to get something on screen almost whichever way you tune your receiver or set up your software.

**Finnish Juri** has many hobbies, but he became interested in receiving and decoding wefax after watching windsurfers in Denmark intercepting FAX transmissions on the fly. When his holiday ended he returned home determined to write a program to do the same. The result is *RadFax*, currently in version 0.9.1 (it has been for some time) and available for download at [www.pp.song.fi/~jmunkki/radfax/](http://www.pp.song.fi/~jmunkki/radfax/) The program costs US\$25 to register and those who do will receive source code.

The *JVComm* of the Mac world however, is Mac *MultiMode* a truly excellent program which translates many of the popular data

modes including ACARS, c.w., RTTY, FAX, SSTV, packet, PSK31 and ALE (it will also transmit those modes too).

The program requires a more modern PowerPC-equipped Mac which means your LCs won't be able to use it but the 6100 - sporting a very early example of the 'new' processor - should be just about okay. *MultiMode* offers a very nicely laid out screen which features a scope facility, colour decode window and easy button-driven user interface. It can be downloaded as shareware from [blackcatsystems.com/software/multimode.html](http://blackcatsystems.com/software/multimode.html) and registration costs US\$89. The latest version is 3.9.4, released on 30 May 2001 (i.e. just after I last mentioned the program in the May issue of *SWM!*). There's also a beta version which supports the Mac's latest operating system OSX. And while you're visiting Black Cat Systems' site, check out the other excellent Mac radio-oriented software and links. Good luck, Bob.

**John Earnshaw** E-mailed me to say "Your column brings things that I grew up with back to life! My problem is that I got an ex-college BBC B computer with ADFS and twin drives but no disks. I've got blank ones so I tried to format them but have no boot disk. Where can I get one or am I doing something wrong? The disc drive is a Pace twin 5.25in. Since I've got the Internet I feel that the old computers are more alive than the PC. I like the quick boot-up - just switch on and it's there. Along with the BBC I have an (don't laugh) Acorn Electron. One day I will find someone local who has the same interests as me. My XYL likes the old computers too, as we have very few games for the PC apart from emulators and my radio software. I have also acquired a +3 Spectrum to add to my collection which is as follows: Spectrums +2, +2a, +3, Atari ST 520 (single-sided drive) and a 1040 ST. You can't beat the old machines we all love".

Great collection John, and no problem for a boot disk. My own BBC machine has an Opus Challenger disk drive (the 256K example) and a slightly different DFS, but I do have an Acorn disk somewhere so send me a blank floppy and I'll copy it for you (and the offer is open to anyone else in similar circumstances - just remember to include a s.a.e.).

## Crash Dummy!

It can happen to anyone of course but, after three years of daily hammering on my Fujitsu Pentium II 350MHz, the poor old machine has finally curled up its silicon toes, crashed and died. Frankly, I was at the point where an upgrade was on the cards anyway and fortunately, I'd only recently made a backup of the contents of the hard drive (principally because of the avalanche of viruses doing the rounds on the Internet at the moment). Why am I telling you this? Because there really has never been a better time to buy a new PC. It's very definitely a buyers' market and all the major manufacturers are offering fantastic deals to win your custom. I'm an advocate of mail-order as you know and my last system but one came from Evesham Micros (and is still going strong doing service for the kids), a company that I've known about since my years working on computer mags in the early 1990s.

I scanned the ads and settled on an Evesham machine which came with a 1.4GHz processor, 256Mb RAM, 40Gb hard drive, etc. I didn't need a screen because my existing 15in monitor is fine (I don't like big CRTs). There's no point in reporting a price because it will already have gone down massively since I made my purchase (it was £100 less than advertised when I went to buy it!), but it was very reasonable. The new computer sports an all-important CD burner too - useful for backups - and has a truly stupefying turn of speed. Check out Evesham if you want a great deal, good tech support and no hard sell - I have no connection with the company by the way.

## And Finally

That's it for another instalment. Just space to mention my latest silicon acquisition: a fantastic TRS80 Model 4 - looks like a mainframe terminal with built-in green-screen, twin drives and keyboard. It's a Z80 machine, runs CP/M as well as its own proprietary OS and has a full complement of I/O ports - lots of fun for the coming winter evenings! I'll let you know how it fares in the shack next time and provide a pic or two. Until then, good listening.



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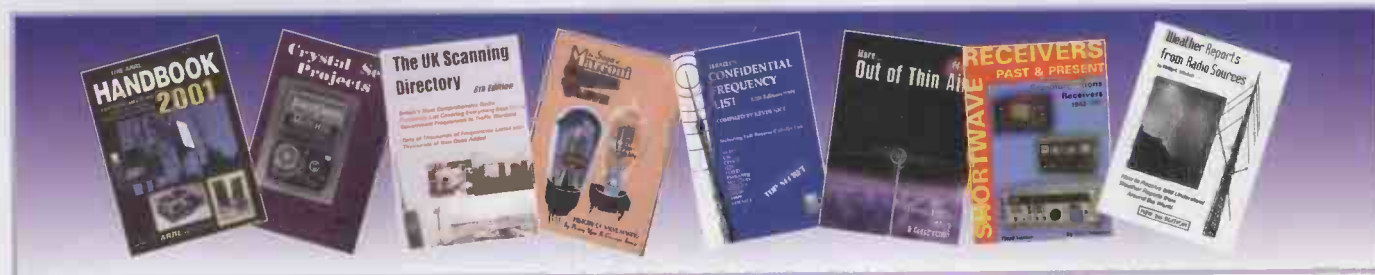
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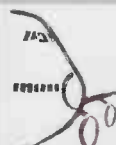
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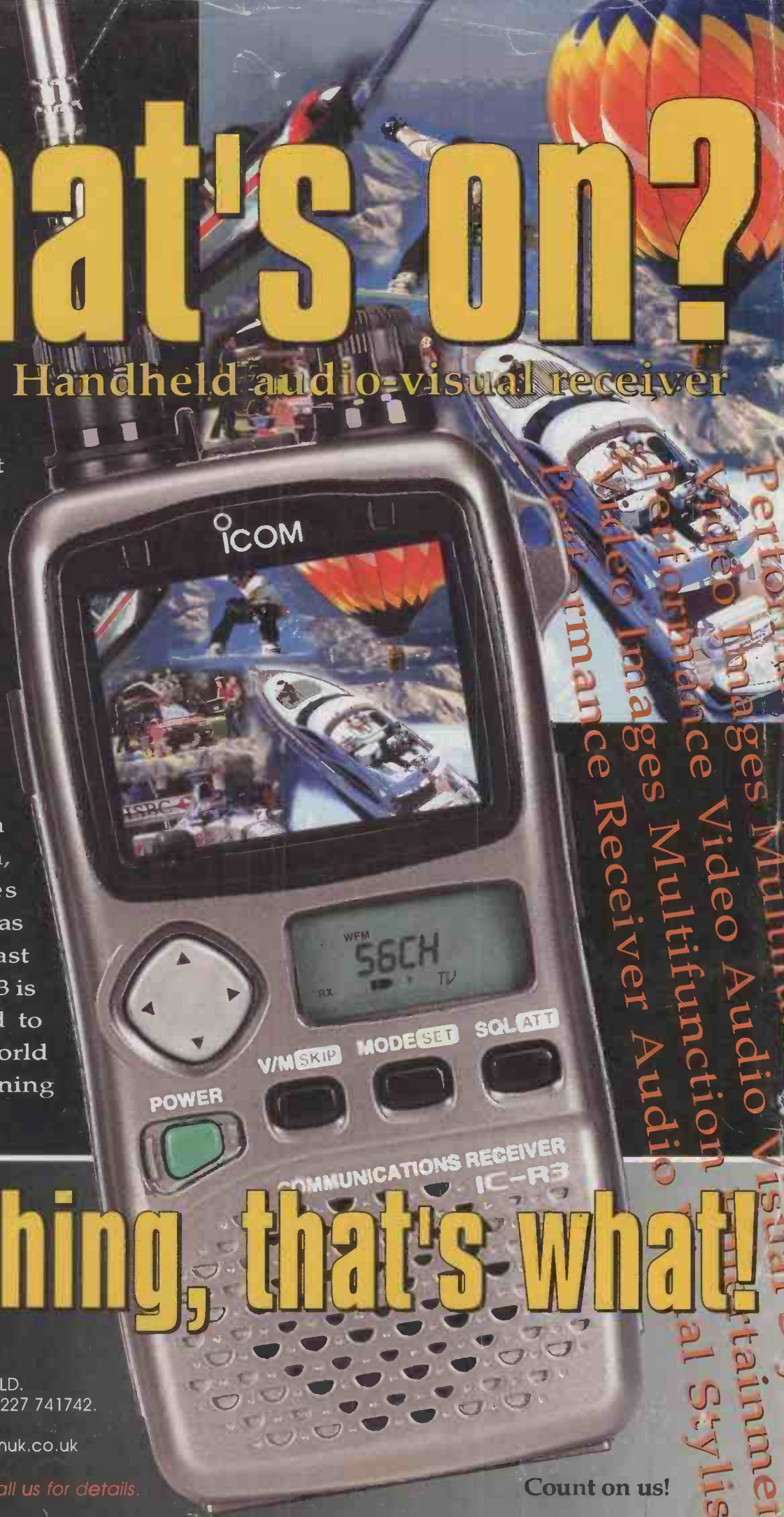
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