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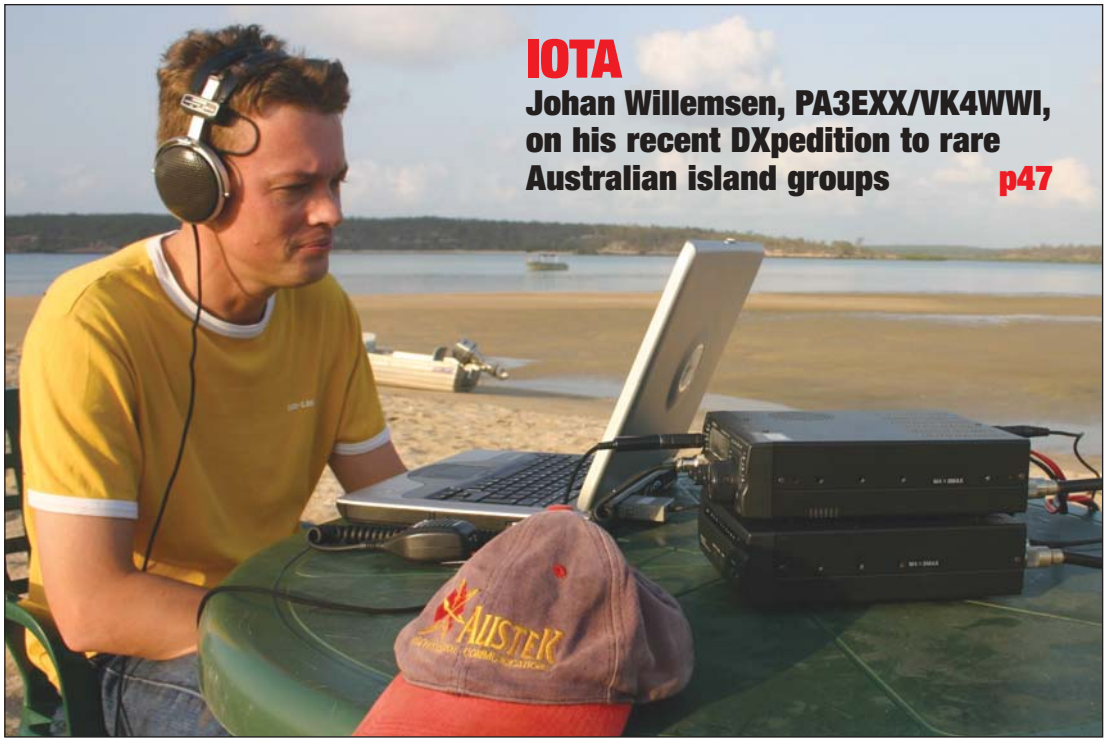
# RadCom

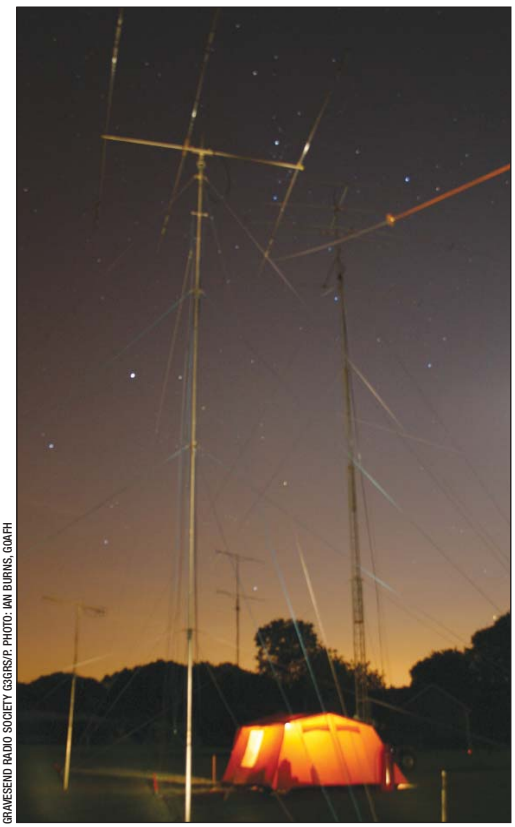
The Radio Society of Great Britain Members' Magazine

£3.95 Vol 81 No. 5 May 2005



## IOTA

**Johan Willemsen, PA3EXX/VK4WWI, on his recent DXpedition to rare Australian island groups** p47



GRAVESEND RADIO SOCIETY G3GRS/P. PHOTO: IAN BURNS, G0AJH

## SSB Field Day 2004

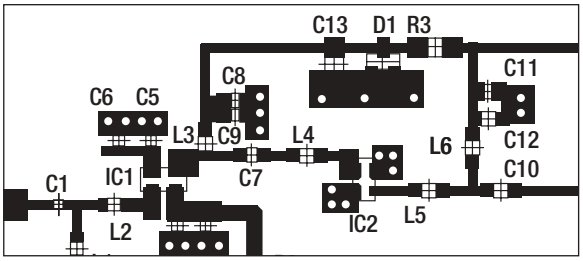
**For the full results turn to** p23

## PALSTAR TUNER

**One capacitor or two? Chris Lorek, G4HCL, reviews two different high-power ATUs from Palstar** p26

## MICROWAVE

**Sam Jewell, G4DDK, describes a low-noise, high-dynamic-range, switchable 23cm amplifier** p67




## INSIDE

# WATERS & STANTON UK'S L

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With the Waters & Stanton Clubcard you pay no interest for up to 5 months if you spend over £75. You can use it in all three of our stores and also at rallies and shows. To apply for your card, simply phone, e-mail or fax your name and address. Alternatively, download the application form from our web site in the "leaflets" section.



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## NEW INDOOR OR PORTABLE LOOP

**Work the world from MFJ-935 / 936 loop system.** *RSGB review says: "..extremely impressed."* You will be too. At last a flat-dwellers antenna that works, and works well!!

Further details on opposite page plus www.wsplc.com Download instruction manual on MFJ web site via our "Link" button. **Peter Waters, G3OJV worked VK and W on SSB from indoors.**


## Icom HF Transceivers

### ICOM IC-756 PRO MkIII

Top of its range HF transceiver. HF & 50MHz, features large colour LCD with spectrum scope, auto ATU and 32-bit floating point DSP unit. **£2099 C**

**IC-7800** £6400 C
Flagship HF 200W transceiver. 200W max. The ultimate receiver - the ultimate design! AC psu built in.

**IC-7800-PACK** £6995 C
The superb transceiver as above plus 17" flat screen, keyboard and SM-20 base microphone.

**IC-7400** £1299 C
HF/VHF 160m - 2m transceiver 5 - 100W. SSB CW FM AM. 12V DC. Nice big display. Lovely price.

**IC-706 MkIIGDSP** £769 C
It's unbeatable. 160m - 70cm (up to 100W HF) yet so small with detachable head. The ultimate mobile.

**IC-718** £449 C
This is a budget class radio HF 16 - 10m at a price that belies its performance. Beautiful display.

**IC-703** *Free IC-703 Logbook* £539 C
Take an IC-706, reduce power to 10W max and get rid of VHF. 160 - 6m of pure QRP joy!!

### Going HF Mobile?

Then check out the great 80m - 6m SIDE-KICK motorised mobile whip from USA. No hassel and great performance. £249.95 C

## Kenwood HF Transceivers

### KENWOOD TS-2000

Top-of-the-range Kenwood transceiver. HF/VHF/UHF or up to 23cm with the optional module. Built-in auto ATU, DSP and its unique TNC. **£1389 C**

**TS-2000**
The station in a box. 160m - 70cm with every feature imaginable inc. DX cluster. Kenwood fans dream rig.

**TS-2000X** £1799 C
Take the TS-2000 and add a superb 23cm module. The best 23cm we know of plus all other bands!

**TS-B2000** £1299 C
Designed for the 21st century. You get HF - 70cm with PC software for direct PC control. It works great.

**TS-870S** £1249 C
Kenwoods great HF radio that uses phasing for SSB. No more filters to buy - they are all inside the box!

**TS-570DG** £839 C
The best budget radio at the price. Superb 100W from 160m to 10m. As used by Peter Waters, G3OJV

**TS-50S** £595 C
A great rugged mobile for 160m to 10m with up to 100W output. Also a great price.

**TS-480SAT** £899 C
HF 160m - 6m with remote front panel. Large enough for base use, small enough for mobile. Big display

**TS-480HX** £1049 C
Take the TS-480SAT, remove the auto ATU and offer a beefy 200W output. That's a really potent package!

## Yaesu HF Transceivers

### YAESU FT-1000 MKV

200W HF transceiver, EDSP, Collins filter, auto ATU, 220V AC PSU-Acknowledged as one of the finest DX rigs on the market. Superb tailored audio and the ability to select Class A bias for dramatic signal purity. **£2099 C**

**FT-1000 FIELD** £1699 C
The HF choice for DXers. With this rigs reputation on DXpeditions what more persuasian do you need?

**FTV-1000** £729 C
6m 200W module for the FT-1000 range. Probably the ultimate for 6m DXing.

**FT-897D** £649 C
160m - 70cm self-contained portable. 100W and up to 20W from optional internal batts.

**FT-857D** £579 C
160m - 70cm mobile with up to 100W output. Lovely tuning control from remote head unit - and great price!

**FT-847** £999 C
Complete station in a box! 160m - 70cm - up to 100W (50W 2m/70cm). Great for satellite work.

**FT-840** £399 C
Is there any other radio that comes close to this price? One of our all-time best sellers. 100W 160m - 10m

**FT-817ND** £489 C
The ultimate QRP self-contained radio. Up to 5W output 160m - 70cm. New low price. UK warranty.

**FT-817DSP** £589 C

Warning - as a regular advertiser you can be sure all our stock is genuine UK warranted. Check serial numbers!!

## Carriage Charges: A=£2.75, B=£6, C=£10

# OWEST PRICES

## ZERO DEPOSIT ZERO INTEREST

## Enquiries 01702 206835

Freephone Orderline 0800 73 73 88

## Icom
### VHF/UHF Mobile/Base

### ICOM IC-E208

**VHF/UHF FM Dual Band Mobile Transceiver**
**Freq range 144-146MHz, 430-440MHz Tx*
**55/50W (3 pwr steps each band)*
**Wideband Rx 118-173, 230-549 & 810-999MHz*
**£239 C**

**IC-910H** £1099 C
2m / 70cm 100W Base station all - modes with option for 23cm module (**UX-910 £359**)

**IC-910HX** £1249 C
As above but with 23cm module ready fitted and a big saving as well.

**IC-2100H** £189 C
2m 55W FM mobile with rugged construction and all-in one die-cast chassis.

**IC-2725E** £269 C
Icom's dual band 2m / 70cm radio. Very easy to operate and install and a lovely detachable head.

## Kenwood
### VHF/UHF Mobile/Base

### KENWOOD TMD-700E

2m/70cm dual band mobile transceiver with APRS. Does not need extra high cost boards to function. Only extra if required is a compatible GPS receiver. **£439 C**

**TM-G707E** £269 C
Dual Band 2m & 70cm with detachable front

**TM-V7E** £359 C
Dual Band 2m & 70cm with 50/35W output

**TM-271E** £189 C
Dual Band 2m FM 60W mobile transceiver

## Yaesu
### VHF/UHF Mobile/Base

### YAESU FT-7800E

**2m/70cms Dual Band Mobile*
**High power 50W 2m /40W 70cms*
**Wide receive inc. civil & military air-band *CTCSS & DCS with direct keypad mic.*
**Detachable front panel *1000 memories plus five one-touch*
**£229 C**

**FT-2800M** £159 C
*2m FM Mobile transceiver * High power 65W * Capable of VHF wideband receiver

**FT-8800E** £269 C
*2m/70cmDualband FM Mobile transceiver * 50W 2m, 35W 70cm * Wideband receiver

**FT-8900R** £339 C
*2m, 70cm, 6m & 10m Quadband FM Mobile transceiver * Independent dial for each band

## Watson
### On-Glass Antenna

### WSM-270 £19.95 B

Dual Band 2m/70cm mobile whip. 2.5dB gain and 1.5:1 VSWR. ).8m long. Complete system including 3.5m cable. No drilling involved. Antenna sticks on glass and interface assembly sticks on inside. Simple and very effective.

## Icom
### VHF/UHF Handhelds

### ICOM IC-E90

The new E-90 offers triple band coverage of 6m, 2m and 70cms. Up to 5W output and rx coverage from 495kHz - 999MHz makes this a very attractive rig. **£269 B**

**IC-T3H** £129 C
2mFM handheld 5.5W c/w BC-01 & BC-146

**IC-T22A** £149 C
2mFM 5W handheld transceiver

## Kenwood
### VHF/UHF Handhelds

### KENWOOD TH-F7E

• 144-146MHz Tx/Rx: FM
• 430-440MHz Tx/Rx: FM
Up to 6W out with Li-ion battery and **"scanner" style coverage from 100kHz to 1300MHz** including SSB on receive! This is a great radio to have at all times when you are on your travels. **£239 B**

**TH-D7E** £299 C
2m/70cm dualband FM handheld transceiver with data communications

**TH-G71E** £179 C
2m/70cm dualband FM handheld transceiver

**TH-K2E** £139 C
2m FM 5W portable transceiver c/w Ni-MH battery/charger

**TH-K2ET** £145 C
2m FM 5W portable transceiver c/w Ni-MH battery/charger

**TH-K4E** £139 C
70cm FM 5W portable transceiver c/w Ni-MH battery/charger

## Yaesu
### VHF/UHF Handhelds

### YAESU VX-7R

Totally waterproof! Wide Frequency coverage from 500kHz to 900MHz AM/FM. Dazzling 132x64 dot matrix display providing easy-to-read frequencies and information plus pictorial graphics. **£249 C**

**VX-2E** £119 C
2m/70cm miniature handheld transceiver with LiON battery/charger

**VX-110** £94 C
2mhandheld transceiver with 8-key keypad NiCd & charger

**VX-150** £99 C
2m handheld transceiver with 16-key keypad NiCd & charger

## Alinco
### VHF/UHF Handhelds

**DJ-V5E** £159 C
2m/70cm FM 5W dualband handheld transceiver

**DJ-193E** £91 C
2m FM transceiver no keypad, Ni-Cds & charger

**DJ-195E** £99 C
2m FM transceiver with keypad Ni-Cds & charger

**DJ-C7E** £124 C
2m/70cm credit size FM handheld

## Linear Amp UK
### HF Linear Amplifiers

### RANGER 811H

**1.8 - 29.7MHz*
**800W CW or SSB, 400W RTTY*
**Uses 4 x811A vertically mounted*
**Drive 10 - 100W*
**Toroidial AC Power Transformer*
**6:1 Reduction Drive on Tuning Controls *"Near Silent" Papst Cooling fan *Front-panel ALC Adjust Control *Built-in AC 230V @ 8A Supply*
**£945 B**

**CHALLENGER III** £1795 C
HF linear amplifier 10-160m WARC 100W in 1.5kW out

## Ameritron
### HF Linear Amplifiers

**AL-1200XCE** £2499.95 C
HF linear amp 10-160m 1.5kW

**AL-1500XCE** £2799.95 C
HF linear amp 10-160m 1.5kW

**AL-800X** £2699.95 C
HF linear amp 10-160m 1kW

**AL-82XCE** £2399.95 C
HF linear amp 10-160m 1.5kW

**AL-80B** £1399.95 C
HF linear amp 10-160m 1.5kW

**AL-811HXCE** £849.95 C
HF linear amp 10-160m 500W (3x811A)

**ALS-500MXCE** £849.95 C
HF linear amp 10-160m 500W solid state

**ALS-600X** £1299.95 C
HF linear amp 10-160m 600W (export only)

## SGC
### HF Linear Amplifiers

**SG-500** £1399.95 C
"Power Cube" 1.6-30MHz 500W solid state

## Yaesu
### HF Linear Amplifiers

**QUADRA (VL-1000)** £3795 C
HF + 6m linear amp. 1kW comes with PSU

## Tokyo Hy-Power
### HF Linear Amplifiers

**HL-1FKX** £1399.95 C
HF linear amp. 1.8-29.7MHz 500W PEP max, solid state

**HL-2FKX** £2699.95 C
HF +6m linear amp 1.8-29.7MHz + 50MHz 1kW PEP max, solid state

**HL-100BDX** £429.95 C
HF+ 6m linear amp 3.5-29.7 & 50MH\- 1-10W in 100W PEP solid state

## NEW STOCK & OFFERS

### W&S European Locator Map


Full colour European Locator Map with new countries and callsign prefixes. Available in high gloss finish with a choice of three sizes. These maps will grace any shack, charts are provided to show how to calculate your locator from latitude and longitude.

A2 Size (LOCW-MAP) **£4.99 A**
A3 Size (LOCD-MAP) **£2.99 A**
A4 Size (LOCS-MAP) **£1.99 A**

### YAESU FT-60E


**Wide band Reception 108-520MHz & 700-999.990MHz (Cellular blocked)*
**New Emergency Automatic ID System*
**High 5W Power Output*
**Ni-MH Long-Life Battery FNB-83 (7.2V,1400mAh)*
**Programmable Keys for user convenience*
**Split CTCSS/DCS and DCS Encode-Only Capability.*
**£179.95 B**

### NEW MFJ-935 /936 "Magic Circle" Loop Tuner

This is the most amazing antenna we have seen in years. For optimum results take a wire around 1/5th wave long, bend into square loop (14ft on 20m = 3.5ft square) and attach to MFJ-935. Result: Ultra low indoor noise and VK, ZL & W all on SSB! That's what we achieved in one day's operation! 20m loop works on 15m as well. Now in Stock! Great for QRP and portable as well.

**MFJ-935** is portable version with smaller meter internal coil. **£179.95** **MFJ-936** has larger meter and is ideal for base use. **£229.95**. You use your own wire to make loop (approx 1/5 wave total length for lowest band) or purchase **MFJ-57** with cross arm and wire for 20/17/15m - approx 2ft per side £39.95. **MFJ-58** has addition of wire for 40/30m **£54.95**

## Watson
### Mobile Antenna's

### ANTENNAS

| | | |
|---|---|---|
| W-2LE | 1/4 wave 2m 0.48m 200W | £9.95 B |
| W-285 | 5/8th 2m 1.33m long 200W | £14.95 B |
| W-77LS | 2m/70cm 0.42m 50W | 14.95 B |
| W-770HB | 2m/70cm 1.1m 200W | 24.95 B |
| W-7900 | 2m/70cm 2m/70cm 1.58m | £32.95 B |
| WSM-270 | Dual band mini magnetic | £19.95 B |

### BASES

| | | |
|---|---|---|
| WM-08 | 8cm diam magnetic | £9.95 A |
| WM-14B | 14cm diam magnetic | £12.95 A |
| W-3HM | Hatch mount | £14.95 A |
| ECH | Cable kit | £10.95 B |

NOTE: All antennas have PL-259 ends. Mag mounts have cable attached. Hatch mount needs ECH cable.

## Carriage Charges: A=£2.75, B=£6, C=£10

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## NEW STOCK & OFFERS

### MANSON SDC-2010

NEW

**£9.95 A**

* Cigar Plug-in DC adaptor
* 1.5 - 12V DC 1.5 Amps
* Stabalised and protected.
* 7 - way DC adaptor set.
* Matches most Yaesu / Alinco sockets.
* Works from 12 V or 24 V vehicle systems.

### POCKET MORSE READER

**MFJ-461**
**Reads CW**
**Just hold near receiver speaker**

**£84.95 B**

That's right - just hold this self-contained decoder near your speaker and see the text scroll across the screen. Absolutely amazing

### SG-2020ADSP QRP 20W HF Radio

160m - 10m
0.1 - 20W
Full DSP
Diecast Chassis

Perfect for QRP. SSB / CW and DSP processing. Passband down to 100Hz. Built-in SWR meter and electronic keyer. Max Tx drain 4A. Size 15 x 6.5 x 18cm. 680g.

**£589.95 B**

## Antenna Accessories

**Dipole Bits**

| | | | |
|---|---|---|---|
| Kevlar | Strong 400lb strain line 200ft | £22.95 | A |
| FW-PVC-50 | 50m clear PVC 2mm wire | £39.95 | A |
| Flexweave | 50m multi-strand 2mm wire | £29.95 | A |
| HDCW | 50m hard drawn 16g copper | £14.95 | A |
| Insul-8 | Black ribbed insulator | £0.99 | A |
| WDC-50 | SO-239 dipole centre insulator | £6.49 | A |
| Egg-m | Medium ceramic egg insulator | £2.15 | A |
| Egg-s | Small ceramic egg insulator | £1.75 | A |
| WS-2580 | 25pcs 3" ladder line spacers | £9.99 | A |

**Diamond 50 Ohm Balunas**

| | | | |
|---|---|---|---|
| BU-50 | 1:1 1.7MHz 40MHz 1.2kW | £26.95 | A |
| BU-55 | 1:1 3.5MHz - 75MHz 500W | £34.95 | A |

**Antenna Traps (pairs)**

| | | | |
|---|---|---|---|
| TR-200 | 200W 14MHz (20m) | £44.95 | B |
| TR-200-10 | 200W 10MHz (30m) | £47.95 | B |
| TR-200-7 | 200W 7MHz (40m) | £49.95 | B |
| TR-200-3.6 | 200W 3.6MHz (80m) | £53.95 | B |
| TR-1000-14 | 1kW 14MHz (20m) | £59.95 | B |
| TR-1000-10 | 1kW 10MHz (30m) | £61.95 | B |
| TR-1000-7 | 1kW 7MHz (40m) | £64.95 | B |
| TR-1000-3.6 | 1kW 3.6MHz (80m) | £73.95 | B |

**German Made High Quality Baluns**

| | | | |
|---|---|---|---|
| HB-1-200 | 1:1 3.5 - 30MHz 200W | £25.95 | B |
| HB-4-200 | 4:1 3.5-30MHz 200W | £25.95 | B |
| HB-6-200 | 6:1 3.5 - 30MHz 200W | £25.95 | B |
| HB-1-1 | 1:1 3.5 - 30MHz 1kW | £34.95 | B |
| HB-4-1 | 4:1 3.5 - 30MHz 1kW | £41.95 | B |
| HB-6-1 | 6:1 3.5 - 30MHz 1kW | £41.95 | B |

**Remote 4:1 1.5kW Balun**

| | | | |
|---|---|---|---|
| REM-BAL | For coax to ladder line match | £45.95 | B |

**Patch Leads**

| | | | |
|---|---|---|---|
| WPL-70 | V low loss 75cm PL-259 | £6.95 | A |
| WPL-50 | Standard 50cm PL-259 | £2.99 | A |
| WPL-50BNC | BNC version of above | £2.99 | A |
| HQ-66 | 66cm RG-213 PL-259 | £4.99 | A |
| HQ-10m | 10m long PL-259 | £14.99 | A |

## SGC External Auto ATU's

### SGC SG-231

1 - 60MHz. 3 - 100W pep (50W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 900mA.

**£349.95 C**

**SG-239** £189.95 C
Mini auto ATU 1.8 - 30MHz 1.5 - 200W PEP primarily for long wires - non waterproof. 12V DC

**SG-231** £349.95 C
1.8 - 60MHz 100W PEP. A great random wire tuner that you can use outdoors. 12V DC

**SG-237** £299.95 C
1.8 - 60MHz 100W PEP. Great for mounting outdoors and feeding long wire. Waterproof. 12V DC

**SG-230** £339.95 C
1.8 - 30MHz 200W PEP. The original design that handles end fed or coax unbalanced. Waterproof. 12V

**SG-235** £749.95 C
3.5 - 54MHz. A hunky 120W PEP tuner that handles long wires. Great outdoor design. Waterproof.

## Icom External Auto ATU's

**AH-3** £479.95 C
1.8 - 28MHz. A hunky 120W PEP tuner that handles whips or wire longer than 2.5m. Waterproof.

## Alinco External Auto ATU's

**EDX-2** £289.95 C
1.8 - 30MHz 150W long wire tuner designed for use with DX-70 transceiver. Waterproof.

## MFJ Internal Auto ATU's

### MFJ-993

*Auto ATU with digital data display *1.8-30MHz *Long wire, coax & balanced line *300W SSB, 150W CW *Cross needle metering

**£249.95 C**

**MFJ-991** £209.95 C
1.8 - 30MHz auto ATU. Similar to MFJ-993 but no digital display. Works with any HF transceiver. 150W PEP

**MFJ-994** £349.95 C
1.8 - 30MHz high power auto ATU. 600W PEP / 300W CW. Tunes wire, coax and balanced feed.

## SGC Internal Auto ATU's

**MAC-200** £259.95 C
1.8 - 60MHz 200W PEP. Wire, coax and balanced feeder. Features auto antenna switching.

**SG-237PCB** £279.95 C
1.8 - 60MHz 100W PEP. Same as SG-237 but without housing for building into your own housing.

**SG-211** £189.95 C
1.8 - 60MHz works off internal dry cells. Zero drain wait state. 60W PEP. Ideal for portable (Min 1W).

## Yaesu Internal Auto ATU's

**FC-20** £249.95 C
1.8 - 60MHz 100W matched for FT-100/Ft-847. Desk top unit to match transceivers. Coax systems only.

**FC-30** £249.95 C
1.8 - 60MHz 100W. Designed for use with FT-857/FT897. Coaxial input / output.

**FC-40** £239.00 C
1.8 - 60MHz 100W. New waterproof ATU designed for use with FT-897 / FT-857 and mobile operation.

## Icom Internal Auto ATU's

**AT-180** £349.95 C
1.8 - 54 MHZ ATU designed for IC-708. Plugs directly into transceiver for seamless operation. Coax only.

## Kenwood Internal Auto ATU's

**AT-50** £319.95 C
1.8 - 30 MHZ 100W ATU specifically designed for use with TS-50 transceiver. Coaxial only.

## Cushcraft HF Antennas

**MA5V** £239.95 C
Vertical 5-band 20m - 10m. No separate radials needed. 250W. Self-supporting. 4.48m tall.

**A3-S** £469.95 D
The classic 20 15 10m 3-el beam. 2kW 8dB gain. 8.45 el. Turn radius 4.72m. F/B ratio 25dB.

**A3-WS** £379.95 D
Dual Band 3 el beam for 17m & 12m. 2kW. El length 7.66m. Turn radius 4.4m. Gain 8dB. F/B ratio 25dB.

**A4-S** £569.95 D
Tri-band 4 element Yagi. for 20m - 10m. DXers delight. 2kW . 8.9dB gain F/B 25dB. Turn radius 5.49m

**R-8** £469.95 C
8-band vertical 40m - 6m. No separate radials needed. 1.5kW. Height 8.7m

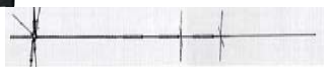
**R-6000** £329.95 C
6-band vertical 20m - 6m. No separate radials needed. 1.5kW. Height 5.8m. Great small garden ant.

**MA5V**
**£239.95 C**

5-band 2 El mini beam. 20m - 10m 2kW. Elements 5.2m Turn radius 2.7m. (Dipole on 17/12m) 5dB gain

## Diamond HF Antennas

### DIAMOND CP6



Covers five popular HF bands and the 6m band. Low angle radiation makes it ideal for DX work. Outperforms dipoles for long distance contacts and compares favourably with beams located 10m+ above ground.

*Bands: 3.5 -50MHz *Power: 200W *VSWR: Better than 1.5:1 *Socket: SO-239 *Height: 4.6m *Radials: 1.8m rigid adjustable

**£239.95 C**

## Radio Works HF Antennas

**CW-160** £129.95 C
8-band 160m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 265ft long.

**CWS-160** £119.95 C
Compact 8-band 160m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 133ft long.

**CW-80** £89.95 C
7-band 80m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 133ft long.

**CWS-80** £109.95 C

Compact 7-band 80m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 133ft long.


**G5RV Plus** £59.95 C

Rugged 2kW balun matched G5RV with 102ft element and 31ft ladder line. Requires ATU. Made in USA

## Hustler Base Antennas

**6-BTV** £229.95 C
80 - 6m 6-band vertical. 7.3m tall 1kW. Can be used at ground level with earth stake. Ideal small gardens

**5-BTV** £199.95 C
80 - 10m 5-band vert. 7.64m tall 1kW. Can be used at ground level with earth stake. Ideal small gardens

**4-BTV** £169.95 C
40 - 10m 4-band vert. 6.52m tall 1kW. Can be used at ground level with earth stake. Ideal small gardens

## Butternut Antennas

**HF2V** £229.95 C
80 / 40m high performance vertical. 1kW PEP 9.75m tall. Self supporting for ground mount use.

**HF6V** £299.95 C
6 band vertical 80-40-30-20-15-10m. 2kW. 7.9m tall. Use own radials or ground mount.

**HF9V** £349.95 C
9-band 80 40 30 20 17 15 12 10 6m vertical 1kW 7.9m tall. Use radials or ground mount

## Buddipole Products

HF Portable at its Best

**W3-BP** £199.95 B
40m - 2m adjustable dipole. 250W and max length of 4.65m. Packs down to 65cm approx.

**W3-MBP** £199.95 B
Sames as W3-BP but packs even smaller.

**W3-BS** £134.95 B
40m - 2m vertical is half a Buddipole. Ideal for QRP and rucksack - as used by Peter Waters G3OJV.

**Peter Waters** says: *I think these products are great. Superbly engineered and very efficient.* Options include adaptor for dipole to decorators pole £6.95, Field tripod £89.95, 2.45m telescopic mast £49.95, mini tripod for Buddistick.

## Super Antennas

**MP1-SA** £139.95 B
Screwdriver style adjustable HF QRP whip 40m - 70cm. 150W PEP. Max extended 185cm approx

**MP2-SA** £199.95 B
Electrically tuned version of the above. Requires around 9V - switch control box not included.

**MP-80M** £29.95 A
Add on 80m coil to extend the LF coverage of the MP1 and MP2.

## High Sierra Mobile Whips

**HS-1800/PRO**
**£379.95 C**

The ultimate mobile whip. Electrically tuneable 80m - 6m 1kW PEP Includes switch box and 12V cable. Massive 2" coil. Made in USA. Superb!!

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As used by Peter Waters G3OJV/M

Get mobile on all bands from 80m to 6m in minutes. This compact screwdriver antenna comes with cables and control box. Designed to go on our 3-way magnetic mount (£39.95 extra) it is an amazing performer and only 1.37m maximum!

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RadCom
RADIO COMMUNICATION

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No responsibility can be assumed for the return of unsolicited material (if in doubt, call us first!)



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| **Home Corporate** | £42.50 |
| **Overseas Corporate** | £42.50 |
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P&P on RSGB orders: £1.75 for 1 item, £3.30 for 2 or more items. Overseas rates on request.

# Contents

**MAY 2005**

**p31 – After the tsunami. Open-air operating on the Andamans**


**p85 – Brian Horsfall's wobbulator.**

**RADIO SOCIETY OF GREAT BRITAIN**

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

Founded in 1913 incorporated 1926.
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Member society of the
International Amateur Radio Union

**Patron: HRH Prince Philip, Duke of Edinburgh, KG, KT**

Membership is open to all those with an active interest in radio experimentation and communication as a hobby. Applications for membership should be made to the Subscriptions Department from which full details of Society services may also be obtained.

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# RSGB matters

## SSE CALLS OFF PLT ROLL-OUT

At a recent IEE meeting, a representative of Scottish and Southern Energy plc (SSE) indicated that the company will not be undertaking any further immediate rollout of PLT in the UK and is unlikely to undertake further investment in Access PLT technologies. The reasons given were the lack of progress on technical standards for PLT systems and the commercial position in relation to the provision of other broadband services such as ADSL. The RSGB welcomes this announcement although we are aware that investment and developments in the technology elsewhere could change the situation. At this point it is not clear whether the planned trial of PLT by the ManxElectricity Authority on the Isle of Man will go ahead. An article by the RSGB's PR Consultant, Jane Atkinson, on PLT can be found on page 18 in this issue of *RadCom*.

## NEW ARDC CHAIRMAN

The RSGB Board is pleased to announce that it recently appointed Brian Reay, G8OSN, as Chairman of the Amateur Radio Development Committee, taking over from Ed Taylor, G3SQX. Brian has been heavily involved with the ARDC since becoming a full member in 2003, having previously served as a corresponding member. He was involved in the development of the Advanced Radio Communications Examination syllabus and pilot examinations, updating of other Radio Communications Examination syllabuses, initiated the concept of the 'Train the Trainers' scheme, was part of the team that organised the special 'weekend examinations' at the RSGB HF Convention in 2004 and is part of the team developing the syllabus for the RSGB's International Licence Examination. Brian has a number of ideas concerning training and the Board wishes him well in his endeavours.

## REORGANISATION IN REGION 12

Phillip Brooks, G4NZQ, RSGB Regional Manager, reports that there is a new DRM structure in Region 12. Peter Frampton, M0CNX, continues to be responsible for Cambridge but in all other counties new people have joined the Team. Trevor Hawkins, M5AKA, is relinquishing his Essex responsibilities on 15 April and James McGinty, M0ZZO, is taking over that county. Trevor is thanked for an excellent contribution during his period of tenure. The full details are:

**DISTRICT 121 CAMBRIDGE**
Peter W Frampton, M0CNX, 118 Ramnoth Road, Wisbech, Cambs PE13 2JD; tel: 01945 464754; e-mail: peter.m0cnx@btinternet.com

**DISTRICT 122 NORFOLK**
Andy Jackson, G1KLP, 81 Suffield Way, Grange Estate, Kings Lynn, Norfolk PE30 3DX; tel: 01553 670281; e-mail: g1klp@btinternet.com

**DISTRICT 123 ESSEX**
James McGinty, M0ZZO, 17 King Georges Avenue, Dovercourt, Harwich, Essex CO12 4AG; tel: 01255 242746; e-mail: james@mcginty.net

**DISTRICT 124 KENT**
Larry Boorman, G3DT, 2 Bull Lane Cottages, Bull Lane, Bethersden, Ashford, Kent TN26 3LF; tel: 01233 332901; e-mail: l.boorman@ntlworld.com

**DISTRICT 125 SUFFOLK**
Mark Taylor, G0LGJ, 6 Weldon Road, Scarning, Dereham, Norfolk NR19 2UB; tel: 01362 691099; e-mail: rsgb@g0lgj.co.uk

## REGION 13 DRMs

RSGB Regional Manager for Region 13 (the East Midlands), Ken Frankcom, G3OCA, writes that Bob Hansford, M0RSH, has been appointed as Deputy Regional Manager for Leicestershire. He is also secretary of the Welland Valley ARS.

There are two vacancies for Deputy Regional Managers in Region 13: the North Notts / North Derbys and South Notts / South Derbys districts. Anyone interested in filling these positions should please contact Ken, G3OCA, on 01332 720976.

## INTERMEDIATE EXAM DATES

The confirmed dates for the Intermediate exams for the second half of the year are as follows:

Friday 1 July; Monday 15 August; Friday 23 September; Saturday 8 October; Tuesday 22 November and Monday 12 December 2005.

## *RADCOM* 'WWW" COLUMN

Jeremy Boot, G4NJH, is stepping down as 'WWW' columnist because of pressures of other work. Jeremy took over from Andy Gayne, G7KPF, in September 2002. Since the 'WWW' column started in 1998 the World Wide Web has grown from something of a novelty to a vital tool that most people use on a daily basis - it is estimated that over 90% of UK radio amateurs now have access to the web. There is therefore no longer any need for a *RadCom* column to promote its use by amateurs, although all *RadCom* writers will of course continue to list useful websites under 'Web search' in their columns. We would like to thank Jeremy and Andy for providing such a useful and informative page over the years.

## CREDIT WHERE CREDIT'S DUE

The photograph of Trevor, M5AKA, and Prof Colin Pillinger published on p11 of the April *RadCom* was courtesy of David Taylor, GM8ARV.

The second letter in the April 'The last word' ('GB2RS headlines e-mail') was written by Richard Lorenzen, WA0AKG, and not Geoff Gott, G3MUO. Apologies to all for these errors and omissions. ◆


**RSGB President Jeff Smith, MI0AEX, has found a novel way to promote the RSGB when driving about!**

## HQ STAFF VACANCY – *RADCOM* EDITOR

*RadCom* editor Steve Telenius-Lowe, G4JVG, is to retire shortly and there is a vacancy for a person to edit *RadCom*, the Society's journal and one of the most respected amateur radio publications in the world.

The work includes planning the content of the magazine, commissioning articles, sub-editing copy sent in by contributors and regular columnists, liaising with designers and the advertising agent, and ensuring the magazine is produced to a high standard and on time every month.

Applicants should have an excellent command of English, be computer literate, have a broad knowledge of amateur radio matters and be able to work to tight deadlines. A current UK amateur radio callsign would be a distinct advantage.

This staff position is based at RSGB headquarters in Potters Bar, Hertfordshire. The salary is negotiable depending upon relevant qualifications and experience.

If you are interested, please send an application and your CV to the General Manager, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE, or e-mail: gm.dept@rsgb.org.uk

# RSGB FIGHTS THREATS TO THE HOBBY

## The future of amateur radio licensing - what can we expect?

Founded in 2003, the Office of Communications, Ofcom, is the independent regulator for communications industries, which includes amateur radio. In late December 2004 Ofcom and the RSGB met for informal discussions on the content of a consultation document produced to discuss the future of amateur radio licensing. Ofcom tabled the first draft which contained four options for change: full licensing deregulation, licensing for life, extending the current licence period renewal, and an option to do nothing at all to change the current situation.

Sadly, owing to existing legislation, Ofcom could not consider the 'do nothing' option as, under the terms of the Telecommunications Act they have an obligation to ease the regulatory burden. They also felt, at that time, that full deregulation would not be a feasible option. They implied, in effect, that there were two options - licensing for life and extending the current licensing period.

The RSGB considered both options but pointed out to Ofcom that there are some inherent dangers in moving to a 'licence for life', although we do support the extension of the expiry date. However, when the final draft of the consultation document was passed to the RSGB, we were dismayed to find that none of the issues we had raised had been taken into consideration.

The document quite clearly stated that Ofcom proposes to reform amateur radio licensing in order to reduce the regulatory burden on radio users by making amateur radio licenses valid for life and making electronic licences available free of charge. They suggest that these proposals are consistent with the level of regulatory intervention required to manage the amateur radio spectrum, maintain standards and also comply with the United Kingdom's international obligations. The consultation also examined the other three options from the first draft including the option to make amateur radio WT Act licence exempt (deregulation) despite the fact that they have already dismissed this as unfeasible in the first draft.

### THE RSGB POSITION - DEREGULATION

The RSGB agrees that the amateur service in the United Kingdom is over-regulated but we strongly believe deregulation is not the answer. The individual radio amateur and the amateur radio service is a breeding ground for technical innovation and development and much of modern day technology owes its existence to the engineers and scientists that made their way through this particular route. To deregulate would be to amputate the hand that feeds industry with those much-needed engineers and scientists.

The RSGB will fight strongly against any moves to make amateur radio WT Act licence exempt. Such a move would, in our view:

- Disenfranchise all UK amateurs from the rest of the world;
- Remove the need for training and examinations;
- Enable anyone to purchase radio equipment and operate on the amateur bands;
- Lead to widespread interference problems;
- Without a recognised licence *all* UK amateurs would be prevented from operating abroad whilst on holiday;
- Any amateur who moves to live in another country would *not* have a licence to enable his or her new country of residence to issue a reciprocal licence;
- The end of the coordinated UK Repeater and Data Packet networks. This at a time when more management is necessary in certain amateur bands to meet criteria laid down by the Ministry of Defence;
- The end of Notices of Variation which enable controlled research and development programmes to be undertaken by UK amateurs. It would be probable that power limits currently imposed on radio amateur operation would be exceeded thus causing a high level of interference;
- End the current amateur band planning agreements;
- Be a risk to national security as the location of amateur radio stations would not be accurately known;
- Dilute the support role that radio amateurs traditionally provide to the user services in the provision of radio communications support;
- Reduce the support given by the amateur radio community to education and training within the UK and lead to a further depletion of the UK skills base in radio communications and electronic engineering;
- A deregulated service would mean there would not be a requirement for callsigns (contrary to the Radio Regulations) and users of equipment would use whatever form of identification they wished. The pirating of existing amateur radio callsigns which is already on the increase will escalate;

### THE RSGB POSITION – LICENCE FOR LIFE

The option of a licence for life is flawed and is inherently dangerous to the future wellbeing of the Amateur Radio Service and Amateur Satellite Service.

A licence for life would encourage and cause the following problems:

- The UK licensing database would quickly become flawed and out of date;
- Close down procedures could not be maintained, thus causing a threat to safety of life frequencies, military and aeronautical frequencies;
- Radio amateurs' involvement in emergency planning and their role in the 'Home Defence Plan' would be diluted;
- The degradation of the database of radio amateurs could be a threat to homeland security;
- A dispersed amateur radio community will lead to an increased problem of interference.

These are just a number of issues of concern.

The RSGB fully supports Ofcom's desire to see a reduction in the administrative burden of renewing the amateur radio licence on an annual basis. In fact the RSGB welcomes this direction. However, the Society believes that to alleviate some of the issues raised above the best option is for a licence which has a renewable life of five years. This would not solve all the problems but it would enable the register of holders of an amateur radio licence to be more efficiently maintained.

The RSGB will continue to discuss these matters further with Ofcom with a view to reaching an agreed position which will not only protect the current amateur radio community but also ensure the future. We hope that we can count on the support of all members and all amateur radio enthusiasts in this consultation exercise. If you would like more information on how you can help, please contact RSGB General Manager Peter Kirby, G0TWW, on 0870 904 7373 or e-mail: gm.dept@rsgb.org.uk ◆


**Lambda House, RSGB headquarters.**

RADIO COMMUNICATIONS FOUNDATION

# News of the RCF and GB4FUN




**GB4FUN's new look (see text).**

## RCF GALENA FUND

Jim Roberts, RS183873, has sent another sizeable donation to the Radio Communications Foundation (RCF). He supplies galena crystals - suitable for making crystal radio sets - for £2 plus P&P, and then sends the proceeds to the RCF. For further details see the article on page 15 of the March 2005 *RadCom*. Jim writes that although many people wrote to him requesting crystals following the article in the March *RadCom*, he still has plenty of galena available. If radio clubs or schools would like a large 'lump' for them to break up themselves he is open to offers. Please note, however, that as it contains a large proportion of lead, the galena rock is very heavy! Please contact Jim Roberts, The Flat, 49A High Street, Pateley Bridge, N Yorkshire HG3 5JZ for further details.

## RADIO COMMUNICATIONS FOUNDATION GRANTS

If you think you have a project which could be supported by a grant from the Radio Communications Foundation (RCF), please make an application as soon as possible. The details of the objectives of the Foundation and how to apply are on the RCF website at www.commsfoundation.org The next trustees meeting will be in May and later in the year in November.

## GB4FUN's NEW LOOK

The GB4FUN mobile radio communications demonstration vehicle has a new look! GB4FUN has now been touring the country for almost four years and, not surprisingly, after so many thousands of miles, it was beginning to look a little tatty. In early March it therefore received a new application of artwork, with "GB4FUN - Radio Communications Demonstration Module www.gb4fun.org.uk" on the front, a satellite and the website on one side, a large handheld transceiver on the other side and, on the back, another handheld and the logos of the sponsors: The RCF, HSBC bank, Kenwood, Waters & Stanton, Home View Surveillance, G1MFG ATV equipment, Tennamast, and AMSAT-UK. ◆

## Supporters of the Radio Communications Foundation

**We asked members when renewing their membership to include a donation to help to continue to support the work of the Radio Communications Foundation. The following is the list of those members who have kindly sent in a donation by the deadline date for this issue. Contributions continue to be wanted: if you would like to help, please send your donation to RCF, c/o RSGB HQ.**

### RCF 'Big Hitters'

**Jim Roberts, RS183873**
**J Creasey, G4RIP**
**A Saunders, GM3VLB**

R Cole, 2E0AYT
Dr L R Carter, 2E0LRC
J Dixon, 2E0RJD
F Cook, 2E1BKW
N Pickworth, 2E1MNP
J T Saunders, EA5ARC
A Green, EI3HG
C Yeates, EI7AAB
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P Vukasinovic, G0UPA
V Worton, G0XYS
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N J Lansley, G1KZI
J D Morgan, G1PLJ
W S Bevan, G2ADC
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J Hall, G3FJL
R E Wand, G3FNY
D R P Topping, G3HYG
B Mudge, G3MDD
R D Luscombe, G3MEP
D W Mayes, G3MMA
R Levi, G3NQT
G G Bulleyment, G3XIV
J E Hart, G3ZGA
G R M Haynes, G4FLY
J Warburton, G4IRN
B G Davey, G4ITG
H F Macgregor, G4JSL
P Allan, G4NTA
M S Barr, G4OQN
E Brown, G4YXE
N I Bazley, G6AFB
A J Cuthbertson, G6JRS
K M Coleman, G6SSX
G L Lamb, G7AMF
B J Smallshaw, G7CSY
P A Chambers, G7HIT
V Kingsley, G7LWN
D A Evans, G7RAB
D L Coe, G7SDC
Eur Ing P M B Jessop, G8KGV
K Pascoe, G8ZQM
J S Wardem, GM0JZV
J G McVittie, GM0NBG
M A Christmas, GM1SRR
H H Christie, GM4SNP
D M Clark, GM7OSQ
J Pedley, GM7TUD
C D Evans, GW0IRP
D J Supino, KB1DJE
H Nasvik, LB9RE
T G Parker, M0BGE
Miss A Morris, M0HDE
A J F Gasking, M0JGG
P I Badley, M0PIB
D Bowyer, M1AEI
J W Henderson, M1DSU
A H Butler, M1ECF
T E Clark, M1EXH
W H Jackson, M1FAD
A F Hunt, M1FIN
D G Riley, M3DGR
R Wilkes, M3HQD
H W Carrel, MJ3HWC
W Aitken, MM0CNV
I A Callan, MM3FEP
R C Whittaker, MM3RXY
D W Wishart, MM5DWW
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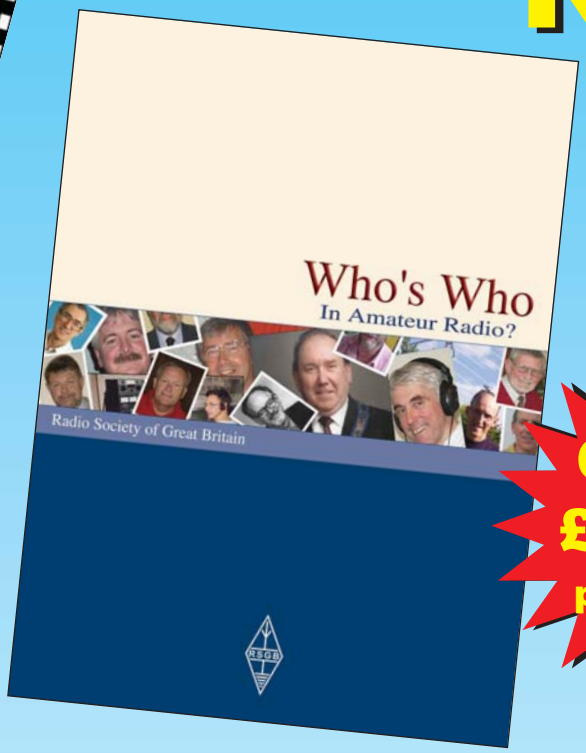
M W George, RS188063
J Wingrove, RS194553
D V Debbage, RS94986
Dr M D Brown, VA3GRL
M E Bazley, VK6HD
B Harper, VK6JW

**The RSGB is also grateful to those many generous members who have sent donations anonymously, or who have asked us not to publish their names.**

NEW

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# *Who's Who in Amateur Radio?*

## Ever wondered who that was?
## Who is that person you hear on the air?

Well the RSGB now has a book that just might tell you! Radio amateurs are often people whose achievements are often known only to themselves, or to their immediate friends and family. Who's Who in Amateur Radio? is a first attempt to reveal the achievements of radio amateurs.

Who's Who in Amateur Radio? provides a listing of around 500 of the most active amateurs, including their name, callsign, place of residence, date of birth, profession, education, when they were first licensed, their amateur radio achievements, areas of amateur radio interest, and amateur radio club or society memberships. In nearly 50% of the cases the listing is accompanied by a photograph of the individual which will help to put a face to that well-known callsign. Entries are in alphabetical order by current callsign but included is an index by surname and appendices listing various key people in amateur radio, and in particularly in the history of the Radio Society of Great Britain.

Whatever the level of achievement, Who's Who in Amateur Radio? makes fascinating reading and is an invaluable guide to the personalities of amateur radio.

160 pages, 240 x 175mm, paperback ISBN: 1-905086-03-2
Non Members Price £14.99 plus p&p


# *Operating Manual*

***By Don Field, G3XTT***

This 6th edition of the RSGB Amateur Radio Operating Manual has been completely updated and redesigned this edition reflects the huge changes in hobby in recent years. The impact of licensing changes and the ubiquity of PCs and the Internet are just some of the challenges in the hobby in the 21st Century. To deal with these, RSGB Amateur Radio Operating Manual has a completely new look at the content and approach. For example, some of the traditional demarcations between HF and VHF and between the various operating modes have been overturned. New and comprehensive chapters can be found on topics such as PCs in the Shack and Operating Modes. There is also a huge amount of new material included, for example, the 136kHz and 5MHz allocations, new data modes and the WSJT software suite, APRS and VoIP. Size: 210mm x 297mm, 224 pages, ISBN 1-905086-00-8
Non Members price £19.99 plus p&p

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£8.49 Members
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**All prices plus p&p**

**E&OE**

RSGB in talks with Ofcom over future of licensing

# Deregulation still a threat

At a meeting between the RSGB and Ofcom which took place on 25 March, Ofcom's Deputy Chairman, Richard Hooper, assured the RSGB that deregulation of amateur radio was not an option that Ofcom was considering at this time. Despite these assurances, the RSGB remains unconvinced. Ofcom is committed under the Telecommunications Act 2003 to ease the regulatory burden wherever possible. The RSGB would argue that changing the expiry date on the amateur licence will not ease this burden, radio amateurs will still be required to hold a licence, and the costs and administration involved in issuing that licence will still exist. Only deregulation will fulfil Ofcom's objective and that is why the RSGB remains sceptical of Ofcom's statement and position.

The meeting with Ofcom was productive. The RSGB team was well received and the Society's concerns regarding deregulation and the proposal to issue a 'life time' licence were noted. It is the RSGB's understanding that the proposed consultation on the future of amateur radio licensing will now begin around the middle of April. A further meeting between the Society and Ofcom is planned after the publication of the consultation document.

As we went to press the RSGB learned that Ofcom Deputy Chairman Richard Hooper has handed in his notice and will be leaving at the end of the year. Richard Hooper was insistent that deregulation was not on Ofcom's agenda and we hope that this news will not affect Ofcom's thinking.

A full statement on the RSGB position can be found on page 7.

# ML&S distributor for EH antennas


EH antennas on the roof of the ML&S emporium at Chertsey, Surrey.

ML&S are always adding to their range of unique products and the EH antennas from Arno in Italy seemed to fit the bill nicely. Single-band Arno EH antennas for all bands from 160 to 6m are now available from ML&S and cost £105 for the 'Cobra' 6m - 40m range and £179 for the 'Venus' 80 / 160m versions. All offer very small size, low SWR (so no ATU required) and can handle up to 2kW. Further details at www.hamradio.co.uk or the manufacturer's website www.eheuroantenna.com

# Raynet meets Cabinet Office representatives

Under the terms of the recent Memorandum of Understanding between the RSGB and The Radio Amateurs' Emergency Network, The Network is designated the lead agency in consultations with the Cabinet Office's Civil Contingency Secretariat. In order to improve the Government's understanding of the role of Raynet, representatives from the Emergency Planning Team of the Radio Amateurs' Emergency Network recently met the Central Sponsor for Information Assurance (CSIA), which is a unit of the Cabinet Office and which works with partners in the public and private sectors, as well as its international counterparts, to help safeguard the nation's IT and telecommunications services.

RAEN Chair, Cathy Clark, G1GQJ, and her team gave a presentation on the capabilities and current resources of Raynet and in turn learned about the government contingency operations requirements. The main areas where Raynet could assist were agreed. This initial meeting was considered by both parties to be a worthwhile exchange of ideas, and future meetings will include the use of Raynet as part of the communications contingency.

# National Mills Weekend

The National Mills Weekend, organised by the Denby Dale radio club for the Society for the Protection of Ancient Buildings, takes place on 7/8 May. In Essex, the Havering & DARS will be putting no fewer than four mills on the air during the weekend: GB2UW in Upminster; GB0MW in Mountnessing; GB2ARW in Aythorpe, Roding; and GB5SW in Stock. In addition to the Denby Dale club's award, H&DARS will be running the Essex Windmill Award for working the windmills run by the club. Further details from Fred Curtis, G3SVK, 32 Elgin Ave, Harold Park, Romford, Essex RM3 0YT.

# CW practice now on 6m

Although there is no longer a Morse code test, the GB2CW Morse practice sessions do still exist. John Bluff, G3SJE, has recently added 50.2787MHz to the GB2CW transmissions he makes on behalf of the Edgware & District Radio Society. These transmissions are now on this frequency as well as 1978.7kHz on Mondays at 8.30-10.00pm local time (4-14WPM) and on the 1st and 3rd Thursday of each month at 8.00pm-9.30pm local time (6-16WPM, and plain language at 10-20WPM respectively). The GB2CW schedule can be found on p35 of the *RSGB Yearbook 2005*.

# Charity challenge

The children's' hospitals appeal, known as 'medequip4kids', a registered charity, is back at the Krypton Factor assault course on 7 and 8 May. Now is the time to get a team together for this challenging event in which teams of four race against each other. The assault course is located at Holcombe Brooke north of Manchester and is easily accessed from the motorways. You don't have to be fit, you just have to come and enjoy yourself. Details from info@medequip4kids.org.uk or tel: 0161 798 1600.

# NEWS BRIEFS

- Dick Whittering, G3URA, has stepped down as BARTG Chairman and has been replaced by Roger Cooke, G3LDI.
- The Royal Signal ARS will be running GB6VIE to commemorate the 60th anniversary of Victory in Europe from 8 May for 28 days. A free certificate is available: please send two 2nd class stamps to Mike Humphrey, G0SWY (QTHR).
- Robin John Powell, G3OGP, has been installed as the Worshipful Master of Radio Fraternity Lodge No.8040. All enquiries about membership are welcome from existing Freemasons and radio amateurs interested in joining, tel: 01202 475048.
- Cypriot amateurs have joined those in the UK, Ireland, Croatia, Switzerland, Norway, Denmark, San Marino and Iceland, having been granted access to 7100 - 7200kHz.
- A VHF AM *Yahoo* Group has been formed and has over 100 members. The group has settled on the following frequencies as centres of AM activity but emphasises that these are not 'must use' frequencies, but just somewhere to look for AM operation. They are 29.05, 50.57, 70.26, 144.57 and 432.57MHz. To join the group, send an e-mail to: VHFam-subscribe@yahoogroups.com
- Sands Amateur Radio Contest Group will be operating GB4WSF on 20, 40 and 80m 30 April - 1 May from the Wray, Lancs, annual Scarecrow Festival. Wray Scarecrow Festival is the oldest such event in the world and attracts thousands of visitors. Further details from Kev Redmond, g6fke@gb7mbc.net
- A Radio Amateurs' Old-Timers Association (RAOTA, www.raota.org) 'Get-Together' will be held at the Brunswick Inn in Derby on 14 May. Please contact the organiser, Ian, G4EAN (QTHR) or tel: 0115 926 2360, so that catering can be arranged. RAOTA Associate Membership is open to anyone active in amateur radio who shares the aim of RAOTA: to maintain the spirit and traditions of amateur radio.

## Win a trip to Brazil!

The next World Radiosport Team Championship (WRTC) will be held in Brazil in July 2006. Besides the teams, judges and referees, there is much to enjoy for spectators [see *RadCom* September 2002 - *Ed.*]. The organisers of WRTC 2006 have announced a raffle, with prizes of two all-expenses paid trip to Florianopolis, Brazil, to attend the Games. One prize will be drawn in May 2005 and the other in May 2006. Tickets cost £5 each and are available from Roger Western, G3SXW, 7 Field Close, Chessington, Surrey KT9 2QD (don't forget to include your callsign). Further details from Roger, e-mail: g3sxw@compuserve.com

## ARC Ltd to close

ARC Ltd will close its doors on 7 May after 21 years based in Earlestown, Newton-le-Willows, Merseyside. Peter, G4KKN; Frank, G4MWM, and Elaine have been there since 1983 when it was the northern branch of Amateur Radio Exchange. Then in 1988 Peter bought the business and traded as Amateur Radio Communications Ltd. However, Peter has finally decided to retire this year and concentrate on his commitments at home including his smallholding. Nevertheless Peter, Elaine and Frank will be sad to see the door close on that Saturday but would like to thank all their loyal customers for their support over the years and hope that some will keep in touch. Also, if any wish to call in and see them before the end of business on 7 May, they may even pick up a last-minute bargain!

## On your bike!

Young Leon, M3LPJ, raised £186 for Comic Relief's Red Nose Day by riding non-stop five times around Sefton Park in Liverpool on his pushbike - about 11 miles. He was sponsored by friends and amateurs from around the north-west. While riding, he used a Kenwood TH-F7E hand-held and made contacts with amateurs as far away as North Wales. The money was handed over during a ceremony at Princess Special School, a school for children with special needs, where Leon helps out in his spare time.

Leon, M3LPJ, on his bike.

## Enigma to be reactivated after 60 years

As a tribute to the work of the Voluntary Interceptors (VIs) 60 years ago, the Scarborough Special Events Group will be active on SSB, CW and PSK as GB2HQ from GCHQ Scarborough over the weekend of 7/8 May. The QSL card shows an Enigma machine and HRO receiver.

GCHQ has provided a working Enigma machine for use by SSEG and Ofcom has given permission *for this event only* for transmission of an enciphered Enigma message to be sent in Morse. The CW station will operate around 7015 or 3515kHz and the Enigma message will be transmitted in Morse code at 1100UTC on **Saturday 7 May**, at a speed of 15WPM. The message will consist of a few five-letter groups, which will be repeated once, at 1300UTC. GCHQ invites all licensed amateurs and listeners to submit a copy of this Enigma message and will award a certificate for an accurate intercept. A copy of this message should be sent via G0OOO (QTHR) and can be enclosed with a QSL card. Details of how to obtain the award can be found on the group's website sseg.co.uk or by SASE to G0OOO.


QSL PHOTO BY ROY CLAYTON, G4SSH

The GB2HQ QSL featuring HRO receiver and Enigma cipher machine.

## Amateurs in Indian Ocean earthquakes relief work

We have already reported on radio amateurs providing emergency communications and other relief work in the aftemath of the 26 December tsunami ('RadCom News' February & March; see also the article on pages 31 and 32 this month). News is still reaching the *RadCom* office of other amateurs' assistance and the full story will probably never be told. Andy Lingham, 9M2PV, provided details on the work of Yussof, 9M2FF, who was a member of the Malaysian disaster relief team that flew to Aceh in Indonesia on 15 January. The Indonesian national amateur radio society ORARI had been approached, and Yussof was granted the reciprocal callsign YB6ZBE. He put up a G5RV antenna on the balcony of the team's accommodation above a shop. Despite interference from badly screened water pumps, a 40m link was established to the Malaysian Amateur Radio Emergency Service (MARES) HQ in Kuala Lumpur. Yussof was deployed to provide assistance to the medical team, treating victims in their makeshift tents and providing medicine, clothing and baby food. A situation report was sent to MARES every night.

◆ Indonesian amateurs were involved in disaster relief work following the earthquake near Nias Island on 28 March. Soejat Harto, YB6HB, and Zulkarman Syafrin, YC6PLG, were among the volunteers sent to Nias Island. Soejat is a medical doctor and a vice-chairman of the North Sumatra Province branch of ORARI, while Zulkarman is a member of the Indonesian Amateur Radio Emergency Service. The 28 March earthquake measured 8.7 on the Richter scale and around 1000 lives are believed to have been lost.

## QSL Communications 20th anniversary open day

QSL Communications (www.qsl-comms.co.uk) is holding its open day on Sunday 8 May 2005, and they invite you to come along and help them celebrate their 20th anniversary. Representatives from Icom (UK), Kenwood Electronics, and Yaesu UK will be on site and demonstrating their products. Why not go along and meet up with old friends and meet new ones? The address is Unit 6 Worle Indus Centre, Coker Road, Worle, Weston-Super-Mare BS22 6BX. For further information contact Jayne on 01934 512757 or e-mail: jayne@qslcomms.f9.co.uk

# Club and regional news

## 1 Scotland South & Western Isles

**COCKENZIE & PORT SETON ARC**
13 1st 144MHz DF hunt. Bob, GM4UYZ, 01875 811723.
**LOTHIANS RS**
9, 'Beam Technology', Brian, GM8BJF.
23, DF hunt, Peter, GM4DTH. Toby, MM0TSS, 07739 742367, obysigouin@onetel.net.uk
**PAISLEY (YMCA) ARC**
11, Build your own radio gadgets.
25, AGM. Jim, GM3UWX.
**WEST OF SCOTLAND ARS**
13, Braille Technology, Terry, GM3WUX.
20, AGM. Pat, 0141 554 5582.

## 2 Scotland North & Northern Isles

**DUNDEE ARC**
24, 'Communications in Korea', Graham Knight, GM8FFX. Alex, GM7IIL, 01382 553386.
**MORAY FIRTH ARS**
27, Morse QSO for beginners. Geoff, MM5AHO, 07770 726759, www.mfars.co.uk

## 3 North West

**CHESTER & DARS**
3, Annual dinner.
17, 'Bring and Tell'.
24, Outdoor evening, club VHF station.
31, Surplus sale. Derrick, M1SUM, 0151 356 1572.
**SOUTH MANCHESTER R & CC**
6, DVD formats, Dave, G4UGM.
13, Members' favourite websites.
20, 'The Renaissance of Science', Chris, G4HON.
27, AGM. Ron, 0161 969 3999.
**STOCKPORT RS**
3, APRS presentation and demonstration, Chris, 2E0FUH.
17, Direction Finding talk and demonstration, Dave, G3WFT. David, M1ANT, 0161 456 7832.
**THORNTON CLEVELEYS ARS**
9, On air.
16, Auction.
23, HF Field Day preparation.
30, No meeting. Jack, G4BFH, jack.duddington@btinternet.com
**WARRINGTON ARC**
3, Solar activity and propagation, Jim, G3NFB. John, G0RPG, 01925 762722.

## 4 North East

**GOOLE R & ES**
11, HF on air at Barmby Tidal Barrage.
18, ARDF discussion at Black Swan Asselby.
25, Bill Richards ARDF competition. Richard, G0GLZ, 01405 769894.
**GREAT LUMLEY AR & ES**
4, 11, On air.
18, 'E-Bay: tips on how to buy cheap and sell dear'.
25, On air. Nancy, 0191 477 0036, 07990 760920, nancybone2001@yahoo.co.uk
**GRIMSBY ARS**
5, DF hunting, Dave, G0IIQ.
19, 80m CW contest. Brian, G4DXB, 01472 231383.
**HALIFAX & DARS**
17, Talk by Bill, G4KQJ. Tom, M0TKA, 01484 715079.
**KEIGHLEY ARS**
26, 'Foxhunt'. Cath, G0OSA, 01535 656155.
**SHEFFIELD ARC**
9, Used equipment sale.
16, Portable evening Whiteley Woods.
23, Planning for VHF NFD.
30, No meeting. Nick, G4FAL, 0114 255 2893.

## 5 West Midlands

**BROMSGROVE & DARC**
6, AGM and surplus sale.
20, 'Hills on the air' mobile event. Chris, M0BQE, 01905 776869.
**CHELTENHAM ARA**
6, The 3-20 show: PSK31, Simon, G4SGI. Pat, G3IKR, 01386 792542.
**COVENTRY ARS**
6, On air, Novice class, CW practice.
13, Cheese and wine social.
20, Portable evening inc contest.
27, Outdoor competition at Binley Church Hall. John, G8SEQ, 024 7627 3190.
**GLOUCESTER AR & ES**
2, /P from Escarpment site.
9, 6m outdoor evening.
16, 23, On air HF and workshop evening.
30, /P from Escarpment site. Tony, 01452 618930, daytime.
**HILLCREST ARS**
5, Himley planning and equipment test.
14, Himley Lifeboat Marathon GB2HLM, visitors welcome.
19, Report on GB2HLM. Stuart, M0SJV, 01384 232457, m0sjvstuart@supanet.com
**KIDDERMINSTER & DARS**
3, Bletchley & the 'Y' service, Charles, G3BQQ. Tony, G1OZB, 01299 400172.
**MID-WARWICKSHIRE ARS**
10, Used equipment and book sale.
24, Coventry Transport Museum visit (10.30am). Bernard, M1AUK, 01926 420913.
**SALOP ARS**
12, Oscilloscopes, Richard, M1RKH.
26, 2nd 2m 'foxhunt'. Fred, G3NSY, 01743 790457.
**STRATFORD UPON AVON DRS**
9, Elecraft K2 transceiver, Roger, G3KWK.
23, Round table. Terry, G3MXH, 01789 294387.
**TELFORD & DARS**
11, Switched mode power supplies, talk by SMPU designer.
18, Social evening.
25, Surplus equipment sale, G8UGL. Mike, G3JKX, 01952 299677, mjstreetg3jkx@aol.com

## 6 North Wales

**CONWY VALLEY ARC**
4, Open forum evening and video. Wynne, GW6PMC, 01745 855068.
**DRAGON ARC**
2, Discussion.
16, Ordnance Survey, talk by Mike Blackburn. Leslie, 01248 470606.
**NORTH WALES RADIO SOCIETY**
5, 10-minute lectures, fun topics.
12, Annual junk sale. Ted, GW0DSJ.
**WREXHAM & DARS**
3, Computers in the shack, Adrian, M1LCR. Mark, MW1MDH, markmdh@btopenworld.com

## 7 South Wales

**ABERYSTWYTH & DARC**
12, Visit to Bontgoch water treatment works, Ray, GW7AGG. Ray, mwmg01@aber.ac.uk

## 8 Northern Ireland

**BANGOR & DARS**
4, Sporadic E, Pete, MI5JYK. Mike, GI4XSF, 028 4277 2383.

## 9 London & Thames Valley

**CRAY VALLEY RS**
19, Icom evening. Richard, G7GLW, 07831 715 797, rcains@btinternet.com
**CRYSTAL PALACE R & EC**
6, Hands on with meters and oscilloscopes. Bob, G3OOU, 01737 552170 or Victor, G1PKS, 020 8653 2946.
**EDGWARE & DRS**
12, Surplus sale.
26, Constructors' cup, NFD briefing. Rod, G0SQL, 020 8204 1868, g0sql@harrow-middx.demon.co.uk
**HODDESDON RC**
10, Talk by club founder, Roy Charlesworth, DU9/G4UNL.
24, 'Microsoft Office Continued', John, G4VMR. Don, G3JNJ, 020 8292 3678.
**MAIDENHEAD & DARC**
5, Biography 'From Pennsylvania thru CIA and Beyond', John Coleman.
17, 'Morse keys', Dennis, G3LLZ. John, G8RYW, 01628 628463.
**NEWBURY & DARS**
25, AGM. Kevin, G6FOP, 01635 826397, g5xv@ntlworld.com
**READING & DARC**
12, BBC Monitoring at Caversham, AI, G4VSQ. Pete, G8FRC, 0118 969 5697.
**RIDGEWAY REPEATER GROUP**
18, AGM - all those interested in GB3WH, GB3TD and GB7NW are welcome. Talk-in on WH/TD. Rob, G4XUT, www.rrg.uk.org
**SHEFFORD & DARS**
26, Pedestrian DF hunt. David, G8UOD, 01234 742757.
**SILVERTHORN RC**
13, 27, On air. Les, G0CIB, 07980 275081.
**SOUTHGATE ARC**
12, *RadCom* archive talk and demo, Graeme, G8DVJ. Mike, M0ASA, 020 8366 0698.
**SURREY RCC**
9, Construction evening. Ray, G4FFY, 020 8644 7589.
**SUTTON & CHEAM RS**
19, AGM and construction contest. John, G0BWV, 020 8644 9945, info@scrs.org.uk
**WIMBLEDON & DARS**
13, Surplus equipment sale.
27, PicATUne construction, on air. Jim, M0CON, 020 8874 7456.

## 10 South & South East

**BASINGSTOKE ARC**
7, Radio-O Forest of Dean weekend.
21, New Forest 'foxhunt', G4WIZ.
22, New Forest 'foxhunt'. Frank, M0AEU, barc@2lo.info
**FAREHAM & DARS**
4, On air.
11, How does it work? The timer NE555, Andrew, G0AMS.
18, Logging software, Robert, G0SEM.
25, Drake / Collins: how good are they really? Amplifiers: How useful are they really? Chris,G8JFJ, enquiries@fareham-darc.co.uk
**FARNBOROUGH & DRS**
11, Transistors, John, G3KND. Alan, M5AMN, 01252 682447.
**HASTINGS E & RC**
18, Tetra digital communications, John Rivers. Gordon, 01424 431909, gordon@gsweet.fsnet.co.uk, www.g4cus.freeserve.co.uk
**HORNDEAN & DARC**
24, 'Bees and beekeeping', by the Honey Man, Roy Godfrey. Stuart, G0FYX, 023 9247 2846.
**HORSHAM ARC**
5, Radio travels, David, G4JHI. David, G4JHI, 01403 252202.
**MID-SUSSEX ARS**
6, Preparation for Mills weekend.
7, Mills on the air at Jill windmill, Pyecombe.
13, Construction evening.
20, Radio night and table top sale.
27, Construction contest, Rob Mannion, Tony, G3MPF. John, G6XTW, 01273 588556.
**SOUTHDOWN ARS**
7, GB2PW at Polegate Windmill.
9, Logie Baird 50 line TV, Tony, G0EYE. John, G3DQY, 01424 424319, vaughdqy@aol.com
**SWINDON & DARC**
5, Chippenham DARC mini-DXpedition to Lundy, Ian, G0GRI.
12, DF contest.
19, Preparation for contest.
26, 'Metal Detecting', Jon, 2E0DBD. Mike, M5CBS, 01793 826465.
**TROWBRIDGE & DARC**
4, Members' short talks 2, 'Pacificon', Alan, M0PUB; Part 'P' building regs (electrical), its affects on you. Ian, G0GRI, 01225 864698, evenings / weekends.
**WORTHING & DARC**
4, Plans for weekend special event station.
8, VE day anniversary GB2NFM Mills Weekend High Salvington Mill.
11, Computers Apple v PC, Enrico.
18, 'Gadgets', Enrico.
25, Plans for Buckingham Park.
30, Special event station Buckingham Park. Roy, G4GPX, 01903 753893.

## 11 South West & Channel Islands

**BOURNEMOUTH RS**
6, Model jet engines, Simon Peckham. David, G4BKE, 01202 697338, www.brswebsite.freeserve.co.uk
**CITY OF BRISTOL RSGB GROUP**
23, Radio astronomy, a beginner's view, Brian, G4NNS. Martyn, G3RFX, 0117 973 6419.
**CORNISH RAC**
5, Stage lighting.
9, Computer section. John, G4LJY, 01872 863849.
**EXMOUTH ARC**
4, QSL card judging.
18, Construction and radio operating night. Mike, G1GZG, 01395 274172.
**HOLSWORTHY ARC**
4, AGM, open night. David, 01288 353561, m3eoq@hotmail.com
**NORTH BRISTOL ARC**
13, Bring & buy.

20, 'Foxhunt'. Dick, G0XAY, 01454 218362, Jon, 0117 941 4602.
**PLYMOUTH RC**
7, 'Rooster breakfast'.
8, 'Foxhunt', meet 1.00pm at *Jack Rabbit*, Derriford. Frank, G7LUL, frank@foxonezero.fsnet.co.uk
**SOUTH BRISTOL ARC**
4, Computer & software clinic.
11, Workshop: Morse code.
18, Annual maintenance of club aerials.
25, On air. Len, G4RZY, 01275 834282.
**SOUTH DORSET RS**
7, Windmills / watermills weekend.
8, 60th anniversary of VE day.
10, Propagation: how to understand it better, how it works. Carol, 2E1RBH, 01305 820400, carolonfraggle@tiscali.co.uk
**TAUNTON & DARC**
6, Ofcom detection service, talk & demo, Richard, M0DUC, & Dave Woodgate.
20, Discuss Field Day arrangements. William, G3WNI, 01823 666234, g3wni@btinternet.com
**TORBAY ARS**
20, Open forum, RSGB Regional Manager's visit. Dave, G6FSP, g6fsp@tars.org.uk

## 12 East & East Anglia

**BRAINTREE & DARS**
2, 30th anniversary evening.
16, AGM.
21, 30th anniversary activity. John, M5AJB, 01787 460947.
**CAMBRIDGE & DARC**
13, APRS, Rob, M0ZPU.
27, 'In your shack', members video, Mike, M0BLP. Ian, G4AKD, 01954 782974.
**CHELMSFORD ARS**
3, 3B9C Rodrigues DXpedition, Don, G3XTT. Martyn, G1EFL, 01245 469008.
**CLACTON RADIO CLUB**
7, National Mills Weekend. G4AQZ.
**COLCHESTER RADIO AMATEURS**
5, Constructors' Championship.
19, Interference causes and remedies; safety in the shack. Keith, 01206 521330, keith@g3isk.fsnet.co.uk
**DOVER RADIO CLUB**
4, Operating night.
11, MSG1 satellite, Nigel, M0NDE.
18, Operating night.
25, Talk on Echolink, Declan, M0TMX. Brian, G4SAU, g4sau@bcuff.freeserve.co.uk
**FELIXSTOWE & DARS**
8, National Mills Day special event station GB2WTM. Paul, G4YQC, paul.whiting@bt.com
**HARWICH ARIG**
11, WWII communications at Arnhem, Tom, G0SBW. Tony, G4EYE, 01255 886065.
**HAVERING & DRC**
4, Data on air live demo MFSK, Hell, PSK and RTTY.
11, Informal.
20, Digital TV, Murray, G6JYB.
25, Informal. Oliver, G3TPJ, 01708 746677.
**LEISTON ARC**
3, Weather satellite and DRM reception, Richard, M1DNG. Paul, M3MIG, 01728 746044, m3mig@aol.com
**NORFOLK ARC**
8, Young Communicators, Hewitt School.
11, Construction project, Mark, G0LGJ.
25, Coastguard communications, Eric, KA2G. Reg, G0VDO, 01603 429269.
**SOUTH ESSEX ARS**
4, GPS demo, Dave, G4UVJ.
18, Aviation talk, Bob Goody. Dave, southessex.ars@btinternet.\com, www.southessex.ars.btinternet.co.uk

## 13 East Midlands

**DERBY & DARS**
3, Junk sale.
17, 'The computer virus: fact or fiction?', Peter, G0FQB.
24, Technical topics.
31, Video. Martin, G3SZJ, 01332 556875.
**EAGLE RADIO GROUP**
10, ATUs and matching, Charles, G0CBM. Terry, G0SWS, 07979 733640.
**HUCKNALL ROLLS-ROYCE ARC**
13, On air.
20, RSGB video introduced by Ken Frankcom, G3OCA.
27, Visit to Stockhill fire station. Keith, G6NHY, 07929 916642, hrrarc@ntlworld.com
**LINCOLN SW CLUB**
1, Metheringham Airfield weekend special event station.
4, Raffle, on air.
7, National Mills Weekend at Ellis Mill, Lincoln.
11, 80m data contest.
15, Drayton Manor rally.
25, Slide show and video, Roger, G3PVU. John, G1TSL, 01526 323153.
**LOUGHBOROUGH & DARC**
3, On air, 2m contest.
10, 1st DF of 2005 2m easy starter.
17, One valve project judging.
24, Visit Ratcliffe power station.
31, 2nd DF of 2005, 160m. Chris, G1ETZ, 01509 504319.
**MELTON MOWBRAY ARS**
20, Annual construction contest, G6KQP Trophy. Phil, G4LWB, phil@croxtonkerr.fsnet.co.uk
**SOUTH NORMANTON, ALFRETON & DARC**
2, Bank holiday, on air.
7, Mills weekend.
9, Basic electronics part 3, Russell Bradley.
16, Junk sale.
23, Video.
30, Public holiday, on air. Mike, M0RMJ, 01949 876523, mike.jeffs@ntlworld.com, www.qsl.net/snadarc
**SOUTH NOTTS ARC**
4, FT-1000 'flying lessons'.
7, Mills weekend.
11, Construction project, Terry, M0RIA.
18, Members-only forum.
25, The oscilloscope, John, G4EDX. Terry, M0RIA, 0115 937 2942.

**Items for club news should be sent to the RadCom Office at HQ to arrive by the 26th of the month, ie approximately a month before publication (eg 26 January for the March Issue). News items should be sent in writing (fax, letter or e-mail: gb2rs@rsgb.org.uk) by the club secretary or the person responsible for publicity. Post cards for this purpose are available from RSGB HQ. A database of all meetings is shared between *RadCom* and GB2RS, so information only needs to be sent once.**

## COURSES AVAILABLE IN HAMPSHIRE

◆ Places are still available on the **Farnborough** & DRS Foundation course in May. Sessions will take place at 7.00 - 10.00pm at Farnborough Community Centre on the four Thursday evenings from 19 May to 9 June. The Chief Instructor for the course is John Hardy, G3KND, who during the 23 years he taught the RAE had more than 500 students pass the examination. Further details from Paul Whatton, G4DCV, tel: 01252 892804 (please leave a message) or e-mail: paul.whatton@ntlworld.com

◆ The **Andover** Radio Amateur Club intends to hold another Foundation course on 4 / 5 June. The venue for the course will be the Community Centre at Larkhill. This course is open to all and no previous experience is necessary.

◆ The cost for **either** course is £30, to include the examination fee and a copy of the RSGB course book, *Foundation Licence Now!*

## TAUNTON'S G5JJ CUP

The Taunton & DARC (www.qsl.net/G3XZW) held its annual dinner at the *Queen's Arms* in Pitminster at which the G5JJ Club Challenge Cup was presented. Doug Hall OBE, G5JJ, was present and the Chairman asked him to present the cup. The Challenge Cup is presented each year to the member who contacts (SWL: hears) the most stations, on any mode, during the year on the frequency decided by the committee. The winner in 2004 was Tom Taylor, G0PSE, who had also won the trophy in 2003. The runner-up was Ray Wilkin, G0UKX. Doug Hall made the presentation, congratulated Tom and wished the club every success in the future.

**Tom Taylor, G0PSE (left), receives the Challenge Cup from Doug Hall OBE, G5JJ.**

## MID-LANARK CLUB SUCCESS

Mid Lanark Amateur Radio Society (MLARS) had six successful candidates at its latest Foundation course. It was jointly run by Gordon Hunter, GM3ULP, and Jim Kelly, GM0SYV, at the Newarthill Community Centre. MLARS is now looking for candidates for the next Foundation / Intermediate courses to be run as soon as numbers suffice.

**Mhairi McCallum (successful candidate, daughter of Gordon McCallum, GM3UCI, sending a Greetings Message under the watchful eye of Phil Woods, GM0LIR, in the MLARS HF shack.**

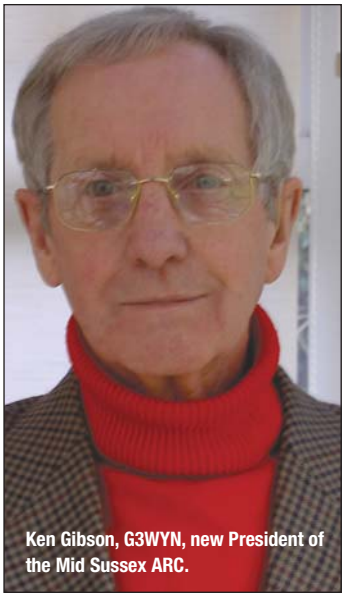
## BRAINTREE CLUB 30th BIRTHDAY AWARD

2005 marks the 30th anniversary of the Braintree & District Amateur Radio Society (www.badars.org.uk). The club will be running an award scheme from May to the end of July. The aim is to collect 30 points. Points are awarded for working special event station GB0BTA (15 points), club callsigns (G3XG and G6BRH, 10 points), plus any club member (5 points). GB0BTA will be active during the weekend of 21/22 May. Points for each callsign can be claimed for one contact per band per day. A minimum of two different callsigns needs to be worked. QSOs via repeaters do not count. A list of club members' callsigns is available on the website or by sending an SASE to the event organiser, G0DEC QTHR. To obtain the certificate, send a cheque for £3 to G0DEC made payable to Braintree & District Amateur Radio Society to cover postage and a donation to the Essex Air Ambulance.

## ROSE & CROWN RADIO CLUB

The Rose & Crown RC, M0DRM, in Barnsley (www.m0drm.tk) recently held a successful Foundation course. Successful candidates were Stacey, now M3ITM; Angela, M3OXR; Andrew (aged 13), M3ITR; Katie (10), M3ITQ, and Sandra, M3WUF. Andrew, who is profoundly deaf, had to use special equipment made available by his school to hear the tutor. The club is also running an Intermediate course and can cater for candidates with learning difficulties.

The club is growing and has many activities planned for the year ahead. It has recently acquired a caravan which is being renovated and converted into a mobile shack to be taken to events and displays to demonstrate amateur radio to the public.



Ken Gibson, G3WYN, new President of the Mid Sussex ARC.

## NEW PRESIDENT FOR MID SUSSEX ARC

Ken Gibson, G3WYN, has been appointed president of the Mid Sussex ARC, only the third president in the 40 year history of the club. Ken was one of its founder members and has been involved in amateur radio from an early age. His main interests are in HF operation, wire antenna design and PSK31 work with basic computer equipment. Ken says that his aim as president is to bring back the 'magic' of amateur radio to the many new members of the club and to demonstrate to them that using simple, cheap equipment and antennas can give many enjoyable contacts world-wide, despite the onset of modern technology!

## EXAMINATION SUCCESSES

◆ All nine candidates who sat their Intermediate examination on 25 January at the **Renfrew** Amateur Radio Society passed with flying colours. Congratulations to all of them and special thanks to the instructors and invigilators. The nine Intermediate passes bring the total number of people having passed examinations at the Renfrew Amateur Radio Society to 15 and continues the club's 100% success rate. An Advanced course planned for late March or early April is already fully subscribed. More information about the Renfrew Amateur Radio Society, including details of upcoming courses can be found at www.ms0dxk.co.uk

◆ January was a good month for James Hill, M0TJC, and his partner, Tracy Taylor. James received his M0TJC licence on 20 January, after having passed the Advanced exam on 13 December last year. Tracy completed and passed the Foundation course and exam run by the **Wisbech** Amateur Radio and Electronics Club, on 22/23 January and is now licensed as M3TCJ. The club fielded six candidates for the Foundation exam and had a 100% pass rate. Tracy now plans to begin studying - assisted by James - for the Intermediate licence in the near future. The next family member to get the 'treatment' will be daughter Charlotte, but as she is only 20 months old, it may be a while yet!

◆ The **Harlow** and District Amateur Radio Society recently held its first Foundation licence exam since becoming a registered examination centre. All three candidates were successful, and are already studying for their Intermediate licence. Courses are organised and run on demand; further details from Alan, M0TEC, on 01279 441092 or e-mail: m0tec@g6ut.com

◆ At the first Intermediate exam of the year, two members of the **Dundee** ARC, Stuart, MM3RUT, and Dave, MM3HGN, successfully passed and are now keenly looking forward to receiving their 2M0 callsigns.

◆ Selim Alpuvan, M3EKF, who took the Foundation course at the **Loughton & Epping Forest** ARS, has now successfully passed the Intermediate licence.

## CRAY VALLEY CLUB OFF TO THE SCILLIES - AGAIN

PHOTO: DAVE, G0FDZ.

Left to right: Dave, G0FDZ; Dave, G4BUO; Richard, G7GLW; Nobby, G0VJG; Simon, M3CVN; Ralph, 2E0ATY.

Last year the Cray Valley Radio Society mounted a DXpedition to the Isles of Scilly (IOTA EU-011) for the RSGB IOTA Contest 2004. For the club's first major DXpedition it turned out to be quite a success, with first place in the UK Island High Power Expedition category, and seventh in the overall Island multi-operator category. The same team is returning from 25 - 31 July this year with a better set-up, using the club contest call M8C in the IOTA contest and at other times signing their own callsigns /P.

This year the club will also operate more seriously on the VHF bands, with beams on 6m and 2m and an entry in the RSGB 50MHz UK Activity Contest as G3RCV/P. Dave, G0FDZ, will also be active on microwave bands.

Students and instructors on the Dover Radio Club Foundation course. L to r, back: Brian Joyner, G8ZYZ (Assistant Instructor); Richard Bax; Albert Wilson; Barry Pearson; Mark Gibbinson; Sam Whitlock; Paul Cook; David Harding, G0DQI (Lead Instructor); Front: Graham Cahill, 2E1ITE (Assistant Invigilator); Katrina Barton; Samantha Evans; Cecil Armstrong, G0OJZ (Chief Invigilator).

## WINTER STORMS

Despite the late winter's best efforts, eight more radio amateurs were licensed in Norfolk in March thanks to the Norfolk ARC course run by Rex, G0CLR, and Colin, G7UVY. Because the snow forced cancellation of the scheduled Wednesday induction session, both candidates and instructors had to work extra hard to get through everything in one weekend.

PHOTO: COLIN, G7UVY

Roger, G3LDI, carries out the Morse assessment.

# RSGB Yearbook 2005 UK & Ireland Call Book

***Edited by Steve White, G3ZVW***

**If you want a complete list of all of the UK licences on issue combined with a 176 pages of invaluable information about amateur radio the 2005 RSGB Yearbook is for you.**

Bigger than ever the 2005 RSGB Yearbook has had every page reviewed and updated from the 2004 edition. The contents reflect the current state of the hobby, with pages devoted to contesting, awards, satellites and propagation. New for this edition are the 'Contesting Guide', your complete guide to RSGB contests from HF to microwave. You will also find features on Top Band Direction Finding and Mills Weekend. The section devoted to licensing now contains a huge list of all the Foundation, Intermediate and Advanced amateur radio courses available, plus a list of Examination Centres. IOTA receives extensive coverage, with a feature on IOTA's 40th Anniversary, information on the awards scheme, the Honour Roll and Annual Listing. Additionally there is the callsign listing for the Irish Republic, for short wave listeners and short contest callsigns, plus surname and postcode listings. As you would expect there is also much, much more included. All-in-all it adds up to a reference book that no radio amateur should be without. Everything you need at your fingertips, with 476 A4 pages this book is excellent value.

Non Members price £16.99 plus p&p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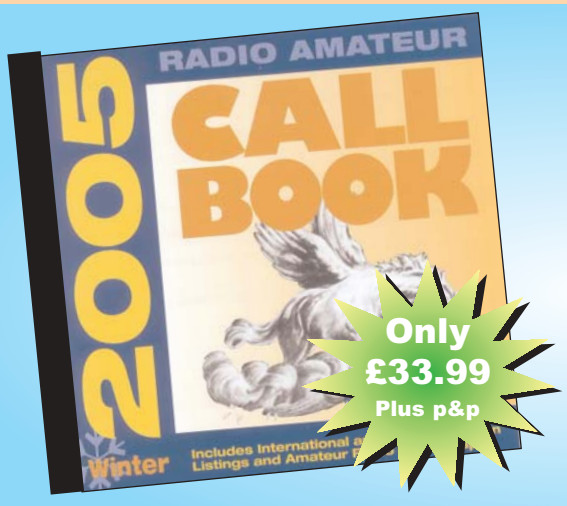


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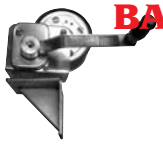

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**Angus Annan,** MM1CCR
RSGB Board Member for the Environment
c/o RSGB HQ

**Jane Atkinson**
RSGB PR Consultant,
E-mail: PR@rsgb.org.uk

# The RSGB Public Relations initiative

**Angus Annan, MM1CCR, introduces the RSGB's PR initiative, and the Society's new PR Consultant, Jane Atkinson, provides a summary of why power companies in the UK should not invest in PLT**

These are interesting times for amateur radio in the UK and the RSGB. On the one hand, due to the introduction of the new licensing structure, the hobby has been expanded and enlivened with an influx of new licence holders. On the other hand, there have been new challenges, with less experienced radio amateurs taking to the air, concerns about possible interference from Power Line Telecommunications (PLT) and the creation of a new merged regulatory body (Ofcom) for radio, telecoms and the media. Ofcom has launched a series of consultations about the use of the radio spectrum, licensing of amateur radio and changes to arrangements for other services.

With these uncertainties around, the RSGB recognises the importance of raising the profile of amateur radio and protecting the amateur band allocations at all frequencies. Amateur radio in the UK has much to be proud of and much to offer to national life, and the Board of the RSGB is determined that our interests must be protected and presented in the best possible light. For some time there has been a feeling that the RSGB needs to be more active in public relations and this was also highlighted in the report of the RSGB Foresight Review. The PLT issue illustrated the need for an effective strategy in public relations and the need to be able to influence opinion and make effective representations to government departments.

With the threat from PLT in mind, the Board sought the help of an experienced PR practitioner, but now that a wide rollout for PLT seems less likely in the UK, it has been decided to widen the PR brief to devise a new communications strategy for the Society. The intention is that the RSGB should be better positioned to influence opinion formers in government departments and the media and to improve on communications with members. The RSGB also needs to build alliances with leading organisations in the spheres of education, engineering and the various government policy setting bodies.

Our PR consultant is Jane Atkinson, a partner with Glenfern Ltd, London. Jane has experience of PR work with technology companies such as JCB and Sony. She can be contacted at PR@rsgb.org.uk For information about Glenfern and their clients, see www.glenfern.com

**Angus Annan, MM1CCR**

## PLT: a risky investment?

The position on PLT broadband services in the UK is still uncertain, but a recent announcement from British Telecom points the way to a fully national service based on ADSL broadband. This situation now suggests that a wide roll-out broadband Internet connection using the electricity power cable network may be more a phantom of hope than a viable investment.

Power companies are attracted to PLT by the prospect of running Internet services over existing power cable infrastructure as an additional revenue stream. However, the power companies that have been trialling PLT can hardly take comfort from the commercial prospects when considering standards and PLT technologies. Without standards, the technology remains proprietary and the prospects for interoperability and low cost production of PLT hardware are not encouraging. As with any new technology, tools of the trade such as remote network management and frequency planning controls are absent or crude and investment in these essentials can only be justified when standards are agreed.

Control of RF interference emissions from PLT remains a dominant issue in the USA and in Europe as PLT uses the same frequencies as HF radio services. In the USA work on IEEE Standard P1675 for broadband over power line hardware is not expected to be complete until late 2006.

Whilst at times the FCC has appeared supportive of PLT, in recent announcements it has set tight requirements to protect safety of life radio services and a requirement for a public database of all PLT operations.

In Europe, work on a harmonised network standard for control of RF emissions has been going on for some time without final result. Should such a standard emerge, then it will still have to be ratified by the national standards bodies of each country.

There is also the question of standards for PLT hardware. Users of HF radio services such as long range broadcasting, amateurs and defence interests have expressed concerns and an easy passage for these standards at national level cannot be assumed.

PLT is now showing all the problems of the classic late to market situation, in the face of well developed services from cable and DSL telecommunications companies. Many of these other providers are already able to offer an attractive full package of voice, data and video services at prices that are very competitive. In the UK, recent announcements by BT are pointing the way to almost full coverage of the UK with DSL broadband services by summer 2005, ringing the death knell for other approaches to broadband such as PLT and satellite links.

PLT has been touted as the solution for broadband provisions in those countries where rural areas may have electricity supplies, but no telecommunications services. Here again additional costs come into play as the PLT signal needs repeaters in the power line every half mile or so. This has tended to force PLT companies to concentrate more on urban areas where broadband provisions are already dominated by cable and DSL services. The new Wi-Max wireless standard is also enabling municipal broadband services to be deployed successfully with a range of up to 25 miles.

The so called 'In house' PLT has hardly fared better. The idea is to use the domestic mains wiring, in hotels for example, for broadband distribution within the building. A group known as the Home Plug Alliance has created a standard labelled as HomePlug 1.0, but this remains proprietary and has still not achieved recognition by USA or EU standards bodies. Bearing mind the widespread use of battery-powered laptop computers, wireless distribution in hotels and public buildings is likely to command a better market.

It is clear that for all the claimed advantages of using an existing wiring infrastructure, PLT still faces obstacles with standards and radio interference and with strong competition from well established alternatives, the investment prospects for PLT remain uncertain. The RSGB will continue to monitor developments and use every opportunity to protect the interests of the HF radio community, particularly amateur radio.

**Jane Atkinson, RSGB PR Consultant**

**Angus Annan, MM1CCR**

**Jane Atkinson, RSGB PR Consultant.**

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# National Science

**This year's 'National Science Week', organised by the BA, ran from 11 to 20 March. As always, it provided an ideal opportunity for radio clubs to put on special event stations to demonstrate amateur radio to the general republic. We have six reports from clubs across the land and further reports will be uploaded to the RSGB website.**

national science week
11 - 20 march 2005

## TORBAY ARS

Although the official start date for National Science Week was 11 March, at the West of England School for the Visually Impaired it began on 27 January! With the normal curriculum to follow, there just wasn't the opportunity to allow a week for Science Week activities. So the Torbay Amateur Radio Society devised a programme of activities stretching over seven weeks in one-hour slots.

Mike, G1FON; Derrick, G3LHJ, and Colin, G4FCN, attended the school on a weekly basis. The first visit was an introduction to amateur radio, with subsequent visits covering the practical side of the hobby. In the second week there was a presentation of amateur radio books for the school's library, followed by a demonstration of amateur radio using the HF bands. The pupils really enjoyed it as they participated in the contacts, proving once again that young people are still just as fascinated by amateur radio now as they were years ago.

The following week coax, 300 ohm ribbon feeder, BNC connectors and soldering were demonstrated. For those pupils who couldn't see at all, everything was prepared for a 'feeling session', so there was no doubt how coax or ribbon feeder was constructed. The partially sighted youngsters got on with constructing a Slim Jim aerial to be used the following week. The GB3TR 2m repeater couldn't be heard from the school's location using a handheld with helical whip but once the Slim Jim was connected, the first call produced a contact, proving the advantage of antenna gain. One of our contacts on GB3TR was Tony, M0THJ, whose location was just a few miles from the school in Exeter. Although we tried to work him simplex after our initial contact, we were unable to do so, thus showing the advantages a repeater offers.

Pupils built their own Morse keys using materials scrounged from the science lab. Morse code was available in Braille, so there was all round interest, and it was amazing how quickly some pupils learned to recognise certain letters. The HF station was set up and Derrick, G3LHJ, provided a good demonstration of how a CW QSO is conducted. The enthusiasm from the pupils showed that interest in CW is far from waning, and that it will continue to be a part of amateur radio for years to come.

When the pupils were reminded that was only one more session to go, the disappointment shown by them proved how successful the visits by the club had been. Many expressed a wish to continue learning, as if they realised that - although partially sighted or without sight at all - the world of amateur radio is open to them for their enjoyment and new friendships. One of the school's lecturers, Simon, who was a lapsed amateur and very keen to instigate the club's visits, has now renewed his old callsign, dusted off his equipment, and you may hear G8NVS calling CQ in the near future. He said he felt the visits were so successful that he would be continuing with amateur radio lectures and practical sessions at the school in the future.

Mike Mangan, G1FON

## YORK ARS

Sadly, the York Amateur Radio Society's involvement in Science Week 2005 has come to an end, although I am happy to report that we have already been invited to take part again next year. The series of events mounted by City of York Council, in association with the BA, was kicked off by a most wonderful lecture given by Adam Hart-Davis. I managed to get some tickets so members of York ARS were present and it was a wonderful experience.

The staff at Acomb Library welcomed us once again. The standard of hospitality (and almost non-stop tea) was amazing. Lorraine, who is in charge at the library, kindly put together a display of poster from the material supplied by the RSGB. The bands were not in very good shape, but the crafty use of a 2m hand-held kept the visitors who wanted to 'have a go' happy. Needless to say I spent time walking on the lawn outside (great fun).

Much interest was shown by a lot of people visiting the library, including 89-year old Ron, who produced a QSL card which he had been given by us when he visited the clubroom in 1982. And little Christopher who took to the Morse practice oscillator like a trooper, as you will see from the photograph.

Our thanks to Lorraine and her staff for their kindness in giving us the opportunity to bring amateur radio to the attention of so many people.

Keith Cass, G3WVO

## WORTHING & DARC

The Worthing and District Amateur Radio Club staged a full week of events for National Science Week. The club was invited by Worthing Borough Council to set up a station in the fantastic Worthing Museum. Activity was between 11 and 19 March. Many visitors to the museum chatted to WADARC volunteers who gave a full explanation of the science behind radio communications and mobile telephones, with regular video presentations in the lecture theatre. Also explained was the new amateur radio licensing structure.

Excited pupils from Whytemead and Hawthorns First schools enjoyed learning how to send their own names using Morse code and learned to tap out the SOS call used by the *Titanic*. Each pupil was awarded a certificate of achievement on completion of their Morse 'training'. Visiting pupils were also able to speak to over 30 amateurs locally and across the world, and received an explanation of how

**Bottom, left to right: TORBAY**
**Derrick, G3LHJ, presents RSGB books to the West of England School for the Visually Impaired library.**

**YORK**
**Popular scientist and TV presenter Adam Hart-Davis kicks off Science Week for the York ARS with a lecture organised by the City of York Council.**

**Young Christopher shows off his newly-acquired skills on the Morse practice oscillator.**

# Week 2005

PHOTO: MARK HARPER, MW1MDH

their transmissions reached other parts of the world. The pupils were taught why radio amateurs are the only amateur body to be allowed to talk to the International Space Station, how radio waves are sent into space and bounced off the moon, satellites and the tails of meteors.

The museum station made contacts with over 30 countries, including Japan, Indonesia, Saudi Arabia and islands in the Pacific Ocean, using the call GX1WOR.

At the same time, WADARC members were also busy running the permanent special event station at the Newhaven Fort Museum using the callsign GB2NFM. Its National Science Week activities mirrored those at Worthing Museum and contact was established between the two stations. Again, another huge success both on the air and with visiting schools and the public.

WADARC wishes to thank the Worthing, East Sussex and Lewis councils, and the superb staff at both Worthing Museum and the Newhaven Fort Museum. Also Icom, which supported the event with goody bags.

Geoff Patrick, 2E0EKB

## LEISTON HIGH SCHOOL, SUFFOLK

During Science Week, an amateur radio display and special event station was run from Leiston High School. As a result of the activity, permission has been granted for permanent antennas to be erected at the school, with the full support of the Science Department.

After Easter there will be a regular weekly station on the air using the callsign GX6FS (courtesy of Leiston Radio Club), and an Intermediate course will be run in June / July.

Over the week several Foundation licensees at the school experienced VHF / FM and HF SSB operating, making contacts with Finland, Sweden, Russia, Bulgaria and Croatia, as well as within the UK. It was wonderful to watch individuals who had had no access to amateur radio since taking their M3 tests in 2003 develop into confident operators, capable of tuning up the rig / antenna and conducting QSOs independently.

Dave Powis, G4HUP

## PORTLAND ARC

On Sunday 20 March Portland Amateur Radio Club set up a demonstration station in the visitors' centre at Portland Bill Lighthouse, activating the club's permanent special event callsign GB2PBL. Visitors waiting to ascend the lighthouse tower were able to see the station in operation and watch the RSGB amateur radio information video, continuously playing on a widescreen TV.

Unlike last year's event, when stormy weather made operating conditions 'interesting', to say the least, this year the weather was much more pleasant. The station in the visitors' centre consisted of two HF radios with wire dipoles. Most of the operation was on phone, with contacts all over Europe and, when propagation improved during the afternoon, the USA and Canada on 17m. Plans to operate PSK31 on 40m were thwarted by an attack of 'gremlins' although reception was still possible and the display of live PSK contacts generated interest from the visitors. A good day was also had by all the PARC volunteers!

## 'SCIENTRIFFIC', WREXHAM SCIENCE FESTIVAL

Members of the Wrexham ARS put on an amateur radio display and operated GB2WSF from 'Scientriffic 2005', organised by the Wrexham Science Festival, on Saturday 19 March. Wrexham club members James and Eric converted the venue's drab, beige walls into a colourful display with posters from Kenwood, Icom and the RSGB. The club's PC ran a *PowerPoint* presentation and video of the club's DXpedition to the Isle of Man. Newly-appointed Deputy Regional Manager Stephen Roberts, M0SJR, from neighbouring Region 3, represented the RSGB and kindly stepped in when the local Regional Manager and Deputy were unavailable due to other commitments.

The first visitors were very interested as a relative was licensed and they were looking at getting into the hobby. The two Steves (MW1STE and M0SJR) explained the new licensing structure, and provided details of local courses. A lot of people we spoke to during the day were surprised to hear how the licence structure had changed. Some knew of the Foundation licence, but some were only aware of the Novice licence (as it was).

Visitor numbers were bolstered by the 'Children's University' scheme, where children were given a passbook and when they completed 10 activities they were rewarded with a T-shirt and certificate. At our exhibit, they had to send their name in Morse code (Morse is still popular with the young!) and we'd stamp their passbook. Despite this, numbers were noticeably down on the previous year. This could well have been due to the Wales / Ireland rugby grand slam final match, or perhaps Steve Bennet's 'Starchaser' rocket appearing at Scientriffic was considered to be more impressive! The team showed some concern at the numbers attending and are worried about the future of the event. Despite this, there was a general consensus that we'd wait to see how things went next year.

I would like to thank Steve, MW1STE; Adrian, M1LCR; Geoff, GW6SBD; Eric, 2W0WXM, and James, M3JRP, for their help in running and operating GB2WSF. Thanks also to Stephen, M0SJR, for being our RSGB rep for the day, and to Kath Wilson, M1CNY, for letting us have Steve on loan! Thanks also to Icom, Kenwood, and of course all at RSGB for helping to support the event. Finally thanks to all the team at Scientriffic for all their support.

Mark Harper, MW1MDH ◆

**Above, left to right:**
**WORTHING**
**Rosie Gale talks to a German station on 40m SSB from Worthing Museum.**

**PORTLAND**
**On the air as GB2PBL from Portland Bill Lighthouse Visitors' Centre.**

**WREXHAM**
**David McKenna and Jenna Griffin (future MW3s?) practice sending Morse under the watchful eye of Stephen Roberts, M0SJR.**

### GB4FUN

As usual, GB4FUN was out and about in the run-up to, and during, Science Week. This year, the RSGB's mobile radio communications demonstration vehicle was in north-east England and central Wales:

| | |
|---|---|
| 7 - 10 March | Museum of Lincolnshire Life, Lincs |
| 11 March | Teacher Training Day, Amplethorpe College, York |
| 14 March | Crickhowell High School, Powys |
| 15 March | Gwernfed High School, Powys |
| 16 March | Whitton Primary School, Powys |
| 17 March | Welshpool High School, Powys |
| 18 March | Llanfyllin High School, Powys. |

WEB SEARCH

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# SSB Field Day 2004

**With a 25% increase in entries since the previous year, SSB Field Day is now a popular event for many radio clubs. It is truly an event at which all club members can take an active part, be they listeners, Foundation, Intermediate or Full licence holders.**

**The Scarborough Amateur Radio Society's, G4BP/P, luxury tented accommodation.**

**The night shift at the Stratford upon Avon & District Radio Society, G0SOA/P, station.**

**Medway Radio Contest Group, G3TRF/P, nearly set up.**

**Bristol Contest Group, G6YB/P, antennas: Cushcraft 40m beam at 85ft and A3S at 95ft.**

According to one log - "Weather brilliant if not too hot - thanks HFCC". Well, I'm not sure that the RSGB HF Contests Committee can take credit for the weather, but the event does seem to have been a resounding success. There were several stations reporting that this was either their first Field Day, or their first for many years. This was borne out by the bumper number of entries - 45 entries were received this year versus 36 in 2003, and 31 the year before. Many teams showed quite a wide spread of age groups and experience, and over a quarter of all the operators would be new to HF during the last 2 years.

It seems like the weather was kinder than propagation conditions. Most stations reported that the HF bands were in poor shape, though unfortunately this was quite typical of summer propagation in low sunspot years. And it was the stations that managed to make good use of 15m and 20m that were the ones who came out on top. 10m showed little sign of opening and many stations showed a complete blank on that band.

## RESULTS

Congratulations go to the Bristol Contest Group, G6YB/P, who take the Northumbria Trophy for first place in the Open Section. Their outstanding HF band performance proved to be the deciding factor this year. They had the top band scores on 20m, 15m and 10m bands. Gravesend Radio Society, G3GRS/P, took second place by putting in an excellent show on the low bands. They had the highest number of QSOs on both 40 and 80m. Lichfield Amateur Radio Society, G3WAS/P, and the East Notts Contest Group, G3TBK/P, had almost identical QSO totals, but Lichfield's superior multiplier total put them into third place.

In the Restricted Section the G3PSH Memorial Trophy was won this year for the first time by Contest Cumbria, G3IZD/P. Congratulations to this team of just two operators - G3IZD and G4IIY. Their score on 20m seems to have made all the difference over second placed Cray Valley Radio Society, G3RCV/P, who won the section last year. Third was Stratford upon Avon and District Radio Society, G0SOA/P.

## LOGS

In general the quality of the logs was excellent. All but six logs were in the recommended Cabrillo format this year. This may be an effect of the club championships, which are getting people used to submitting logs using Cabrillo. It may also be the improved Cabrillo support in logging programs. I agreed to swap logs with the DARC who run the IARU Region 1 Field Day. This gave access to 250 logs from Germany, Russia and many other countries in Region 1. The conversion of these logs took some time, but the resulting database containing approx 90,000 QSOs enabled nearly 50% of QSOs to be cross-checked.

As usual some stations lost quite a few points by not correctly copying whether stations were signing /P. Some more subtle logging errors caused multipliers to be wrongly claimed. For example, the station signing AH6JN/4 was in Florida and should really have been logged as AH6JN/W4 to avoid the logging software counting it as the Hawaiian Islands. Also a few groups thought they had worked Guantanamo Bay with the KG4 prefix. However, KG4+three letter calls are actually allocated to the mainland W4 call area. Sorry, folks.

Please remember to edit the Cabrillo file and check the header information before sending it. It is also helpful if you add some 'SOAPBOX' lines to give information about your station, antennas, and some comments. No summary files are needed with Cabrillo, but you need one if you use other formats.

I am very grateful to Steve, G3UFY, for his help in double checking the results. This was done to see that everything was fair and above board, due to my own operation with G6YB/P.

## BAND CONDITIONS

The low bands were the life-blood of the contest for many stations, especially in the Restricted section. Several reported a high static noise level, however, which made reception quite difficult at times. On Sunday morning 40m produced some VE5, VE6 and VE7s around 0400 to 0500UTC and a good crop of ZLs between 0500 and 0700UTC. There was activity on 20m for most of the contest, but only a few were able to keep a run going late into the night. In the early morning there was a good opening to VK and ZL. 15m was open to the USA on Saturday afternoon and to the Far East and Japan just before the end of the contest. 10

metres was pretty dead throughout. However, a few brief flurries of activity on Sunday morning did produce some QSOs and even some DX from Qatar, A71EM, and Namibia, V55O/P. In fact V55O/P was quite a force on all bands finishing in Region 1 Field Day with 1062 QSOs.

Mixed feelings were expressed for the All Asia contest, which shares the same weekend as SSB Field Day each year. It does create additional interest and activity even though some stations find it difficult to deal with. Generally Asian stations are happy to work UK portables. It speeds things along if you give the AA exchange, which is your age, as well as the Field Day serial number, without being asked. Of course non-Asian stations operating in the AA contest will not want to work Europe, as they have nothing to gain and time to lose.

**Open Section**

| | | | 3.5 | | 7 | | 14 | | 21 | | 28 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pos | Group | Call | Qs | Ms | Qs | Ms | Qs | Ms | Qs | Ms | Qs | Ms | QSOs | Mults | Score |
| 1 | Bristol CG | G6YB/P | 151 | 17 | 276 | 37 | 879 | 70 | 312 | 47 | 30 | 11 | 1648 | 182 | 1026662 |
| 2 | Gravesend RS | G3GRS/P | 266 | 25 | 452 | 43 | 502 | 69 | 103 | 33 | 14 | 5 | 1337 | 175 | 829675 |
| 3 | Lichfield ARS | G3WAS/P | 211 | 31 | 172 | 36 | 714 | 72 | 143 | 35 | 6 | 3 | 1246 | 177 | 763578 |
| 4 | East Notts CG | G3TBK/P | 250 | 28 | 273 | 28 | 576 | 56 | 131 | 36 | 3 | 1 | 1233 | 149 | 657537 |
| 5 | Hadley Wood CG | G4STV/P | 141 | 18 | 252 | 36 | 387 | 48 | 204 | 44 | 13 | 6 | 997 | 152 | 538688 |
| 6 | Ipswich RC | G4IRC/P | 195 | 21 | 310 | 30 | 216 | 46 | 97 | 29 | 11 | 3 | 829 | 129 | 404673 |
| 7 | Sheffield ARC | G3RCM/P | 189 | 18 | 271 | 29 | 412 | 56 | 40 | 11 | 6 | 2 | 918 | 116 | 389528 |
| 8 | Addiscombe ARC | G4ALE/P | 183 | 20 | 127 | 24 | 458 | 61 | 82 | 27 | 11 | 4 | 861 | 136 | 384880 |
| 9 | Oxford & DARS | G5LO/P | 146 | 13 | 153 | 24 | 417 | 48 | 91 | 27 | 6 | 4 | 813 | 116 | 343708 |
| 10 | Banff & Buchan ARC | GM3GG/P | 86 | 13 | 73 | 16 | 400 | 58 | 126 | 30 | 4 | 4 | 689 | 121 | 294877 |
| 11 | Wrexham ARS | GD4WXM/P | 199 | 23 | 95 | 23 | 301 | 53 | 39 | 21 | 0 | 0 | 634 | 120 | 275040 |
| 12 | Guildford & DRS | G5RS/P | 173 | 17 | 80 | 15 | 470 | 45 | 64 | 16 | 9 | 3 | 796 | 96 | 274176 |
| 13 | Melton Mowbray ARS | G4FOX/P | 147 | 16 | 193 | 22 | 348 | 40 | 82 | 13 | 1 | 1 | 771 | 92 | 253092 |
| 14 | South Cheshire ARS | G6TW/P | 225 | 24 | 244 | 22 | 144 | 33 | 24 | 13 | 1 | 1 | 638 | 93 | 217899 |
| 15 | Havering & DRC | G4HRC/P | 236 | 25 | 183 | 18 | 141 | 36 | 24 | 8 | 1 | 1 | 585 | 88 | 199408 |
| 16 | Edgware & DRS | G3ASR/P | 154 | 18 | 174 | 24 | 85 | 30 | 61 | 22 | 9 | 3 | 483 | 97 | 192933 |
| 17 | Stockport RS | G6UQ/P | 131 | 15 | 102 | 17 | 140 | 39 | 57 | 20 | 7 | 2 | 437 | 93 | 169074 |
| 18 | Wakefield & DRS | G3WRS/P | 0 | 0 | 0 | 0 | 402 | 55 | 160 | 30 | 0 | 0 | 562 | 85 | 152830 |
| 19 | Clifton ARS | G3GHN/P | 103 | 14 | 139 | 13 | 163 | 36 | 70 | 16 | 3 | 2 | 478 | 81 | 145152 |
| 20 | Lincoln SW Club | G5FZ/P | 87 | 16 | 18 | 6 | 417 | 54 | 0 | 0 | 0 | 0 | 522 | 76 | 127376 |
| 21 | Medway RCC | G3TRF/P | 68 | 10 | 25 | 7 | 296 | 37 | 111 | 17 | 1 | 1 | 501 | 72 | 122616 |
| 22 | Hucknall Rolls Royce ARC | G5RR/P | 99 | 11 | 292 | 24 | 64 | 28 | 7 | 4 | 1 | 1 | 463 | 68 | 117980 |
| 23 | Norfolk ARC | G4ARN/P | 132 | 12 | 153 | 18 | 74 | 28 | 20 | 12 | 0 | 0 | 379 | 70 | 111650 |
| 24 | Scunthorpe Steel ARC | G4FUH/P | 156 | 18 | 35 | 10 | 86 | 29 | 23 | 14 | 2 | 1 | 302 | 72 | 85104 |

**Restricted Section**

| | | | 3.5 | | 7 | | 14 | | 21 | | 28 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pos | Group | Call | Qs | Ms | Qs | Ms | Qs | Ms | Qs | Ms | Qs | Ms | QSOs | Mults | Score |
| 1 | Contest Cumbria | G3IZD/P | 252 | 27 | 320 | 31 | 293 | 52 | 27 | 16 | 0 | 0 | 892 | 126 | 430038 |
| 2 | Cray Valley RS | G3RCV/P | 256 | 24 | 335 | 29 | 133 | 39 | 23 | 10 | 2 | 1 | 749 | 103 | 293447 |
| 3 | Stratford upon Avon & DRS | G0SOA/P | 176 | 18 | 150 | 20 | 158 | 51 | 31 | 19 | 8 | 4 | 523 | 112 | 237440 |
| 4 | Wisbech AR&EC | M5ARC/P | 228 | 21 | 116 | 20 | 126 | 43 | 50 | 21 | 3 | 1 | 523 | 106 | 216664 |
| 5 | RAFARS | G8FC/P | 165 | 19 | 124 | 20 | 108 | 34 | 28 | 13 | 5 | 1 | 430 | 87 | 160080 |
| 6 | Bittern DX Group | M0NBG/P | 203 | 17 | 200 | 18 | 51 | 25 | 21 | 9 | 0 | 0 | 475 | 69 | 134274 |
| 7 | Sutton & Cheam RS | G2XP/P | 116 | 12 | 132 | 18 | 115 | 40 | 19 | 10 | 7 | 1 | 389 | 81 | 131787 |
| 8 | Kilmarnock & Loudoun ARC | GM0ADX/P | 123 | 15 | 128 | 18 | 108 | 33 | 21 | 11 | 1 | 1 | 381 | 78 | 126360 |
| 9 | Finningley CG | M0PDC/P | 143 | 15 | 170 | 20 | 76 | 31 | 7 | 5 | 0 | 0 | 396 | 71 | 118428 |
| 10 | West of Scotland ARS | GM4AGG/P | 83 | 11 | 86 | 15 | 149 | 34 | 17 | 10 | 0 | 0 | 335 | 70 | 100380 |
| 11 | Echelford ARS | G7EAR/P | 155 | 17 | 134 | 17 | 53 | 25 | 14 | 6 | 0 | 0 | 356 | 65 | 100035 |
| 12 | Horsham ARC | G4HRS/P | 128 | 13 | 56 | 15 | 72 | 32 | 13 | 7 | 0 | 0 | 269 | 67 | 75308 |
| 13 | Basingstoke ARC | G3TCR/P | 85 | 12 | 76 | 17 | 104 | 33 | 0 | 0 | 0 | 0 | 265 | 62 | 68510 |
| 14 | Farnborough & DRS | G4FRS/P | 76 | 11 | 51 | 15 | 54 | 26 | 26 | 17 | 4 | 2 | 211 | 71 | 63545 |
| 15 | Scarborough ARS | G4BP/P | 115 | 12 | 103 | 17 | 58 | 25 | 0 | 0 | 0 | 0 | 276 | 54 | 62478 |
| 16 | STARS | G6OI/P | 117 | 14 | 57 | 11 | 41 | 22 | 10 | 8 | 0 | 0 | 225 | 55 | 53625 |
| 17 | Mexborough RC | G4BTS/P | 71 | 10 | 72 | 13 | 43 | 22 | 15 | 8 | 1 | 1 | 202 | 54 | 48654 |
| 18 | Kidderminster & DARS | G0KRC/P | 87 | 7 | 90 | 13 | 25 | 15 | 3 | 3 | 0 | 0 | 205 | 38 | 37240 |
| 19 | Darenth Valley RS | G0KDV/P | 21 | 7 | 8 | 5 | 77 | 30 | 14 | 9 | 0 | 0 | 120 | 51 | 24123 |
| 20 | Cambridge & DRC | G2XV/P | 41 | 7 | 26 | 5 | 56 | 22 | 11 | 4 | 0 | 0 | 134 | 38 | 21698 |
| 21 | Highland CG | GM0FRG/P | 0 | 0 | 56 | 10 | 29 | 18 | 0 | 0 | 0 | 0 | 85 | 28 | 10388 |

Check logs received with thanks: G0VQR/P, GM8OEG, 9A5KV/P, OK1UU, N1BCL, G3VQO, K3ZO, N6QQ.

## SOAPBOX

G4ARN/P reported: "*Operated station at Norfolk Police Gala day again from Norfolk Amateur Radio Club display stand. Some newer licensees introduced to contesting and PC logging*". I'm sure PC Logging was pleased to meet them!

The good weather figured in many comments. From G3RCM/P: "*Great weather in the Peak District this weekend . . . G4BTS/P were just down the hill from us in the 'Fox House' pub car park - so we had to pay them a visit. Not sure if this had an adverse affect on our score but it added to the pleasure of the event*" and from M0NBG/P: "*Great WX all weekend . . . band conditions quite stable from our location with stations available for the entire 24 hours*". G4STV/P wrote: "*WX was superb so the social side was just as much fun. Our first outing for SSB FD, it won't be our last*". The weather wasn't so kind with GM0ADX/P north of the border: "*Usual problems with weather, generator and antennas but still great fun. It wouldn't be field day if it all worked first time would it?*"

Murphy is never far away during these contests, as G5RS/P found out: "*We had some serious problems with RF getting into the equipment. We tried to resolve this and effect a change in set-up wasting best part of an hour and still needed several reboots of the computer after that.*" At G4HRS/P: "*PicATUne started smoking!*" while a few problems at M0PDC/P don't seem to have affected morale: "*Thoroughly enjoyed the contest apart from the few power problems forcing us on to batteries for a while. Can't wait till next year. Amazing what you can work on such a basic set-up!*"

G6YB/P reported: "*The lack of a second usable receiver to hunt mults will be reflected in our totals, it also made decisions of band changes complete guesswork. 80 and 40 had high levels of static all night, but we were lucky that our site and antennas let us work 20m to North America instead.*" Comments from G3TBK/P: "*Had a good run into US, and several to JA. Good that the All-Asia contest is on, gives a lot more to work, even if frustrating at times that others won't give us a multiplier*". M5ARC/P wrote: "*10m was dead except for V55O/P, but we couldn't work him. Static was high all weekend on 80 / 40 / 20.*"

It seems that there was quite a variety of experience taking part. For instance, at G4BP/P: "*Thoroughly enjoyed by all participants with plenty of support for the erection and dismantling of the station. Nice to see newer club members, Intermediate and Full licence holders participating. Fine new site beside the Pike Lake on Lord Wykeham's estate*". And at G0SOA/P: "*A simple set-up as usual with a single Tx / Rx and a team of seven ops with an age range of 56 years!*"

Altogether it was a very enjoyable way to spend a late summer weekend. So make sure that 3 and 4 September is in your diaries for this year. ◆

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# Palstar AT1KM and AT1500CV antenna

**One capacitor or two? Chris Lorek reviews two different high-power ATUs from Palstar.**

Many amateurs active on the HF bands use resonant antennas such as dipoles, trapped beams and verticals. But these have a finite bandwidth, and although you'd normally assemble them to the correct dimensions to give a good 50Ω match at your favourite part of the band, on other frequencies the match could start causing problems to your transceiver or linear amplifier output stages. Low band enthusiasts (eg 160m and 80m) will invariably be using wire antennas, either dipoles or various types of long wire, and here an antenna tuner is usually a necessity. Built-in auto-antenna tuners within transceivers can often help with a small mismatch, typically of up to 3:1, but they'll rarely be able to match something like a long wire.

The latest high-power tuners from Palstar have been designed with this in mind, and are especially suitable for operation up to and beyond the UK legal limit of output power. Solidly-built, there're designed to provide a match to your 50Ω transmitter from an antenna impedance of anywhere between 20Ω and 1500Ω over the frequency range of 1.8 to 30MHz. The AT1KM is rated at 1000W PEP SSB (800W continuous carrier) and the AT1500CV is rated at 1500W PEP SSB (1200W continuous carrier), although with each tuner Palstar says that the power should be reduced for low impedance ranges.


## CIRCUITRY

Each tuner uses a 'T' configuration matching circuit, with series variable capacitors together with a variable inductor to earth at the capacitor junction. The inductor in each tuner is a 24μH roller inductor, with a ceramic former and thick (12SWG) tin-plated wire. A silver-plated bar and roller wheel are used for the variable tap. The inductor is thus continuously variable, and it's driven by a crank handle on the front of the tuner, a mechanical five-digit counter next to the crank handle shows the relative position of this accurate to the three digits closest to the bottom of the display.

The AT1KM uses a single capacitor adjustment knob by employing a dual-stator differential variable capacitor, of 440pF in each section and rated at 3kV, together with a 6:1 precision Vernier drive and analogue 'dial' type indication concentric to the front-panel tuning knob. The AT1500CV uses two independently variable capacitors each of 315pF and rated at 4.5kV.

The AT1KM measures 135 x 266 x 583mm and weighs 3.6kg, the AT1500CV measures 114 x 317 x 304mm and weighs 5.5kg. Apart from the size, power rating and tuning method, each tuner has similar operating controls and antenna connection arrangements.

## ANTENNA SELECTION

Each tuner has a six-position antenna selector, allowing you to switch between three rear-panel output coax sockets (Coax 1 tuned and Coax 1 tuner bypass, Coax 2 tuned and Coax 2 tuner bypass, and a third 'straight through' socket labelled "Bypass") plus a balanced antenna. The last of these can either be a single wire fed against ground, or a balanced feed antenna, an internal 4:1 Ruthroff balun being fitted for this. Linking two of the nylon-insulated rear panel high-voltage antenna wire terminal posts, using a supplied wire strap, changes between a single wire and balanced feed output. A single SO-239 coax socket is used for the 50Ω nominal transceiver / linear amplifier input connection. A further rear panel socket is provided for a 12V DC input using a 2.1mm socket, this being used purely for the front panel meter illumination bulb.

A cross-needle forward and reflected power meter is used to show you what's going on RF-wise. This has two switched ranges, of 300W forward and 60W reflected, or 3000W forward and 600watts reflected. The SWR is easily read, whatever power you're transmitting,

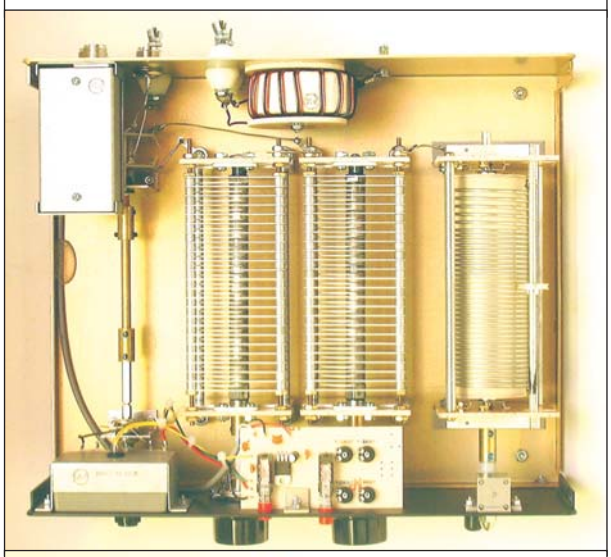
# tuners

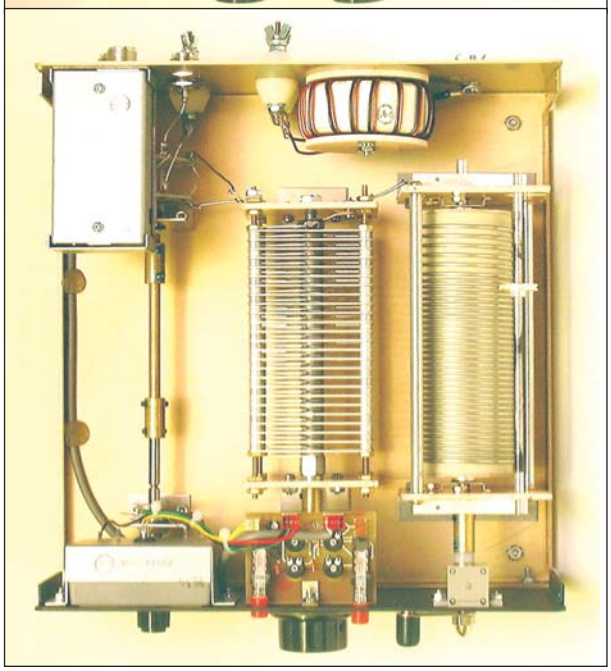


Real panel connections on the AT1KM (the AT1500CV is very similar).

Internal view of the AT1500CV: note the dual variable capacitors in addition to the 'roller coaster' inductor.

Internal view of the AT1KM.





by where the two meter needles cross over. The Power / SWR meter is always in circuit whenever the tuner is connected, even when the front panel antenna selector is switched to one of the direct or bypass positions.

## CONNECTING

Installing either tuner is a very easy affair, by simply connecting it in series with the coaxial output from your transceiver or linear amplifier. Your antenna coaxes are in turn simply connected to the relevant output coax sockets on the rear panel. If you're using a long wire antenna, this is simply connected to the lower wire post nearest the SO-239 coax sockets. Alternatively, for a balanced antenna feed, this is connected to the two other posts and a wire link added between the two lower posts.

For the benefit of readers who aren't familiar with a manually-operated tuner such as this, after finding a clear frequency you first transmit a carrier at relatively low power, and adjust the front-panel capacitor and inductor knobs to achieve the lowest possible reflected power as viewed on the meter. At first this takes a degree of practice and needs a little patience, but after a while it becomes second nature. When you've successfully tuned the antenna, it's useful to note down the various settings from the front panel adjustment knobs for each band and antenna you use so that the next time you tune to that band, you've a good 'starting point'. In fact, the operating manual for each tuner provides such a table, with initial 'suggested' settings and room for your own settings to be noted down. Alternatively, you could even make a list of settings for various sub-segments of the bands you operate on, to give a pre-operation adjustment so you can get on the air straight away without needing to perform the manual 'tune for maximum smoke' operating each time you change frequency!

Here, I found the accurate calibration readouts on the tuners were excellent for my on-air operations, especially that of the roller inductor. At first I had reservations about the single capacitor adjustment on the AT1KM tuner, thinking this could have problems in matching some antenna impedances. This would probably indeed have been the case if a switched inductor were used, as is the case with many antenna tuners (usually for economic reasons, ie it is cheaper than a continuously-variable roller inductor). However, with the roller inductor I could always get a good match. I even tried my best to simulate widely-ranging impedances and phases using a combination of resistors and varying coax lengths, and testing the tuner with an RF network analyser to gain a Smith chart and VSWR graph indication of the eventual match obtained which was normally very acceptable. A further test using a Henry 5K Classic linear amplifier, feeding 800W and 1kW constant carrier respectively into the AT1KM and AT1500CV and then into a terminated load in each case, showed the power handling specification to be fully justified.

## CONCLUSIONS

The tuners aren't a 'dirt cheap' budget price; you get what you pay for. In my opinion the Palstar tuners I tested are certainly in the upper class league in terms of operation, build quality and performance, yet at a price that shouldn't break the bank. I found using them on-air a real pleasure.

Thanks to Vine Antenna Products, tel: 01691 831111, e-mail: info@vinecom.co.uk, for the loan of the review tuners. The AT1KM is priced at £249 with the AT1KD digital meter version at £329. The AT1500CV is available at £329 (RRP £369). ◆

**WEB SEARCH**

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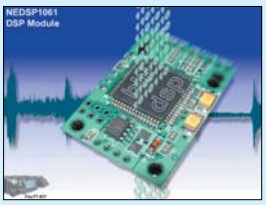

- FT817, TS50, DX-77, Icom 706MkIIG and generic instructions available
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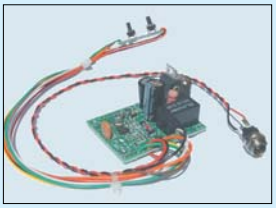

The NEDSP1062-KBD comes with the fitting kit, labels, fused DC power lead and installation instructions.

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### SteppIR Fluidmotion Antennas (RadCom review Feb 04)

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### Vine now stocks OPTIBEAM from Germany (RadCom review Aug 03)

Radcom's reviewer described the antenna as "the best of the best" We are pleased to offer the full Optibeam range for those who prefer traditional aluminium antennas.Models available for WARC, traditional HF bands, HF + 40m, etc. Contact us for more details for the *Mercedes-Benz* of multi-element HF antennas.

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### NEW from Vine Antennas - PALSTAR ATU's

Continuing in our mission of bringing you the best, we are pleased to announce we now stock the excellent ATU's from Palstar. Watch for the forthcoming RadCom review.

**AT1K - 1200W pep - £249** **AT1500CV - 1500W pep - £329**



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**Bharathi Prasad,** VU2RBI, **Ram Mohan Suri,** VU2MYH, and **Sarath Babu Rayaprolu,** VU3RSB

E-Mail: niarvu4@gmail.com

# Amateur radio from the Andamans: DXpedition & disaster relief

**What started out as an ordinary DXpedition - albeit to one of the rarest DXCC entities in the world - was turned into an extraordinary humanitarian relief operation by the tragic events of 26 December 2004. As is now known, an earthquake of magnitude 9.0 on the Richter scale, followed by a devastating tsunami wave, killed in excess of 300,000 people in the Indian Ocean region. The DXpedition team was close to the epicentre; three of its team members give us a first-hand account, compiled by Frank Rosenkranz, DL4KQ.**

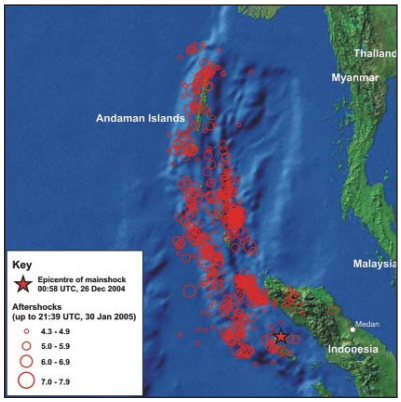
The Indian National Institute of Amateur Radio (NIAR) has made at least five requests to the Government of India over the last 10 years for permission to operate a DXpedition from the Andaman and Nicobar Islands, but none received a favourable response. [As a result of these refusals, the Andaman and Nicobar Islands were rated as the second 'Most Wanted' DXCC entity in the world, according to a survey by *The DX Magazine* in 2004 - *Ed.*] Last year though, Bharathi, VU2RBI, and Suri, VU2MY, the founder and chairman of NIAR, met officials from all the required ministries and somehow managed to convince them. Everything moved forward slowly.

## THE DXPEDITION

A team of five amateurs - Bharathi Prasad, VU2RBI; D N Prasad, VU2DBP; S Ram Mohan, VU2MYH; R Sarath Babu, VU3RSB; and D S Varun Sastry, VU3DVS (aged 15) - was given permission by the Department of Telecommunications, Ministry of Information and Technology to operate from the Andaman and Nicobar Islands between 3 and 31 December 2004, using the callsigns VU4RBI and VU4NRO. The DXpedition was inaugurated by the Honorable Governor of Andhra Pradesh on 25 November. This came as a pleasant surprise but also as a shock. We were happy with such a positive response from the authorities, but giving just two weeks to prepare was a nightmare.

There was not enough time to make elaborate arrangements. While we at NIAR are ready for disaster communications, with suitcases packed with HF and VHF equipment and antennas, we were certainly not ready with the right kind of antennas for a DXpedition. We dismantled a 4-element beam for 20, 15 and 10m, and packed it with a Hy-Gain vertical for 40, 20, 15 and10m. 600kg of equipment, comprising HF transceivers, Yagi, vertical and dipole antennas, masts and amplifiers was shipped to Port Blair on the Andamans.

Three members (VU2RBI, VU2DBP, VU3DVS) went by air and reached Port Blair on 1 December, while VU3RSB and VU2MYH travelled by train and sea, a journey that took five days. They arrived just 12 hours before the start of the DXpedition. Time was the only essential requirement that we never had in our control; it always moved ahead of us.




**Left**
**The five team members.**

**Above**
**Map of Andaman and Nicobar Islands showing the huge number of aftershocks.**

On reaching Port Blair we met the local authorities including the Chief Secretary, Government of Andaman and Nicobar; the Secretary, General Administration, and other functionaries including the Principal of the Government Polytechnic College, and explained the expedition to them. The Chief Secretary wanted a station to be established in the Science Centre, where students would have the opportunity to learn about amateur radio, in addition to a station in the Polytechnic College. They extended complete support to the team. A third station was set up at the Hotel Sinclair. Officers of the Army Signals Unit also assisted by providing manpower to help in erecting the antennas. Erection of the Yagi and dipole antennas was very interesting. It took almost two days to assemble and erect the 7-element triband Yagi.

## ON THE AIR

We worked out schedules to be on the bands for most of the day and night. TVI was a common complaint from the neighbours and transmission was not possible from one location between 7.00pm and 10.00pm. We were informed that Sarath's, VU3RSB, voice was heard in all the telephones at the Polytechnic College, but they were very cooperative and never made this an issue.

As the days passed, we spent most of the time on the bands; the only time the team would meet was either for lunch or dinner. Bharathi seldom joined us, even if she called the group meeting. There were hardly five or six instances when Bharathi actually left her room during the 23 days of operation.

Suri, VU2MY, joined us later, which gave us an opportunity to create awareness of amateur radio on the islands. The local press also covered the DXpedition. Charlie, K4VUD, and Henryk, SM0JHF, came to the islands to take photographs. We were pleased with their presence and support.

It was a pleasure to contact hundreds of radio amateurs round the globe and to work the pile-up. Sometimes it was difficult to contact low-power stations as high-power operators used to 'hijack' the situation. However, every opportunity was taken to exchange reports with low-power operators, including mobile stations.

The stations were operated in DXpedition mode from the early hours of 3 December until the early hours of 26 December, with barely three or four hours of sleep a day. Bharathi, VU2RBI, individually made about 20,000 contacts. The whole team made a total of about 35,000 contacts before the earthquake and the associated tsunami struck our location.

**Left, top to bottom: Putting up the antenna, with help from an officers of the Indian Army Signals Unit.**

**Antenna used by Bharathi, VU4RBI, from Hotel Sinclair in Port Blair.**

**The antenna support was bent during the earthquake.**

**Bharathi, VU4RBI, on the air.**

**Some of the devastation caused by the earthquake in the Andamans.**

**Below: Letter of appreciation from Prof Ram Kapse, Lieutenant Governor of the Andaman and Nicobar Islands.**

*[Editor's note: Bharathi Prasad, VU2RBI, and S. Suri, VU2MY, will be giving a lecture and slideshow on this operation at Ham Radio in Friedrichshafen on Saturday 25 June in Room 2.]*

**WEB SEARCH**

**National Institute of Amateur Radio (NIAR):**
www.niar.org
**British Geological Survey (26 December earthquake and tsunami background):**
www.earthquakes.bgs.ac.uk/latest_info.htm

## EARTHQUAKE!

In the early hours of 26 December, while the other guests in the hotel were fast asleep, all of a sudden, tremors were felt at 6.29am. We realised it to be an earthquake and shouted "tremors" into the microphone and rushed out of the room, raising the alarm and alerting the others. All the occupants of the rooms rushed out and gathered on the lawn of the hotel building. Immediately after the tremors, the other operators rushed from their shacks to Hotel Sinclair to join Bharathi. By God's grace all were safe.

After about half an hour, VU2RBI went back to the radio shack and checked the antenna on the rooftop, which had been disturbed by the tremors and had to be re-erected. There was no power but the management started up the hotel's generator. Immediately, VU2RBI went back on the air and contacted amateurs in Thailand (John, HS0ZAA) and the mainland of India (Shanker, VU2UU, in Chennai, and Rama, VU2MYL, in Hyderabad). They all confirmed that tremors were felt at their locations as well. We could only guess at the magnitude of the damage caused. The team decided to suspend DXpedition operations and to start emergency communications with the mainland.

## RELIEF OPERATIONS

Telephone lines were out of order but within a few hours we came to know the extent of the damage in Port Blair through the local people. While the news of the death and devastation caused by the earthquake and tsunami in other areas was quickly transmitted around the world, the situation on the Andaman and Nicobar Islands was not known.

Bharathi went on transmitting information about the situation to anyone who could hear her signals. At the same time, she sent the other team members to the office of the Chief Secretary, Government of the Andaman and Nicobar Islands, to express our willingness to provide emergency communications to help the administration.

The Deputy Commissioner (DC) requested our services on 27 December and we immediately established a station in the control room at his office, operated by VU2RBI and VU3RSB. At the DC's request, VU2MYH and VU2DVO went to Car Nicobar Island in a military aircraft to establish communications between Port Blair and Car Nicobar.

The communications infrastructure had collapsed and we were to handle hundreds of messages each day between the mainland and the affected areas. Ours was the only link for thousands of Indians and people of other nationalities who were worried about their friends and families on the islands. Our station in the DC's control room became the centre of messages between Port Blair and the Nicobar Islands. Survivors on Car Nicobar were communicating with their relatives in Port Blair through our stations. Amateurs on the mainland helped us by relaying messages when there was no propagation between our stations on the islands.

When telephone lines were restored on 28 December, information received by radio about the survivors on Car Nicobar was conveyed to anxious relatives on the mainland. We also helped about 15 foreign tourists, including several from USA, to send news to their families. At the request of the DC, one of our team (VU2JOS) was sent to Hudbay on Little Andaman Island, along with Government officials, for help with relief activities there. The local people were very happy to use our services and their huge relief on receiving information about the welfare of their families was beyond one's imagination.

After the earthquake we did not dare to sleep inside the hotel rooms at night, and so slept in the open air on the hotel's lawns. Tremors continued for days after the tsunami.

VU2RBI continued with emergency communications until the morning of 1 January, when she returned to Delhi. However, other team members continued in Port Blair, and on Car Nicobar and Little Andaman and more NIAR members joined them on 2 January in order to go to other islands which had no means of communication.

## ACKNOWLEDGEMENTS

Though we went to the Andaman and Nicobar Islands for a DXpedition, the circumstances led us to conduct emergency communications, which was a sheer coincidence. Associated Press, *Washington Post*, Zee News etc witnessed the service of amateur radio to society in its hour of need and we are grateful to them for spreading awareness of amateur radio to the public.

The DXpedition group thanks the Government of India for permitting the DXpedition, in particular the Ministry of Information and Technology which, with NIAR, sponsored the DXpedition.

Contributions made by DX associations, clubs and individuals helped us to sustain the DXpedition operation beyond 15 December and we are grateful to DERA; NCDXF; INDEXA; German DX Foundation; Danish DX Group; Robin Kirkhus; ZL DX Group; Swiss DX Group; EU DX Club; CDXC (Chiltern DX Club, The UK DX Foundation); Charles Harpole, K4VUD; Dr Markus Dornach, DL9RCF; Bob Rylatt, G3VXJ; Fernando Fernandez Martin, EA8AK, and several others. Our special thanks to Frank, DL4KQ; INDEXA, GDXF and Fluidmotion, who provided very good antennas (SteppIR and Cushcraft A3WS, A103) shipped from USA. Any omissions are unintentional; we thank everyone for his or her valuable contribution in support of this operation. ◆

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***FT-857D HF / VHF / UHF MOBILE.*** *The FT-857D, the world's smallest HF/VHF/UHF mobile transceiver, provides base station-type performance from an ultra-compact package that's ideal for mobile or external battery portable work. Wide frequency coverage, outstandig receiver performance, and the convenience of optional remote-head operation make the FT-857D the expert's choice for high-performance mobile operation!*

*The new FT-857D version includes coverage of the 60-meter (5 MHz) band, plus the previously-optional DSP circuitry, at no additional cost!*

***FT-897 HF / VHF / UHF PORTABLE.*** *The FT-897 is a rugged, innovative, multiband, multimode portable transceiver for the amateur radio MF/HF/VHF/UHF bands. Providing coverage of the 160-10 meter bands plus the 6 m, 2 m, and 70 cm bands, the FT-897 includes operation on the SSB, CW, AM, FM, and Digital modes, and it's capable of 20-Watt portable operation using internal batteries, or up to 100 Watts when using an external 13.8-volt DC power source.*

*The new FT-897D version includes coverage of the 60-meter (5 MHz) band, along with the 0.5 ppm TCXO Unit, at no additional charge!*

## FT-7800R £237.00

***FT-7800R - VHF / UHF FM MOBILE TRANSCEIVER***
*The FT-7800R provides 50 Watts of power on the 144 Mhz band, and 40 Watts on the 430 MHz, and is designed for simplicity of operation along with high performance in the receiver section.*

## VX-7R £248.00

***VX-7R - THE WORLD'S FIRST SUBMERSIBLE AMATEUR HAND-HELD***
*Plus you get Dual Receive, 50/144/430 MHz operation plus wide-band receive coverage, a full color status indicator Strobe, and an "Internet" key for quick access to the exciting new WIRES™ repeater-internet linking system.*

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***FT-8800R - VHF / UHF DUAL BAND FM TRANSCEIVER***
*If you're ready for the best in a Dual-Band FM Mobile Transceiver, the FT-8800R is ready for you! With easy operation, outstanding receiver performance, and crossband repeat capability, the FT-8800R is the new standard of comparison!!*

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## VX-2E £119.00

*All prices and specifications are subject to change without notice or obligation.*

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UT-20 23cms Unit . £369.95
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VS-3 Voice Synth ... £45.95
SP-23 Ext Speaker . £68.95
MC-60 Desk Mic ... £117.95
MC-90 DSP Mic .... £187.95

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PG-4Z Ext Cable .... £44.95
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SO-2 TCXO ..... £122.95

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MC-60 Desk Mic ... £117.95
MB-430 Bracket ..... £44.95
PS-53T 23A PSU .. £229.95
SO-2 TCXO ..... £122.95

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MC-60 Desk Mic ... £117.95
MB-13 Bracket ..... £39.95
HS-5 Del Phones .... £52.95
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1 YEAR WARRANTY **£594.00**

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MC-58DM DTMF ... £44.95
PG-4X Ext Cable .... £61.95
PS-53T 23A PSU .. £229.95
VS-3 Voice Unit ..... £45.95

1 YEAR WARRANTY **£424.00**

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DFK-3C Panel kit .... £34.95
MC-58DM DTMF ... £44.95
PG-4X Ext Cable .... £61.95
MB-12 Mount ..... £14.95
MB-201 Mount ..... £14.95

**£265.00**

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TH-F7E 2&70 .... £237.00
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THG-71 2&70 .... £219.00
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Plus much more phone...

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DVS-2 Voice Unit .. £199.95
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FT1000MP FIELD **£1,699.00**

## YAESU FT-847

HF 6m 2m 70cm. DSP. ATU Option

ATAS-120 Act ant . £259.95
ATAS-25 Man ant . £189.00
FC-20 ATU ..... £249.95
FVS-1A Voice Unit £199.95
MH-36D8 DTMF ..... £54.95
MMB-66 Bracket ..... £32.95

2 YEAR WARRANTY **£989.00**

## YAESU FT-897D

HF 6m 2m 70cm.100W Transportable

FP-30U AC supply £199.95
FNB-78 Batt pack ... £99.95
FC-30 Ext ATU ..... £249.95
FVS-1A Voice Unit £199.95
TCXO-9 TXCO ..... £69.95
MMB-80 Bracket ..... £15.95

2 YEAR WARRANTY **£649.00**

## YAESU FT-857D

HF 6m 2m 70cm.100W. Mobile

ATAS-120 Act ant . £259.95
FC-30 Ext ATU ..... £249.95
MH-36E8J DTMF ... £57.95
CT-39 Packet cab ... £14.95
TCXO-9 TXCO ..... £69.95
YSK-857 Sep kit ..... £45.95

FREE DSP **£579.00**

## YAESU FT-817ND

HF 6m 2m 70cm. Portable / Mobile

FP-30U AC supply £199.95
FNB-78 Batt pack ... £99.95
FC-30 Ext ATU ..... £249.95
TCXO-9 TXCO ..... £69.95
MMB-80 Bracket ..... £15.95

FREE BATTERY & CHARGER **£449.00**

## YAESU FT-7800E

2m & 70cms. Dual Band Mobile.

FBA-28 Bat case .... £11.95
FNB-72 Batt pack ... £41.95
YHA-63 Whip ant .... £15.95
TCXO-9 TXCO ..... £69.95
CT-39 Packet Cab .. £14.95

2 YEAR WARRANTY **£237.00**

## YAESU FT-8800/8900

**FT-8800** Dual Band Mobile. 2/70
**£269.00**
Lower than the rest
Quad Band Mobile. 10/6/2/70 **FT-8900**
**£329.00**

2 YR WARRANTY

## YAESU FT-2800M

2m Mobile. 137-174 MHz RX. 65W.
VHF Rugged Mobile TX.

MH-48A6J DTMF ... £39.95
SP-7 Speaker ..... £34.95
MLS-100 Ext spkr ... £29.95
FP-1030A PSU ..... £199.95
DC Power cord ..... £17.95

2 YEAR WARRANTY **£159.00**

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## ICOM IC-7800 FLAGSHIP

HF+6m Flagship 200W. 32Bit DSP.
ATU. LCD Scope.

Keboard&Monitor . £469.95
SM-20 Base Mic ... £144.99
SP-20 Ext Spkr ..... £164.99
CT-17 CI-V Conv .... £99.95

2 YEAR WARRANTY **£6,400.00**

## ICOM IC-756 PROIII NEW

HF+6m 100w ATU. 32 Bit DSP.

AH-4 100W ATU ... £359.95
SM-20 Base Mic ... £144.99
SP-20 Ext Spkr ..... £164.99
PS-125 25A PSU .. £295.95
CT-17 CI-V Conv .... £99.95
UT-102 Voice unit ... £32.99

2 YEAR WARRANTY **£2079.00**

## ICOM IC-7400

HF 6m 2m 100W ATU. 32 Bit DSP.

AH-4 100W ATU ... £359.95
SM-20 Base Mic ... £144.99
SP-20 Ext Spkr ..... £164.99
PS-125 25A PSU .. £295.95
CT-17 CI-V Conv .... £99.95
CR-338 TXCO ..... £43.48

2 YEAR WARRANTY **£1,279.00**
Inc. SP-21 & SM20

## ICOM IC-706 MkII G

HF 6m 2m 70cm 100W DSP Mobile.

AT-180 ATU ..... £329.95
MB-62 Bracket M .... £17.99
MB-63 Bracket F ..... £9.99
MB-72 Handle ..... £9.95
OPC-581 Sep Cab . £32.99
UT-86 Voice unit ..... £41.13

2 YEAR WARRANTY **£749.00**

## ICOM IC-703

HF+6m Portable. 10W. DSP. ATU.

BP-228 Batt Pack ... £71.76
MB-62 Bracket M .... £17.99
MB-63 Bracket F ..... £9.99
MB-72 Handle ..... £9.95
OPC-581 Sep Cab . £32.99
LC-156 Carry case . £62.06

2 YEAR WARRANTY **£539.00**

## ICOM IC-718

HF 100W TX. Dual VFO. Auto Notch.

AH-4 100W ATU ... £359.95
MB-5 Bracket ..... £35.25
MB-23 Carry strap .... £9.99
UT-102 Voice unit ... £32.99
OPC-599 ACC Cab £32.99
UT-106 AF DSP ..... £84.99

2 YEAR WARRANTY **£439.00**

## ICOM IC-910H / X

All mode 2 & 70. 100W. 9600bps op.

AG-25 Preamp ..... £159.95
MB5 Bracket ..... £35.25
CR-293 TXCO ..... £89.99
UT-102 Voice unit ... £32.99
UX-910 23cms unit £349.99
UT-106 AF DSP ..... £84.99

2 YEAR WARRANTY **£1087.00**

## ICOM & YEASU Handhelds

IC-T3H 2m FM .. £129.00
IC-E90 6/2/70 .... £269.00
FT-60E 2&70 ..... £169.00
VX-2E 2&70 ..... £119.00
VX-5R 6/2/70 .... £199.00
VX-7R 6/2/70 .... £248.00
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Tuners, Meters, Analysers.

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| MFJ-986C 3Kw | £319.95 |
| MFJ-993 Intellituner | £249.95 |
| MFJ-971 QRP | £89.95 |
| MFJ-969 300w | £189.95 |
| MFJ-962D 1.5Kw | £259.95 |
| MFJ-949E 300w | £149.95 |
| MFJ-948 300w | £139.95 |
| MFJ-945E Mobile | £109.95 |
| MFJ-941E 300w | £119.95 |
| MFJ-934 ATU+AG | £169.95 |
| MFJ-921 2m | £139.95 |
| MFJ-924 70cms | £119.95 |
| MFJ-914 Extender | £59.95 |
| MFJ-901 200w | £79.95 |

Reads SWR + Resistance(R) & Reactance(X) or Magnitude(Z) & Phase(degrees). Coax cable loss(dB) Coax cable length and Distance to fault... plus more.

Analysers

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| MFJ-269 HF/VHF/UHF | £349.95 |

Dummy Loads

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| MFJ-250X 1kw without oil | £49.95 |
| MFJ-260C 300w PL259 | £37.95 |
| MFJ-260CN 300w N-Type | £44.95 |
| MFJ-264 1.5kw PL259 | £74.95 |
| MFJ-264N 1.5kw N-Type | £79.95 |

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Morse Decoder / Tutor
**£76.50**

Learn Morse code anywhere, anytime with this MFJ Pocket Morse Code / CW Tutor! Take it everywhere! enjoy code at home, going to work, on vacation, on a plane or in a hotel. A large LCD display reads out letters, numbers and punctuation in plain English.

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| Pro-Set-HC-IC Headset | £119.95 |
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| Goldline GM-5 Stick mic | £109.95 |
| Goldline Vintage Stick mic | £129.95 |
| HM-10-4 HC4 Reg stick mic | £69.95 |
| HM-10-5 HC5 Reg stick mic | £69.95 |
| HM-Dual HC4+5 Stick mic | £119.95 |
| HM-10-I Icom Stick mic | £89.95 |
| HMM-1C Icom Hand Mic | £59.95 |
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## Adonis Microphones

*AM-708E*
Variable Compression
2 Microphone Outputs
**£129.95**

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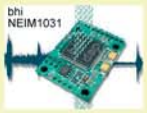
| Adonis AM-708E | £129.95 |
| Adonis AM-508E | £79.95 |
| Adonis AM-308E | £69.95 |
| Adonis FX-10 | £59.95 |

## bhi DSP



Noise Cancelling Solutions for Amateur Radio & SWL

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| NES1031 Inline dsp module | £129.95 |
| NES1061 817 dsp module | £89.95 |
| NES1061 817 brd inc fitting | £115.95 |
| NES1062 dsp module | £89.95 |
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## Watson Supplies

*W30-AM*

0-15VDC
30/35A Peak
**£119.95**

*W25-XM*
*NEW*

13.8VDC
25A Switchmode
**£99.95**

| | |
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| W-10AM 10A Supply | £59.95 |
| W-5A 5A Supply | £29.95 |
| W-3A 3A Supply | £22.95 |
| W-25SM 25A Supply | £79.95 |
| W-10SM 10A Supply | £49.95 |

## Diamond Supplies

*GZV4000*
5-15 VDC
40A Peak
**£154.95**

| | |
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| GZV-6000 60A Supply *NEW* | £299.95 |
| GZV-4000 40A Supply | £154.95 |
| GSV-3000 30A Supply | £144.95 |
| GZV-2500 25A Supply | £114.95 |

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Will tune AR-8200, AR8000 & IC-R10
***Super Searcher***
**£99.95**

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| Hunter | £59.95 |

Call for further details

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* Imp - 50 Ohms
* LCD readout
* 10-Digit display

***Super Hunter***
**£149.95**

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| CN103N VHF/UHF | £65.95 |
| CN801H HF/VHF | £109.95 |
| CN801V VHF/UHF | £119.95 |

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| CS-201 2-Way | £24.95 |
| CX401 4-Way | £49.95 |
| CS401N 4-Way NType | £Call |

## Avair Meters

AV-200
HF / VHF PWR SWR meter

| | |
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| AV-400 VHF/UHF | £49.95 |
| AV-601 HF/VHF/UHF | £69.95 |
| AV-1000 HF/VHF/UHF | £89.95 |
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| CT11 Single Paddle | £90.95 |
| CT12 Classic Paddle | £97.95 |
| CT12DX DX Paddle | £111.95 |
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## Watson Antennas

Watson W2000
Bands 6m/2m/70cm
Gain 2.15/6.2/8.4dB
Power 200W (50W 6m)
Type 1/2, 2x5/8, 4x5/8
Length 2.5m
**£69.95**

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| W-30 2/70 Base | £39.95 |
| W-50 2/70 Base | £49.95 |
| W-300 2/70 Base | £64.95 |
| W-2000 6/2/70 Base | £69.95 |
| WBV-70 4m 1/2 Wave Base | £39.95 |

## Bencher Antennas

Butternut HF-6V
Bands: 80/40/30/20/15/10
Height (Adj): 26 ft (7.9 m)
Weight: 12 lbs (5.4 kg)
Impedance: Nom 50 ohms
VSWR: 1.5:1 or less
**£299.95**

| | |
|---|---|
| Butternut HF-2V 40/80m | £229.95 |
| Butternut HF-6V 80-10m | £299.95 |
| Butternut HF-9V 80-6m | £349.95 |
| Butternut HF-5B 20-10m | £319.95 |
| 30-MRK 30m ad for HF2V | £89.95 |
| A-17-12 17&12 ad for HF6V | £49.95 |
| A-6 6m ad for HF6V-X | £14.95 |
| TBR-160S 160m HF2/6/9V | £114.95 |

## Hustler Antennas

Hustler 5-BTV
5 Bands - 80-10m
Height 7.64m - Weight 7.7kg
SWR 1.15:1 - Power 1kW
**£179.95**

| | |
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| Hustler 4-BTV 4 Band Vert | £149.95 |
| Hustler 6-BTV 6 Band Vert | £209.95 |

## West Mountain Radio


| | |
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| RIGblaster Pro | £209.95 |
| RIGblaster Plus | £119.95 |
| RIGblaster M8 | £89.95 |
| RIGblaster M4 | £89.95 |
| RIGblaster RJ | £89.95 |
| Nomic 8P | £59.95 |
| Nomic 4P | £59.95 |
| Nomic RJ | £59.95 |

## Tonna Antennas

Tonna - 20655
23cms (1296 Mhz) 55 element 21.5 dbi gain "N" 4.64m long.

| | |
|---|---|
| Tonna 20505 6m 5el | £89.95 |
| Tonna 20809 2m 9el | £54.95 |
| Tonna 20811 2m 11el | £79.95 |
| Tonna 20817 2m 17el | £99.95 |
| Tonna 20909 70cm 9el | £45.95 |
| Tonna 20919 70cm 19el | £59.95 |
| Tonna 20921 70cm 21el | £74.95 |
| Tonna 20635 23cm 35el | £64.95 |
| Tonna 20655 23cm 55el | £89.95 |
| Tonna 20745 13cm 25el | £69.95 |

## Diamond Antennas

| | |
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| HF10FX 10m Mobile | £39.95 |
| HF15FX 15m Mobile | £39.95 |
| HF20FX 20m Mobile | £39.95 |
| HF40FX 40m Mobile | £39.95 |
| HF80FX 80m Mobile | £42.95 |
| CR8900 10/6/2/70 | £72.95 |
| CP6 Base 6m-80m | £239.95 |
| X50 Base 2/70 | £54.95 |
| X200 Base 2/70 | £84.95 |
| X300 Base 2/70 | £99.95 |
| X510 Base 2/70 | £124.95 |
| X700 Base 2/70 | £249.95 |

## Cushcraft Antennas

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|---|---|
| X-7 - 20/15/10 7el Yagi | £669.95 |
| A3S - 20/15/10 3el Yagi | £499.95 |
| A4S - 20/15/10 Yagi | £569.95 |
| A3WS - 12/17 3el Yagi | £379.95 |
| ASL-2010 13-32MHz Log | £749.95 |
| MA5B - Mini Beam | £369.95 |
| D3 - 20/15/10 Dipole | £249.95 |
| D3W - 30/17/12 Dipole | £249.95 |
| D4 - 40m Rotary Dipole | £349.95 |

## TGM Antennas *Mini Beams*

** Call for prices on TGM upgrade kits.*

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|---|---|
| MQ-24SR 6-20m 2el | £329.95 |
| MQ-34SR 6-20m 3el | £449.95 |
| MQ-3 6-20m 3el | £379.95 |
| MQ-26 6-20m 2el | £389.95 |
| MQ-26SR 6-20m 2el + EH | £419.95 |
| MQ-36SR 6-20m + Dir | £559.95 |

## Radioworks Wire Ants

| | |
|---|---|
| CW-160 160-10m (252ft) | £129.95 |
| CWS-160 160-10m (133ft) | £114.95 |
| CW-80 80-10m (133ft) | £89.95 |
| CWS-80 80-10m (66ft) | £109.95 |
| CW-40 40-10m (66ft) | £84.95 |
| CW-20 20-10m (34ft) | £89.95 |
| G5RV+ 80-10m | £59.95 |
| Radioworld G5RV Fullsize | £29.95 |
| Radioworld G5RV Halfsize | £27.95 |

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## LDG Electronics

### AT-1000

1KW Auto ATU - 1.8-54MHz - 1-8 secs
Tune - Approx SWR Rating of 10:1

**£499.95**

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100w Auto ATU - 1.8-54MHz - 0.5 - 6 secs

**£129.95** ***BEST SELLER****

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100w Auto ATU - Covers 1.8-54MHz
1-5 secs Tune - Cross needle meters

**£199.95**

### LDG AT-100Pro *New*

100w Auto ATU - 1.8-54MHz
1-5 seconds Tune - 2 Pos Ant switch

**£169.95** ***New****

### LDG RBA 1:1 & 4:1

1:1 or 4:1 Balun - Covers 1.8 - 30Mhz
Power rating 200w

**£29.95**

### LDG AT-897

100w Auto ATU for FT-897 - 1.8-54MHz

**£199.95**

Accessories:

| | |
|---|---|
| K-OTT Kenwood Interface | £49.95 |
| Y-OTT Yaesu Interface | £54.95 |
| Icom-IC1 Icom Interface | £29.95 |
| Alinco-IC1 Alinco Interface | £29.95 |
| AC-1 Cable | £19.95 |

## W4RT Electronics

### One-Plug-Power

One-Plug Power is the internal FT-817 battery solution you have been waiting for until now.


**OPP-817**
**£54.95**
*NEW!* 2300 mAh Large Capacity FT-817 Internal Battery Soluion Still use Internal 817 Charger

**OPP-897**
**£99.95**
One Plug Power for the FT-897 4500 mAh; Fully Compatible with the FT-897 and Yaesu Charger.

*NEW!*

One-Plug Power is the internal FT-817 battery solution you have been waiting for until now. One-Plug Power comprises a 1800 mAh NiMH battery pack, both over-termperature and over-current protection, connection to the FT-817 Molex connector, and a modified Yaesu battery cover door featuring a power jack that allows connection of a battery charger such as the Maha MH-C777 or MH-C888.

### One-Big Punch

One BIG Punch (OBP) is a custom add-on accessory for the Yaesu MH-31 microphone commonly used with many Yaesu amateur radios

**OBP**
**£49.95**
Speech Compressor for the Yaesu MH-31 mic and FT817 FT857, FT897. Improve the TALK POWER.

**Hand Mike**
**£57.95**
W4RT Electronics Microphone with One BIG Punch Speech Compressor included.

The One BIG Punch is an AF-based speech compressor specifically configured to provide remarkable increase in talk power while maintaining good audio quality. The OBP is NOT a clipper, but a compessor providing great voice compression, high-level limiting, and noise gating. The unit can be mounted inside the MH-31, requires no additional electrical power, and can be turned on or off by using the MH-31's TONE switch.

### One-Board-Filter

The One-Board Filter (OBF) affords you the opportunity to have both the Collins CW and SSB mechanical filters available in your FT-817 together!

**OBF**
**£229.95**
Replace two filters in the space of one. OBF includes the two optional filters and fitting.


**Collins Mechanical Filters**
***for the Yaesu FT-817, 857 & 897.***

***500 Hz CW - £94.95*** ***2.3kHz SSB - £94.95***

This is the option that many, many FT-817 owners have requested. The OBF utilizes Collins Mechanical Filters that are the same as used in the optional Yaesu filters for the FT-817. The bandwidth of the 7-pole CW filter is 500 Hz and the 10-pole SSB filter is 2.3 kHz. The One-Board Filter is NOT available for installation by FT-817 owners. This is not a "do-it-yourself" option. The One-Board Filter must be installed by RADIOWORLD, or a competent engineer . If in doubt please call for details.

### One-Touch-Tune

At the touch of a button, you have the carrier needed for tuning. One-Touch Tune (OTT) is totally transparent to the FT-817 and to any external equipment that you have attached to the rig.

**OTT-817**
**£54.95**
It requires no external power and works with both manual and automatic tuners.

| | |
|---|---|
| W4RT OTT-FT817 | £54.95 |
| W4RT OTT-FT100/857/897 | £54.95 |
| W4RT OTT-FT847 | £54.95 |
| W4RT FT817 One Fast Charger | £Call |
| W4RT Antenna Boss | £139.95 |

***NEW* FT-817 Stand***
**£19.95**
Simply snaps into position. Adjust for desired height. Complete with non slip feet and allen wrench.

***Professional-Grade FT-817 Stand***

## W2IHY Technologies

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***£Call for information***

Adapter cables to fit Icom - Kenwood - Yaesu ..... £22.95

## ATX Walkabout

*ATX Walk--about PL-259*

**£47.95**

The ATX Walkabout covers all bands (including WARC bands) from 80-6m, 5W guaranteed, 25W max. When fully telescoped it is about 65 inches long. This makes it ideal for the FT-817 or any other portable HF radio.

| | |
|---|---|
| ATX Walkabout BNC | £47.95 |
| ATX Walkabout PL259 | £47.95 |
| ATX Walkabout Universal | £54.95 |

## The Miracle Whip

RX - 0.6 to 460 Mhz
TX - 40,30,20,17,15,12, 10, 6, 2m & 70cm

Power Limits 25W PEP 10W Cont.

**£127.95**

***In Stock****

* The Miracle Whip will transmit on almost any frequency you are licensed to use including WARC, MARS/CAP, Alaska Emergency, Citizens Band, Marine, and most commercial HF SSB and VHF/UHF channels

** The Miracle Whip is optimized for for best receive rather than lowest swr on 80 and 160, as no short antenna will present good transmitting opportunities at these frequencies

## Portable Masts

Telescopic Masts Inc Guy Rings

| | |
|---|---|
| Small 17' 6" | £55.95 |
| Medium 26' 0" | £65.95 |
| Large 33' 0" | £75.95 |
| Tripods to fit masts | £25.95 |

## Mobile Mounts

Solarcon MAGZ-17 TRI-MAG

**£39.95**

An extremely strong magnet base which actually consists of 3 x 5" chrome magnets that are interconnected with metal strips to form one very large mount. Suitable for very large mobile antennae such as ¼ wave tank whips.

| | |
|---|---|
| Siro MAG125 3/8 | £17.95 |
| Siro MAG125 PL | £17.95 |
| Siro MAG 145 3/8 | £22.95 |
| Siro MAG 145 PL | £22.95 |
| Solarcon Magz-17 | £39.95 |

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HF - 1.5-30MHz
Power Amplifier

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Output Power 150 W Max
Output Power SSB 250 W Max

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| Challenger MK3 HF | £1795.95 |
| Ranger811H HF | £945.95 |
| Discovery 2-31 2m 1KW | £1395.95 |
| Discovery 2-35 2m 1.5KW | £1595.95 |
| Discovery 6-31 2m 1KW | £1395.95 |
| Discovery 6-35 2m 1.5KW | £1595.95 |
| Discovery70 70cms 700w | £1495.95 |
| LA-STNM Bal Super Tuner | £345.00 |
| LA-STWM Bal Super Tuner | £395.00 |

## SGC. Smartuners

SGC-230 200Watts **£359.95**

| | |
|---|---|
| SGC-230 HF | £359.95 |
| SGC-231 HF+6m | £359.95 |
| SGC-235 HF-500w | £749.95 |
| SGC-237 HF+6m | £299.95 |
| SGC-237 Porta | £589.95 |
| SGC-237 PCB | £299.95 |
| SGC-239 HF | £185.95 |
| MAC-200 | £339.95 |

## Rotators

YAESU

| | |
|---|---|
| G-2800SDX Rotator | £999.95 |
| G-450C Rotator | £379.00 |
| G-550C Rotator | £309.00 |
| G-650C Rotator | £499.00 |
| G-1000DXC Rotator | £599.00 |
| G-5500C Rotator | £569.00 |

## Feeders & Wire

Military Spec High grade 50 Ohm coaxial Cable **£69.95** A 100m Drum

| | |
|---|---|
| RG58U | £0.50 per Metre |
| RG8 Super | £0.70 per Metre |
| RG213 | £0.90 per Metre |
| W103 Westflex | £1.20 per Metre |
| RG-8 75 Metre Drum Special | £39.95 |
| Flexweave 50m Flex | £29.95 |
| Flexweave-PVC-50 50m | £39.95 |
| Enamelled Copper Wire 50m | £12.95 |
| Hard Drawn Copper Wire 50m | £14.95 |

Rotator Cable: - Color coded Cable

| | |
|---|---|
| 3 core | £0.45 per Metre |
| 7 core | £0.79 per Metre |
| 8 core | £1.09 per Metre |

DC Connecting Cable

| | |
|---|---|
| 5A DC Cable | £0.50 per Metre |
| 10A DC Cable | £0.75 per Metre |
| 20A DC Cable | £1.00 per Metre |
| 25A DC Cable | £1.10 per Metre |

## Second Hand List

### Second Hand Antennas

Cushcraft X9 10/15/20 9ele....£450.00

| | |
|---|---|
| Cushcraft R-6000 Vertical | £200.00 |
| Cushcraft A3S 10/15/20 3ele | £299.00 |

***PLUS MUCH MORE... CALL FOR DETAILS***

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|---|---|
| Kenwood YG-455CN1 | £100.00 |
| Kenwood YK88CN | £40.00 |
| Kenwood YK88SN | £40.00 |
| Yaesu XF114SN | £60.00 |
| Yaesu XF112C | £40.00 |
| Icom FL-53 | £100.00 |
| Icom FL-101 | £40.00 |
| Kenwood DRU-3 | £70.00 |

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AEA PK-900 TNC £200.00
AEA PK-96 TNC £90.00
AKD 6001 6m FM Transceiver £135.00
Alan HQ-2000 2kW 26 - 30MHz SWR / Watt Meter £25.00
Alinco DJ-G5EY Dual Band Handheld £199.00
Alinco DJ-V5 Handheld £99.00
Alinco DJ-X2000 Scanner 0.1kHz-2.1GHz £299.00
Alinco DJ-X10 Wide Band Receiver £200.00
Alinco DR-150 2m Transceiver with Air-and Receive £150.00
Alinco DR-605 2m/70cms £175.00
Alinco DR-M10 10 Metre Transceiver £99.00
Alinco DX-70 HF & 6m Transceiver £389.00
Alinco DX-70TH HF & 6m Transceiver (100W Output) £475.00
Alinco DX-77 HF Base £399.00
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AOR 5500 Display As new display model £450.00
AOR AR-3030 HF Receiver, Including PSU £350.00
AOR AR5000+A AR5000+A £1,599.00
AOR AR-7030 Top Receiver £550.00
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Bearcat UBC-780XLT RX Trunktrack £220.00
Bearcat UBC-9000 RX Scanner £179.00
BHI BHI Noise Eliminating Module £89.00
Bnos 20AMP PSU 20A PSU £89.00
Bnos LP50-3-50 6M Amp Solid State £89.00
Bnos LPM144/10/100 2m 100w Amp £119.00
Comet CD-270D SWR Power Meter £49.00
Commtel Comm-225 Receiver £150.00
Daiwa CN-103L 2/70cms Cross needle Meter £40.00
Daiwa CN-801H 1.8-200 MHz SWR+PWR Meter £80.00
Daiwa CS-201 2 way Switch £10.00
Daiwa PS120 10A PSU £40.00
Daiwa PS-30 XM II 30A PSU £99.00
Datong FL2 Multimode Filter £69.00
Diamond SX-100 SWR & Power Meter - 1.6 - 60MHz £65.00
Diamond SX-200 SX-200 £69.00
Fairhaven RD-500 Communications Rx £299.00
Fairhaven RD-500VX Communications Rx £399.00
FDK Multi-750 2m Multimode Transceiver £129.00
Fujion F-2000A Radio Direct Finder £99.00
Hal DXP38 TNC £140.00
Hanson FS7 2/70cm Meter £30.00
Heil BM-10-5 Headset £50.00
Icom PCR-1000 PC RX £249.00
Icom 451E 70cms Multimode Transceiver £250.00
Icom A-3E Airband Handie £220.00
Icom IC-207H IC207H £199.00
Icom IC-2100H 2m FM Mobile Transceiver £150.00
Icom IC-2710H Dual Band Mobile £225.00
Icom IC-251E 2m £249.00
Icom IC-271E 2m multimode £299.00
Icom IC-2725E 2/70 mobile £200.00
Icom IC-490E 70cms Mobile Transceiver £250.00
Icom IC-703 HF/6M £450.00
Icom IC-706 HF/6/2 Mk1 £399.00
Icom IC-706 HF/6/2 Mk2 £525.00
Icom IC-706 HF/6/2/70 Mk2G £675.00
Icom IC-718 Hf Moble/Base £375.00
Icom IC-726 Mobile/Base £400.00
Icom IC-735 HF Mobile/Base £299.00
Icom IC-736 HF/6m + ATU Mains Trx £699.00
Icom IC-7400 HF/6/2 Band / All mode Tranciever £949.00
Icom IC-746 HF / 6m / 2m Built In ATU £875.00
Icom IC-756 PRO HF/6 Base £1199.00
Icom IC-756 PRO2 HF/6 DSP Base £1,499.00
Icom IC-901 2m/70cms £175.00
Icom IC-910H 2m/70cms Base £899.00
Icom IC-775 DSP 200w Base £1,499.00
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Icom IC-R8500 Receiver £999.00
Icom IC-W31E Dual Bander £160.00
Jil Jil SWR Meter SWR Meter £15.00
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Kenwood D7E 2/70 TNC £225.00
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Kenwood F7E 2/70 Handheld £189.00
Kenwood MB-201 MB-201 £20.00
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Kenwood PS-430 PSU £100.00
Kenwood R-2000 Receiver Inc Converter £275.00
Kenwood R-5000 Receiver £499.00
Kenwood R-5000 Receiver inc VHF Converter £600.00
Kenwood SP-430 Kenwood Speaker £45.00
Kenwood SP-230 Kenwood Speaker £50.00
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Kenwood TM-742 Mobile £220.00
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Kenwood TR-9000 2m Multimode £220.00
Kenwood TS-2000 All Band / All mode Tranciever £1,199.00
Kenwood TS-271E TS271E £165.00
Kenwood TS-480HX HF 200w Mobile £799.00
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Kenwood TS-60S HF Mobile £299.00
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Kenwood TS-570DGE HF Mobile £675.00
Kenwood TS-570S HF/6 100w Base £825.00
Kenwood TS-790E 2/70 Base £750.00
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Kenwood TS-830S HF Trx Base £299.00
Kenwood TS850S HF £550.00 & TS850SAT inc Tuner £699.00
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Kenwood TS-950SD HF150W DSP Base Station £1,200.00
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MFJ MFJ-1272B TNC / Mic Switch £20.00
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MFJ MFJ-784 DSP Filter £149.00
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MFJ MFJ-921 VHF 200 Watt ATU £50.00
MFJ MFJ-948 ATU £89.00
MFJ MFJ-956 Rx ATU £25.00
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Yaesu FR-101 HF, 2m, 6m Base Rx £399.00
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Yaesu FRG-8800 RX £199.00 or inc Converter £299.00
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Yaesu FT-41R Handheld Transceiver £120.00
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Yaesu FT-480 2m £150.00
Yaesu FT-690Rmk2 6m Multimode Mobile Transceiver £275.00
Yaesu FT-7100M 2m / 70cms Mobile Transceiver £220.00
Yaesu FT-736R 2/70 Base £550.00 or 6/2/70 £750.00
Yaesu FT-767GX HF/6/2/70 Base £799.00
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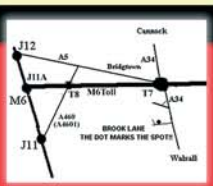


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or email to recruitment@rfi-global.com or apply through the website at www.rfi-global.com

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# Book review

***TECHNICAL TOPICS SCRAPBOOK 2000 – 2004***
**By Pat Hawker, G3VA**
**Reviewed by HQ Staff**

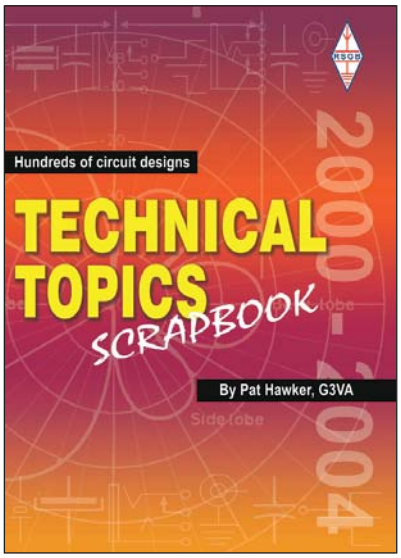
By now, *Technical Topics Scrapbook* (*TTS*) has become as much of an institution as 'Technical Topics' itself. Each issue encompasses five years' worth of the popular *RadCom* column – every item, in every month, for five years!

*Technical Topics Scrapbook 2000 – 2004* is the fourth such publication and completes 20 years of 'TT' columns, a veritable wealth of knowledge and informed comment in the field of amateur radio by our most respected international ambassador for the hobby.

Pat has been writing 'TT' continuously for nearly 50 years – a feat in itself. The series of *TTS* is rapidly becoming a collector's item, and it is no exaggeration to say that all those who consider themselves to be informed about amateur radio should have copies.

If you have copies of the three previous books, you will know what to expect. The pages are exact copies of the *RadCom* pages from which they were taken, so that the visual 'character' of the 'TT' pages is preserved.

To quote from the Preface, "The object is to make everyday amateur radio interesting and challenging in a manner that will attract the young and at the same time encourage established amateurs to improve their technical, constructional and operating skills, prepare for emergency operations, explore new digital modes and



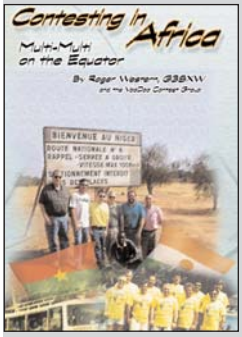

techniques, seek out new horizons on UHF and in space communications etc while, at the same time, enjoying the traditional activities of 'rag-chewing' and contest operation. Some specialist forms of amateur radio are covered in other monthly or bi-monthly columns in *RadCom* rather than in 'Technical Topics' but, nevertheless, the range of topics covered is extremely large."

'TT' has always sought to educate and comment on developments both inside and outside amateur radio, without the use of reams of mathematics and statistics. On controversial matters, Pat is renowned for his unbiased descriptions, only occasionally offering a sceptical comment, and for very good reason. As Pat says in the Preface, his column provides "… information that has real or practical value for everyday amateur radio, relevant and/or interesting to the majority of both professional and non-professional experimenters, and all those who remain fascinated by the marvels of radio communication – the memorable technical development of the 20th century. But no apology is made for occasionally including material relating to its historical development, or brief obituaries of those who contributed to it as amateurs or professionals, or as both."

If, like me, you pick up a book with the aim of finding a particular item, and end up reading countless other topics to the exclusion of what you really wanted, beware! This book is ideally suited to the browser. But to be fair, the excellent index provides access to every single item so, if you want to retrieve information quickly without being sidetracked, the index allows you to do this very effectively.

A review such as this usually concludes with a statement that 'no bookshelf should be without one'. I hope that what has gone before makes that statement redundant.

***TECHNICAL TOPICS SCRAPBOOK 2000 – 2004***
**By Pat Hawker, G3VA**
**RSGB 2005**
**264 pages, A4 (297 x 210mm), paperback**
**ISBN: 1-905086-05-9**
**Members' price £12.74 + p&p**
**(Non-members' price £14.99 + p&p)**




***CONTESTING IN AFRICA: MULTI-MULTI ON THE EQUATOR***
**By Roger Western, G3SXW, and the VooDoo Contest Group**
**Reviewed by HQ Staff**

This is Roger Western's second book associated with HF DX and contesting. The first, *Up Two - Adventures of a DXpeditioner*, was reviewed briefly in the August 2003 *RadCom*. Roger is probably the UK's best-known CW DXpeditioner and contest operator. Together with some buddies from the USA and the UK he formed the 'VooDoo Contest Group', a loose formation of like-minded individuals who have operated the *CQ* World Wide DX CW contest from different locations in West Africa each November for the past 10 years. Members of the group come and go, some years they are as many as 10; in one year they were only four in number. The one constant is Roger himself, and he provided the majority of chapters for this book, with eight other members of the group each contributing a chapter on their own experiences.

This book is *not* a series of DXpedition articles; rather it is a record of the group's combined wisdom gleaned through almost a complete sunspot cycle-worth of radio activity from the tropics. There are chapters on multiplier-hunting, logging accuracy and pile-up tactics - in other words, how this group goes about maximising its score in the CQWW contest. Read and learn from the experts! But another theme runs through the book, a term that Roger calls "F&F" - 'Focus and Fun'. 'Focus' refers to just how much effort is put into winning (the meaning of 'fun' is obvious). It is Roger's contention that there must be a proper balance between these two: too much focus and it ceases to be fun; too much fun and the final score suffers - and that in itself detracts from the overall fun. It is very obvious reading this book that although a great deal of effort - 'focus' - is put into these major contesting efforts, all the participants do indeed also have a great deal of fun.

Clearly this book will appeal to existing HF contesters, but it will also be of interest to a much wider audience than that. It is written with the 'average' amateur in mind, with a useful chapter by KC7V explaining what the CQWW DX contest is all about. Its pages are filled with photos, maps, charts and graphs, which helps to make it come alive.

Contesting divides radio amateurs more than most other aspects of this wide-ranging hobby of ours. There are those who just do not understand - or perhaps do not *want* to understand - it. If such people were to read this book, contesting may well gain itself some new converts!

***CONTESTING IN AFRICA: MULTI-MULTI ON THE EQUATOR***
**By Roger Western, G3SXW, and the VooDoo Contest Group**
**Idiom Press 2004**
**190 pages, 228 x 151mm, paperback**
**ISBN: 0-9617577-4-4**
**Members' price £10.19 + p&p**
**(Non-members' price £11.99 + p&p)**

5 Sydenham Buildings, Lower Bristol Road, Bath BA2 3BS

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# Newcomers' news

**Steve Hartley says, "This month's postbag has been one of the most varied I have experienced. Lots to cover, from portable antennas to space communication."**

Martyn Medcalf, M3VAM, was looking for a portable antenna that he could put in the back of his car when he pops over to Guernsey for a long weekend. He already had a Buddipole, made by W3FF in the USA (reviewed in *RadCom* March 2005- *Ed*), and he found it has a 'little brother' called the Buddistick.

The Buddistick is a multi-band, portable vertical aerial for the 40 - 10m bands. It will work with any rig up to 250 watts. It comes in a small padded bag and it measures 33 x 12 x 8cm and weighs only 7kg, including the mini Tripod (an optional extra). When fully extended the total height above the ground is around 2.4m. Tuning for each band is fairly easy and is carried out by adjusting a tap on a coil, extending the telescopic whip and adjusting the radial wire.

Martyn tried the antenna in his back garden over a weekend and although his good lady, Val, found him a number of jobs to do he still managed to make 48 contacts. These were spread across 16 countries including the USA (New York) and were all made with a Yaesu FT-897 at 10W output.

Thanks for the report Martyn, looks like you have found a good solution to your portable requirements.

## ON AIR MORSE PRACTICE

Ian Keyser, G3ROO, is a great advocate of the key and he has been running slow Morse practice contacts on 3.5MHz for some time. He is on every night that he can manage around 3564kHz between 1830 and 1900. He sends at 12WPM calling "CQ QRS QSO" and will reply at the speed of the calling station if less than 12WPM.

These sessions have proved so popular that he has had to arrange a roster to give even better coverage. Full details of the stations involved, times and frequencies are now posted on Ian's web page (see 'Web search' below). If you need a bit of encouragement to get you going with CW, give Ian or one of the others a call and I am sure you will receive a warm welcome.

## NORWICH CLASSES

First off, a correction. In my 'Newcomers' News' in March I gave John Peters the callsign M0MXN; he is in fact G0MXN. Sorry John! Despite my error, John is still on speaking terms and he sends news that the Norfolk Amateur Radio Club has begun its first Advanced course with 15 students. Several travelled 40 or 50 miles through snow to attend the first class. The club has a number of tutors for different parts of the syllabus, with three additional mentors available to the students as well.

Almost the first question raised by the students was the subject of mock exam questions. The club chairman had been in touch with the RSGB and was told that no question papers or questions could be released. This caused great consternation among the students and instructors and John asks if any practice questions are available elsewhere.

I have sent John a copy of a practice paper I put together from the old *RAE Manual*, with a few new questions added to cover the new syllabus points, and details of Murray Ward's *QADV* software - see below.

Most of the Norfolk students are dreading the maths questions, even though they will have the syllabus formula sheet provided. John hopes that when they see how the calculations are actually done it will put their minds at rest: "We advised that it is best to take bite sized chunks of the syllabus and not try to understand it all on the first day."

All of students agreed that the tackling the Advanced classes was greatly assisted by having had the Foundation and Intermediate to build on. It was the first time that some of them realised that those licensed under 'the old system' had not had the advantage of the building blocks of training and lead-in exams such as they have enjoyed (is "enjoyed" the right word?)

This is excellent news and exactly in the spirit we should expect from good radio clubs - a team effort that encourages newcomers to work through the 'self-teaching' experience.

## ADVANCED PRACTICE

Murray Ward, G3KZB, has been busy updating his *QADV* software and the latest version is now available, free of charge, from his website (see 'Web search').

Regular readers will know that I am a great fan of Murray's work. The software is an excellent aid to revision and includes pointers back to the RSGB textbook *Advance!*

## INTRODUCTION TO SPACE

AMSAT-UK will be holding a Space Colloquium at the University of Surrey in Guildford between 29 and 31 July. As in previous years there will be special beginners' sessions to teach newcomers how to get started in the fascinating world of amateur radio space communications. The RSGB GB4FUN van, which has a fully equipped satellite station, will be available during the event for visitors to work through the satellites for real.

Martyn Medcalf, M3VAM, with his Buddistick.

There will be guided tours of the Surrey Space Centre with the satellite mission control centre and the satellite assembly facility. These tours are always popular and they provide a unique opportunity to see satellites in various stages of construction. And as if that wasn't enough, there is also an extensive lecture programme ranging from highly professional technical presentations to basic down to earth 'how to do it' type talks.

If you would like to know more about the Colloquium please contact the secretary, Jim Heck, G3WGM, tel: 01258 453959 or e-mail: g3wgm@amsat.org (see also 'Web search'). ◆

**WEB SEARCH**

| | |
|---|---|
| **Morse Practice:** | **www.g3roo.org.uk** |
| ***QADV* Advanced exam practice questions:** | **http://freespace.virgin.net/murray.g3kzb** |
| **AMSAT-UK:** | **www.uk.amsat.org** |

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# A beginner's guide to restoring

**In the second and final part of his beginner's guide to restoring old radios, Steve Ireland provides some tips on bringing apparently 'dead' equipment back to life, starting with cleaning 'pots' and switches.**

Potentiometers are best cleaned by squirting electrical contact cleaner into their cases from an aerosol can and quickly rotating the associated spindle to and fro'. The most effective way of cleaning rotary switches and valve pins I have found is to spray plenty of solvent on the tip of a cotton bud and wipe this briskly over their conducting surfaces. You will find the cotton bud quickly becomes dirty, and you should repeat this process (changing cotton buds) until no more dirt can be removed.

With rotary switches, it is easy to miss some of their contacts, and on the basis of Murphy's Law, particularly those ones which are the dirtiest. It is always worth going over the rotary switches in a radio on *at least two separate occasions* because of this factor.

Once the switches and potentiometers seem clean, it is not a bad idea to clean the inside of the radio with a damp cloth (and the odd spray of contact cleaner). It might not help the radio's performance, but you will feel a lot better for it - and you will be able to judge the condition of its mechanical components far better.

If the radio is really old, the chassis and components such as transformers may have become so oxidised that wire wool or fine emery paper is needed to remove this. If this is the case make sure you carefully 'blow-clean' the radio after any rubbing down has been completed.

For more information on the technical aspects of restoration, see Pat Hawker's, G3VA, excellent 'Technical Topics' column in *RadCom* April 2004 [1].

This is also a good time to familiarise yourself thoroughly with how the equipment is operated, by reading its operational / service manual from cover to cover. If you don't have a manual for the radio concerned, a search using *Google* (or similar) may well throw up a site run by a vintage radio enthusiast where you can download one for free. It is also good to do an Internet search to see what other information on your radio you can turn up. Instructions may be available specifically on restoring a radio of the kind you have.

**Restored Panda Cub 50W 1.8 - 28MHz AM / CW transmitter.**

## THE WEAKEST LINK

The next step is to look very carefully at the condition of the radio's capacitors (in particular, electrolytic and paper ones) and resistors (in particular, the wirewound ones). In my experience, these components are the most likely to suffer electrical failure, a short circuit in particular, much more so than any of the thermionic valves. If any of the electrolytic capacitors show any signs of leakage from their cases, they need to be replaced. Any other capacitors with a leaky or melted look should be replaced as well. While these components may still work OK for now, this situation is not likely to last. My motto is 'if in doubt, take it out' and replace with a modern equivalent.

My suspicion about old electrolytic capacitors is such that these are all automatically replaced in any radio I work on that is older than 35 years or so. If you have ever heard or seen an electrolytic capacitor fail - usually with a sound like a gunshot and an incredible mess - you will understand why.

Although a few years ago it used to be hard to obtain new high voltage electrolytic capacitors, thanks to the common usage of switch mode power supplies, today there is a ready supply of a range of values (eg 10 to 100µF) with a 450V maximum voltage rating. These are ideal for use in most receivers, but in transmitters you may need to use a couple in series, to obtain a suitable voltage rating.

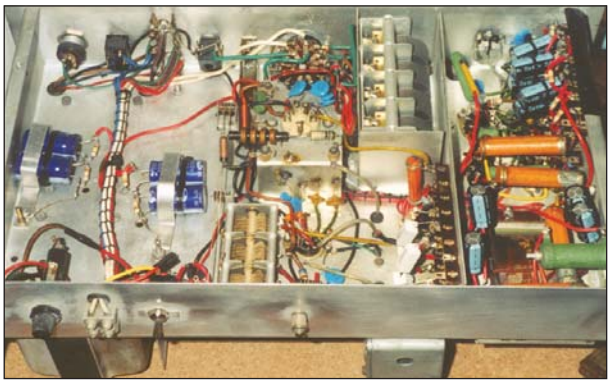
I recently replaced an old 16µF 500V electrolytic in a 1950s Panda Cub AM / CW transmitter with two 10µF 450V electrolytics in series. When you are using capacitors in series in this manner, a 100k 0.5W resistor should be placed across the pins of each of the capacitors used. This helps to ensure that the voltage across each of the two capacitors in series is about the same. The Panda Cub transmitter was designed by the legendary Louis Varney, G5RV, and commercially manufactured during the 1950 / 1960s, from WWII surplus components. Another useful thing to know about these modern electrolytics is that are sometimes referred to as 'TKR capacitors' - not sure why, but they are.

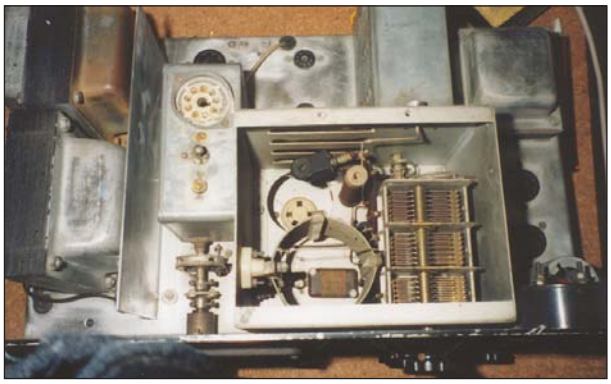
The other component type that is likely to fail in an old valve receiver or transmitter is a resistor. Any that look as though they may have been overheated at some time should be replaced with one of identical value and wattage (which will usually be considerably smaller than the original component). In the case of wirewound resistors, I usually check their continuity / value with a multimeter, just to make sure they haven't gone open circuit. Some values of wirewound resistors are hard to find these days, in particularly those with dissipations higher than 5W, so you may have to replace a resistor of this kind with either a series or parallel combination of smaller wattage resistors.

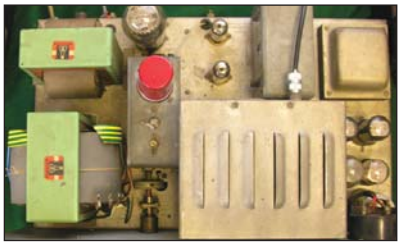
The main problem with carbon (conventional) resistors that are 30 to 60 years old is that their value may have altered, sometimes by as much as 30%. Disconnecting one end and checking the value with your multi-meter is the only sure-fire way to check if this has occurred. If a resistor's value has altered by more than 10% or so, it is best to replace it with a modern resistor of identical value and wattage.

I also generally replace the AC rectifier valve with solid state rectifier diodes (eg IN4004 type), observing the correct polarity. These can be soldered across the valve rectifier base, in the appropriate places. A valve rectifier won't start conducting until about half the input voltage (ie 125V) is applied, while silicon rectifiers will - this is important when re-forming electrolytic capacitors.

# old valve equipment, part 2







**Top left**
**Underside of Panda Cub transmitter. All the original electrolytic capacitors have been replaced by modern TKR electrolytics. To the left, TKR-type electrolytics are used in series with 100k equalisation resistors (these replaced six 'square' electrolytics about 10 times their size). The original slightly melted paper capacitors have been replaced by 3kV disc ceramics.**

**Top right**
**The surface of the Panda Cub chassis and its main transformer, choke and modulation transformers have been carefully cleaned with wire wool to get rid of oxidisation.**

**Above left**
**The majority of these components showed signs of overheating or age and so were removed from the Panda Cub and replaced with modern equivalents.**

**Above right**
**Top view of a fully restored and working Panda Cub.**

## POWERING UP

Once the radio has been thoroughly cleaned and its components checked, we can finally *think* about applying power via a variac, as discussed last month. However, power should first be applied with all the valves from the radio removed.

The reason for this two-stage process is that if anything is wrong with the radio, it can make diagnosis of the fault much easier (by removing one of the potential sources of failure from the equation, so to speak). Before removing the valves, make sure you have a drawing / plan that shows which valve belongs in which valve socket.

Once the valves have been removed, for safety reasons replace the radio in its case. Never forget that the kind of voltages used in thermionic valve equipment - ie over 200V - can be fatal. Great care must be taken that you *never* handle the radio with AC mains power connected to it when it is out of its case. *Always* switch off the receiver, switch off the power at the mains outlet and then unplug the radio's power cord from the mains outlet before removing the radio's case. Once this has been done, *do not* reconnect the AC mains connection to the radio until it is safely back in its case.

Before going any further, check that the mains input of the radio has been set to whatever is your local mains voltage. I know a few sad stories where 110V AC radios have been plugged into 230V AC mains supplies.

With the variac's voltage control set to zero volts and its output connected to the radio's AC mains input, the variac's input can be plugged into the AC mains. Now, carefully increase the voltage control to about 50V (assuming you are on 230V AC mains) and leave the receiver alone for a couple of minutes. Then increase the variac control to about 100V and repeat the process.

This gradual build-up of the AC mains voltage allows the electrolytic capacitors inside the radio to charge up slowly making it much less likely for their dielectric to break down and for them consequently to go short circuit and explode.

The process is repeated in steps of less than 50V, until the full local AC mains voltage is reached. If the radio has dial lights, these will illuminate as the voltage is increased.

Once the full mains voltage has been reached, the radio is left with the voltage at this level for about half an hour, with you in attendance. After 30 minutes has passed, the variac is reduced to 0V, the radio switched off, the power outlet to which the variac is attached switched off and the variac's power cable removed from the mains outlet.

The radio's case is then removed and the valves are carefully replaced in their sockets, first spraying each socket's receptors with electrical contact cleaner before inserting each one. Once this has been done, the radio's case is replaced, the power cable is reconnected to the variac and the AC mains switched on.

Once again, in a similar manner, the variac is increased in 50V steps until the full mains voltage is reached. When the mains voltage reaches about 50% of the maximum, you will notice the heaters of the valves start to illuminate. If any of the valves fails to light up, their heaters may be burnt out and the valve concerned should be replaced by one of an identical kind (or its equivalent).

As before, leave the radio running in this state for a further 30 minutes, with you in attendance. Obviously, if the equipment is a transmitter, it should *not* be switched to transmit during this time.

## READY TO GO?

In 95% of the radios that I have restored, following this process has resulted in a working radio. You also should look at the mechanical aspects of the radio, in particular the main tuning mechanism, and check that this is working correctly. If not, some reference to the manual or Internet sources of information may be necessary.

If your radio fails to work, it is a matter of carrying out some old-fashioned fault-finding. In contrast to the surface-mounted solid-state equipment of today, if you have a basic knowledge of electronics and are armed with a manual, a circuit diagram and a multimeter, you have a good chance of actually being able to find and fix the problem yourself.

Working on 1950s and 1960s valve radios is very satisfying as long as you are patient and, as has been covered earlier in this article, take very good care to abide by some basic rules of electrical safety.

Good hunting, if you decide to become involved in this fascinating aspect of our hobby. For me, a valve radio is alive in a way that its semiconductor sister just isn't. ◆

**REFERENCE**

[1] 'Refuse bin? Repair? Restore? Rebuild?'; 'Technical Topics', Pat Hawker, G3VA, *RadCom* April 2004.

# HF

## Don Field comments on HF band propagation conditions in February and March and brings the latest news of DXpeditions and other operations scheduled for May

There were some reasonable band conditions during the February / March period, particularly on the lower bands, but 10m was generally restricted to north-south propagation. The good news was that the FT5XO Kerguelen Island operation was workable from the UK on all nine HF bands, with several contributors mentioning contacts. Signals were generally quite weak (most of their stations were running just 100 watts to vertical antennas) with 30 to 15m appearing to offer the best possibilities for those with modest stations. For me, the hardest contact with them was on RTTY, the pile-ups on that mode being quite ferocious nowadays, and QSO rates generally lower than on the other modes.

During the *CQ* WPX SSB weekend (no doubt we will have more reports on this one next month) I worked over 100 countries, but conditions were poor on 15m and almost non-existent on 10m other than to Africa and South America. 80 and 40m were lively, though, and I enjoyed being able to work US stations co-channel in our expanded 40m band.

The Swains Island operation (see last month) appears to have been a non-event as far as UK DXers are concerned. Even the 'big guns' don't appear in the online log. A case of poor propagation while the expedition was in progress, I guess. Anyway, you can find some nice pictures and background on their website.

A recent German DX Foundation survey put KH7 (Kure Island) at the top of the 'Most Wanted' list for European DXers. The good news is that there are plans for a big US-led operation this coming autumn. More details in due course. Nearer to home, an intrepid team is planning an assault on Rockall, the most remote outpost of the British Isles. More on this next month.

### DX NEWS

Alan, G0RCI, will lead a small group to **St Kilda** (SCOTIA DI23, IOTA EU-059) to operate as GB0SK from 2 to 6 May. The team may also activate **Bernera** (IOTA EU-010 and SCOTIA HI15) as GM0GRC (callsign of the Grantham Radio Club, G0GRC, in GM) on the outward and return journeys on 1 and / or 6 May. This is a long sea-crossing with constant Atlantic swell and success will be, as always, very much weather-dependent (as your scribe can confirm, having crossed from the Flannans to St Kilda in a Force 9 gale during an earlier IOTA expedition to those islands!).

**Norwegian** amateurs may use LI instead of LA and LJ instead of LB from 17 May until 7 June to commemorate 100 years of Norway as a sovereign state. The Norwegian Post and Telecommunications Authority has also granted permission to Norwegian club stations to operate on eight 5MHz-band spot frequencies from 1 April 2005 until 31 December 2007. The permitted modes are upper sideband and CW, with a maximum transmitter power output of 100 watts. The centre frequencies of the channels are: 5280, 5290, 5332, 5348, 5368, 5373, 5400 and 5405kHz, with the upper sideband 'dial frequency' being 1.5kHz lower in each case.

Seven German operators will activate Ummanz Island (O-06 for the German Islands Award, IOTA EU-057) from 2 to 8 May. They will be on all bands CW, SSB, RTTY and PSK31. Operators mentioned are DL1APR, DL1APW, DL1NUF, DL5AOJ, DL7NFK, DL9NDS and DM3BJ. QSL via their home callsigns.

Ted, 5Z4NU, the Chairman and Secretary of the Amateur Radio Society of **Kenya**, reports that the Kenyan licensing authority (the CCK) has granted Kenyan amateurs the use of two new bands, 1810 - 1850kHz and 10100 - 10150kHz. This is perhaps not strictly true, with 5Z being active on 160m as long ago as the 1960s, but the band has not been included in the licence for some years now. 5Z4DZ has been taking advantage of the new permissions, and has been worked from the UK on both bands.

Michael, PA5M, and Pierre, HB9AMO, are in **Chad**, and have been active as TT8M and TT8AMO respectively. They will be there until early May and active when work (UN) permits. TT8AMO will only be on CW, but TT8M will also be on SSB and digital modes. QSL both to PA7FM. Logs will be available on the PA7FM website.

Ivan, OM3CGN, and some 7X (Algerian) operators will activate **Sanja Island** (Algerian island part of the Mediterranean Sea Coast Centre Group), from 1 to 5 May. The call will be 7V2SI.

The group which activated Europa Island (TO4E and TO4WW) in 2003 is off to **Glorioso** this month, and expecting to be active from 15 to 30 May, with a large team and plenty of equipment. They had a last-minute hiccough with their boat, having to find another (more expensive!) one at short notice, but their plans remain firm. They will be placing particular emphasis on the low bands, on which Glorioso has been extremely rare in the past (I note that I have this one on 10 to 20m, but not on any of the lower bands). No callsign had been announced at the time of writing. The QSL manager will be F5OGL.

Andre, GM3VLB, writes that he and his wife will be back on Beachcomber Island in the Mamanuca Group off **Fiji** (IOTA OC-121) from 25 May to 3 June. He will use his old call of 3D2LB, CW and SSB.

On their way to Dayton, DL1BDF, DL1BAH, DK1BT and DG2BDB will stop in New York City at the **United Nations** where they will be guests at the 4U1UN ARC. They plan to be active between 12 and 15 May. QSL via HB9BOU.

Joca, PS7JN (also known as ZW0SAT and ZW0S), plans as many as four work trips to **St Peter and St Paul Rocks**, PY0, this year. He plans to concentrate his operating on the low bands, SSB and CW. The callsign will probably be PY0SA. No specific dates at this time.

### CQ DX FIELD AWARD

*CQ Amateur Radio* magazine has introduced a new operating award, the '*CQ* DX Field Award' (I have to commend them on their choice of name!), recognising achievements in contacting at least 50 of the world's 324 10° x 20° 'grid fields' (well known to VHF DXers as 'Locators'). The press release says that "this is the first of three new programmes to be announced by *CQ* over the next three months with the goal of revitalising ham radio's core activity of DXing, or contacting stations in faraway places". *CQ* DX Awards Manager Billy Williams, N4UF, has calculated that


**The spectacular four-sided QSL from Tim, M3SDE / ZK1SDE**

105 Shiplake Bottom, Peppard Common, Henley on Thames RG9 5HJ

E-mail: don@g3xtt.com

there are 177 fields with which the active ham stands a pretty good chance of making a contact, noting that many fields are in Antarctica, the Arctic or wholly within oceans. Endorsements will be issued for each additional 50 fields up to 150, then in increments of 25 fields to a final level of all 324 fields. Contacts made on or after 1 January 1980 (the year in which the grid system was adopted for amateur radio use) will count toward the new award. Complete details and rules were due to be published in the April 2005 issue of *CQ* magazine and posted on the magazine's website. I can help with copies if you don't have access to these sources.

## CORRESPONDENCE AND TABLES

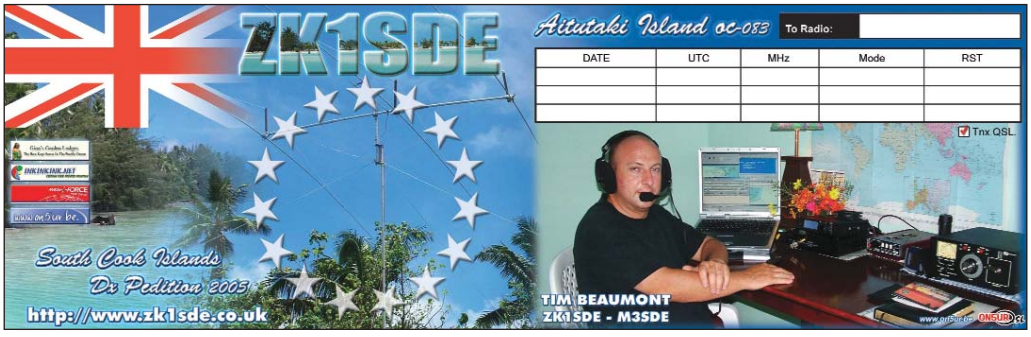
Gerry, G0RTN, was pleased with his first attempt at the Commonwealth contest where he worked, among others, Z24S and VK9NS for all-time new ones. He urges others to give this event a go in future years. Gerry also says, "I'd also like to make a plea for proper use of, and response to, CQ DX calls. I recently heard a UK station calling CQ DX on 40m SSB in the middle of the day and going on to work other UK stations. It's also depressing to see how many UK stations return to European stations calling CQ DX. I recently heard an Estonian station becoming frustrated when what were obviously several UK stations persistently returned to his CQ DX calls when he was trying to work into the Americas. It might be worth making it clear that if you hear a European, and probably a North African, Central Asian or Middle East station, calling CQ DX don't reply." I won't list all Gerry's other DX here, suffice to say that he had a busy month with some quite exotic ones.

Colin, MU0FAL, also asks the question "What is DX?", prompted by a recent letter in 'The Last Word' (*RadCom* April 2005). This is quite a topic, which I may well return to at a future date. The simplest rule of thumb on the HF bands is that it refers to callers outside your own continent, but clearly that's an over-simplification. For a station in Spain, Morocco is hardly DX, for example. The truth is that those who call "CQ DX" are generally hoping for someone distant or, preferably, rare to call them, though most of the time they are likely to be sadly disappointed! It's true that some DX stations (I'm talking about rarity rather than distance) prefer to call others, rather than call CQ themselves, so as to avoid being besieged by callers. Either way, there are very few instances where we in the UK would qualify as DX and have our calls welcomed by the CQing station.


**Members of the February / March 5T0CW crew. L to r: Jim, G3RTE; Phil, G3SWH; Nicolas, 5T5SN; Jean, ON8RA, and Harry, ON4HVO.**

Cris, GM4FAM, is another to send a long list of DX worked. He singles out the 5T0CW, TO7C, VP2V/DL7DF and XT2JZ operations for particular note, all easy to work on several bands. He also collected two all-time new ones under his GM call, namely ZD9BV and HH4/K4QD. Despite his DXing successes, Cris is looking for a QTH with a few more acres of land; there's no holding back a keen DXer!

Peter, G3JFS, lists some nice DX, too, but I was especially interested in his mention of the new Olivia MFSK mode which he has been using since the end of January with best DX so far being a contact with VK2DSG and a report from ZL. Take-up is slow because the software was written for *Linux* but there is a version called Olivia-Aid that works with *Windows XP* and *2000*. More information is available from the relevant websites.




Tim, M3SDE, writes following his return from Rarotonga (ZK1SDE). He made 5944 QSOs with 125 DXCC entities, which he was happy with given the band conditions, but was unable to go to the North Cooks due to severe weather (which also delayed his flight home).

Dave, G3YMC, is now at 201 countries worked on QRP (5 watts) CW, but feels the 250 level will be a long time coming, especially given that we are entering the bottom of the solar cycle. His latest new one was Brett, 9M6BG (VR2BG operating from 9M6CT's QTH in the Commonwealth contest). Dave comments that "the trick with QRP is not to try and break big pile-ups, and once things get on the *Cluster* it is a waste of time. If you don't get the station after a few calls, going out of the shack and trying again 15 minutes later seems to work wonders!"

Chris, G1VDP, has a nice list of DX worked and is starting to be interested in IOTA. He has been told that he could be the first G1 to qualify for the basic award, which would be a nice coup. Chris has also completed a soundcard interface recently, with the intention of getting started on datamodes. His all-time new ones this month include C6ANM, HH4/K2AC and RA3AUU/HI3 on 20m, EK3GM and PZ5RA on 17m, plus A92GR, S92RI, V5/SP7VC and T6KBLRM (Afghanistan) on 15m. Stan, G0KBL, writes that his best catch of the month was C21DL (Nauru) on 17m, a very nice one indeed.

Mark, G0LGJ/M, caught some good ones again with his 100 watts into a 'DK3 Screwdriver' (bought from B&Q, perhaps?). In terms of miles per watt, the 20m contact with ZL2BCG must rate quite high. The rest of the bunch are mainly from Africa and Central and South America.

David, M0CNP, had fun in the BARTG RTTY contest, including 20m QSOs with OX3HX, HL3AHQ and HS1PDY. Some nice ones there and, as I said earlier, RTTY really is growing in popularity by leaps and bounds, odd perhaps in that it is really an antique mode in these days of computers able to handle much more sophisticated datamodes, but no single mode seems to have gained enough momentum to take its place.

Terry, G1UGH, sends a list of DX worked, which includes two all-time new ones for him: 3B8DB on 10m and EY8CQ on 17m. Damian, M0BKV, comments, "It's amazing how much can be learnt about HF propagation during busy contests. It's the only time when the bands are so busy that you really notice activity moving across

## QTH CORNER

| | |
|---|---|
| F5OGL | Didier Senmartin, PO Box 7, F-53320 Loiron, France. |
| FT5XO | Garry V Hammond, VE3XN, 5 McLaren Avenue, Listowel, Town of North Perth, Ontario N4W 3K1, Canada. |
| PA7FM | Dennis Robbemond, Loggerhof 11, 3181 NS Rozenburg, Netherlands. |
| XT2JZ | Jan Hallenberg, SM5DJZ, Vassunda Andersberg, SE-741 91 Knivsta, Sweden. |

continents". Like others this month, Damian sends a long list of DX worked, and there simply isn't space to include it all. It does look as though his most exciting contact was when he finally cracked the 6O0CW pile-up on 30m, loading up his 20/15/10m tribander for the occasion.

Finally, Andy, GD0TEP, is having problems with a European station pirating his call on 40 and 20m. It's always a pity when this happens, and frustrating not only for Andy but for those who think they have worked a rare one.

## PROPAGATION

Several propagation forecasters are predicting the solar maximum for solar cycle 24 will only reach a sunspot number of 75. If their prediction holds true this would be the lowest solar cycle maximum since cycle 14 which was 64 in 1906. Complete details can be found on the Space Weather website.

As we approach the sunspot minimum years, several correspondents on the Internet reflectors have been asking about programs to track the greyline (the boundary between sunlight and darkness). I have listed a number of the recommended options in 'Web search' below.

## THANKS

Special thanks go to the authors of the following for information extracted: *OPDX Bulletin* (KB8NW), *The Daily DX* (W3UR) and *425 DX News* (I1JQJ). Please send items for the **July** issue by **21 May**. ◆

## COUNTRIES WORKED, 2005

(starting 1/1/05, sorted this month by CW totals)

| CALL | CW | SSB | DATA | MIXED |
|---|---|---|---|---|
| G4KFT | 145 | 0 | 0 | 145 |
| G0KBL | 135 | 0 | 0 | 135 |
| G4OBK | 119 | 12 | 68 | 138 |
| GM4FAM | 114 | 44 | 0 | 135 |
| G0RTN | 111 | 18 | 0 | 114 |
| G3YMC (QRP) | 109 | 0 | 0 | 109 |
| G3JFS | 104 | 52 | 104 | 144 |
| MU0FAL | 103 | 40 | 0 | 106 |
| M0BVE | 67 | 0 | 0 | 67 |
| G4WXZ | 51 | 32 | 0 | 69 |
| GM8OEG | 45 | 8 | 36 | 56 |
| M0BKV | 39 | 56 | 24 | 81 |
| MM3AWD | 23 | 21 | 3 | 33 |
| MM0BQI | 21 | 29 | 63 | 82 |
| G4FVK | 17 | 31 | 0 | 40 |
| M0CNP | 5 | 14 | 67 | 74 |
| M5GUS | 0 | 82 | 0 | 82 |
| GU0SUP | 0 | 0 | 71 | 71 |
| G1UGH | 0 | 54 | 0 | 54 |
| G0LGJ/M | 0 | 43 | 0 | 43 |
| G6CSY | 0 | 22 | 36 | 39 |
| G1VDP | - | - | - | 57 |

## WEB SEARCH

| | |
|---|---|
| CQ Magazine | www.cq-amateur-radio.com |
| *DXAID* | www.eham.net/reviews/detail/1058 |
| *DX Atlas* | www.dxatlas.com/ |
| *Geoclock* | http://home.att.net/~geoclock/ |
| Glorioso 2005 | http://glorieuses2005.free.fr/index-fr.htm |
| KH8SI | www.swains-island.org |
| Mapmaker | http://www.mapmaker.com |
| Olivia MFSK | http://n1su.us/olivia and http://homepage.sunrise.ch/mysunrise/jalocha/mfsk.html |
| PA7FM | www.pa7fm.nl |
| Space Weather | http://solar.uleth.ca/news/05Mar2005/index.php |
| W6EL Prop | www.qsl.net/w6elprop/ |

## HF F-Layer, Propagation Predictions for May 2005

**Compiled by - Gwyn Williams, G4FKH**

| | 3.5MHz | 7.0MHz | 10.1MHz | 14.0MHz | 18.1MHz | 21.0MHz | 24.9MHz | 28.0MHz |
|---|---|---|---|---|---|---|---|---|
| Time | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 |
| (UTC) | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 |
| *** EUROPE | | | | | | | | |
| Moscow | 2.....367 | 73.....14777 | 26.....16764 | ..34455567.. | .....7... | ..... | ..... | ..... |
| *** ASIA | | | | | | | | |
| Yakutsk | ..... | ..... | 321....12455 | .2543445636. | ...1221..... | ..... | ..... | ..... |
| Tokyo | ..... | .....14.. | .....15.. | .....1113.. | .....1..... | ..... | ..... | ..... |
| Singapore | ..... | .....452. | .....1541. | .....221.. | .....21... | .....1.... | ..... | ..... |
| Hyderabad | ..... | .....333 | 1.....4665 | .....34531 | ..322356.... | ..112124.... | ..... | ..... |
| Tel Aviv | 71.....667 | 77.....6888 | .441..157873 | ..32112377.. | ...1..1..... | ..... | ..... | ..... |
| *** OCEANIA | | | | | | | | |
| Wellington | ..... | ..... | .....11... | .....1..... | ..... | ..... | ..... | ..... |
| Well (NZ) (LP) | ..... | 142..... | 254.....142 | 122.....52 | .....1. | .....1. | ..... | ..... |
| Perth | ..... | .....11.. | .....1.. | ..... | ..... | ..... | ..... | ..... |
| Sydney | ..... | .....12.. | .....22.. | .....1... | ..... | ..... | ..... | ..... |
| Melbourne (LP) | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Honolulu | ..... | ..... | ..1..... | ...11..... | ..... | ..... | ..... | ..... |
| Honolulu (LP) | ..... | ..... | ..... | .....1... | .....1... | .....1... | .....1... | ..... |
| W. Samoa | ..... | ..... | ..... | ...1111..... | .....1..... | ..... | ..... | ..... |
| *** AFRICA | | | | | | | | |
| Mauritius | ..... | .....1332 | .....3221 | .....12... | .....1.... | ..... | ..... | ..... |
| Johannesburg | 55.....255 | 67.....7888 | .1.....7643 | ..1....361.. | ..11..121... | ...1..11.... | ....2233.... | ..... |
| Ibadan | 21.....12 | 66.....566 | 775.....5887 | ..741115787. | ..8833579 8.. | ...8....86.. | .....9... | .....7... |
| Nairobi | ..... | 3.....333 | 42.....2444 | .4.....14555 | ..32112456 3. | ..23223565.. | ...1.1126... | .....2... |
| Canary Isles | 66.....366 | 776.....1777 | 7762...14677 | ..71...17674 | ...76577785. | ...3..3378.. | ..... | ..... |
| *** S. AMERICA | | | | | | | | |
| Buenos Aires | 11..... | 776.....37 | 223.....45 | .....131 | .....175. | .....263. | .....13.. | ..... |
| Rio de Janeiro | ..... | 32.....44 | 11.....353 | .....531 | ....1.11386. | ....1.11373. | .....1125.. | ..... |
| Lima | ..... | 212.....2 | 1.1.....12 | .....1. | .....35. | .....22. | .....1.. | ..... |
| Caracas | ..... | 321.....2 | 332.....13 | .....33 | .....23. | .....21. | ..... | ..... |
| *** N. AMERICA | | | | | | | | |
| Guatemala | ..... | 111..... | 1.1.....1 | ..... | ..... | ..... | ..... | ..... |
| New Orleans | ..... | 22..... | 22.....1 | .....11 | .....111253. | .....1.. | ..... | ..... |
| Washington | 11..... | 662.....2 | 671.....15 | ....111.1146 | .....112253. | .....1.. | ..... | ..... |
| Quebec | 62.....2 | 772.....7 | 1.1.....13 | ....1..1113. | .....26. | ..... | ..... | ..... |
| Anchorage | ..... | ..... | ..... | .....1. | ..... | ..... | ..... | ..... |
| Vancouver | ..... | ..... | ..... | ..... | .....1. | ..... | ..... | ..... |
| San Francisco | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| San Fran (LP) | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

**Key:** Each number in the table represents the expected circuit reliability, e.g. '1' represents reliability between 1 and 19% of days, '2' between 20 and 30% of days, etc. No signal is expected when a '.' is shown. Black is shown when the signal strength is expected to be low to very low, blue when it is expected to be fair and red when it is expected to be strong.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at http://members.aol.com/g4fkhgwyn The page is updated monthly. The provisional mean sunspot number for March 2005 issued by the Sunspot Data Centre, Brussels, was 24.8. The daily maximum / minimum numbers were 43 on 11 March, and 7 on 1 and 30 March respectively. The predicted smoothed sunspot numbers for May, June and July are respectively: (SIDC classical method - Waldmeier's standard) 25, 24, 22 (combined method) 30, 29, 28. Longpath predictions are shown with (LP) following the path name. Higher input power and superior aerials have been used for these predictions; less well-equipped stations may find the longpath predictions somewhat inaccurate.

E-mail: willemsen@multiweb.nl

# IOTA

**Instead of the usual bimonthly 'IOTA' column, this time we feature a report from Johan Willemsen on his 2004 DXpedition to three of Australia's rarer IOTA groups, and an all-time new one, Marion Reef, OC-267**



**Right:**
**Desert island: Marion Ref, OC-267.**

**Left, top to bottom: Map of the Gulf of Carpentaria, showing locations of North Island, OC-198; Bremer Island OC-185, and Sweers Island, OC-227.**

**Map of the Coral Sea, showing location of Marion Reef, OC-267.**

**Operating from the beach on North Island, OC-198 - during daylight!**

**The camp site on Bremer Island, OC-185. Note the operator, in the shade of the tree.**

**Sweers Island, OC-227, from the air.**

**Johan operating as VK4WWI, with Lyn, VK4SWE, on Sweers Island, OC-227.**

**Operating from the shade of the automated weather station on Marion Reef, OC-267.**

After the IOTA DXpedition to Cato Reef in 2003 my Australian friends John, Stewart and Graham asked me where we were to go in 2004. Stewart owns a plane for his HF radio business in Australia; he travels to remote Aboriginal settlements and cattle stations for repairs and installations. The plane is a Cessna 206 based in Cairns and that gave me the idea to visit the islands in the Gulf of Carpentaria. These islands were at the top of the 'most wanted' islands in VK.

## NORTH ISLAND OC-198

After six months of preparation and arranging permits I flew from Amsterdam to Cairns were we stayed for the night in John's house. The next morning we went to the airport, packed all the equipment in the Cessna and left for Burketown. After refuelling we left for King Ash Bay in the Northern Territory. After a two-hour flight we arrived at King Ash Bay airstrip. The Cessna was anchored to the ground with ropes and steel pins and we left it there. We were taken to North Island in a small boat by Mark, a former bar owner from Sydney who leases the island from the Aborigines and runs fishing lodges on the island.

North Island is a very beautiful place to visit, but is very remote; it took us about two hours in the boat to get there and everything had to be taken with us - fuel water, food and all the gear. The operation from North Island (OC-198) was difficult and resulted in 337 QSOs. There was one good spot for operating and that was on the beach, the generator shed produced S9+ noise and the *CQ* WW SSB contest was on.

I could only operate from the beach during daylight hours as there were some large saltwater crocodiles in the area and the manager told me that it would be very stupid to be on the beach after dark concentrating on the radio with the headphones on. By the time I heard the splash of the crocodile coming out of the water it would already have had me. And sure enough when we were out on the beach at night, sunset being at around 1800 local time, we could see pairs of red eyes in the water - pretty scary. The crocodiles are very smart; they can watch you for months, observe your habits and attack when you don't expect it. There are incidents like that every week in the Northern Territory and the list of crocodile stories is endless. When a crocodile eats someone and they shoot it, it is taken to the coroner for examination!

## BREMER ISLAND OC-185

After the two-day operation from OC-198 we flew from King Ash Bay to Gove, a bauxite mining community in the Northern Territory. Trevor, who runs a fishing and camping business, welcomed us. He had arranged the permit for Bremer (OC-185) and was running a well-organised business. We had to camp on Bremer and he had all the gear including tents, cooking equipment and a large quantity of very fine food.

I was working from the beach again; propagation was good and it resulted in 1080 QSOs. Solar panels and a small generator charged the battery. The only problem was the heat, it was about 40°C and I was eaten alive by sand flies and mosquitoes: stupid, I should have taken my mosquito net. The one

inhabitant of the island visited us, a young Aboriginal wearing shorts, with a boomerang and spears, accompanied by his dogs. After we gave him some orange juice he left and we did not see him again.

During the day there was no propagation and it was too hot to move a muscle but at sunset 14MHz opened and it was great, working from the beach watching the sunset and enjoying the pile-up. A lot of people complain about the mess some expeditions get themselves into during a pile-up, but I must say that it is all up to the individual. When you start running split from the start and work by number it is no problem, but you have to be strict: don't take 1s when you are working 2s - and that is sometimes difficult when you hear a good friend calling. The Japanese operators are very disciplined and when working Japan I could work four SSB QSOs a minute, with Europe two or three QSOs. After a good operation from OC-185 we went back to Gove for the flight to Sweers Island, OC-227.

## SWEERS ISLAND OC-227

On Sweers Island I was going to visit my friend Lyn, VK4SWE. She is a resident and runs a lodge with her husband Tex. Lyn had received her licence about a month earlier and we managed to work on CW and SSB from Europe, together with RSGB IOTA Manager Roger, G3KMA, and Steve, G0IUH. After a beautiful three-hour flight over the Gulf of Carpentaria we arrived at Sweers Island and were welcomed by Lyn and Tex.

Sweers Island is named after Salomon Sweers from Holland who worked for the Dutch East-India Company in Batavia [Jakarta] around 400 years ago. We operated from the restaurant on the island and made 469 QSOs. The island is a place with a rich history; it was visited by Matthew Flinders who circumnavigated and named Australia. Another phenomenon is the 'Morning Glory', a rolling cloud which only seems to appear in the Gulf of Carpentaria and the Gulf of Mexico.

During the second day of the stay I did an interview for about 10 minutes on ABC radio explaining amateur radio and the IOTA programme. It was broadcast throughout the eastern half of Australia. After an hour we received a phone call from Bruce, VK4ISA, from Mount Isa and we managed to have a QSO on 7MHz.

Lyn will improve her antennas this year and she is quite active so you should be able to work her sooner or later. After this operation we flew back to Cairns.

The only neighbour on Marion Reef.

## MARION REEF OC-267

I left John, Stewart and Graham in Cairns and went on to Mackay, from where I would leave for Marion Reef on the *Wyllaway*. The flight went well, the 30kg overweight baggage was no problem, thank you Qantas! The next day we left for Marion Reef. The *Wyllaway* carried 12 sports fishermen and two crew and was accompanied by two game fishing boats, the *Marlin Blue* and *Black Samurai*.

After an astonishing 220 miles of sailing through the Coral Sea we anchored close to the weather station on Careela Cay at Marion Reef. This trip was a stroll in the park compared with the trip last year to Cato. The sea was flat, the weather was good and I remember seeing many reefs close by. My travel mates were a mixed group of people, three heart surgeons from Brisbane, five welders who owned a company producing equipment for abattoirs, and a guy working on a submarine. We had a lot of fun but the jokes that were told are not suitable for this article! The heart surgeons had bought the complete stock of a liquor store just for this trip (makes you think!) - but every night we had a wonderful dinner with very good wines. We ate fish for a weak, but it was fresh.

The *Wyllaway* is very well equipped for an expedition like this. Every afternoon the skipper took me to the reef in a dinghy with charged batteries, food and water. I had a VHF handheld with me for emergencies. On the reef was a solar powered weather station which provided nice shade. I operated from there, surrounded by thousands of birds. At sunset I could see the dorsal fins of sharks hunting in the lagoon and when we sailed to the reef in the dinghy it was like being in a large fish tank with thousands of fish, coral, sea snakes and turtles.

I slept for two nights on the reef when the sea was too rough for the dinghy to pick me up in the dark. That was special, there were thousands of stars and there was nobody out there. I was only bothered by a huge turtle who wanted to lay her eggs where my vertical was. I had to remove her because she was very strong and I was afraid she would damage the wires. But I had the chance to see her dig a 5ft hole and lay her eggs, which took about three hours. After that she disappeared back into the sea and came back the next day.

Marion Reef resulted in 1485 QSOs. Propagation was poor because of the Aurora Australis; South America was a disaster because the path is over the South Pole. However, I did manage to work Pedro, HK3JJH, after he asked for a sked by calling a Japanese friend of his. North America was also difficult but during the one good opening, which lasted for 30 minutes, a lot of friends like W5BOS, WD8MGQ and KB5GL were put in the log. They had been looking for me for four days, but it shows that being on at the right time on the right frequency finally pays off.

After the Marion Reef expedition I went back home to process the QSLs and validation paperwork. This year I have sent simple plain QSLs because I wanted to QSL fast for the Honour Roll update, but I'm not sure I will do that again. Colour QSLs are much nicer: any comments on this would be appreciated. Hope to work you all later this year from OC-NEW. ◆

| ADDITIONS TO IOTA DIRECTORY - 40TH ANNIVERSARY EDITION | | |
|---|---|---|
| OC-268/Pr | YB7 | Laut Kecil Islands (Indonesia) |
| SA-094 | CE8 | Ultima Esperanza Province South group (Chile) |

Pr = Provisional

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**Complete System: £1299**

## IC-7800

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**And more bits from ML&S:** You've read it all before and yes, the IC-7800 really is the ultimate DX-er's choice. At £6400 you may argue it damn well should be. Before you pooh-pooh it, it will exist in your shack for at least 10 years. Like any flag ship from Icom (IC-781 & IC-R9000) even after almost 20 years they still fetch 50% of their value privately. If the IC-7800 is the same (and you bet it will be) in real terms that equates to a cost of ownership of £160 a year. Talk to Chris or one of his team to discuss a package that not only suits your radio needs but your financial situation.
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# The ML&S Ham Radio Top Sellers, Antennas &

**No.1** ★★★★★★★★★
## NEW Yaesu FT-60E+ MH-34b4b
Latest Twin Band 5W Handie from Yaesu. Offered with Yaesu MH-34b4b Speaker microphone!
**Only £189 Complete!**
**(Rig only: Call)**

**No.2** ★★★★★★★★★
## NEW VX-6R
New Handie with CW Trainer!
**Coming soon...**

**No.3** ★★★★★★★★★
## Yaesu FT-847 + MFJ-993 Bundle!
The famous HF+6+4+2+70 Transceiver is now even better value. Buy a new FT-847 with a new matching MFJ-993 Auto Tuner.
**Bundle Price Only £1225**

**No.4** ★★★★★★★★★
## Yaesu FT-1000MP mkV
Still the flagship of the Yaesu HF Range. 200W and put the CDXC IOTA crew on the map.
**RRP: £2599, MLS: £2099**
**NEW LOW PRICE!**

**No.5** ★★★★★★★★★
## Yaesu FT-1000MP mkV Field
Ditto mkV but 100W and built in PSU.
**RRP: £1999 ML&S: £1699**
**NEW LOW PRICE!**

**No.6** ★★★★★★★★★
## Yaesu FT-857+ATAS-120
We have found a few ATAS-120 auto antennas so we can offer this deal once more. But hurry!
**£779 for both (Rig only: £579)**

**No.7** ★★★★★★★★★
## Yaesu VX-7R
The U.K's best selling Triple Band Handie.
**Only £299 or 24 x £14.99**

**No.8** ★★★★★★★★★
## Yaesu VX-150
Built on the commercial VX-400, simple to use rugged 2m Handie, supplied with Nicads & Charger.
**RRP: £149, ML&S: £99.95 or 'Twin Pack' only £199**

**No.9** ★★★★★★★★★
## Yaesu FT-817ND Latest Version
The latest FT-817ND comes complete with HF+6+2+70 and Metal-hydride batteries, charger, mic & antenna.
**Call for best price**
**(FT-817ND-DSP Version available)**

**No.10** ★★★★★★★★★
## Yaesu FT-897 + FC-30 Auto Tuner
For the start of 2005 we have bundled together a brand new FT-897 Transportable Base rig with HF/6/2/70, all mode with the FC-30 Auto Tuner. This literally bolts on to the side of the FT-897 making it a very compact HF package.
**Only £849 for both**
**(Rig only: £649)**

**No.11** ★★★★★★★★★
## Yaesu FT-7800
Bar make the tea it'll give you 2m/70cm- @ 50W/40W.
**RRP: £239, ML&S: £239**

**No.12** ★★★★★★★★★
## Yaesu FT-8800
Similar to the FT-7800 but can receive on 2 & 70 simultaneously.
**RRP: £289, or 48 x £8.26 p/m**

**No.13** ★★★★★★★★★
## Yaesu FT-2800M
2M brick-built 65W rig.
**RRP: £179, ML&S: £159**
**FREE MLS-100 Yaesu Mobile speaker**

**No.14** ★★★★★★★★★
## Yaesu VX-2E
Micro Handie 2/70 with scanner. Complete withLi-Ion battery, charger & antenna.
**NEW LOWER PRICE**
**Now only £119**

**No.15** ★★★★★★★★★
## Yaesu FT-8900 with FREE YSK-8900 Remote Kit!
One-stop solution to high-power FM on 10m, 6m, 2m & 70cm. When your local repeater is busy, slip onto 10m & work DX!
**Only £339**

**No.16** ★★★★★★★★★
## FT-840FM
Not all FT-840's are the same. Ours come fitted with the FM Board enabling 29.6MHz operation. The very best budget priced HF 100W Transceiver.
**£445.00**

**No.17** ★★★★★★★★★
## Kenwood TS-2000E
Just superb on all bands 160m-2m with optional 23cm (X-Version).
**RRP: £1699, ML&S: Call**

**No.18** ★★★★★★★★★
## Kenwood TS-2000X
As above but with 23cm fitted.
**RRP: £1999, ML&S: Call**

**No.19** ★★★★★★★★★
## Kenwood TS-480SAT
The best selling Kenwood H.F. Can be used mobile or base. Includes ATU.
**RRP: £1099 ML&S: £CALL**

**No.20** ★★★★★★★★★
## Kenwood TS-480HX
As TS-480SAT but 200 Watts, no ATU.
**RRP: £1199, ML&S: £999**
**or 48 x £29.56 p/m**

**No.21** ★★★★★★★★★
## Kenwood TS-570DGE
Still the ideal choice if you are keen on H.F. and want an easy to use radio.
**RRP: £999, ML&S: £799**
**or 48 x £23.64 p/m**

**No.22** ★★★★★★★★★
## Kenwood TMD-700E
The unique 700E is not only a dual-band FM rig but has APRS and TNC built-in.
**RRP: £519, ML&S: £439**
**or 48 x £12.99 p/m**

**No.23** ★★★★★★★★★
## Kenwood TH-F7E
2/70 Handie with Gen Cov RX. If you must have SSB RX on your dual-bander then buy one!
**RRP: £289.95, ML&S: £249**

**No.24** ★★★★★★★★★
## Kenwood TH-D7E
A 2/7- Handie with TNC and APRS capability. **RRP: £359, ML&S: £299**
**or 48 x £8.85 p/m**

**No.25** ★★★★★★★★★
## NEW Icom IC-756Pro mkIII
The latest in the IC-756Pro Series
**RRP £2495 ML&S £2099**
**or 36 x £76.31**
Package deal: IC-756ProIII, SM20 Microphone, SP-23 New Base Speaker with filters.
**RRP £2768, ML&S only £2299**

**No.26** ★★★★★★★★★
## Icom IC-7800
The worlds best H.F. Transceiver? Probably.
No silly freebies, just the ultimate understanding and support you deserve when making an investment of this magnitude. To discuss the new HF+6M Super Rig from Icom, call the ML&S Sales team today.
**RRP: £6400.00**

**No.27** ★★★★★★★★★
## Icom IC-7400
HF/6M/2M DSP Base Transceiver with ATU & 100W.
**RRP: £1699, ML&S: £1299 with FREE SP-21 & SM20**
(whilst stocks last)

**No.28** ★★★★★★★★★
## Icom IC-706mkIIG
Final batches are trickling through. This was the radio that started compact all band mobile operation 10 years ago. We are offering the last few at a very special price. Please call or see our web site.
NEW MODEL ARRIVING SOON!

## Heil Sound

***We have been Heil stockists for over 15 years. With more space we can offer even more of their excellent product range. We also stock the Goldline & Classic range, call for details.***

**The 'Standard' in DX-Audio Engineering.**
Available with either the HC-4 (DX) or HC-5 (HQ High Quality) microphone inserts.

### Pro-Set Series
All Large Headphones with padded ear-shields and boom-microphone. Don't forget to add the cable interface for your radio.

| | |
|---|---|
| Pro-Set-4 with HC-4 DX Insert | £109.95 |
| Pro-Set-5 with HC-5 HQ Insert | £109.95 |
| Pro-Set-IC with Icom Insert | £124.95 |
| Pro-Set-Plus-IC for Icom & HC4 insert | £169.95 |
| Pro-Set-Plus with dual HC4/HC5 | £155.95 |
| AD-1 Interface Leads for any of the above (Please specify which radio) | £16.95 |

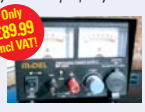
### Pro-Set Quiet Phones
New release from Heil Sound, the Quiet Phone series employ a noise cancelling system to remove external noises & phase reversal to ensure you hear what you want to hear not everything else!

| | |
|---|---|
| PSQP-4 with DX insert | £189.95 |
| PSQP-5 with HQ insert | £189.95 |
| PSQP-IC with Icom insert | £199.95 |
| FS-2 PTT Foot Switch for any of the above headphone systems | £39.95 |

## NEW! MyDEL Power Supplies

A new rage of PSU's from MyDEL. The neatest smartest looking desk top power supplies that money can buy. Ideal for powering any main rig or accessory requiring 13.8V DC at up to 25 Amps.

### MyDEL MP-250A
Only £89.99 incl VAT!



25 Amps maximum. 22Amps constant, ideal for most modern HF Transceivers
- Variable Voltage 9-13.8VDC
- 110-234V input
- 2 x outputs: 25A Binding Posts, 7A Cigar Socket
- Fan cooled, speed variable to voltage supplied
- Two huge back-lit meters, Volts/Amps
- Fully protected, supply shut off if more than 25A is drawn, re-setable by switching off for 25 seconds.
- Only 5 3/4"W x 4 1/2" H x 6" D in size
- Less than 35mV peak-to-peak ripple under full 25AMP load
- Full exchange warranty for 2 Years

### MyDEL MP-4128
Another new switch mode PSU from MyDEL.

Similar in spec to the MP-250A but without meters or cigar lighter o/p. 22-25 AMP output with heavy duty binding posts on the front panel and push on terminals for lower current output on rear. Fully protected. **£69.99**

### Yaesu FP-1030A
25 Amp power supply **£179.00**

**Conditions**. All applications subject to a simple credit check. A decision is usually within minutes so you can buy straight away. Minimum first spend is £75. Spend Up to £200 - Interest Free Period 56 days. Spend Over £200 - Interest Free Period 90 days. Spend Over £300 - Interest Free Period 4 months. Spend Over £400 - Interest Free Period 5 months. Spend Over £500 - Interest Free Period 6 months. Like a credit or debit card you will receive a detailed monthly statement & your own personal ML&S Store Card. Any outstanding balance due after the above period will be charged at 29.8%. For further details see our website.

## Tigertronics Sound Card - Radio Interface


For all available Digital modes, the SignaLink SL-1+ also supports the latest Voice modes such as Internet Repeater Linking (EchoLink, VOIP, etc.), Remote Base, and Voice Keyer operation. We sell four versions of the enhanced model the SL-1+8R with 8-pin round mic. connector, the SL-1+RJ45 with RJ-45 mic. connector, the SL-1+RJ11 with RJ-11 mic. connector and the SL-1+6PMD with 6-pin mini Din Data Port connector SL-1+8xxx Interface with rig lead (you specify! **£69.95**

**Extra leads**
**£14.95** (8-Pin, RJ-45, RJ-11, 6-pin mini DIN)
**£19.95** (SL-CAB-13I 13-Pin Icom), (SL-CAB-13K 13 Pin Kenwood)

*Apply now for your very own ML&S Store Card*

**Buying from ML&S has just got easier! By using the ML&S Store Card you can purchase any product & pay no interest for up to 6 months. There's no lengthy forms to fill in and you can use it whenever you like. Keep all your Ham Radio purchases separate making it easier to manage your spend *and* get interest free - what could be better?! Conditions apply.**


**"Classic" Finance example: Kenwood TMD-700E. RRP: £519. Payment illustration: Zero deposit and 48 payments of £12.99 per month. Total amount payable: £623.52. APR: 19.9%. ML&S is a licenced credit broker. Finance offered subject to status. Full written details on request. E&OE**

**Don't forget! ML&S are approved stockist for the following:** bhi Ltd, Casio, Icom, Kenwood, Maldol, M

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www.hamradio.co.uk

# Accessories - much more on show at the store

**No.29** ★★★★★★★★★
**Icom IC-703**
10W Portable/Base HF Transceiver with built-in ATU.
**RRP: £703, ML&S: £449**

**No.30** ★★★★★★★★★
**Icom IC-718**
Basic ready to go 100W HF Transceiver supplied with Microphone & DC Lead.
**RRP: £649, ML&S: £449 or 48 x £13.29 p/m**

**No.31** ★★★★★★★★★
**Icom IC-910X**
The best 2/70 & 23cm dedicated all mode base. 23cm included.
**RRP: £1675, ML&S: £1239 or 48 x £36.66 p/m**
Basic Version (without 23cm) also available £1089 or 48 x £31.93 p/m

**PLUS: £50 credit against your next Icom purchase!**

**No.32** ★★★★★★★★★
**Icom IC-R20E**
The latest portable receiver with TWIN RX & digital record facility. For full spec see web.
**RRP: £499, ML&S: £369.95 or 24 x £18.54 p/m**

**No.33** ★★★★★★★★★
**Icom IC-2200H**
Just Arrived! 65W o/p 2M FM. The optional UT-115 provides digitally modulated and demodulated clear audio. It also allows you to send voice and data simultaneously.
**RRP: £235, ML&S: £199.00**

**No.34** ★★★★★★★★★
**Icom IC-E208**
2/70 mobile 50/55W Transceiver with host of additional features. Remote head leads included.
**RRP: £365, ML&S: £239**

**No.35** ★★★★★★★★★
**MFJ-259**
Range: 1.8-170MHz. MFJ's favourite Antenna Analyser with HF frequency coverage. It's simple to operate and keeps your antennas in check. MFJ-259B gives you a complete pictures of your antenna's performance. You can read antenna SWR and Complex Impedance 1.8 to 170MHz.
**ML&S: £269.94**

**No.36** ★★★★★★★★★
**MFJ-269**
Range: 1.8-450MHz. MFJ's latest Antenna Analyser with UHF frequency coverage. Based on the successful MFJ-259B it combines all of the features plus more.
**ML&S: £349.95**

**No.37** ★★★★★★★★★
**TomTom Go**
The world's simplest, smartest, all-in-one car navigator. It's so good Lynchy uses one in his Y4ESU Mobile!
**ML&S Only £439.95**

## Daiwa Meters

| | |
|---|---|
| **Daiwa CN-101L: SWR/PWR Meter 1.8-150Mhz** Power range: 15/150/1.5kW | ML&S only £59.95 |
| **Daiwa CN-103LN: SWR/PWR Meter 140-525MHz** Power range: 20/200W | ML&S only £65.95 |
| **Daiwa CN-801H: SWR/PWR Meter 1.8-200Mhz** Power range: 20/200/2000W | ML&S only £109.95 |
| **Daiwa CN-801V: SWR/PWR Meter 140-525MHz** Power range: 20/200W | ML&S only £119.95 |
| **Daiwa CN-801S SWR/Power Meter 0.9-2.5Ghz** Power rating: 2/20 watts | ML&S only £139.95 |

## Hustler 6-BTV Only £229.95

**The best performing H.F. Vertical - ever!**
We have literally sold hundreds of these with fantastic customer reports. At last a vertical that gives you REAL PERFORMANCE on 80m and 40m, as well as the other bands. No radials required. Just mount 18 inches above the ground, connect to a decent earth spike close by and operate.
**6-BTV HUSTLER 80-10m Vertical 1kW.**
6 Bands: 10, 15, 20, 30, 40, 80m. VSWR 1.6:1 or better. 10-40m Bandwidth up to 100kHz 80m. Power: 1kW
If you can't mount the Hustler 6-BTV on the ground then the only choice is the new VK5Jnr. It's so good we use one at our new H.Q.!

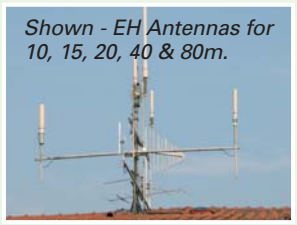
### MyDEL MultiTrap
*Forget the G5RV. Install a proper TRAPPED wire dipole MutiTrap for 80-10M Only 66'.Must be centre supported.*
**£99.95**

### MyDEL MegaTrap
*Same as Multitrap but 160m/80/40m, 105' long.*
**£109.95**

# Small Garden? No Garden?

## Install an EH Antenna for HF today.

*Introducing a new range of antennas from Arno Electronics. Available for any band 10m-160m, ML&S stock this exciting new product available for immediate despatch.*


*Shown - EH Antennas for 10, 15, 20, 40 & 80m.*

*All antennas are beautifully built and pre-tuned at the factory. Supplied with fixing clamps & clear installation instructions. Easily fine tuned with outer ring sleeve. You will be totally amazed at how well they work. No ATU required. Just plug-in and work!*

| | | | | | |
|---|---|---|---|---|---|
| Cobra 10 | 28-29.8MHz, | 2kW | 90cm long | (500W RTTY/AM) | £105.00 |
| Cobra 12 | 24.890-24.990 | 2kW | 90cm Long | (500W RTTY/CW) | £105.00 |
| Cobra 15 | 20.7-21.7MHz | 2kW | 90cm long | (500W RTTY/AM) | £105.00 |
| Cobra 17 | 18.068-18.168MHz | 2kW | 90cm long | (500W RTTY/CW) | £105.00 |
| Cobra 20 | 13.8-14.8MHz | 2kW | 90cm long | (500W RTTY/AM) | £105.00 |
| Cobra 30 | 9.9-10.3MHz | 2kW | 93cm long | (500W RTTY/AM) | £105.00 |
| Cobra 40 | 7-7.2MHz | 2kW | 93cm long | (500W RTTY/AM) | £105.00 |
| Venus 80 | 3.5-3.8MHz | 2kW | 248cm long | (500W RTTY/AM) | £179.00 |
| Venus 155 | 1.913-1.933MHz | 2kW | 248cm long | (500W RTTY/AM) | £179.00 |
| Venus 160 | 1.830-1.850MHz | 2kW | 248cm long | (500W RTTY/AM) | £179.00 |

Delivery: Cobra £20, Venus £25. (England & Wales, phone for other destinations)

**For more details on this fascinating design see our web site. Better still listen out for G4HKS or G0WTZ using one from the showroom!**

## Linear Amp Range of Amplifiers

ML&S £Phone

### Challenger 3 The Ultimate H.F. Amplifier

* Output power: 1500W SSB or CW, 1000W RTTY
* Gain: 13dB nominal
* Power requirements: 230V AC at 13A, 50/60 Hz
* Frequency coverage: All amateur bands 1.8 - 29.7MHz
* Valve: Single GS35b ceramic triode
* DC voltage: 3600V DC
* Metering: Plate current, Grid current/RF O/P
* Dimensions: 16in wide x 9.5in high x 17in deep 410mm x 240mm x 475mm
* Weight: 29kg

**ML&S £1795**

### Ranger 811
**Bags of Power for Little Money!**

* Output power: 800W CW or SSB, 400W RTTY
* Gain: 10dB nominal
* Power requirements: 230V AC at 8 Amps, 50/60 Hz
* Frequency coverage: All amateur bands 1.8 - 29.7 MHz
* Valves: 4 x 811A, vertically mounted
* Cooling: Papst 120mm axial fan
* DC voltage: 1700V DC
* Protection: Primary AC fuses, soft-start
* ALC: Front panel adjustable control
* Dimensions: 14in wide x 9.5in high x 16in deep 355mm x 240mm x 405mm
* Weight: 23kg

### Discovery 2 or 6 (GS31) 2m or 6m Version of this 1kW Amplifier

* Frequency coverage: 144 - 146 MHz (Discovery 2)
* Or 50-54MHz (Discovery 6)
* Output power: 1200W
* Drive up to: 100W
* DC voltage: 2800V DC
* Gain: 12dB nominal
* Power requirements: 230V AC at 13A, 50/60Hz
* Valve: Single GS31 triode
* Relays: Coaxial O/P, short throw I/P
* Metering: Plate current, Grid current/RF O/P
* Dimensions: 14in wide x 9.75in high x 17in deep 360mm x 250mm x 430mm
* Weight: 25kg

**ML&S £1395**

**Both the above are available with the GS35 Ceramic Triode producing 1500 Watts output.**
**Discovery 2 or 6 (GS35) £1595**

## NCS Multi Switcher £279.95

***The complete range of NCS rig and receiver switching products are now available from your favourite Ham Store.***

The NCS Multi-Switcher is a "mini-console" that lets you switch all operator equipment (microphone, headset, keyer, foot-switch, etc) to any of four radios at the push of a button. You can switch between a headset, desk or hand mic, TNC, Phone Patch, Sound Card, etc. The Multi-Switcher matches the impedance, audio level and pin-out of nearly any microphone to virtually any radio including vintage rigs. The Multi-Switcher also switches your foot- or hand-switch and CW keyer to the selected radio.

***Connecting cable for any Yaesu, Icom or Kenwood Radio £19.95 each***

***For more details and the complete range of NCS products see our web site.***

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Suppliers of Communications Equipment

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www.hamradio.co.uk

## MFJ PRODUCTS

***ML&S always carry a large stock of MFJ accessories. Here is a listing of the most popular items.***

**MFJ-902** Tiny Travel Tuner.
Tiny 4½ x 2¼ x 3 inch tuner handles full 150 Watts! Covers 80-10 Meters, has tuner bypass switch, tunes nearly anything! **£69.95**

**MFJ-904H** Tiny Travel Tuner w/ SWR/Wattmeter & Balun.
Tiny 7½ x 2¼ x 3 inch tuner handles full 150 Watts! Covers 80-10 Meters, has tuner bypass switch, tunes nearly anything! **£129.95**

**MFJ-949E** 300 Watt Antenna Tuner. More Hams use MFJ-949's than any other antenna tuner in the world! Why? Because the world's leading antenna tuner has earned a worldwide reputation for being able to match just about anything. **£159.95**

**MFJ-974H** 160 Thru 6 Meters Balanced Line Antenna Tuner.
The MFJ-974H is a fully balanced true balanced line antenna tuner. It gives you superb current balance throughout its very wide matching and frequency range. **£179.95**

**MFJ-993** 300 Watt IntelliTuner Automatic Antenna Tuner.
The MFJ-993 IntelliTuner lets you tune any antenna automatically balanced or unbalanced - - ultra fast. It's a comprehensive automatic antenna tuning center complete with SWR/Watt-meter, antenna switch for two antennas and 4:1 current balun for balanced lines. **£249.95**

**MFJ-969** Roller Inductor Antenna Tuner.
The MFJ-969 Antenna Tuner gives you MFJ's superb AirCore Roller Inductor and full 6 meteres through 160 Meter coverage! You get everything you've ever wanted including...300 Watts PEP SSB full featured antenna tuner, widest matching range, full size lighted Cross-Needle SWR/Wattmeter reads true peak forward power, QRM-Free PreTune, 8 Position antenna switch, built in 50 Ohm dummy load, heavy duty 4:1 balun -- all in a tough, attractive cabinet. MFJ's famous 1 year No Matter What warranty. **£199.00**

**Remember! If you see any MFJ products cheaper not only will we match it we'll beat it by a fiver!**
(Must be UK approved and in stock at the time of ordering).

Maldol Maldol Maldol


### Maldol HVU-8

The Maldol HVU-8 is a unique and ultra-compact HF, VHF, and UHF antenna developed for confined and restricted space installations like apartments and condominiums or for temporary or portable use. Installation is easily accomplished and convenient due the HVU-8 being only the traditional height and weight of HF vertical antennas. The HVU-8 comes with mounting brackets, U-bolts, etc. for easy installation.

**HVU-8 Specifications**

- Frequency: 80/40/20/15/10/6/2M/70cm bands
- Type: 1/4λ (3.5/7/14/21/28/50MHz)
  1/2λ (144MHz)
  5/8λ x2 (430MHz)
- Gain: 2.15dBi 144MHz. 5.3dBi 430MHz
- 70cm: Two 5/8 waves in phase 5.5 dBi gain
- Power: 200 watts SSB on HF and 150W FM on 6M to 70 CM
- SWR: 1.5:1 at fO frequency
- Connector: UHF (SO-239)
- Mast Diameter: 1.0 - 2.36 inches (25-60 mm)
- Height: 8.5 feet (2.62 m)
- Weight: 5 Lbs. 7 ounces. (2.4 kg)

### Maldol HMC-4

| | |
|---|---|
| Type: | Amateur HF/VHF/UHF mobile antenna |
| Band(s): | 10m - 1/4-wave<br>6m - 1/4 wave<br>2m - 1/2-wave<br>70cm - 2*5/8-wave |
| Gain: | 10 - 0 dBi<br>6m - 0 dBi<br>2m - 2.15 dBi<br>70cm - 5.5 dBi |
| Max power: | 120W (10/6 m: 80 W) |
| Impedance: | 50 ohms, M-plug/PL-259 |
| Length: | 1.19m |
| Weight: | 390gr |
| Manufactured: | Japan, 2003-200x |
| Other: | Suitable for Yaesu FT-8900R. |

Only £69.95

### Maldol VK5-Jnr.

Compact ground plane antenna covering: 3.5/7/14/21/28mHz. It combines low-loss traps, with newly designed coil-bobbin, that can handle up to 500W on SSB. Adjustable solid radials give directional and omni-directional patterns. All traps and elements are adjustable to cover all bands and desired centre frequencies.

Only £219.95

### NEW! GDX-50 Wide-Band Discone TX/RX Antenna

RX: 50MHz - 1500MHz
TX: 6/2/70
POWER: 50W
LENGTH: 1360mm
WEIGHT: 910g
DIAMETER: 530mm
SUITABLE MAST: 60mm

Only £69.95

## ML&S are proud to be the UK distributor for Hokushin Industries' range of products.

Maldol

**For many years Hokushin have manufactured trend setting mobile antennas of the finest quality.**

**All the antennas featured are the conventional M mount that has become the industry standard. The VHF/UHF selection are slender profile with foldover on most models while the HF range are sturdy and durable offering excellent mobile performance.**

**Here are some examples of there excellent range of Maldol Antennas:**

### Apex Range

| | | |
|---|---|---|
| **AX-40** 144/430MHz | • TYPE 1/4λ. 144MHz, 1/2λ. 430MHz • GAIN 3.0dBi 430MHz • MAX POWER INPUT 60W • CONN. M-P • LENGTH 425mm • WEIGHT 110g | **£24.95** |
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| **AX-110** 144/430MHz | • TYPE 1/2λ. 144MHz, 5/8λ. 430MHz • GAIN 3.5dBi 144MHz, 6.0dBi 430MHz, • MAX POWER INPUT 70W • CONN. M-P • LENGTH 1100mm • WEIGHT 150g | **£34.95** |

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| | | |
|---|---|---|
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| **HFC-80** 3.5MHz | • TYPE 1/4λ. • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1540mm • WEIGHT 360g | **£38.95** |
| **HFC-40L** 7MHz | • TYPE 1/4λ. • MAX POWER INPUT 200W SSB • CONN. M-P • LENGTH 1870mm • WEIGHT 330g | **£34.95** |
| **HFC-40** 7MHz | • TYPE 1/4λ. • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1310mm • WEIGHT 210g | **£29.95** |
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| **HFC-15** 21MHz | • TYPE 1/4λ. • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1010mm • WEIGHT 190g | **£29.95** |
| **HFC-10L** 28MHz | • TYPE 1/4λ. • MAX POWER INPUT 250W SSB • CONN. M-P • LENGTH 1515mm • WEIGHT 245g | **£34.95** |
| **HFC-10** 28MHz | • TYPE 1/4λ. • MAX POWER INPUT 120W SSB • CONN. M-P • LENGTH 1010mm • WEIGHT 190g | **£29.95** |

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# Contest

## Tim Kirby with tips on what is really required in a contest exchange, and a reminder to "get your entry in on time!"

### CONTEST CALENDAR

**HF CONTESTS**

| Date | Time | Contest | Mode | Bands | Exchange |
|---|---|---|---|---|---|
| 2 May | 2000-2130 | RSGB 80m Club Championship | SSB | 3.5 | RS+SN |
| 7/8 May | 2000-1959 | ARI International DX | CW, SSB, DATA | 1.8-28 | RST+SN |
| 11 May | 2000-2130 | RSGB 80m Club Championship | DATA | 3.5 | RST+SN |
| 14/15 May | 1200-1200 | Volta RTTY | RTTY | 3.5-28 | RST+SN+CQ Zone |
| 14/15 May | 1200-1200 | CQ-M International DX | CW/SSB | 1.8-28 | RST+SN |
| 19 May | 2000-2130 | RSGB 80m Club Championship | CW | 3.5 | RST+SN |
| 21/22 May | 1800-1800 | His Majesty The King of Spain | CW | 1.8-28 | RST+SN |
| 28/29 May | 0000-2359 | *CQ* WW WPX | CW | 1.8-28 | RST+SN |

**VHF CONTESTS**

| Date | Time | Contest | Mode | Bands | Exchange |
|---|---|---|---|---|---|
| 3 May | 2000-2230* | RSGB 144MHz Activity & Club Championship | ALL | 144 | RST+SN+Locator |
| 7/8 May | 1400-1400 | RSGB 432MHz - 248GHz | ALL | 432-248G | RST+SN+Locator |
| 7 May | 1400-2100 | RSGB 432MHz Trophy | ALL | 432 | RST+SN+Locator |
| 7 May | 1400-2100 | RSGB 10GHz Trophy | ALL | 10G | RST+SN+Locator |
| 10 May | 2000-2230* | RSGB 432MHz Activity | ALL | 432 | RST+SN+Locator |
| 15 May | 0900-1200 | RSGB 70MHz CW | CW | 70 | RST+SN+Locator+ Postcode+QTH |
| 17 May | 2000-2230* | RSGB 1.3/2.3GHz Activity | ALL | 1.3G/2.3G | RST+SN+Locator |
| 21/22 May | 1400-1400 | RSGB 144MHz | ALL | 144 | RST+SN+Locator+ Postcode |
| 22 May | 1100-1500 | RSGB 144MHz Backpackers | ALL | 144 | RST+SN+Locator+ Postcode |
| 24 May | 2000-2230* | RSGB 50MHz Activity | ALL | 50 | RST+SN+Locator |
| 31 May | 2000-2230* | RSGB 70MHz Activity | ALL | 70 | RST+SN+Locator |

* Local time

The full rules of RSGB contests are published in the *RSGB Yearbook 2005* and are also available at www.contesting.co.uk/hfcc (HF Contests) and www.blacksheep.org/vhfcc (VHF / UHF Contests). Both sites are linked from www.rsgb.org

### 1st 50MHz BACKPACKERS CONTEST, 2004

Thunder and lightning, statically charged rain and low temperatures made this contest a real endurance test rather than a pleasant afternoon's activity. Occasional sporadic E propagation enabled most of the entrants to work some DX but generally band conditions were very flat and activity was also low.

Congratulations to the One Man and His Dog Contest Group, G8NWM/P, for winning the 10W multi-operator section. Congratulations to Dan Esdale and his team operating as G0RMX/P for winning the 3W multi-operator section. The West Kent Amateur Radio Society, G1WKS/P, was runner-up in this section. Finally, congratulations to Dave Hewitt, GW8ZRE/P, and Steve Hartley, G0FUW/P, for winning the 10W and 3W Single Operator sections respectively.

***Ian Pawson, G0FCT***

**10W MULTI-OPERATOR**

| Pos | Callsign | Loc | QSOs | Mults | Total | Best DX | km |
|---|---|---|---|---|---|---|---|
| 1* | G8NWM/P | IO92TR | 23 | 19 | 123500 | UR4UDI | 2084 |

**3W MULTI-OPERATOR**

| Pos | Callsign | Loc | QSOs | Mults | Total | Best DX | km |
|---|---|---|---|---|---|---|---|
| 1* | G0RMX/P | IO82TC | 37 | 18 | 122058 | UX2KA/P | 1917 |
| 2* | G1WKS/P | JO01ED | 24 | 7 | 13769 | G0RMX/P | 218 |

**10W SINGLE OPERATOR**

| Pos | Callsign | Loc | QSOs | Mults | Total | Best DX | km |
|---|---|---|---|---|---|---|---|
| 1* | GW8ZRE/P | IO83JA | 66 | 27 | 522477 | UT7UV | 2315 |

**3W SINGLE OPERATOR**

| Pos | Callsign | Loc | QSOs | Mults | Total | Best DX | km |
|---|---|---|---|---|---|---|---|
| 1* | G0FUW/P | IO90JO | 15 | 14 | 39648 | MD6V | 457 |

### 50MHz BACKPACKERS CHAMPIONSHIP, 2004

Only six stations submitted entries for the 50MHz Backpackers Championship this year (14 in 2003). With this level of entry, this contest is not viable. Unless more entries are received for next year's Championship, the 50MHz Backpacker contests will have to be discontinued. With so few entries, a tie at the top of the table was inevitable. This year, the 50MHz Backpackers Trophy is shared between Dave Hewitt, GW8ZRE/P; Dan Esdale and his team, G0RMX/P, and the One Man & His Dog Contest Group, G8NWM/P. The runner-up this year is Steve Hartley, G0FUW/P.

***Ian Pawson, G0FCT***

| Pos | Callsign | Total Normalised Points | Score 20/6/04 | Score 11/7/04 | Total QSOs | Power | Antenna |
|---|---|---|---|---|---|---|---|
| 1* | GW8ZRE/P | 2000 | 522477 | 572376 | 111 | 10 | HB9CV |
| 1* | G0RMX/P | 2000 | 122058 | 170208 | 76 | 3 | 5el |
| 1* | G8NWM/P | 2000 | 123500 | 67176 | 42 | 10 | 5el |
| 4* | G0FUW/P | 1000 | 39648 | 0 | 15 | 2.5 | 3el |
| 5 | G1WKS/P | 647 | 13769 | 91140 | 45 | 3 | 4el |
| 6 | G0OIW/P | 8 | 0 | 4680 | 5 | 10 | Dipole |

Computer logging has certainly revolutionised the logging and submission of contest entries. With the majority of entries now being sent to the adjudicators by e-mail, it's worth thinking about the protocol of making sure that the entry has got to the adjudicator. In the 'old' days, you'd send your packet of log sheets off and if you wanted an acknowledgement, you could include a stamped addressed postcard to return to you, so that the adjudicator could confirm that the entry had been received.

In the electronic world, you send your e-mail off to the adjudicator with the log attached. In some contests you will receive an acknowledgement back automatically. In that case, you know the entry has got there. In other contests, including the majority of RSGB HF ones, you should receive a 'manual' acknowledgement from the adjudicator. In that case, again, you know that the entry has reached the adjudicator. Most adjudicators will do that by e-mail and some will also publish a list of logs received to the UK-CONTEST reflector.

What if you don't receive an acknowledgement from the adjudicator, or that your callsign isn't on the list of logs received? It's best to assume that your entry hasn't got there and resubmit it with a word of explanation. It's your responsibility to ensure that your electronic entry has got to the adjudicator by the closing date. If it hasn't, then your log may well be disqualified. Adjudicators are good people and will always try to help, but do remember the onus is on you to ensure that the log is 'at the church on time'!

### KEEP YOUR EXCHANGES SHORT!

One of the objects of contesting is to pass the required information as quickly and as clearly as possible. One or two people commented that in some of the recent 80m CW sessions, they'd been called by people in the following way:

CQ TEST G4VXE G4VXE K
M7ABC
M7ABC 5NN 001 BK
G4VXE M7ABC 5NN 001 BK

M7ABC really didn't need to send my callsign at the beginning of the over when he sent my report, at least not unless there was QRM, or perhaps there are two people operating on the same frequency. In both those cases, it's best to be very clear about who you're working, to avoid confusion. Rather, if I'd been M7ABC I'd have just sent R or TU (to act as an acknowledgement) and then 5NN 001 BK.

All this being the case, if you're using a logging program to send your CW, it's worth checking how the memories have been set up, to ensure that you're happy with them and that they are not un-necessarily verbose. It's important to be clear, but try not to be long-winded!

### SUPPORTING INTERNATIONAL CONTESTS

Steve Cole, GW4BLE, asked why - when there is such support for the 80m Club Championships - the level of participation in events such as the ARRL DX contest is so low from the UK? A good question. Plenty of people from the UK *do* participate, but a quick check of the logs received page on the ARRL site shows that participation is way down on the level that we might hope for.

We hope that everyone who is enjoying the 80m Club Championships will be minded to enter other contests, particularly some of the ARRL or *CQ* events. Even if you only manage to participate for an hour or so, it's well worth putting in an entry - and that's so much easier than in the days of manual logging. Remember to choose your section carefully; a single band or QRP entry perhaps. You may be surprised and get a certificate! It shows support for the international contests and makes the events more interesting and enjoyable for everyone involved.

Some people have expressed an interest in having a contest within a contest, so that all the UK stations participating in the *CQ* contest not only compete in the main event, but against each other. That way, even if you cannot go to the Caribbean for a DXpedition, you can compare your entry with others from the same part of the world. It will be interesting to see if this idea is followed in coming years.

### BRIAN DAVIES, GW3KYA SK

I was saddened to hear of the death of Brian Davies, GW3KYA, on 7 March. Brian had been ill for some time but had maintained an interest in radio. Brian had been the long time secretary of the Red Dragon Contest Group and had undertaken a great deal of the behind-the-scenes work to make the major multi-single and multi-multi entries that the group made in the 1980s and 1990s. A competent operator too: I remember working Brian when I was in a flat in Canada running just a few watts to a piece of wire around the curtain rail during the RSGB 21/28MHz contest. Rest in peace, Brian.

**Greg, 2E0FMS, and Dave, 2E0EBV, from the Havering and District Radio Club operating in the RSGB 2m Low Power contest, 2004.**

## CONTESTS THIS MONTH

The His Majesty the King of Spain CW Contest takes place on 21 / 22 May. If you chase Spanish provinces, this is the contest for you. Who knows, perhaps His Majesty, EA0JC, will make an appearance! Let me know if you hear him. The major event is the *CQ* WPX CW contest which takes place on 28/29 May. Even if you have a comparatively simple station, you can do very well in this contest, on account of the great variety of multipliers that are available to work in Europe, particularly now that former Class B stations are allowed on the HF bands in several countries.

In May, the portable VHF and UHF contest season really kicks off in earnest and there are lots of events to get involved with. On 7 / 8 May it's the weekend of the 432MHz to 248GHz contest. For the first eight hours of this contest, both the 432MHz and 10GHz trophies run concurrently with the main event. There's a three hour 70MHz CW contest on 15 May, which definitely ought to provide the opportunity to work some European DX. On the weekend of 21 / 22 May, there's a 144MHz contest, with the first 144MHz Backpackers event taking place on 22 May between 1100 and 1500. ◆

## 10GHz TROPHY 2004

In spite of another year of quite average conditions with not even any rain scatter about, entries are up from last year. It was close fought once again at the top of the table with the Colchester Contest Group narrowly displacing last year's winner John Wood, G4EAT. Bob Reeves, G8VOI/P, put in a very creditable score with his low power (0.8W) station.

***Andy Cook, G4PIQ***

| Pos | Callsign | Locator | QSOs | Mults | Total | ODX | ODX km |
|---|---|---|---|---|---|---|---|
| 1* | M1CRO/P | JO01PU | 17 | 16 | 59600 | GD0EMG | 471 |
| 2* | G4EAT | JO01HR | 17 | 14 | 50316 | PA6C | 423 |
| 3 | G4MAP/P | IO92GB | 17 | 12 | 25740 | GD0EMG | 314 |
| 4 | G8VOI/P | IO90MX | 12 | 10 | 18160 | GD0EMG | 430 |
| 5 | GD0EMG | IO74QD | 8 | 6 | 17622 | M1CRO/P | 471 |
| 6 | G4RFR/P | IO80UU | 12 | 10 | 14520 | G3LRP | 312 |
| 7 | G3UKV/P | IO82QL | 14 | 8 | 10808 | G8VOI/P | 202 |
| 8 | G3XDY | JO02OB | 6 | 5 | 5010 | PA0EZ | 274 |
| 9 | G0RRJ | IO91FE | 6 | 6 | 3966 | G4DDK | 216 |
| 10 | G4BRK | IO91DP | 3 | 3 | 3903 | PA0EZ | 478 |
| 11 | M0GHZ | IO81VK | 2 | 3 | 618 | G3UKV/P | 119 |

## 3rd 144MHz BACKPACKERS CONTEST, 2004

Variable weather conditions greeted the 29 entrants for this contest. Some contestants experienced static rain for part of the contest whilst others had fine sunny conditions with little or no wind. Band conditions were also variable with deep QSB for some. Conditions appeared to improve once the 'main' contest (VHF NFD) had finished: several contestants remarked that it was very noticeable that the background noise appeared to drop when VHF NFD had finished.

The accuracy of logging was very variable in this session of the Backpackers. Two stations managed to turn in perfect logs - well done. Another seven stations managed to lose less than 2% of their claimed scored - an excellent achievement. At the other end of the scale, the least accurate log had nearly 34% of claimed points deducted. The average points lost were 7%.

The top of the 3W Single Operator section was very close with less than 1% of the overall score separating the two stations. The superior logging accuracy of G4HUN/P was the deciding factor in determining the top two places in this section.

Congratulations to: Neil Whiteside, G4HUN/P, for winning the 3W Single Operator section; Michael Wright, G8SRL, representing the West Kent ARS, G1WKS/P, was runner-up; to the Malvern Hills 'B', GW4IDF/P, for winning the 3W multi-operator section; the Telford & District ARS, G6ZME/P, were runners-up; to Dave Hewitt, GW8ZRE/P, for winning the 10W Single Operator section; to Ivan Davies, G3IZD/P, the runner-up; to Roger Ward and his team for piloting GW5NF/P into the top spot of the 10W multi-operator section; and finally Bob Edgar and his team operating as G0KYS/P, who were the runners-up in that section.

***Ian Pawson, G0FCT***

**3W Single Operator**

| Pos | Callsign | Loc | QSOs | Mults | Total | Best DX | km | Power | Ant |
|---|---|---|---|---|---|---|---|---|---|
| 1* | G4HUN/P | IO92XA | 66 | 31 | 378076 | DK0WD | 489 | 2.5 | 3el SOTA |
| 2* | G1WKS/P | JO01ED | 60 | 31 | 373736 | DK0TR | 636 | 3 | 2x8el |
| 3 | G4HLX/P | IO91FN | 69 | 28 | 324464 | DK0WD | 590 | 3 | 13el |
| 4 | GW0PZO/P | IO83ID | 87 | 21 | 217791 | G5LK/P | 382 | 2.5 | 9el |
| 5 | G0HRW/P | IO83RO | 48 | 21 | 170205 | F6IFR | 510 | 2.5 | 3el SOTA |
| 6 | G8XQS/P | IO94AO | 29 | 20 | 166360 | ON6BX/P | 622 | 2.5 | 9el |
| 7 | G4VRC/P | IO90NX | 44 | 19 | 127376 | GM3HAM/P | 487 | 2.5 | 12ZL |
| 8 | G0HDV/P | IO93UK | 29 | 14 | 58044 | PI9CM | 439 | 3 | 12ZL |
| 9 | G0NFO/P | IO82QJ | 27 | 16 | 56992 | F6IFR | 413 | 2.5 | 3el SOTA |
| 10 | M0WEN/P | IO93EI | 56 | 12 | 40404 | ON4AMX | 521 | 2.5 | 5el |
| 11 | M0BGR/P | JO00BT | 18 | 12 | 32604 | DK0TR | 653 | 3 | 3el SOTA |
| 12 | M3UBM/P | JO01CG | 14 | 4 | 3284 | G5XV/P | 116 | 2.5 | HALO |

**3W Multi-operator**

| Pos | Callsign | Loc | QSOs | Mults | Total | Best DX | km | Power | Ant |
|---|---|---|---|---|---|---|---|---|---|
| 1* | GW4IDF/P | IO81NV | 62 | 23 | 219834 | ON4AMX | 549 | 3 | 17el |
| 2* | G6ZME/P | IO82NN | 31 | 15 | 80535 | PI4GN | 647 | 3 | 10ZL |

**10W Single Operator**

| Pos | Callsign | Loc | QSOs | Mults | Total | Best DX | km | Power | Ant |
|---|---|---|---|---|---|---|---|---|---|
| 1* | GW8ZRE/P | IO83JA | 109 | 31 | 554528 | F6IFR | 489 | 10 | 7ZL |
| 2* | G3IZD/P | IO84KD | 65 | 26 | 392392 | PE1AHX | 617 | 10 | 10el |
| 3 | G0PQF/P | JO01AX | 51 | 31 | 332165 | GM0FRG/P | 530 | 10 | 9el |
| 4 | G3YDY/P | JO01FQ | 56 | 29 | 271063 | EI7M/P | 504 | 10 | 4el |
| 5 | G3ATZ/P | IO82KV | 71 | 21 | 254667 | ON6BX/P | 601 | 10 | 5el |
| 6 | G6HOU/P | IO90MX | 53 | 25 | 253725 | GI4GTY/P | 504 | 10 | 8el |
| 7 | GW0VRL/P | IO81AR | 31 | 21 | 136458 | ON4WY | 484 | 10 | 17el |
| 8 | M0BAO/P | IO80LV | 33 | 17 | 92140 | GM3HAM/P | 451 | 10 | 8el |
| 9 | M1VPN/P | IO70QO | 16 | 13 | 51675 | ON4WY | 535 | 10 | 3el SOTA |
| 10 | G8XCK/P | IO91OO | 27 | 13 | 37882 | F6KCP/P | 418 | 5 | 9el |

**10W Multi-operator**

| Pos | Callsign | Loc | QSOs | Mults | Total | Best DX | km | Power | Ant |
|---|---|---|---|---|---|---|---|---|---|
| 1* | GW5NF/P | IO81KR | 108 | 34 | 768910 | DK0WD | 699 | 10 | 2x9el |
| 2* | G0KYS/P | IO80AQ | 61 | 26 | 400972 | DK0HN | 791 | 10 | 2x10el |
| 3 | G8NWM/P | IO92TR | 56 | 29 | 358063 | DF0RI | 606 | 10 | 17el |
| 4 | G3BPK/P | IO83PN | 42 | 21 | 115122 | F6IFR | 513 | 10 | 13el |
| 5 | G4HSO/P | IO91QT | 47 | 20 | 102880 | GM3HAM/P | 414 | 10 | 4Q |

## 432MHz TROPHY 2004

This is almost a repeat of last year with poor conditions, yet this is the third consecutive year of increasing entries. The big guns of the Parallel Lines Contest Group & Colchester Contest Group came back this year to the Open Section and fought it out for first and second places, with the Parallel Lines, G8P, triumphing and taking the Trophy. In the Single Operator fixed section, Bryn Llewellyn, G4DEZ, takes the title. Graham Coyne, G3YJR, takes the certificate for leading low power single antenna station.

***Andy Cook, G4PIQ***

**SINGLE OPERATOR FIXED SECTION**

| Pos | Callsign | Locator | QSOs | ODX Call | ODX km | Total |
|---|---|---|---|---|---|---|
| 1* | G4DEZ | JO03AE | 55 | DK2EA | 857 | 17426 |
| 2* | G3MEH | IO91QS | 51 | DF2VJ | 599 | 8471 |
| 3 | G3YDY | JO01FQ | 16 | DF2VJ | 527 | 4288 |
| 4 | G8SRL | JO01ED | 19 | DL2OM | 507 | 3797 |
| 5 | GW4HBK | IO81KP | 8 | PI4Z | 484 | 1957 |
| 6* | G3YJR | IO93FJ | 9 | PA6NL | 413 | 1878 |
| 7 | G3FIJ | JO01KV | 10 | GD0EMG | 445 | 1867 |
| 8* | 2E1GUA | JO01FR | 10 | DJ0UO | 390 | 1525 |
| 9 | M0GHZ | IO81VK | 6 | PA6NL | 440 | 1454 |
| 10* | M5ADF | IO91TO | 12 | PA6NL | 312 | 1310 |
| 11 | G4BRK | IO91DP | 1 | GM3HAM/P | 395 | 395 |

**OPEN SECTION**

| Pos | Callsign | Locator | QSOs | ODX Call | ODX km | Total |
|---|---|---|---|---|---|---|
| 1* | G8P | JO01QD | 203 | DJ7KG | 847 | 80858 |
| 2* | M1CRO/P | JO01PU | 176 | DG6QF | 830 | 62614 |
| 3 | G5B | IO92WS | 139 | DL0GTH | 788 | 49238 |
| 4 | G4BRA/P | IO80UU | 54 | DL2OM | 693 | 14153 |
| 5 | GD0EMG | IO74QD | 39 | PI4Z | 641 | 12822 |
| 6 | G8OHM/P | IO92GB | 48 | DF2VJ | 664 | 9149 |
| 7 | GM3HAM/P | IO74WV | 27 | G8P | 556 | 7807 |
| 8 | G4DBL/P | IO80FI | 7 | PA6NL | 564 | 2552 |
| 9 | G0POT/P | IO91GI | 22 | PA6NL | 391 | 2302 |
| 10 | G6GVI/P | IO81TL | 14 | PA6NL | 451 | 2275 |
| 11 | G2HDF/P | IO82UK | 9 | G8P | 290 | 1178 |

## 144MHz LOW POWER CONTEST, 2004

Most entrants found propagation conditions nothing special, but in much of the UK the weather was good, attracting more than twice last year's number of single operator portable stations. This year's entry included several non-standard logs, such as two which were timed in BST, making for extra work during adjudication. In future you may be penalised for this, so it's worth spending a few minutes checking your entry before pressing the 'send' button.

In the Single operator Fixed section Bryn Llewellyn, G4DEZ, held on to first place, A S Jordan, G0HAS, comfortably took second place and Frank Laanen, PE1EWR, and James Beatwell, 2E1GUA, get certificates as the leading overseas entrant and leading Intermediate licensee. Andrew Warburton, M0LKB, won the Single operator Others section, with Nick Garbett, M1DDD, in second place and Clive Warren, M3OTP, the leading Foundation licensee. The A1 Contest Group took the honours in the Multi-operator section helped by extra multipliers picked up on FM, while Colchester Contest Group of Colchester Radio Amateurs took second place, with 2E0EBV/P operated by 2E0EBV and 2E0FMS the leading intermediate licence station. Thanks to G8ZK/P for the checklog.

***Roger Piper, G3MEH***

**SECTION SF**

| Pos | Call | Club/ Group | Loc | QSOs | Mults | Score | Best DX | Dist |
|---|---|---|---|---|---|---|---|---|
| 1* | G4DEZ | - | JO03AE | 78 | 79 | 1534417 | DL1ASR | 722 |
| 2* | G0HAS | - | IO81VH | 71 | 69 | 954573 | GM8XQS/P | 488 |
| 3 | G8VYK | - | JO01FO | 55 | 59 | 545396 | GI6ATZ | 530 |
| 4 | G8SRL | - | JO01ED | 55 | 58 | 541546 | GM4IGS/P | 525 |
| 5 | G3MEH | - | IO91QS | 53 | 61 | 513254 | DF2VJ | 599 |
| 6* | PE1EWR | - | JO11SL | 33 | 37 | 364154 | F5SGT/P | 621 |
| 7 | G1KHX | - | IO81MI | 34 | 43 | 257871 | GM4IGS/P | 388 |
| 8 | M5ADF | - | IO91TO | 30 | 40 | 189760 | F5SGT/P | 453 |
| 9 | 2E1GUA | - | JO01FR | 19 | 26 | 60424 | GW4ARC/P | 289 |
| 10 | G7ADF | - | IO83QN | 13 | 24 | 49362 | G0VHF/P | 325 |

**SECTION SO**

| Pos | Call | Club/ Group | Loc | QSOs | Mults | Score | Best DX | Dist |
|---|---|---|---|---|---|---|---|---|
| 1* | M0LKB/P | - | IO84KE | 85 | 85 | 1656140 | F8BRK | 587 |
| 2* | M1DDD/P | - | IO93AE | 102 | 86 | 1418742 | F4AJQ/P | 648 |
| 3 | G4DBL | - | IO91JH | 80 | 77 | 1307845 | DG3XA/P | 780 |
| 4 | GW8ZRE/P | - | IO83JA | 83 | 81 | 1264572 | PE0PDV/P | 492 |
| 5 | G8VOI/P | - | IO90MX | 79 | 75 | 1056675 | GM8XQS/P | 537 |
| 6 | GM4IGS/P | - | IO74NP | 50 | 65 | 1027130 | F4AOA/P | 717 |
| 7 | G0HDV/P | - | IO93UK | 66 | 72 | 911952 | GI4OWA | 486 |
| 8 | GM8XQS/P | - | IO85OQ | 31 | 46 | 411838 | F6IFR | 717 |
| 9 | G0EYX/P | - | IO82XU | 44 | 49 | 286111 | F6IFR | 423 |
| 10 | G6HOU/P | - | IO91PF | 39 | 47 | 277206 | GM4IGS/P | 471 |
| 11 | M0BAO/P | - | IO80LV | 28 | 38 | 219298 | GM8XQS/P | 533 |
| 12 | G6GVI/P | - | IO81PH | 24 | 36 | 166860 | F5SGT/P | 376 |
| 13 | M0BPQ/P | Clifton ARS | IO91WP | 19 | 27 | 82296 | F5SGT/P | 465 |
| 14* | M3OTF/P | - | IO81PH | 18 | 28 | 77336 | F6IFR | 349 |

**SECTION M**

| Pos | Call | Club/ Group | Loc | QSOs | Mults | Score | Best DX | Dist |
|---|---|---|---|---|---|---|---|---|
| 1* | G4ZAP/P | A1 CG | IO93EH | 136 | 97 | 2474373 | DF0CI | 834 |
| 2* | G0VHF/P | Colchester CG | JO01PU | 123 | 86 | 2184056 | F5SGT/P | 539 |
| 3 | M1MHZ | Five Bells CG | IO92WV | 99 | 78 | 1525914 | DF2VJ | 632 |
| 4 | G4FUR/P | Coulsdon ATS | IO91XG | 107 | 84 | 1500996 | MM0KOS | 554 |
| 5 | M0BRA/P | Bracknell ARC | IO80ST | 79 | 71 | 1242500 | F4DCG/P | 550 |
| 6 | G4IRC/P | Ipswich RC | JO02OD | 85 | 63 | 873180 | F8DBF | 587 |
| 7 | G2HDF/P | Midland CG | IO82UK | 52 | 61 | 527528 | F5SGT/P | 504 |
| 8 | G0TMT/P | - | JO02QT | 35 | 45 | 358200 | F6KCP/P | 460 |
| 9* | 2E0EBV/P | - | JO01DP | 31 | 33 | 105534 | GW8ZRE/P | 283 |

Checklog: G8ZK/P. * = Certificate winners.

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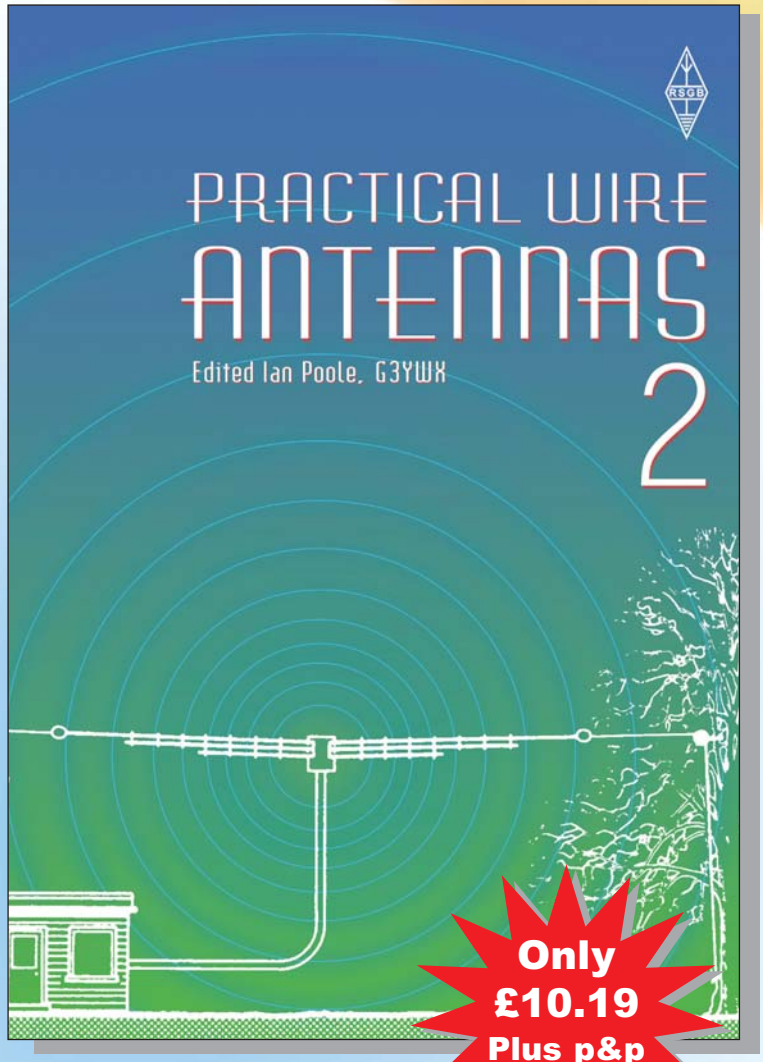


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# How to send useful SWL reports

**Along with the regular reports on band activity, this time we see the first appearance of the new 'All Bands Heard' table for 2005**

A sizeable number of SWL reports for 3B9C that were sent via the bureau are now reaching me. If you sent your QSL via the RSGB bureau there is a good chance that I have already responded to it, or it is in the fairly small pile that have still to be checked against the 3B9C log.

Although quite a few listeners are complying with the DXpedition's wish that listener reports should include three consecutive loggings, a good many do not. I find it hard to understand how a listener is unable to log three consecutive QSOs when 3B9C was such a good signal on most of the DX bands. I can understand why three consecutive loggings are not possible on the low bands because not all listeners are equipped with either the receiver or the antenna to log DX on those bands. I am being generous this time in replying to reports - assuming that the reports correspond with the log. However, this is not the first time that I have suggested that listeners should provide reports that report on more than one QSO.

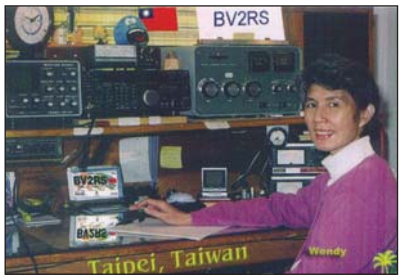
Also on the SWL report theme, it surprises me how rushed, incomplete or just totally incorrect SWL reports can be. How can listeners log a QSO that is not in the DX station's log? How can a listener's shack clock lose two minutes between loggings only 20 minutes apart? How can an SWL provide a report where only one of four listed loggings correspond with the DX station's log? There are, unfortunately, other examples of where listener reports are not being prepared to the right standard.

Although not all SWLs send reports, most do. I hope that when *you* complete your next report *you* take just a little extra time to ensure that all the details are correct. You will be the winner as more amateurs will reply to your reports by sending their QSL card.

## DX REPORTS

Mike, G6HOU, starts off the reports this month. He had spent time in early January monitoring both SSB and SSTV signals. He noted: **SSTV** - BD2JW, JA5TFF, KG4BS and 4Z8EE; **SSB** – CM6FJJ, CX5BW, LU6GB, HK3AK, P4/W3TEF, ZP5CGL and YV5GE.

Peter Webb, BRS53907, had an interesting January on the bands, logging VK, ZL, V63, 9V1, VU, YC, XW, XV, XE and HS.




**An amateur who does reply to SWL reports: Wendy, BV2RS, from Taiwan.**

Philip Davies, RS95258, reported on his listening during the *CQ* 160m SSB contest at the end of February. He logged 35 European countries, eight DX – CN, D4, EA8, EA9, KP4, UA9, VP5 and XE – seven US states and three VE provinces. Philip logged 177 stations during the contest. VY2ZM was the most consistent DX station, while he heard HA80IARU having repeated difficulties in getting his callsign across - too many numerals and suffix letters for snappy contest QSOs! U5WF, the WWII veteran, was heard using his 'Call of Honour'.

Robert Small, BRS8841, considered that conditions at the turn of February "had not been too bad". He even reported several new band countries, including 6O0CW on 1.8MHz. Another 1.8MHz goodie was SU9NC. He logged YI9VCQ and YI1EM on 3.5MHz. 7MHz DX included ZF2FZ, 8P6GW, V31LZ, 6O0CW and E20WXA. 14MHz highlights included 3G0YM (Easter I), YB9CT, UN7QF and 9Q0AR. Robert found nothing new on 18MHz but logged C56C, TS4WHC, 6O0CW, VR2XMT, 9Y4/YL2GM, 5T0CW and 9Y4DLH. Robert rated 21MHz as the 'star' band. He logged A61M, 5Z4DZ, VK6BCP/M, A45WH/MF, 3W2TXR, HZ1EX, HZ1IK, YA5Y, 5V7BR and VK0MT. 24MHz also gave Robert 6O0CW for a new one, while the only DX heard on 28MHz was D2DX (Angola).

## AFTER THE ILA

Despite the sad demise of the International Listeners' Association, Ken Burnell, the ILA former contest manager, continues to run the contest and awards programmes under the new title of 'The World of Radio Communications'. His e-mail address is kenradio@btinternet.com. Check out his webpage at www.btinternet.com/~kenradio

## SWL CONTESTING

My comments in the last column has provided some interesting views. Robert Small was sad to hear that that the SWL section of the IOTA contest had been dropped. He had taken part of numerous occasions, but with its slot in the calendar at the end of July, it has clashed with holidays in recent years.

Although the number of SWLs entering contests is on the wane, Colin Redwood, G6MXL, thought that if the rules that prohibit licensed amateurs from entering SWL contests was relaxed, the number of entries would increase. He makes some good points - inability to erect effective 'contest' antennas due to small gardens and EMC issues. In addition, the older amateur might not want to take part in the hurly-burly of contests, but might want to join in the fun by listening. I have put this suggestion to the RSGB HF Contests Committee and will let you know their reaction to this idea once they have met to discuss it.

## DECLINE IN ACTIVE SWLs

Is the Foundation licence the reason why SWL numbers are falling? The column has covered this more than once, but it is time to put the debate to bed. We do need young people in the hobby to keep it alive. Many SWLs have taken advantage of the licence to become a licensed amateur. The 'apprenticeship' served as an SWL will make their transition from SWL to licensed amateur much easier than a new amateur who does not have, say six months SWLing experience, as they will know about operating technique and practice. So, if you hear a new amateur on the bands displaying excellent operating practice, it is very likely that he was an SWL!

## IDEAS

Kelv, RS96142, took part in the 1995 CQWW SWL Challenge with GM7NVA and remembers hearing 5Z4KL (now GM3VLB), but his SWLing has been "on the back burner" since. He is looking to kick start his SWLing in 2005 and gave me some "back to basics" topics that he hoped I might cover in the column. Of course, topic ideas to cover in the column are always welcome.

## ALL BANDS HEARD 2005

Only one entry to this new table so far. More for the next column, please (in the following format), counting each DXCC entity once on each band. ◆

| SWL | 160m | 80m | 40m | 30m | 20m | 17m | 15m | 12m | 10m | Total | Mode |
|---|---|---|---|---|---|---|---|---|---|---|---|
| BRS8841 | 22 | 35 | 38 | 6 | 32 | 20 | 32 | 6 | 4 | 195 | CW/SSB |

**Dave Lawley,** G4BUO

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# Non-PC Morse

**Although previous columns have promoted computers as providing one of the best ways of learning Morse, this month's theme could be summed up as 'throw away the computer'**


**HB9NL's QSL shows a number of ways of holding the Morse key - and a number showing how *not* to hold the Morse key!**

The Koch method, as implemented in G4FON's software (see 'Web search'), is probably the best way of learning the code, but most people you hear on the CW bands learned in the days BC, before computers.

Learning Morse can be turned into a club activity, or a social event. In the 1980s Reg, G3BPE, made himself very popular in the Gravesend area as a Morse tutor. He got a lot of people through the test but it also had something to do with the home-brew beer he served up between copying sessions. Make it fun to learn Morse code and you're more likely to succeed.

My own 'Elmer', G6BQ, also got a lot of people in Gravesend through the Morse test, sending long passages from books taken at random from the shelf, frequently one of Churchill's histories. From what I have read I have little doubt that Koch is the best method of learning Morse, but if you haven't got a computer available, a human tutor can act as a personal trainer. Because each person's rate of learning new characters will be different, Koch is best suited to one-to-one training rather than a whole class at a time.

The key difference between Koch and the way I learned is that with Koch, you learn characters at full speed, typically 18WPM, but one at a time. Learning characters at this speed avoids the 'plateau' problem which inevitably arises if you start out learning characters at a slow speed and then go through endless practice sessions gradually increasing speed. Far too many people start at about 5WPM and put in many hours getting up to 8 or 9WPM, but then hit the plateau and give up in frustration.

Koch develops your reflexes so that when you hear dah-di-di-dah you *know* it is X, without any conscious process of decoding. If you want to become proficient in Morse you have to realise it is an irreversible process. Just like learning to ride a bike, you will never lose it. Every time someone's mobile phone beeps for a text message, I cannot stop myself reading S-M-S even though I know there is nothing else it could be. Similarly if there's a war film on TV, the ship has been torpedoed and the 'sparks' is sending out a Mayday, I just have to copy the message. Unfortunately, in most films the 'Morse' is actually complete gibberish but occasionally, the code that is being sent actually matches the subtitles at the bottom of the screen.

What you really mustn't do, with Koch or any other method of learning the code, is to use a computer to help you decode Morse. This is tempting, but in the long term it is going to give problems if your goal is to become a proper CW operator. You can use software such as *MixW* to do the receiving as well as sending, but it's a mistake to regard CW as just another datamode. If you want to operate datamodes then choose something that is more suited to machine-to-machine communications, such as PSK31, PacTOR or RTTY, but you'll be missing out on the magic of Morse. If you find yourself tempted to use *MixW* to copy CW for you, my advice is to throw away the computer.

N1IRZ who has championed the Koch method recommends learning at a character speed of 18WPM, but with an overall speed of about 15WPM. Most of the learning process involves copying random groups of characters, and the transition to copying plain text or amateur QSOs can take a little time. It is at this point that it is useful to get someone to send you passages from a book and also to spend some time listening to 'real' CW on the air.

## TIME TO TRY SENDING

It is also at this point that you need to try your hand at sending, and a personal trainer is going to be better than any computer at giving feedback on how your sending sounds. It is important to get a good quality straight key - 'pump handle' - and position it correctly on the table. Adjust the height of the seat so that when not sending, the arm is resting horizontally, and it requires only a small lift of the forearm to hold the knob of the Morse key. This should be held with the forefinger on top of the knob, the thumb to the left and slightly underneath the knob, and the second finger either on top or to the right of the knob (assuming a right-handed operator). Dots are made by a tap with the forefinger whereas dashes are made by a downward movement of the wrist.

The forearm and the upper arm should make an angle of approximately 90 degrees. When sending, movement of the key should come from a combination of the elbow and the wrist. Often the key is mounted at the edge of the table but if it is further back, the forearm should be slightly above the table, not resting on it.

If you have learned the rhythm of the characters correctly using the Koch method, then you need to listen to what you are sending and try to ensure those characters have the same rhythm. If a personal trainer is not available, one method that can work is to record what you send and then carefully listen to your own sending on the tape to identify areas of weakness.

When the time comes to make your first CW QSO, the Morse Training Group founded by Ian, G3ROO, which I mentioned in the last column offers a way of making that first QSO with a minimum of stress. The group goes from strength to strength, and now consists of several operators who make themselves available most evenings between 3562 and 3570kHz. Once you have learned the code, and have checked that you can send correctly, these volunteers will take time to help you make your first CW QSOs at a speed no greater than 12WPM. See 'Web search' below for an outline of the MTG schedule. ◆

**WEB SEARCH**

| | |
|---|---|
| **G4FON's Koch Morse tutor** | www.g4fon.net/CW%20Trainer.htm |
| **Morse Training Group** | www.g3roo.org.uk/ |

**By Norman Fitch,** G3FPK

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# VHF/UHF

**The apparent lack of activity on the VHF/UHF bands has been a matter of conjecture recently: is it a deterioration in the quantity and quality of tropo openings, or is it simply that fewer people are actually going on the air these days? Norman Fitch reports**

Tropospheric propagation seems to have been pretty dire for long periods in recent months. This phenomenon started an interesting 'thread' on the vhf-dx-discuss website [1] which began with a posting by Stewart Cooper, GM4AFF (IO86), referring to the 4m Cumulatives session on 13 February.

He wrote, "Was it me, or did anyone else find conditions yesterday at an all-time low? I'm finding that I seem to get heard less and less as time moves on. I was able to work as many as 18 stations with 7W in 1994 in a 70MHz Cumulatives session. Then I needed my little 40W linear to achieve this in 1998. Throughout I was using an NBS 7-ele Yagi. Now, with about 70W and an 8-ele long Yagi (24ft boom), I find that working seven stations is a struggle." He thinks that this is due to higher noise levels many of us now have to contend with but with which he, being 'in the middle of nowhere' doesn't suffer from.

In reply Howard Oakley, M1BWR (IO90), wrote, "A fascinating question, with some fascinating possibilities (assume reciprocity):

- there could be fewer people active, so maybe the percentage of those on the band that you are working is remaining fairly constant.
- those active could be less interested in working you (why?!)
- those active could find it harder to hear you, perhaps because of an increase in their local noise (for those stations that you do work, are you still getting good reports, although here you need to do better than 'contest 59' reports, of course)?
- those active could find it harder to hear you because of poorer propagation (but unless you find it harder to hear them, that would assume that you were never much above the noise anyway).

"There are plenty of things that are changing that could affect (non-ducting) tropo, depending on where and how you think that occurs. Whilst they shouldn't adversely affect the convective bubble theory (indeed, greater surface temperatures could increase that), there is a lot of water vapour and carbon dioxide being dumped just above the tropopause (from jet aircraft). If non-ducting tropo depends on things happening around the tropopause (which I think it should to support eg IO90 to IO86), then those things could adversely affect - or they could even enhance - propagation? The snag is that such effects should be bilateral!"

In a lengthy contribution, Geoff Grayer, G3NAQ (IO91), wrote "I am completely in agreement with your remarks concerning the deterioration in tropo conditions, even more evident in my view on 2m and 70cm." On returning to the UK in 1986 Geoff used to work many stations in Northern Italy on 2m and 70cm, so many that he statistically analysed these contacts and wrote a paper on Trans-Alpine Ducting. This was examined by the ITU UK Study Group on Non-Ionospheric Propagation and eventually forwarded to the Plenary Session in Geneva.

He also agrees that there has been a huge drop in activity over the years yet when there is an opening there is no shortage of stations operating. Regarding noise, he points out that those, like himself, who live in sparsely inhabited parts of the country also find a much increased noise level. He wrote, "Even here the rise in noise level is very marked. It seems every house is running a computer, and computer-based gadgets running 24/24 hrs - heating, security, automatic car doors, etc, all of which are effectively connected to the antenna system formed by our overhead mains and telephone lines. Electric fences, broadcasting their pulses, also seem to be much more widely used than previously."

Richard Staples, G4HGI (IO83), mentions that, "A lot of the stalwart 2m operators have either gone to another life or just don't come on like they used to." He continued, "To be honest I am as guilty as anyone on this. Yes, constant looking at the *Cluster*, looking at Kiruna, looking at any Internet site that gives me the prospect of some DX: any excuse not to transmit and actually *look* for conditions. Let's face it, the only way you will be able to find out the real conditions is to be there on the band.

"Also global warming? The weather has deteriorated here at this QTH for sure over the past five years. Stronger gale force winds make my life a misery - unable to put up a 4-Yagi station because it would be on the ground most of the time. I am struggling during the winter to keep a 2-Yagi station going simply from very strong westerly winds that pound in here on a regular basis. IO83 used to positively boil with RF and be a hotbed of activity for stations with loads of wampum."

Paul Pasquet, G4RRA, wrote, "I'm convinced that it's got a lot to do with lack of activity generally on 144MHz. Nowadays if anyone with any interest in 144MHz appears on the band what are they going to hear? Probably a load of digital modes that they can't decode, and a pile of white noise because everyone is looking at the *Cluster* and not transmitting. This, of course, leads to the conclusion that the band is not worth calling CQ on because nobody is about.

"We also have the situation where there is no longer a need to go on to the VHF/UHF bands if you want to make contacts. You can now go straight on to HF. I wonder how many people on this newsgroup discovered the fun of VHF/UHF because of the fact that they got a Class B licence first? I know I certainly did. I've noticed that when 144MHz is open, particularly in the direction of France, the activity levels are terrible compared to how they used to be. The beacons can be booming in, but you struggle to find anyone to work, unless of course you go into the WWC or KST and set up a contact."

But then there was the contribution from Walter Blanchard, G3JKV (IO91), who wrote, "I don't believe there's any decline at all in tropo conditions. I've been monitoring the 2m beacons for nearly 35 years from this QTH using much the same kit throughout and in my humble opinion there's been no change. I can still hear GB3ANG at all times and HB9HB 90% of the time. It's just lack of activity."

Volker Grassmann, DF5AI, wrote, "In various e-mail reflectors, European VHF DX operators speculate about 'declining tropo conditions' caused by global warming or, alternatively, by a decline of QSO activity in Europe. Or does this effect not exist at all, ie are we simply facing statistical variations? While the discussion heats up in Europe, Australian VHF operators are enjoying extraordinary tropo DX conditions this summer. I asked Leigh, VK2KRR, to provide an actual overview." This report is on Volker's website - see 'Web search'.

## TECHNICAL DATA

Dr David Kirkby, G8WRB, has added another list of files to his website - see 'Web search'. He wrote, "Most are full tube data sheets - with one or two exceptions, these are *not* single page summaries you can download from Eimac's site. Note that sometimes there are data sheets from more than one manufacturer for the same device. Sometimes there are data sheets for very similar sounding devices, so inspect names carefully."

## SOLAR AND GEOMAGNETIC DATA

In the 30 days to 9 March there were no significant solar events and the 10.7cm solar flux varied gradually from maximum to minimum as the more active side of our star rotated out of view. The maximum value was 122 units on 15 February declining to a minimum of 74 on 1 March before starting to rise again to give an average of 95, about 7.5% down on last month's figure. The SESC sunspot number peaked at 115 on 14 February, the only day that it was in three figures, and the minima were 11 for three days from the 28th. Only ten new regions were recorded. The geomagnetic data for Fredericksburg shows that there were 21 quiet days in this period with the A-index dropping to just 1 on 15 February and 4 March, then on the 7th it rose to 28. There were no reports of any auroral activity in these middle latitudes.

## METEOR SCATTER

The next significant meteor shower this year is the Eta-Aquarids which is predicted to peak at 0640 on 5 May, ±48 hours, with a ZHR of about 50. This is a broad stream and the reflection efficiency is greater than half that at maximum for about eight days. The radiant is above a mid-UK horizon from 0200-1330.

My apologies to Brian Oughton, G4AEZ, the sole operator of G8VYK (JO01) the callsign of the BAe Systems Sports and Leisure Club, for getting his call and name wrong in the March 'VHF/UHF'. He continued his 2m FSK441 mode activity in January completing with IW0GPN (JN62), IK5YJY (JN53), IK0BZY (JN61), T94FY, S51AT (JN75), SM0EPO (JO89), OH6MAZ (KP21), OH6QU (KP03), OH6KTL (KP02), HA5RL (JN97), OK1KRY (JN69) and SP2JYR (JO92).

## MOONBOUNCE

More sad news to start with from Doug McArthur, VK3UM, who reports that Lyell Louttit, VK2BE, passed away at the end of February in his 85th year following hospitalisation and surgery. He was a very active VHF/UHF operator in the Sydney area and many will have worked him off the moon on 70cm. He spent 35 years in aviation as aircrew, both as a radio officer and pilot on 19 different aircraft and also operated on HF as VS6BE.

The complete results of the 2004 ARRL International EME Competition are in the April issue of *QST* and have been published in .pdf format on the ARRL's website - see 'Web search'. In his resumé, Joel Harrison, W5ZN, writes that 131 logs were submitted, 14% down on 2003, although activity remained high. He says, "Soapbox comments ranged from the effects of weather, bad conditions at some locations, and the need to consider an 'Assisted' category. These will all be reviewed and discussed for the 2005 competition."

As far as the Brits are concerned, Peter Blair, G3LTF (IO91), came second in the Single Operator All Band section with 907,500 points. Roy Reed, G3ZIG (JO02), with 179,800 points was a creditable seventh out of 50 who participated in the Single-Op 144MHz category and was the only UK entrant. Likewise, G4ERG was the only UK entrant in the Single-Op 432MHz section and Peter was seventh out of 18 with 74,400 points. Howard Ling's, G4CCH (IO93), 244,800 points earned him third place out of the 19 participants in the Single-Op 1296MHz section; he was the sole UK representative. Congratulations to all.

The results of the 11th Italian ARI EME Contest held on 11/12 September last year have been published and the winners included G3ZIG and G4CCH. The prizes were due to be awarded during an EME meeting in Marina di Pietrasanta over the 30 April weekend. This year's event will be on the 17/18 September weekend.

Congratulations to Finn Christensen, OZ4VV (JO46QU), and R Macintosh, ZL3NW (RE66HO), who completed probably the first OZ/ZL 6m EME QSO on 14 February over a terrestrial distance of 18,112km using JT65A mode. Both stations were using single Yagi antennas aimed low on the horizon to take advantage of ground gain. Thanks to Lance Collister, W7GJ (DN27), for this news.

Doug Millar, K6JEY, Project Director of the San Bernardino Microwave Society reports that the SBMS and the Owens Valley Radio Observatory are working together to use their 40m dish antenna near Bishop in California for educational purposes on 23cm and 3cm. The aim is to be QRV in the autumn and spring EME contests and at other times with educational projects. They will be running 100W and 53dB antenna gain on 23cm.

G3LTF now has his six-tube ring PA working on 23cm giving 800W in the shack. Peter got on at 0030 in the SSB contest on 20 February and in 90 minutes worked K2UYH, LX1DB, K9SLQ, OE9ERC, G4CCH, OZ6OL, ON7UN, W7BBM, K5GW, K4QI and HB9Q. His 70cm station is working well again now he has built a new, high dynamic range converter.

On 23cm in this contest weekend G4CCH completed with ON7UN, SK0UX, HB9Q, HA5SHF*, LX1DB, F6KHM, OE9ERC, LA9NEA*, F1ANH, GW3XYW, OE5EYM, IK3COJ*, OZ6OL, K9SLQ, N2UO (CW/SSB), K5GW, K4QI, K2UYH, W7BBM, OZ4MM, K5JL, HB9SV, K0YW and G3LTF on the Saturday. Next day brought QSOs with VE6TA (CW/SSB), WA6PY, VA7MM (CW/SSB), KL6M (RO/O), G3LTF* and IW2FZR (RO/O). Howard made 21 SSB QSOs and four CW/SSB contacts for a claimed score of 495 points.

G4ERG had CW QSOs with G4RGK, RK6MC for a new initial, W7AMI, HB9Q, UA3PTW, N9AB and WA4NJP. Peter now has Spectran running in his shack and notes, "At last a PC that doesn't raise the noise floor." Using WSJT Ken Osborne, G4IGO (IO80), has made three QSOs on 2m the most recent being with RN6BN on 6 February and S52LM on 6 March using 100W to a single 17-ele NBS Yagi. On 6m on 10 February he completed with W7GJ using 300W and a single 6-ele NBS Yagi.

Stuart Jones, GW3XYW (IO71), has been experimenting with JT65B mode on 2m this year and is now running 400W to four 10-ele Yagis. In the 15-18 February period he completed with OK1DFC, S52LM, JM1GSH, RN6BN, W5UN, JH2COZ, W8WN, UR5LX, S57TW, F8DO, KD3UY and PA0JMV plus partial QSOs with DL9MS and KB8RQ. He is grateful to George Watson, GW4EVJ, ". . . for his unstinting help with the computer set-up." In the SSB contest on 19 February he completed 15 contacts with F6KHM, ON7UN, OE9ERC, HB9Q, SK0UX, G4CCH, OE5EYM, F1ANH, K9SLQ, OZ6OL, HB9SV, K4QI, OZ4MM, W7BBM and K2UYH. The latest version 4.9.6 of Joe Taylor's, K1JT, *WSJT* software is available for free download from his website - see 'Web search'.

The next Activity Weekend is 14/15 May when London latitude stations

**This is Ian Hogan's, G6TGO, VHF/UHF Vargarda antenna installation showing the 19-ele 70cm Yagi above the 9-ele 2m one.**

**ANNUAL VHF/UHF TABLE - JAN TO DEC 2005**

| Callsign | 50MHz Grids | 50MHz Ctr | 70MHz Grids | 70MHz Ctr | 144MHz Grids | 144MHz Ctr | 430MHz Grids | 430MHz Ctr | 1296MHz Grids | 1296MHz Ctr | Total Points |
|---|---|---|---|---|---|---|---|---|---|---|---|
| G4DEZ | 65 | 18 | 17 | 5 | 64 | 23 | 26 | 8 | 14 | 3 | 243 |
| G8HGN | - | - | - | - | 38 | 7 | 18 | 6 | - | - | 69 |
| G3YDY | - | - | - | - | 26 | 7 | 20 | 6 | - | - | 59 |
| G3FIJ | 4 | 1 | 8 | 2 | 17 | 2 | 9 | 2 | - | - | 48 |
| M0XLT | 9 | 6 | - | - | 4 | 1 | 1 | 1 | - | - | 22 |
| G8VYK | - | - | - | - | 12 | 9 | - | - | - | - | 21 |
| G8RWG | - | - | - | - | 15 | 6 | - | - | - | - | 21 |
| G4OBK | 4 | 2 | - | - | - | - | 1 | 1 | - | - | 8 |

The grids are the first four characters, eg IO91, and the countries are the current DXCC entities plus IT9. The next deadline is 10 May.

will have 32.7 hours of moon time. The declination varies from +25.77° to +18.79° and the 144/432MHz sky temperature range is 258/19K to 210/15K. The signal degradation over this apogee weekend varies from -1.91dB to -1.85dB and the sun offset at Saturday midnight is +75°.

## BAND REPORTS

### 50MHz

The only activity reported this month is from Kevin Jackson, M0XLT (IO83), who caught some Es on 13 February when he worked S57RR (JN65), IK6NUZ (JN63), IW0GXY (JN61) and I8JIT (JN71) in the 1844-2035 period. At 1734 on the 18th he heard TV video carriers centred on 48.250MHz, 48.260MHz and 55.250MHz in what he thinks was auroral-E propagation. He put out many CQ calls to no avail.

### 144MHz

Welcome to first-time contributor Ian Hogan, G6TGO (IO83), who got back on VHF/UHF early last year since when he has worked over 300 stations in eight countries via MS, auroral, tropo and Es propagation. He now runs a TR-790E transceiver, a small 50W amplifier and a 9-ele Yagi. Niels Montanana, G8RWG (JO01), was QRV for a few hours in the 5/6 March contest when conditions were average but with low UK activity. ODX were HB9DRE (JN37) at 680km and DL6IAK (JN48) at 674km.

Bob Harrison, G8HGN (JO01), was QRV in the UKAC on 1 March and made 52 QSOs with stations in five countries and 20 locators for a claimed score of 1,040 points. ODX was DL0RSH (JO43) at 662km. Activity was good and static rain at the start soon ceased. In the 5/6 March contest he made 26 contacts with stations in six countries and 19 locators for a claimed score of 12,214 points. ODX was DG3FK (JN59) at 789km.

### 430MHz

G6TGO is QRV on the band with his TR-790E transceiver running 25W to a 19-ele Yagi and would welcome skeds. g6tgo1@hotmail.co.uk is his e-mail address. In the 5/6 March contest G8HGN completed nine contacts with stations in DL, F, G, ON and PA in nine locators for a claimed score of 3,084 points. ODX was F4CKV/P (JN16) at 598km but Bob missed out on DL8NCR (JN59) at 736km heard at 1458 working into OK. In the UKAC on 8 March he made 19 QSOs with stations in DL, G, ON and PA in 12 locators for a claimed score of 45,840 points and again DL0RSH was ODX.

## DEADLINES

That's it for another month. The copy deadline for the July issue is **10 May** and for August it's **14 June**. My telephone answering and fax machine is on 020 8763 9457 and my CompuServe ID is g3fpk ◆

### REFERENCES

[1] To join the vhf-dx-discuss group e-mail majordomo@blacksheep.org with the subject message 'subscribe'

**WEB SEARCH**

| | |
|---|---|
| **VK tropo details:** | www.df5ai.net |
| **G8WRB data sheets:** | www.g8wrb.org/ |
| **ARRL EME contest:** | www.arrl.org/contests/results/2004/eme.pdf |
| **WSJT v4.9.5 software:** | http://pulsar.princeton.edu/~joe/K1JT/ |
| **JT65 information:** | http://pulsar.princeton.edu/~joe/K1JT/JT65.pdf |

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# Musical chairs at the RMC

**Mark relates the changes that are occurring in the Repeater Management Committee ◆ He also reminds those with NoVs for repeaters and Internet gateways of the rules regarding their operation ◆ News of ATV and repeaters**

After seven years as Chairman of the Repeater Management Committee, Carlos Eavis, G0AKI, has decided, due to his increased work commitments, to retire from the chairmanship. Carlos is, as many will know, an employee of RSGB and is responsible for the GB4FUN project. This involves not only the management of the Fun Bus, its bookings and maintenance of all the equipment on board, but he actually *drives* the bus to many of the widely-spread venues and shows the visitors everything in operation. The RMC would like to thank Carlos for his hard work within the committee and also representing it at meetings with RA / Ofcom etc.

At the RMC meeting on 5 February, Andrew Barrett, G8DOR, was voted interim Chairman pending an RSGB board decision about a replacement. Andrew has been a member of the RMC since 2001 as Regional Manager for South and South West England. He comes from an amateur radio family as the son of G2BWW, and has been licensed since the late 1960s, acting as Chairman of the Reading and District ARC through the 70s and early 80s. He was a founder member of the Berkshire Downs Repeater Group (now Thames Valley Repeater Group) in 1977, and is currently its Chairman.

Also moving on is Dave Wilson, M0OBW. Dave recently resigned as RMC Regional Manager for North-West England after many years in the post. Dave has recently been appointed to the Board of RSGB and the increased workload from his duties has made it impossible to hold the RMC position as well. We wish Dave well in his role on the Board. This creates a vacancy for RMC Regional Manager, and applications are invited from amateurs in the area. The successful applicant will be responsible for processing applications for voice repeaters in the area and attending committee meetings approximately four times a year. Applications in writing should be sent to the interim RMC Chairman, Andrew Barrett, G8DOR, c/o RSGB Headquarters. The closing date is 30 June 2005.

Andrew Barrett, G8DOR.

## INTERNET GATEWAYS

The RMC has been asked to remind all amateurs with a Notice of Variation (NoV) on their licence to operate a repeater or Internet gateway, of the rules of operation. You must operate the station strictly in accordance with the terms of the NoV. In particular, the location of the equipment, the height and type of antenna, and the power output must not change without a change to the NoV. In the case of Internet gateways, the 'Attended operation' restriction means you *must* be directly in local control of the equipment. You are in contravention of the terms of the NoV even if you are on another part of the station premises. These are the rules, and we have been asked to remind you of them.

## ATV NEWS

There have been several 23cm ATV repeaters refused clearance due to the primary user of the band having concerns about stations transmitting into the repeaters. They are not concerned about the output of the repeaters, as this can be easily controlled through the NoV issued to the Repeater Keeper. However, there is a worry that high power home stations could use the repeaters and these cannot be controlled in the same way. As a way around the perceived problem, cross-band 13cm / 23cm repeaters are favoured. These have their outputs on 23cm and inputs on13cm. Several repeaters have been applied for including GB3GG (Grimsby), and GB3SQ (Poole, Dorset).

## 70cm NEWS

The RMC was represented at a meeting between the Society and the Ministry of Defence to discuss the future of the 70cm band; it took place at Ofcom on 25 February. Most radio amateurs will know that the primary user imposed a freeze on licensing of 70cm amateur service unattended data nodes and repeaters in February 2002, and this meeting was the first towards the lifting of these restrictions. The primary user also placed on record that it wishes to work with the RSGB as the representative of the UK amateur service on a partnership basis, and there was no wish to deprive the amateur radio community of the facilities previously available to them.

## REPEATER PROPOSAL STATUS AS OF 21 MARCH 2005

The latest clearance status can be obtained from the RMC website. Please note that, even though an application may have cleared, it is beyond the control of the RMC as to when the keeper will bring the repeater into service. ◆

**VOICE REPEATER PROPOSALS SUBMITTED FOR LICENSING SINCE DECEMBER 2004 ARE:**

| Callsign | Type | Proposed Keeper |
|---|---|---|
| GB3CT | New 6m, Northants | G7SYT |
| GB3TA | New 2m, Tamworth | G6NHG |
| GB3TY | New 6m, Carrickfergus | GI6IXD |
| GB3IK | New 2m, Rochester, Kent | G6CKK |
| GB3PN | New 6m, Portsmouth | G6FLX |

| WEB SEARCH | |
|---|---|
| RMC | www.coldal.org.uk/rmc |

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# Cassini/Huygens comms saved at 11th hour

**The efforts of one man to save the Cassini / Huygens project ◆ NSC improvements ◆ Important news about Keplerian element sources**

After a seven-year journey covering 3.5 billion kilometres, the Cassini space probe reached Saturn and began to send back spectacular images of the giant planet and its spectacular ring system. This was more than an imaging mission though; Cassini had a hitchhiker on board, the Huygens probe, which would descend through the dense methane atmosphere of Saturn's moon, Titan. The mission was a huge success with large amounts of data coming from Huygens before it succumbed to Titan's hostile environment. It could have been a very different story, but for the dedication and perseverance of one man – Boris Seds, a 26-year veteran of ESA.

The remarkably story of how one man saved a $300 million project is told by James Olberg, in a long article in *Spectrum*, on the IEEE website. Seds discovered a fatal flaw in the Cassini-Huygens communications system and, by sheer dedication and persistence, proved he was right and saved this once-in-a-lifetime mission.

In the original plan, Cassini would jettison Huygens towards Titan before making a low-altitude, high-speed fly-by. While Huygens parachuted down at a leisurely 18 to 22km/h Cassini would whiz by at 21,000km/h. With a relative velocity between the two craft of 5.5km/sec the expected Doppler shift seen by Cassini would be around 38kHz. Huygens produced its telemetry stream at 8192 bits per second and used the well known BPSK (Binary Phase Shift Keying) modulation technique in which 1 and 0 are represented by a variation in the phase of the received signal. Recovering the data bits requires precise timing. The Cassini receiver was designed to break the incoming signal into 8192 chunks every second, determine the phase of each chunk, by comparison with an unmodulated wave, and output a 0 or 1 accordingly. For a very good technical description of BPSK see 'Web search'.

Because of the large Doppler shift, the length of each data bit would be compressed, resulting in the observed data rate being higher than the nominal data rate of 8192bps. The shifted data stream, when broken up into 8192 chunks per second would not correspond with the data being sent. The decoder would see a steam of data it could not recognize – in effect, binary junk.

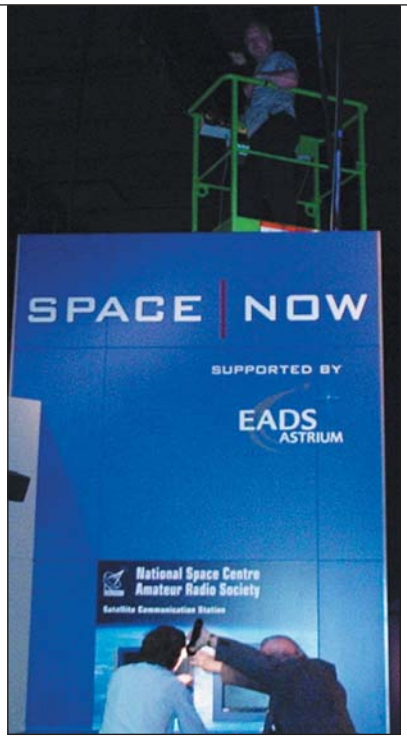
At this point the problem got even more interesting. The timing scheme on Cassini was implemented in firmware, and the spacecraft was already on its journey to Saturn.

How could the mission be saved? After looking at a variety of fixes, the final plan was to reduce the amount of Doppler shift so as to stay within the range of the receiver/decoder. This meant changing the geometry of the fly-by so that Cassini would be further away from Huygens, and the probes' major deceleration component would be perpendicular to the line of sight between the two craft, not along it.

You don't have to go to Saturn to demonstrate how effective this would be. You can demonstrate it using an amateur radio satellite with a CW beacon in the 70cm band. Listen to the change in tone of the beacon during a high-elevation pass. The Doppler shift is relatively large and fast-moving. Then, compare it with another pass later in the day nearer the horizon. The speed of the satellite is, of course, the same in both cases, but the rate of change of the position of the satellite relative to you the observer, is very different. The Doppler shift is now much less, and its rate of change much slower than before. It's an interesting experiment if you've not tried it. The beacon on *LUSAT*, *Oscar 19*, or *FO-29* will give good results.

## GB2NSC GETS A MAKEOVER

As part of a major reorganisation, the amateur radio station at the National Space Centre in Leicester is being transferred to a new location on the other side of the 'Space Now' gallery. This new location enables the station's audio and the satellite tracking display to be fully integrated with the audio-visual presentation systems used to carry our demonstrations for Space Centre visitors. These new facilities will greatly enhance the demonstration capabilities of the station.




**Jeff Lashley of the NSC technical staff, with a member of the radio society, feeding RF cables down to the operating position during an evening working party.**

## KEPLERIAN ELEMENTS, SOME IMPORTANT NEWS

If you are an active member of the satellite community, you will be aware that, due to a government ruling in the USA, (related to 9/11 and protecting the USA from terrorist attack) Keplerian elements for satellites may no longer be available from some of the long-established websites and bulletin boards. Data are still available from a USA government site, and you will have to register at **www.spacetrack.com** A lot of satellite tracking software has built in 'auto-dial software' which calls up Keplerian element data from **www.celestrak.com**, which has around 20,000 users worldwide, or one of the other long-established internet sources. If you have this it may not work now, as these service providers may have to close down. **www.heavens-above.com** may also have to close, although there is some uncertainty at present.

I suggest you register with the SpaceTrack site, it's simple and free of charge; however, there are very heavy restrictions on how you may use the data so read the agreement document before you sign up. You will be assigned a password, which will arrive by e-mail. You then need to log on and change the password to something of your choice. I suggest you follow the same format as the issued password, and just make a change to one character; I tried my favourite password and it was not accepted. ◆

**WEB SEARCH**

**BPSK description by K0LR**
www.computerpro.com/~lyle/watsbpsk.htm

**IEEE Spectrum article**
www.spectrum.ieee.org/WEBONLY/publicfeature/oct04/1004titan.html

**SPACETRACK** www.space-track.org

# ATV

## This month, there is comprehensive news on the ATV repeater front

Located on the Valluga Mountain in the Austrian Alps (2809m ASL), OE7XSI is now radiating ATV thanks to Darko Banko, OE7DBH. The TV transmission is on 10,450MHz and producing some 250mW into a 20dB horn using FM with vertical polarisation (a little too low in frequency to see through GB3YX). The input is on 2,830MHz . I have included an e-mail address should you require more details

GB3BH – the new 13cm ATV repeater at Bushey Heath – has now been equipped to relay GB3HV and GB3TV, the two nearby 23cm ATV repeaters. It can be commanded by DTMF tone sequences. You can control the repeater by DTMF tones on 432.725MHz. You will need a DTMF control that has numbers and letters, eg 0123456789ABCD. First, check that the repeater is hearing your 70cm signal. With the repeater transmitting, send AB4 from the DTMF pad, and the repeater will reply by sending its call sign in Morse added to the audio to confirm that it's hearing you. If the repeater can hear your signal but cannot decode the DTMF (ie incorrect DTMF level, distortion, or your transmitter is off-frequency), the repeater will reply in Morse with 'T (-)'. To switch to an alternative input or to activate the relay functions, use the DTMF codes shown in **Table 1**. The repeater will only switch to another input if there is a valid TV signal present; this avoids transmitting white noise from a receiver if no signal is present. *Please remember to switch off after use.*

**Table 1:**
**DTMF command codes for GB3BH.**

| Description (inputs) | On | Off |
|---|---|---|
| GB3HV relay | A02* | A02# |
| GB3TV relay | A03* | A03# |
| Shack camera | A04* | A04# |
| Caption generator | A00*A5 | A00# |

It is anticipated that this is just the beginning of a new network of linked ATV repeaters which will use a common set of commands for interlink set-up. Full details are available on the G3BH website.

The Luton repeater, GB3TZ, on 13cm, may soon have an additional digital output on 2326MHz. Hopefully, this application will be cleared soon, together with the other three outstanding 13cm applications: GB3YV, Bradford; GB3RX, Coventry; GB3LB, Birmingham.

Recent discussions with Ofcom and the CAA have shown that the GB3PD 23cm application for the Isle of Wight can be accepted, and that GB3FV, in Lincolnshire, can operate cross-band


**TV at the Stevenage Rally in February. Extreme left, Roger Glover, G8IUC; Vas Ikonomou, G0VAS; John Douglas, G4DVG. (Photo: G8TVW)**

13cm in / 23cm out, with their blessing. It appears that some of the CAA L-band radars will be upgraded over the next few months, and may have their frequencies altered as a result. Where this will take the future licensing of 23cm ATV repeaters is uncertain at this time.

The Home Counties ATV Group is now running a high-definition Internet video and audio stream from GB3HV. The system has been under test since the middle of 2004 and is now online and available to all. The best time to watch is on the Wednesday Activity Night, from about 8.30pm onwards. The stream uses *Windows Media* and runs at 193Kbit/sec, so a broadband connection is essential for proper viewing. Please note that it can easily take 30 seconds for the stream to stabilise when you initially open the page. There is an ICQ chat room so that you can take part in the activity even if you're out of range of talkback (144.750MHz FM). The Home Counties Group is also planning a major 'test-it-fix-it' night on 24 May, when members will be bringing in some exotic microwave test equipment including network analysers, a noise figure analyser, spectrum analysers, accurate power meters and so forth. This is your chance to test your homebrew equipment against professional test equipment. Use of the equipment is free for club members; non-members will be asked to make a minimum donation to club funds. Full details are on the Home Counties ATV Club website, please make contact with the club first to let it know what you want to test, so it can make sure the right test gear is brought along. The group meets from 8pm at the Royal British Legion Club, Binfield, Berkshire (between Wokingham and Bracknell).

The BATC is not planning an event this year, not because it usually clashes with the Dunstable Downs Car Boot Sale, it's just not a BGM year! Before you ask, yes, the Dunstable Downs event is still on and is set for 8 May.

Last, but not least, there is a new firm (Mast Head Antennas) making high-quality 23 and 13cm antennas ideal for use with all the UK repeaters. ◆

**WEB SEARCH**

| | |
|---|---|
| **RSGB RMC** | www.coldal.org.uk/rmc.htm |
| **GB3BH** | www.gb3bh.com |
| **GB3HV** | www.gb3hv.com |
| **GB3HV web streaming** | www.gb3hv.com/gb3hv/streaming.htm |
| **Mast Head Antennas** | www.mastheadantennas.com |
| **OE7DBH** | oe7dbh@tirol.com |

# MOONRAKER

*Manufacturers of radio communication antennas and associated products*

## Log Periodic

**MLP32** TX & RX 100-1300MHz one feed, S.W.R. 2:1 and below over whole frequency range professional quality (length 1420mm) ..... **£99.95**

**MLP62** same spec as MLP32 but with increased freq. range 50-1300 Length 2000mm ..... **£169.95**

## Mobile HF Whips (with 3/8 base fitting)

**AM-PRO 6** mt *(Length 4.6' approx)* ..... **£16.95**
**AM-PRO 10** mt *(Length 7' approx)* ..... **£16.95**
**AM-PRO 17** mt *(Length 7' approx)* ..... **£16.95**
**AM-PRO 20** mt *(Length 7' approx)* ..... **£16.95**
**AM-PRO 40** mt *(Length 7' approx)* ..... **£16.95**
**AM-PRO 80** mt *(Length 7' approx)* ..... **£19.95**
**AM-PRO 160** mt *(Length 7' approx)* ..... **£49.95**
**AM-PRO MB5** Multi band 10/15/20/40/80 can use 4 Bands at one time *(Length 100")* ..... **£69.95**
**SPX-100** 'plug n go' multiband 6/10/12/15/17/20/30/40/80mtrs. Band changing is easy via a flylead and socket and adjustable telescopic whip section 1.65m when fully extended ..... **£49.95**

## Slim Jims

**SJ-70** 430-430MHz slimline design with SO239 connection. Length 1.00m ..... **£19.95**
**SJ-2** 144-146MHz slimline design with SO239 connection. Length 2.00m ..... **£24.95**

## VHF/UHF Mobile Antennas

**MICRO MAG** Dual band 2/70 antenna complete with 1" magnetic mount 5mtrs of mini coax terminated in BNC ..... **£14.95**
**MR700** 2m/70cms, 1/4 wave & 5/8, Gain 2m 0dB/3.0dB 70cms Length 20" 3/8 Fitting ..... **£7.95**
SO239 Fitting ..... **£9.95**
**MR 777** 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting) ..... **£16.95**
(SO239 fitting) ..... **£18.95**
**MRQ525** 2m/70cms, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cms Length 17" SO239 fitting commercial quality ..... **£19.95**
**MRQ500** 2m/70cms, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8db 70cms Length 38" SO239 fitting commercial quality ..... **£24.95**
**MRQ750** 2m/70cms, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cms Length 60" SO239 fitting commercial quality ..... **£39.95**
**MRQ800** 6/2/70cms 1/4 6/8 & 3 x 5/8, Gain 6m3.0dBi/2m 5.0dB/70 7.5dB Length 60" SO239 fitting commercial quality ..... **£39.95**
**GF151** Professional glass mount dual band antenna. Freq: 2/70 Gain: 2.9/4.3dB. Length: 31" ..... New low price **£29.95**

## Single Band Mobile Antennas

**MR 214** 2 metre straight stainless 1/4 wave 3/8 fitting .. **£4.95**
SO239 type ..... **£5.95**
**MR 258** 2 Metre 5/8 wave 3.2 dBd Gain (3/8 fitting) (Length 58") ..... **£12.95**
**MR 268S** 2 Metre 5/8 wave 3.5dBd gain Length 51" S0239 fitting ..... **£19.95**
**MR 290** 2 Metre (2 x 5/8 Gain: 7.0dBd) (Length: 100"). SO239 fitting, "the best it gets" ..... **£39.95**
**MR 625** 6 Metre base loaded (1/4 wave) (Length: 50") commercial quality ..... **£19.95**
**MR 614** 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting) ..... **£13.95**
**MR 644** 6 Metre loaded 1/4 wave (Length 40") (3/8 fitting) .. **£12.95**
(SO239 fitting) ..... **£15.95**

## Single Band End Fed Base Antennas

**70 cms** 1/2 wave (Length 26") (Gain: 2.5dB) (Radial free) ..... **£24.95**
**2 metre** 1/2 wave (Length 52") (Gain 2.5dB) (Radial free) ..... **£24.95**
**4 metre** 1/2 wave (Length 80") (Gain 2.5dB) (Radial free) ..... **£39.95**
**6 metre** 1/2 wave (Length 120") (Gain 2.5dB) (Radial free) ..... **£44.95**
**6 metre** 5/8 wave (Length 150") (Gain 4.5dB) (3 x 28" radials) .. **£49.95**

## Mini HF Dipoles (Length 11' approx)

**MD020** 20mt version approx only 11ft ..... **£39.95**
**MD040** 40mt version approx only 11ft ..... **£44.95**
**MDO80** 80mt version approx only 11ft ..... **£49.95**
(slimline lightweight aluminium construction)

## VHF/UHF Vertical Co-Linear Fibreglass Base Antenna

***SQ & BM Range VX 6Co-linear:- Specially Designed Tubular Vertical Coils individually tuned to within 0.05pf (maximum power 100 watts)***

**BM100 Dual-Bander** ..... **£29.95**
(2 mts 3dBd) (70cms 6dBd) (Length 39")
**SQBM100 Dual-Bander** ..... **£39.95**
(2 mts 3dBd) (70cms 6dBd) (Length 39")
**SQBM110 Dual-Bander** ..... **£49.95**
(2 mts 3dBd) (70cms 6dBd) (Length 39")
Unique design – radial FREE
**BM200 Dual-Bander** ..... **£39.95**
(2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")
**SQBM200 Dual-Bander** ..... **£49.95**
(2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")
**SQBM500 Dual - Bander Super Gainer** ..... **£59.95**
(2 mts 6.8dBd) (70cms 9.2dBd) (Length100")
**BM1000 Tri-Bander** ..... **£59.95**
(2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
**SQBM1000 Tri-Bander** ..... **£69.95**
(2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
**SQBM 100/200/500/800/1000** ***are Polycoated Fibre Glass with Chrome & Stainless Steel Fittings.***

## Single Band Vertical Co-Linear Base Antenna

**BM33** 70 cm 2 X 5/8 wave Length 39" 7.0 dBd Gain ... **£34.95**
**BM45** 70cm 3 X 5/8 wave Length 62" 8.5 dBd Gain .... **£49.95**
**BM55** 70cm 4 X 5/8 wave Length 100" 10 dBd Gain ... **£69.95**
**BM60** 2mtr5/8 Wave, Length 62", 5.5dBd Gain ..... **£49.95**
**BM65** 2mtr 2 X 5/8 Wave, Length 100", 8.0 dBd Gain ..... **£69.95**

## MFJ Antenna Tuning Unit

**MFJ-941E** ..... **£129.95**
**MFJ-945** ..... **£119.95**
**MFJ-948** ..... **£139.95**
**MFJ-949E** ..... **£159.95**
**MFJ-969** ..... **£199.95**
**MFJ-971** ..... **£99.95**
**MFJ-993** ..... **£249.95**
**MFJ-974** ..... **£159.95**
**MFJ-974H** ..... **£179.95**

## Rotative HF Dipoles

**RDP-3B** 10/15/20mtrs length 7.40m ..... **£119.95**
**RDP-4** 12/17/30mtrs length 10.50m ..... **£119.95**
**RDP-40M** 40mtrs length 11.20m ..... **£169.95**
**RDP-6B** 10/12/15/17/20/30mtrs boom length 1.00m. ..... **£239.95**

## Hand-Held Antennas

**MRW-310** Rubber DuckTX 2 Metre & 70 cms Super Gainer RX 25- 1800 Length 40cm BNC fitting ..... **£14.95**
**MRW-232** Mini Miracle TX 2 Metre 70 & 23 cms RX 25-1800 Mhz Length just 4.5cm BNC fitting ..... **£19.95**
**MRW-250** Telescopic TX 2 Metre & 70 cms RX 25-1800 Mhz Length 14-41cm BNC fitting ..... **£16.95**
**MRW-200** Flexi TX 2 Metre & 70cms RX 25-1800 Mhz Length 21cm SMA fitting ..... **£19.95**
**MRW-210** Flexi TX 2 Metre & 70cms Super Gainer RX 25-1800 Mhz Length 37cm SMA fitting ..... **£22.95**

## HB9CV 2 Element Beam 3.5dBd

| | | |
|---|---|---|
| **70cms** | (Boom 12") | **£19.95** |
| **2 metre** | (Boom 20") | **£24.95** |
| **4 metre** | (Boom 23") | **£29.95** |
| **6 metre** | (Boom 33") | **£34.95** |
| **10 metre** | (Boom 52") | **£64.95** |
| **6/2/70 Triband** | (Boom 45") | **£64.95** |

## Halo Loops

**2 metre** (size 12" approx) ..... **£14.95**
**4 metre** (size 20" approx) ..... **£19.95**
**6 metre** (size 30" approx) ..... **£26.95**
*These very popular antennas square folded di-pole type antennas*

## Guy Rope 30 metres

**MGR-3** 3mm (maximum load 250 kgs) ..... **£6.95**
**MGR-4** 4mm (maximum load 380 kgs) ..... **£14.95**
**MGR-6** 6mm (maximum load 620 kgs) ..... **£29.95**

## Crossed Yagi Beams (fittings stainless steel)

**2 metre 5 Element**
(Boom 64") (Gain 7.5dBd) ..... **£74.95**
**2 metre 8 Element**
(Boom 126") (Gain 11.5dBd) ..... **£94.95**
**70 cms 13 Element**
(Boom 83") (Gain 12.5dBd) ..... **£74.95**

## Yagi Beams (fittings stainless steel)

**2 metre 4 Element**
(Boom 48") (Gain 7dBd) ..... **£24.95**
**2 metre 5 Element**
(Boom 63") (Gain 10dBd) ..... **£44.95**
**2 metre 8 Element**
(Boom 125") (Gain 12dBd) ..... **£59.95**
**2 metre 11 Element**
(Boom 185") (Gain 13dBd) ..... **£89.95**
**4 metre 3 Element**
(Boom 45") (Gain 8dBd) ..... **£49.95**
**4 metre 5 Element**
(Boom 128") (Gain 10dBd) ..... **£59.95**
**6 metre 3 Element**
(Boom 72") (Gain 7.5dBd) ..... **£54.95**
**6 metre 5 Element**
(Boom 142") (Gain 9.5dBd) ..... **£74.95**
**70 cms 13 Element**
(Boom 76") (Gain 12.5dBd) ..... **£49.95**

## ZL Special Yagi Beams (Fittings stainless steel)

**2 metre 5 Element** (Boom 38") (Gain 9.5dBd) ... **£39.95**
**2 metre 7 Element** (Boom 60") (Gain 12dBd) .... **£49.95**
**2 metre 12 Element** (Boom 126") (Gain 14dBd) **£74.95**
**70 cms 7 Element** (Boom 28") (Gain 11.5dBd) .. **£34.95**
**70 cms 12 Element** (Boom 48") (Gain 14dBd) ..... **£49.95**
*The biggest advantage with a ZL-special is that you get massive gain for such a small boom length, making it our most popular beam antenna*

## G5RV Wire Antenna (10-40/80m) (Fittings stainless steel)

| | HALF | FULL |
|---|---|---|
| **Standard** (enamelled) | **£19.95** | **£22.95** |
| **Hard Drawn** (pre-stretched) | **£24.95** | **£27.95** |
| **Flex Weave** (original high quality) | **£29.95** | **£34.95** |
| **Flexweave PVC** (clear coated PVC) | **£34.95** | **£39.95** |
| **Deluxe 450 ohm PVC Special** | **£44.95** | **£49.95** |

**TS1** Stainless Steel Tension Springs (pair) for G5RV ..... **£19.95**

## G5RV Inductors

Convert your half size g5rv into a full size with just 8ft either side. Ideal for the small garden ..... **£19.95**

## Reinforced Hardened Fibreglass Masts (GRP)

GRP-150 1.5" OD Length: 2.0m Grade: 3mm ..... **£19.95**
GRP-175 1.75" OD Length: 2.0m Grade: 3mm ..... **£24.95**
GRP-200 2.0" OD Length: 2.0m Grade: 3mm ..... **£29.95**

## Speakers

**PMR-218** ..... **£8.95**
- Impedance: 8Ω
- Power: 3 Watts nominal/5 Watts max
- Size: 95 x 95 x 65mm
- Lead: 2m with 3.5mm jack plug fitted

**PMR-250** ..... **£10.95**
- Impedance: 8Ω
- Power: 3 Watts nominal/5 Watts max
- Size: 65 x 130 x 80mm
- Lead: 2m with 3.5mm jack plug fitted

**PMR-712** ..... **£14.95**
- Impedance: 8Ω
- Power: 3 Watts nominal/5 Watts max
- Size: 120 x 120 x 40mm
- Lead: 2m with 3.5mm jack plug fitted
- Includes mute and audio noise filter

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(UK mainland only)

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## Mounting Hardware (All galvanised)

**6" Stand Off Bracket** *(complete with U Bolts)*.....**£6.00**
**9" Stand off bracket** *(complete with U Bolts)*.....**£9.00**
**12" Stand off bracket** *(complete with U Bolts)*..**£12.00**
**12" T & K Bracket** *(complete with U Bolts)*.....**£14.95**
**18" T & K Bracket** *(complete with U Bolts)*.....**£17.95**
**24" T & K Bracket** *(complete with U Bolts)*.....**£19.95**
**36" T & K Bracket** *(complete with U Bolts)*.....**£29.95**
**Chimney lashing kit**.....**£12.95**
**Double chimney lashing kit**.....**£24.95**
**3-Way** Pole Spider for Guy Rope/ wire.....**£3.95**
**4-Way** Pole Spider for Guy Rope/wire.....**£4.95**
**1"** Mast Sleeve/Joiner.....**£6.95**
**1.25"** Mast Sleeve/Joiner.....**£7.95**
**1.5"** Mast Sleeve/Joiner.....**£8.95**
**2"** Mast Sleeve/Joiner.....**£9.95**
**Earth rod** including clamp (copper plated).....**£9.95**
**Earth rod** including clamp (solid copper).....**£14.95**
**Pole to pole clamp** 2"-2".....**£4.95**
**Di-pole centre** (for wire).....**£4.95**
**Di-pole centre** (for aluminium rod).....**£4.95**
**Dog bone insulator**.....**£1.00**
**Dog bone insulator** heavy duty.....**£2.00**

## 5ft Poles Heavy Duty (Swaged)

**Heavy Duty Aluminium (1.8mm wall)**
with a lovely push-fit finnish to give a very strong mast set
**1¼"** single 5' ali pole.....**£7.00**
**1¼"** set of four (20' total approx).....**£24.95**
**1½"** single 5' ali pole.....**£10.00**
**1½"** set of four (20' total approx).....**£34.95**
**1¾"** single 5' ali pole.....**£12.00**
**1¾"** set of four (20' total approx).....**£39.95**
**2"** single 5' ali pole.....**£15.00**
**2"** set of four (20' total approx).....**£49.95**

## Cable & Coax Cable

**RG58 best quality standard** per mt.....**35p**
**RG58 best quality military spec** per mt.....**60p**
**RGMini 8 best quality military spec** per mt.....**70p**
**RG213 best quality military spec** per mt.....**85p**
**H100 best quality military coax cable** per mt.....**£1.10**
**3-core rotator cable** per mt.....**45p**
**7-core rotator cable** per mt.....**£1.00**
**10 amp red/black cable 10 amp** per mt.....**40p**
**20 amp red/black cable 20 amp** per mt.....**75p**
**30 amp red/black cable 30 amp** per mt.....**£1.25**
*Please phone for special 100 metre discounted price*

## Connectors & Adapters

**PL259/9 plug** (Large entry).....**£0.75**
**PL259 Reducer** (For PL259/6 to conv to P1259/6).....**£0.25**
**PL259/6 plug** (Small entry).....**£0.75**
**PL259/7 plug** (For mini 8 cable).....**£1.00**
**BNC Screw type plug** (Small entry).....**£1.25**
**BNC Solder type plug** (Small entry).....**£1.25**
**BNC Solder type plug** (Large entry).....**£3.00**
**N-Type plug** (Small entry).....**£3.00**
**N-Type plug** (Large entry).....**£3.00**
**SO239 Chassis socket** (Round).....**£1.00**
**SO239 Chassis socket** (Square).....**£1.00**
**N-Type Chassis scoket** (Round).....**£3.00**
**N-Type Chassis scoket** (Square).....**£3.00**
**SO239 Double female adapter**.....**£1.00**
**PL259 Double male adapter**.....**£1.00**
**N-Type Double female**.....**£2.50**
**SO239 to BNC adapter**.....**£2.00**
**SO239 to N-Type adapter**.....**£3.00**
**SO239 to PL259 adapter** (Right angle).....**£2.50**
**SO239 T-Piece adapter** (2xPL 1XSO).....**£3.00**
**N-Type to PL259 adapter** (Female to male).....**£3.00**
**BNC to PL259 adapter** (Female to male).....**£2.00**
**BNC to N-Type adapter** (Female to male).....**£3.00**
**BNC to N-Type adapter** (Male to female).....**£2.50**
**SMA to BNC adapter** (Male to female).....**£3.95**
**SMA to SO239 adapter** (Male to SO239).....**£3.95**
**SO239 to 3/8 adapter** (For antennas).....**£3.95**
**3/8 Whip stud** (For 2.5mm whips).....**£2.95**
*Please add just £2.00 P&P for connector only orders*
*PLEASE PHONE FOR LARGE CONNECTOR ORDER DISCOUNTS*

## Baluns

**MB-1** 1:1 Balun 400 watts power.....**£24.95**
**MB-4** 4:1 Balun 400 watts power.....**£24.95**
**MB-6** 6:1 Balun 400 watts power.....**£24.95**
**MB-1X** 1:1 Balun 1000 watts power.....**£29.95**
**MB-4X** 4:1 Balun 1000 watts power.....**£29.95**
**MB-6X** 6:1 Balun 1000 watts power.....**£29.95**
**MB-Y2** Yagi Balun 1.5 to 50MHz 1kW.....**£24.95**

## Tri/Duplex & Antennas Switches

**MD-24** HF or VHF/UHF internal duplexer (1.3-225MHz) (350-540MHz) SO239/PL259 fittings.....**£22.95**
**MD-24N** same spec as MD-24 but "N-type" fittings.**£24.95**
**MX2000** HF/VHF/UHF internal Tri-plexer (1.6-60MHz) (110-170MHz) (300-950MHz).....**£59.95**
**CS201** Two-way di-cast antenna switch. Freq: 0-1000MHz max 2,500 watts SO239 fittings.....**£14.95**
**CS201-N** Same spec as CS201 but with N-type fittings.....**£19.95**
**CS401** Same spec as CS201 but4-way.....**£39.95**

## Antennas Rotators

**AR-31050** Very light duty TV/UHF.....**£24.95**
**AR-300XL** Light duty UHF\VHF.....**£49.95**
**YS-130** Medium duty VHF.....**£79.95**
**RC5-1** Heavy duty HF.....**£349.95**
**RG5-3** Heavy Duty HF inc pre set control box.....**£449.95**
**AR26** Alignment Bearing for the AR300XL.....**£18.95**
**RC26** Alignment Bearing for RC5-1/3.....**£49.95**

## Mobile Mounts

**Turbo mag mount** 7" 4mtrs coax/PL259 3/8 or SO239.....**£14.95**
**Tri-mag mount** 3 x 5" 4mtrs coax/PL259 3/8 or SO239.....**£39.95**
**Hatch Back Mount** (stainless steel) 4 mts coax/PL259 3/8 or SO239 fully adjustable with turn knob.....**£29.95**
**Gutter Mount** (same as above).....**£29.95**
**Rail Mount** (aluminium) 4mtrs coax/PL259 sutiable for up to 1inch roof bars or poles 3/8 fitting.....**£12.95**
**SO259 fitting**.....**£14.95**
**Gutter Mount** (cast aluminium) 4mtrs coax/PL259 3/8 fitting...**£9.95**
**SO259 fitting**.....**£12.95**
**Hatch Back Mount** 3/8 4mtrs coax/PL259.....**£12.95**
**Roof stud Mount** 4mts coax/PL259 3/8 or SO239 fitting.....**£12.95**

## Antenna Wire & Ribbon


**Enamelled copper wire** 16 gauge (50mtrs).....**£11.95**
**Hard Drawn copper wire** 16 gauge (50mtrs)..**£13.95**
**Equipment wire** Multi Stranded (50mtrs).....**£9.95**
**Flexweave** high quality (50mtrs).....**£27.95**
**PVC Coated Flexweave** high quality (50mtrs).....**£37.95**
**300Ω Ladder Ribbon** heavy duty USA imported (20mtrs).....**£15.00**
**450Ω Ladder Ribbon** heavy duty USA imported (20mtrs).....**£15.00**
*(Other lengths available, please phone for details)*

## Miscellaneous Items

**CDX** Lightening arrestor 500 watts.....**£19.95**
**MDX** Lightening arrestor 1000 watts.....**£24.95**
**AKD** TV1 filter.....**£9.95**
**Amalgamating tape** (10mtrs).....**£7.50**
**Desoldering pump**.....**£2.99**
**Alignment 5pc kit**.....**£1.99**

## Telescopic Masts (aluminium/fibreglass opt)

**TMA-1** Aluminium mast ★ 4 sections 170cm each ★ 45mm to 30mm ★ Approx 20ft erect 6ft collapsed.....**£99.95**
**TMA-2** Aluminium mast ★ 8 sections 170cm each ★ 65mm to 30mm ★ Approx 40ft erect 6ft collapsed.....**£189.95**
**TMF-1** Fibreglass mast ★ 4 sections 160cm each ★ 50mm to 30mm ★ Approx 20ft erect 6ft collapsed.....**£99.95**
**TMF-2** Fibreglass mast ★ 5 sections 240cm each ★ 60mm to 30mm ★Approx 40ft erect 9ft collapsed.....**£189.95**

## HF Yagi

**HBV-2** 2 BAND 2 ELEMENT TRAPPED BEAM FREQ:20-40 Mtrs GAIN:4dBd BOOM:5.00m LONGEST ELEMENT:13.00m POWER:1600 Watts.....**£399.95**

**ADEX-3300** 3 BAND 3 ELEMENT TRAPPED BEAM
FREQ:10-15-20 Mtrs GAIN:8 dBd
BOOM:4.42m LONGEST ELE:8.46m
POWER:2000 Watts.....**£329.95**

**ADEX-6400** 6 BAND 4 ELEMENT TRAPPED BEAM FREQ:10-12-15-17-20-30 Mtrs GAIN:7.5 dBd BOOM:4.27m LONGEST ELE:10.00m
POWER:2000 Watts.....**£599.95**
40 Mtr RADIAL KIT FOR ABOVE.....**£99.00**

## HF Verticals



**VR3000** 3 BAND VERTICAL
FREQ: 10-15-20 Mtrs
GAIN: 3.5dBi HEIGHT: 3.80m POWER: 2000 Watts (without radials)
POWER: 500 Watts (with optional radials).....**£99.95**
OPTIONAL 10-15-20mtr radial kit.....**£39.95**

**VR5000** 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 4.00m RADIAL LENGTH: 2.30m (included). POWER: 500 Watts.....**£189.95**



**EVX4000** 4 BAND VERTICAL FREQ:10-15-20-40 Mtrs GAIN: 3.5dBi HEIGHT: 6.50m POWER: 2000 Watts (without radials)
POWER: 500 Watts (with optional radials).....**£119.95**
OPTIONAL 10-15-20mtr radial kit.....**£39.95**
OPTIONAL 40mtr radial kit.....**£14.95**

**EVX5000** 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 7.30m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials).....**£169.95**
OPTIONAL 10-15-20mtr radial kit.....**£39.95**
OPTIONAL 40mtr radial kit.....**£14.95**
OPTIONAL 80mtr radial kit.....**£16.95**

**EVX6000** 6 BAND VERTICAL FREQ: 10-15-20-30-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 5.00m RADIAL LENGTH: 1.70m(included) POWER: 800 Watts.....**£299.95**

**EVX8000** 8 BAND VERTICAL FREQ:10-12-15-17-20-30-40 Mtrs (80m optional) GAIN: 3.5dBi HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included)
POWER: 2000 Watts.....**£319.95**
80 MTR RADIAL KIT FOR ABOVE.....**£89.00**
*(All verticals require grounding if optional radials are not purchased to obtain a good VSWR)*

## Trapped Wire Di-Pole Antennas
(Hi grade heavy duty Commercial Antennas)

**UTD160** FREQ:160 Mtrs LENGTH:28m POWER:1000 Watts.....**£49.95**
**MTD-1** (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts..**£49.95**
**MTD-2** (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts.....**£54.95**
**MTD-3** (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts.....**£99.95**
**MTD-4** (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts.....**£44.95**
**MTD-5** (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts.....**£89.95**
*(MTD-5 is a crossed di-pole with 4 legs)*

## Patch Leads

**STANDARD LEADS**
**1mtr RG58** PL259 to PL259 lead.....**£3.95**
**10mtr RG58** PL259 to PL259 lead.....**£7.95**
**30mtr RG58** PL259 to PL259 lead.....**£14.95**
**MILITARY SPECIFICATION LEADS**
**1mtr RG58** Mil spec PL259 to PL259 lead.....**£4.95**
**10mtr RG58** Mil spec PL259 to PL259 lead.....**£10.95**
**30mtr RG58** Mil spec PL259 to PL259 lead.....**£24.95**
**1mtr RG213** Mil spec PL259 to PL259 lead.....**£4.95**
**10mtr RG213** Mil spec PL259 to PL259 lead.....**£14.95**
**30mtr RG213** Mil spec PL259 to PL259 lead.....**£29.95**
*(All other leads and lengths available, ie. BNC to N-type, etc. Please phone for details)*

ALL PICTURES ARE FOR REFERENCE ONLY

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E-mail: g4njh2@ntlworld.com

# E-commerce is alive and well for ham radio

**We all know how useful the Internet is for looking up sites; the purpose of this column is, I suppose, to prove that to you as far as our hobby is concerned. Over the years I think I have covered most topics, but I am sure (I hope!) there is more still I can wheedle out of the many pages.**

Today, let us look at a simple, practical use of the WWW. You know that there are suppliers of radio out there. How do you find them? You know there is all this mouth-watering equipment, but you rarely get to rallies. How do you find out what's there and what will you be able to see and evaluate – or, indeed, sigh and put away your chequebook?

Well fortunately, pretty well all UK suppliers have a site and certainly all the main equipment providers do, so of them quite exotic. So let us take a practical tour around the UK sites and see what we can see.

## G6DPP

A simple Internet search came up with a useful list by G6DPP. Exactly how up-to-date it is is proudly displayed at the top of the page. It is an uncomplicated set of lists, but immensely useful as a reference. On the same site, you can find a whole load of links to individual pages and manufacturers. We will come on to the latter presently. Amateur sites do not need to be complicated or sophisticated to serve the hobby. There are other examples of useful listings, not least of all, our old friend Andy Gayne, G7KPF (the previous author of this column), whose pages have been in use now since 1996. There are plenty more.

## SUPPLIERS

I concentrated on the UK suppliers list. It would be invidious to review them all and I leave you to delve in, but one or two caught my eye. Mushroom Components for example "can ship over 100 million semiconductor devices from stock including more unusual and obsolete transistors, diodes and integrated circuits". Fairhaven Electronics, which also manufactures radios, has a clear and navigable page, and there is also the stylish Zycomm site, which I particularly liked. That caught my eye too because it is not far from me in Derbyshire.

Of course the big, well known, suppliers are there too – Waters and Stanton PLC, Martin Lynch and Sons, Maplin, to name but a few, and all have extensive sites. I do not intend to review them nor to favour one above another, but they are all there. E-commerce has taken off seriously since I last wrote about these matters some years back. Now it would be quite normal to buy on the net and for retailers to accept it. Telephone and fax orders were the order of the day then. (For anyone interested in E-commerce progress, the BBC has a good summary of the UK progress – which was 27% up last year on the year before – published at the peak of Christmas shopping fever.)

## EQUIPMENT

What about the equipment? Well, I think we had better visit the big ones – Yaesu, Kenwood, Icom. As you would expect, these are major professional sites. The Yaesu site is not overwhelming, I have to say. I looked longingly at the latest HF transceivers. The prices are notable by their absence. The equipment, of course, is not exclusively amateur. There is some interesting commercial stuff there too. I think I expected more. The Kenwood site is both global and local (to the country). It struck me as more topical. Not only is there detail of the latest products, but also a word about the recent extension of 40m band in the UK and a note about UK rallies. This is quite an appealing site which Kenwood have taken some care over. I liked it.

The Icom site, with an up-to-date UK set of pages was full of pics of various sorts – its products, mouth-wateringly complex at times – I've always thought that if you spend lots of money you ought to have endless controls to play with, no doubt a very old-fashioned concept! Anyway, there are some goodies to download for computer users and small simulators of various radio features. It guides the reader to news items (the latest posted just yesterday). Like its cousins, amateur equipment is only one of the many things it manufactures.

## ANTENNAS AND MORE

A rig isn't much use without its antenna. So have a look, for example, at the Cushcraft site – very stylish. The section on amateur antennas includes a gallery of various DXpeditions. Spend a moment to have a look at Moonraker antenna site or, if you are into Weather Satellite equipment, for example, try the Timestep site.

## WHY THESE?

I mention all these because they caught my attention. They all have British links, but there are thousands of others worldwide. I do not wish to comment on the products all these commercial outlets supply, excellent as they are, I am sure. The point of this article is, as I said, to remind you of the value of the Internet to find sites of interest and we are all interested in radio equipment, even if only to sigh, drool or window-shop. From one interest you will hop to another; quite rightly. E-commerce is not just buying: it's the ability to inform you too.

I enjoyed this short hop around the sites. I didn't buy anything this time, but if I had a few thousand pounds to spare, I can think of one or two things I might! For the smaller item, I could at least shop around the very many sites and see just what buy might be best. ◆


**Typical of many manufacturers' sites, Yaesu offers its up-coming wares.**

| WEB SEARCH | |
|---|---|
| G6DPP | www.g6dpp.com/link1/ |
| Mushroom Components | www.mushroom.co.uk/ |
| Fairhaven Electronics | www.fair-radio.demon.co.uk/ |
| Zycomm | www.zycomm.co.uk/ |
| Waters and Stanton PLC | www.wsplc.com/ |
| Martin Lynch and Sons | www.hamradio.co.uk/ |
| Maplin | www.maplin.co.uk/ |
| Nevada | www.nevada.co.uk/ |
| E-Commerce BBC | http://news.bbc.co.uk/2/hi/business/4281927.stm |
| G7KPF | www.users.zetnet.co.uk/kama/hamlinks.htm |
| Yaesu | www.yaesu.com |
| Icom | www.icomuk.com |
| Cushcraft | www.cushcraft.com/ |
| Moonraker | www.moonrakerukltd.com |
| Timestep | www.time-step.com/ |

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# Microwave

**Looking for a 23cm band low-noise amplifier that can be switched to low gain when a strong local signal appears? Sam describes a low-noise, high-dynamic-range, switchable 23cm amplifier.**

Recent developments in cellular radio component technology has provided the VHF, UHF and microwave enthusiast with access to low-cost, low-noise, high-dynamic-range parts such as the Agilent ATF54143 PHEMT FET. [PHEMT – Pseudomorphic High Electron Mobility Transistor – *Ed.*] As a result, if you are looking for an effective low-noise 23cm preamplifier there have been several designs published in the amateur press over the last few years. While there have been many such designs optimised for the low-noise amplifier stage, there has been a dearth of designs for the equally-important receive converter second-stage amplifier. Using some of this new technology, a switchable, low-noise, second-stage amplifier has been developed for use with a mast-head preamplifier.

I have been developing a new 23cm transverter and one of my design objectives was to enable the receive side to maintain high dynamic range when using a masthead preamplifier, yet still have adequate sensitivity if used as a stand-alone transverter. The key to achieving this was discovered when the data sheet for the Agilent MGA71543 was studied. This GaAs Microwave Monolithic Integrated Circuit (MMIC) amplifier device is designed for use in Code-Division Multiple Access (CDMA) and W-CDMA cellular receivers, where the level of received signal is critical to maintaining traffic capacity. This device incorporates a simple, internal, switching system where the amplifier can be bypassed whilst maintaining a good match at the input and output. This type of device is called a low noise amplifier mitigated bypass switch.

When used with a good masthead preamplifier, the system receive noise figure can be maintained below 1dB, with relatively good dynamic range, but when a very strong local signal appears, the MGA71543 bypass switch can be operated to reduce system gain, so that operation can continue, although with a higher system noise figure, and with reduced blocking or intermodulation problems.

My transverter design required 30dB of pre-mixer gain without the masthead preamplifier. An MGA71543, on its own, can provide 16dB gain with a noise figure below 1dB at 23cm. A second amplifier stage is obviously required to achieve 30dB gain. A good second-stage candidate is the MGA53543. Using the MGA71543 as the first stage and the MGA53543 as the second stage, the two-stage amplifier measured 29.6dB gain at a noise figure of 1.1dB and an input intercept (IIP3) of -3dBm (calculated from two-tone measurements). This is a slightly lower IIP3 than expected, although it is adequate for my (current) requirements. Switching out the MGA71543 reduces the overall amplifier gain to 8.7dB, with 8.2dB noise figure, but provides a measured IIP3 of +11.5dBm. Depending on the gain and noise figure of the masthead preamplifier and receive feeder loss, the overall system noise figure can still be maintained below 2dB with the MGA71543 switched out and below 1dB with it in circuit.

**Fig 1** shows the circuit schematic of the two-stage amplifier, its layout being shown in **Fig 2**. This has been derived from the application notes for each device, with matching for 1.3GHz rather than the published 900MHz or 1800MHz cellular allocations. The MGA71543 first stage device is noise-matched with a 'T' circuit using a series capacitor and inductor and a shunt inductor. It is important that the indicated values are used or noise figure will suffer, as will gain.

The input device has two source connections. One of these is double-decoupled with two capacitors. The second source connection is also decoupled with a similar arrangement, but here the source connection is connected through a 10ohm resistor and then a feedthrough capacitor to an external 100ohm potentiometer and toggle switch, used to set the bias and bypass the stage respectively. The value of the potentiometer should be adjusted for best noise figure or best intercept, depending on requirements. Opening the switch

**Fig 1**
**Schematic of the 23cm switchable amplifier.**

**Fig 2**
**Layout of the 23cm switchable amplifier PCB. Not actual size - see text.**

FIG 2 © RADCOM 454

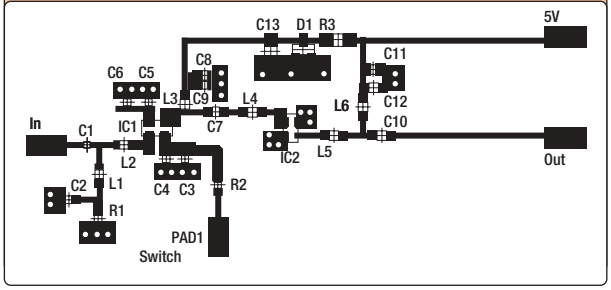
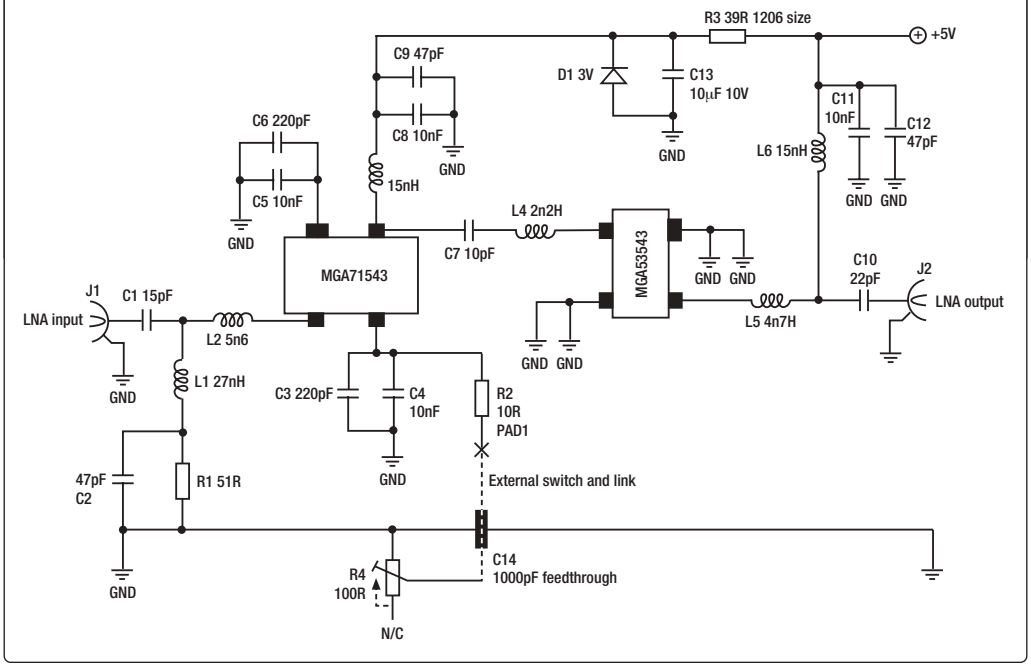



FIG 1 © RADCOM 453



removes the bias and causes the MGA71543 to internally bypass itself. A further improvement in noise figure can be achieved with the use of better (lower loss) decoupling capacitors on the source connections of the MGA71543.

The first stage 3V drain voltage is derived from the 5V supply by using a well-bypassed 3V Zener diode and dropping resistor. The dropping resistor value is chosen to pass 10mA Zener current when the MGA71543 is set to draw 40mA. If the first stage is operated at much less than 30mA, to improve noise figure, then the series resistor R3 must be increased accordingly, to ensure that the Zener diode current doesn't exceed about 10mA.

An MGA53543 is capable of a +38dBm output intercept at 15.4dB gain, if the output match is optimised. In this amplifier, the output match is not fully optimised, resulting in a lower than expected IIP3. The second stage is matched at its input using surface mount inductors and capacitors. The MGA53543 requires 5V drain-to-source bias and therefore operates directly from the +5V supply.

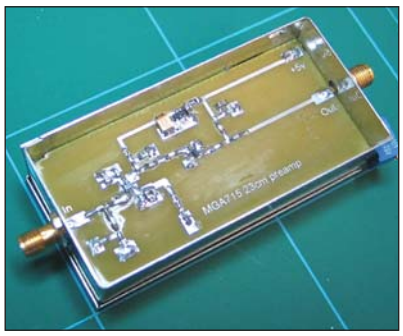
The photograph shows the amplifier built into in a standard Schuberth tinplate box, with dimensions 37 x 74 x 30mm, obtainable from Eisch-Kafka Electronics in Germany. The amplifier is built on FR4 double-sided 1.6mm thick fibreglass PCB. A 1:1 PCB foil for the amplifier can be obtained from the author on request.

Home-produced double-sided PCBs with good quality through-board connections can be difficult to engineer. My solution to this problem is to drill 0.5 – 0.6mm diameter holes, where through-board ground connections are required, using a sharp high speed drill bit. A single strand of *thin* tinned or silver plated wire is then threaded though the holes and soldered both sides using very thin (28swg) solder to make a small size soldered joint over the wire. The small diameter hole seems to produce a capillary action, sucking the solder down into the hole and effectively making an excellent through-board connection. This technique avoids the unsightly and often ineffective wire 'worms' formed by off-cuts of old 0.25W resistors.

The two MGA devices are mounted as shown, taking care to ensure that the larger (wider) source lead is orientated as shown in the circuit schematic. SMA connectors are used at the input and output.

The 5V supply should be connected into the box through a second feedthrough capacitor.

I have become a devotee of surface mount inductors and capacitors in place of the more popular, but ungainly, microstrip matching arrangements. I use 0603-size surface mount components where possible although, at 23cm, the larger 0805 size is quite usable. 0603-size inductors and capacitors are often cheaper than the 0805-size alternatives.



**The prototype 23cm switchable amplifier in its tinplate box. This view shows the component side of the PCB.**

## BAND ACTIVITY

There is just room for a short band activity report this month. After last December's big lift early-year conditions have generally reverted to normal, although a small opening around 15 and 16 January resulted in some interesting microwave propagation that included the first report of 24GHz DX for 2005. Up to the end of January, the weather was generally cold with a succession of low-pressure areas crossing the UK. Around the middle of the month, an intense (1051mb) high-pressure system, centred off the west coast of Ireland, gave rise to a cold, northerly, air flow across much of the UK. The result was to allow some interesting propagation.

Conditions on 15 January allowed G3LQR (JO02) to copy the Schiphol 24GHz beacon PI7EHG (JO22) for the first time this year and, indeed, the first time Simon has copied it on its new 24,048.200MHz allocation. Simon reports the beacon as peaking at 579. It was audible for about 1h during the day. The exact time wasn't recorded.

On the morning of the 16th, the DX Cluster showed that F6DKW (JN18) copied the 3cm beacon DB0JO (JO31) on 10,368,860MHz at 579 whilst G3XDY (JO02) worked Herve, F5HRY (JN18), at 53 on 2320MHz SSB. Herve reported hearing GB3MHS (JO02) on 2320.830MHz at 519. The GB3MHS beacon runs just 2W to a relatively poor antenna, so it is good to see that it was reaching down into the Paris area on this occasion. It is hoped to upgrade GB3MHS (13cm) with greater output and a more effective antenna in the near future.

John, G4BAO (JO02), reports that he worked, on 23cm in December, DJ5BV (JO30) at 509km and ON4IY (JO20), at 346km under flat band conditions and, on 10 December, he worked OZ1CTZ (JO46), at 719km for a new country. John was running 15W to a 4 x 23-element Yagis. Since late December, John has increased his 23cm ERP with a new DB6NT 50W RF MOS power amplifier. I wonder what John got for a Christmas present? John also reports that he has changed his 23cm band IF from 144MHz to 50MHz in order to use the CW filter and DSP facilities of his FT-920.

Mark, G0EBB (JO01), is a new operator on 23cm. Mark runs 10W to a single Yagi from (in his words) a poor location in Sussex. He hopes to move to a much better location in Sussex sometime this year. G4DDK (JO02), worked Mark at 519 using aircraft scatter on the evening of 25 January. Welcome to microwaves, Mark.

## COLUMN INPUT

Please send your activity contributions to the address at the top of the page. The latest date for copy is 6 May for inclusion in the July column. My thanks to all correspondents to this month's column. ◆

**Table1: Component list for 23cm amplifier**

| Component | Value | Type - supplier |
|---|---|---|
| R1 | 51R | SMD 0603 Rapid Electronics |
| R2 | 10R | SMD 0603 Rapid Electronics |
| R3 | 39R | SMD 1206 Rapid Electronics |
| R4 | 100R | 10 Turn trimmer Rapid Electronics |
| C1 | 15pF | SMD 0603 NPO Farnell InOne |
| C2 | 47pF | SMD 0603 NPO Farnell InOne |
| C3 | 220pF | SMD 0805 NPO Farnell InOne |
| C4 | 10nF | SMD 0805 NPO Farnell InOne |
| C5 | 10nF | SMD 0805 NPO Farnell InOne |
| C6 | 220pF | SMD 0805 NPO Farnell InOne |
| C7 | 10pF | SMD 0603 NPO Farnell InOne |
| C8 | 10nF | SMD 0805 NPO Farnell InOne |
| C9 | 47pF | SMD 0805 NPO Farnell InOne |
| C10 | 22pF | SMD 0603 NPO Farnell InOne |
| C11 | 10nF | SMD 0805 NPO Farnell InOne |
| C12 | 47pF | SMD 0805 NPO Farnell InOne |
| C13 | 10µF | SMD 10V WKG Tantalum Farnell InOne |
| C14 | 1000pF | Screw- or solder-in feedthrough – Mainline Electronics |
| L1 | 27nH | SMD 0603 Farnell InOne |
| L2 | 5n6H | SMD 0603 Farnell InOne |
| L3 | 15nH | SMD 0603 Farnell InOne |
| L4 | 2n2H | SMD 0603 Farnell InOne |
| L5 | 4n7H | SMD 0603 Farnell InOne |
| L6 | 15nH | SMD 0603 Farnell InOne |
| D1 | 3V | SOT23 Zener Rapid Electronics |
| IC1 | MGA71543 | Agilent BFI Optilas |
| IC2 | MGA83543 | Agilent BFI Optilas, Farnell InOne |
| Tinplate box | E-Kafka 1000102 | Tinplate box Eisch-Kafka Electronics |
| J1 | SMA 4 hole mounting socket | Farnell InOne |
| J2 | SMA 4 hole mounting socket | Farnell InOne |

**WEB SEARCH**

| | |
|---|---|
| **Agilent device data** | HYPERLINK "http://www.agilent.com" www.agilent.com |
| **Eisch- Kafka Electronics** | HYPERLINK "http://www.eisch-electronic.com" www.eisch-electronic.com |
| **Farnell InOne** | HYPERLINK "http://www.farnell.com" www.farnell.com |
| **Rapid Electronics** | HYPERLINK "http://www.rapidelectronics.co.uk" www.rapidelectronics.co.uk |

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# Antennas

**The description of the RFD (resonant feed-line dipole) in February's 'Antennas' resulted in some informative and constructive mail and I was surprised at the amount of work some readers have done on this antenna**

John Heys, G3BDQ, says that he came across the RFD design in a small book called *Simple Low-Cost Wire Antennas for Radio Amateurs,* by Bill Orr, W6SAI and is described as a 'Cobra Vertical for 10 and 6 Metres'. This antenna uses a choke constructed by putting three turns of the feeder through a ferrite ring.

Neil Robertson, GM8EUG, also drew my attention to the W6SAI book, which describes the construction of the Cobra antenna; he also sent me a copy of the Cobra description. GM8EUG adds, "I have just been playing around with a similar design trying to get it to work on 15m. I was never able to get the SWR below 2:1; however (as you mentioned in your article) the choke seems to work as I could also touch the coax below the choke and the SWR did not change".

I find that I have a copy of *Simple Low-Cost Wire Antennas for Radio Amateurs,* and sure enough the Cobra antenna is described. I missed it because it was described as a 'Cobra' rather than a RFD.

Geoff Mackenzie-Kennedy, GM4ESD, says "Both the RFD-1 and RFD-2 antennas were the subjects of an article by James E Taylor, W2OZH, in *QST* August 1991. The article is also contained in ARRL's *More Wire Antenna Classics* - Volume 2. On 40m, one I tried as a vertical half-wave worked very well. One that I tried for 17m did not. Like yourself, I am not sure about the choke".

Bernard Spencer, G3SMW, has made Cobra antennas for 145MHz and for 14MHz. Also sometimes with traps to make them dual-band (eg 14/18MHz). He usually fixes it vertically on a fibre-glass telescopic mast, or sometimes horizontally from the house for HF.

## CHOKE DESIGN

G3SMW has things to say about the chokes in this application. "You mentioned choke problems, and indeed there are, not only for Cobras, but also for practically all coax-fed vertical antennas, including ground-plane antennas, J-poles, and those with a quarter-wave bazooka balun like the original 'Coaxial Dipole'.

"There are two effects, both distinctly undesirable, and they are not known to all manufacturers or amateurs, as I know from work and play. The worst one is an upwards tilt of the lobe in the elevation plane which should, of course, be horizontal for VHF/UHF antennas. This often results in the signal being between 3dB and 6dB less than it should be, and the user may not realise this. To eliminate this effect generally requires two 'chokes' on the feeder, one at the top near the base of the antenna, and the other about a quarter of a wavelength below it. Even if the top choke is perfect, the first half-wavelength of coax below it will usually have sufficient current induced on its outside from the antenna to cause this upward tilt (it does not require much, as can be seen if modelled in *EZNEC* etc). So the best place for the second choke is in the middle of this top half-wavelength of feeder ie a quarter-wavelength below the top choke, but the position and inductance of this second choke are not critical and it does not need to be a trap.

"For the top 'choke', which determines the length of the bottom half of the radiator, what is required is a high inductive reactance compared to the impedance at the end of the dipole, not always an easy thing to fabricate! A better way in principle (and practice) is to use the feeder coiled as a trap with a shunt capacitor, and tuned to the centre frequency of the antenna. This does not require a great deal of inductance, and the impedance will be very high at its resonant frequency. It is more tricky to make and adjust than just winding the coax into a coil of arbitrary inductance, but is better for defining the length and for reducing currents on the feeder.

"The second problem is that current on the outside of the coax feeder can be the cause of an unacceptable mismatch in the feeder. This may occur when there is only one choke, giving a disappointing match to the rig that changes as you run your hand along the coax."

G3BDQ also referred to an article he had written in *Practical Wireless* (August 1995) called 'The Slim Cobra'. By chance I had a copy of this magazine and the article, which describes the experimental work done by G3BDQ and G4SLU. Details of the construction of the G3BDQ Cobra antenna are shown in **Fig 1**.

FIG 1 © RADCOM 455

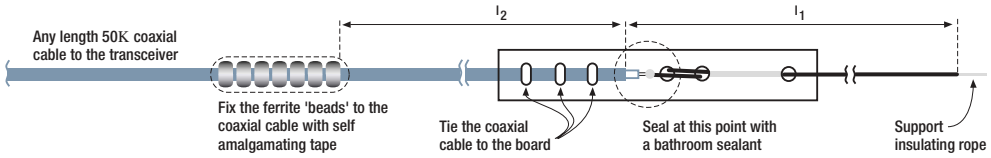


**Fig 1 Details of the Slim Cobra antenna by G3BDQ from Practical Wireless. The dimensions of l1 and l2, respectively, are 29MHz – 2.46m (2.66m); 28.1MHz – 2.54m (2.74m); 21.1MHz – 3.38m (3.65m); 18.1MHz – 3.95m (4.26m); 14.1MHz – 5.07m (5.47m); 10.1MHz – 7.07m (7.64m); 7.05MHz – 10.14m (10.95m).**

## OTHER COBRAS

Be aware that there are other antenna designs under the banner of Cobra. One of these is a balanced HF centre-fed dipole that uses what appears to be a linear loading arrangement and can be found on [1]. The other describes research into the microwave Coaxial Beam-Rotating Antenna (COBRA) [2]. ◆

WEB SEARCH

[1] www.hamuniverse.com.cobraantenna.html
[2] www.vosssci.com/randd/cobra.html

# Technical correspondence

## 'A contact too far', *RadCom* February 2005, pp36 / 37

**From Richard Hankins, G7RVI**

I have been surprised to see no comment published so far on this article regarding the replication of radio links at the battle of Arnhem. I read the article with great interest, as I, amongst many others, have long pondered exactly what went wrong with the signalling at Arnhem. The first thing to note is that the WS68P used in the test is now very old indeed. Having repaired a great deal of vintage equipment on the bench, I know there is a very high probability of it failing to meet its original specification, unless it had recently been overhauled, and thoroughly checked against the spec. I recently had an opportunity to ask the owner of the set whether this had been done - and he said "not to my knowledge". So I think we can assume that the WS68 was not working correctly.

The second thing to note is that HF ground wave propagation is extremely sensitive to the nature of the earthing, as well as the type of aerial used. The testers themselves noticed this, when they reported: "... the resonant frequency at any tap varied wildly as the degree of coupling of the frame and body to ground changed". I have seen no historical information that clearly says what earthing arrangements the Arnhem signallers had in place – if any. They might have had an earth spike, or maybe even a counterpoise – but probably not for the WS68P, as my equipment lists for that set do not include any earthing facilities. The 'earth' was thus reduced to the capacitance of the case to the physical ground below it. The value of this capacitance will vary enormously if the set is taken off the operator's back, and placed on the ground – things will then improve a lot. Given the weight of a WS68P (plus dry batteries), you can be sure that any operator would have taken the set off at the slightest opportunity! Unfortunately, we are not told whether the testers actually did this - and we can only infer from the pictures that all the tests were run with the Icoms on the operators' backs.

Finally, the use of modern sets as substitutes is very questionable. Even if they were put on the ground, their capacitance to ground will be far less than the large metal cabinet of a WS68P (or WS22) would supply. Secondly, power output figures for wartime sets need the most careful interpretation. The idea of measuring power into a standard 50Ω load simply hadn't arrived! Power was measured typically into a 10Ω load in series with 40pF (to simulate a whip aerial) by either measuring the RF current (using a thermocouple meter), or using a valve voltmeter with a diode probe across the resistor. A set supplying 0.25W into this load, will probably supply something very different into a 50Ω load – indeed, we do not have a spec for power into 50ohms for these early sets at all. Thirdly, the modulation level on wartime sets tends to be low - for a variety of reasons, these early sets did not modulate well, and the average level is typically around 30% if you are lucky - I can see no sign that this point was addressed by adjusting the Icoms appropriately.

The WS68 in backpack.

The testers are to be congratulated for giving us some interesting anecdotes, however, with this long list of uncertainties I don't think we are any nearer knowing for sure what went wrong with Arnhem signals. To answer the questions unequivocally will need a team with a much more rigorous approach, equipped with original sets working as well as they did in 1944.

**The author, Tom Robinson, G0SBW, replies**

The intention when writing the article was to share an interesting amateur radio experience rather than for it to be an in-depth examination of the communications problems at Arnhem. The WS68P used in the TV programme was 'discovered' only a few days before filming and was used 'as found'. Clearly its inclusion was mandatory from the point of the visual appeal of the programme. The two IC-703s clearly outperformed the ageing WS68P, but still suffered some of the problems experienced by the WS68Ps during the actual battle. During development of the IC-703 'Arnhem' backpacks, the programme's radio consultant advised that counterpoises and earthing spikes were not to be used. Capacity plates, connected to the IC-703's chassis, were incorporated into the backpack frames to simulate the bulk of the WS68P. No tests were done with the radios placed on the ground. The points made regarding the questionability of using modern rigs as substitutes for WWII equipment are relevant. However, the use of the modern rigs allowed the director to include filmed radio tests in the programme. The modulation issue was considered by the testers but was not followed up. Differences in performance between the WS68P and the IC-703 due to this factor would be small compared with the large effects on signal strength of ground clutter. The superior modern rigs still had difficulties at Arnhem. This suggests WS68Ps in top-notch condition will still not be fully satisfactory. I understand that the WS68P had been reported as less than suitable following airborne operations in Italy prior to Arnhem.

Further radio tests using refurbished equipment will be very interesting but I am not sure that such technical tests, in isolation, will add much to the understanding of the communications situation during the battle. Other factors such as the interaction of logistics and choice of equipment during the planning of 'Market Garden', and the hour-by-hour changing situation on the battlefield also need to be considered.

Chapter 8 of Lewis Golden's book *Echoes from Arnhem* gives an account and analysis of the signals situation at Arnhem. The author was the Adjutant of 1st Airborne Divisional Signals and was present during the battle. The book dispels some of the myths and is thoroughly recommended to anyone interested in this topic. ◆

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# Whatever next

**More about your 'ideal' transceiver – this month looking at the receiver section ◆ Organic printing – a technique with apparently boundless potential**

Last month I disseminated what the attendees at my talk at Stevenage decided they would like from the transmitter of their ideal transceiver. This month we move on to the receiver.

## THE RECEIVER

The first and foremost requirement of an HF receiver these days is good electrical performance. In particular, this means the ability to withstand the presence of very strong signals close to the frequency being received and megawatt broadcasters not much further away. A measure of a receiver's ability to deliver the goods whilst under this kind of electrical assault is Third Order Intercept ($IP_3$). Many commercially-made amateur transceivers have an $IP_3$ of +20 to +22dBm. Modern military grade equipment has an $IP_3$ in the region of +25dBm, while the Icom IC-756 PROIII has an $IP_3$ of +30dBm. 'Super rigs' such as the Icom IC-7800 and the forthcoming Yaesu FTDX9000 have an $IP_3$ of +40dBm. After some discussion, a vote was taken and +30dBm was chosen as the figure that would give perfectly good performance, without costing a fortune to implement. However, to improve matters, the main receiver for the next generation transceiver should be amateur bands only. This means bandpass filters can be included for each band, along the lines of those produced by Array Solutions (see photo top right) and Dunestar. **Fig 1(a)** shows the circuit of a 3-pole Butterworth filter. Even a circuit as simple as this would give a good measure of rejection outside its passband, but extending it to 5-poles as shown in **Fig 1(b)** would make it even better. The passband characteristic of the Dunestar 80m filter is shown in **Fig 2.** Incorporating bandpass filters would dramatically improve the rejection of out-of-band signals, and reduce the temptation to include a high first IF (some triple-conversion receivers have a first IF around 70MHz). Double conversion would be sufficient, with the first IF somewhere around 9MHz and the second IF around 455kHz. Optional crystal filters for the IFs should be catered for.

Initially, the decision to opt for an amateur-bands-only receiver might seem curious, but it was decided that the next generation transceiver should have a general coverage receiver as well. It should be entirely separate from the main receiver, indeed it should be a plug-in option. By design, its performance would not be as good as the main receiver, but it would be far more flexible and could have greater frequency coverage than the 1.8MHz-54MHz of the main receiver. It should be triple-conversion with a high first IF, as opposed to the double-conversion of the main receiver.

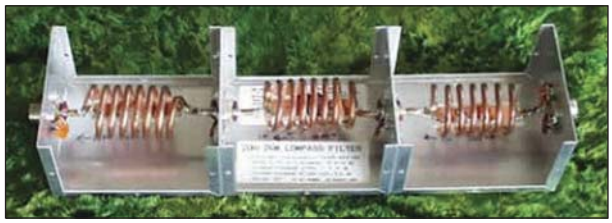
When the subject of DSP was raised, it became clear that, because DSP can be accomplished at sufficiently high frequencies these days, the DSP should be at 455kHz, ie at the final IF. That being the case, there would be no need for conventional-style detectors, all detection should be done by software. The ability to have highly-adaptable 'brick wall' DSP filtering at IF would result in a receiver which could kill heterodynes and reduce noise far better than DSPs which run at audio (by which time the damage is often done), and would not suffer image frequency problems that DSPs running at a final and very low IF of 11kHz (or so) have. In recognition of the fact that digital communication is going to become more prevalent, the receiver should be equipped with a quadrature IF output for connection to an external detector.

Other requirements were an input for at least one separate receive antenna, but suggestions not deemed important were a high-quality internal loudspeaker and detectors for DAB or DRM.

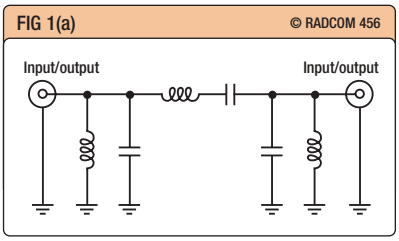
Next month, the user interface.

## ORGANIC PRINTING

The concept of being able to print your own integrated circuits was featured in this column previously. Now, at the University of Manchester, scientists are developing the process of organic printing to the point where made-to-measure human cells could be printed. Just think... burns victims could have new skin printed and applied, osteoporosis sufferers could have new bones printed layer upon layer until an entire bone was built up, and those who require organ transplants could have whatever they need constructed – all without fear of rejection. Prof Brian Derby, head of the Ink-jet Printing of Human Cells Project research team, said "We can place cells in any designed position in order to grow tissue or bone". He described the technique of printing three-dimensional structures, known as 'tissue scaffolds', as having tremendous potential. ◆



Inside an Array Solutions bandpass filter. The band filters inside the Next Generation transceiver would be much smaller than this 2kW model.



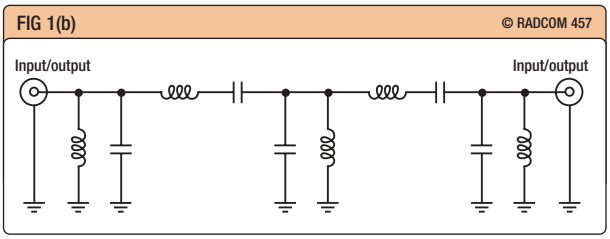




**Fig 1**
**(a) Circuit diagram of a 3-pole Butterworth filter;**
**(b) Performance can be improved by extending the filter.**

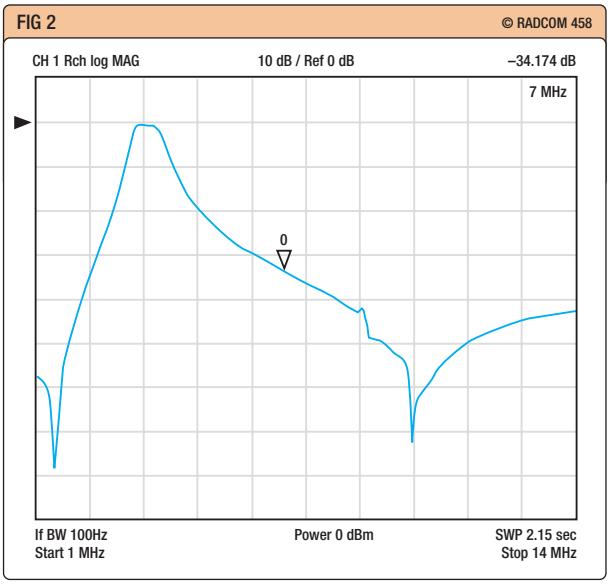



**Fig 2**
**Bandpass performance from 1MHz to 14MHz of a Dunestar 80m bandpass filter.**

WEB SEARCH

**Organic printing**
http://news.bbc.co.uk/1/hi/england/manchester/4184627.stm

# In practice

## ◆ GM3SEK ◆ Soldering topics revisited

### ON THE MOVE

By the time you read this, my callsign should have changed to GM3SEK, as we're in the process of moving to south-west Scotland. Please note the new contact details above.

### SOLDERING REVISITED

**The items about soldering in the past few months have produced a lot of interesting correspondence.**

Dave Sergeant, G3YMC, sees a lot of failed soldered joints in his electronics repair business. He finds them to be the second most common type of fault, after electrolytic capacitors [1], and they fall into various categories. Components such as the power transformers in switch-mode power supplies and the line output transformers in TVs are a common source of failed joints. They have relatively heavy leads, and the mounting holes in the PC boards are deliberately made oversize to accommodate production tolerances and aid removal. This leaves them vulnerable to failures due to 'hollow joints' (**Fig 1**) in which surface-tension forces inside the solder cone can cause thinning which is undetectable by visual inspection. This applies particularly if there is too little solder on the joint (see later). The ring where the cross-section is thinnest is partway up the cone, which is exactly where these joints tend to fail.

Another category of joint failures that Dave has noticed is in components that tend to get hot, such as small TO220 power transistors and three-terminal regulators. The combination of repeated temperature cycling and small expansion/contraction movements can eventually cause the solder to crystallise, and may break the joint completely apart at its weak spot. He also finds that leadouts carrying high voltages are the most prone to fail. It's hard to imagine why high voltage as such should be a problem, but there may be an indirect reason: in power transistors, the high voltages tend to be on the collector lead, which is also the one that gets hottest because it is connected directly to the semiconductor chip. Also, if a joint carrying high voltage begins to fail, it is more prone to arcing followed by rapid self-destruction. Dave also notes that power devices with flat rather than round leadouts seem more prone to joint failure; this fits in with the theory about hollow joints, because a flat lead can never completely fill a round hole.

Paul Gaskin, G8AYY, points out that when PC boards are mass-produced using flow soldering, responsible manufacturers put a lot of effort into optimising both the board layout details and the soldering process; and indeed they do. However, no single set of process parameters can be truly optimum for all the different shapes and sizes of soldered joints on the same board. Both G3YMC and Geoff Darby, G7RTC, note that the need to avoid over-heating small components may mean that some of the physically larger joints just barely reach soldering temperature, or may not retain enough solder to make a good joint. This increases the risk of those joints failing in the longer term, in patterns that become predictable to experienced service engineers such as G3YMC and G7RTC. Some manufacturers may additionally hand-solder the joints that could be prone to delayed failures, but that requires an exceptionally accurate crystal ball, and of course it adds to production costs.

### CROPPING COMPONENT LEADS

Further questions arose about cropping component leads. In factory assembly, the leads are cropped by machine before flow-soldering but for hand soldering, one tends to leave the leads on, to help hold the components in place when the board is turned over. G8AYY points out that side cutters can be used to crop the leads after soldering, with very little risk of damaging the pads and tracks, although end cutters can reduce the risk even further.

Bent Neilsen, OZ8BN, raised a further intriguing question: soldering technicians in Denmark are taught that one should crop the component leads *before* hand soldering, to avoid the mechanical shock that the soldered joints inevitably receive when they are cropped afterwards. None of my correspondents had heard of this being a problem – provided, of course, that the joints are well made in the first place. Eventually, I did find a reference in a 1999 article in *Avionics* magazine, which mentions two reasons to do so. One is to avoid the possibility of corrosion at the newly exposed copper/solder interface, and the other is to avoid shock to the solder joint [2]. Also, that author was talking about bending the leads over to lie flat on the pads before soldering, which obviously requires that the leads are cropped first. But that article was about avionics, where PC boards must remain reliable throughout a lifetime of acceleration, vibration and extreme environmental conditions. Such extreme precautions in assembly are not necessary for normal electronic applications. The only time I could imagine the 'shock risk' leading to problems would be if the joint already had a hidden flaw, as in Fig 1.

Whenever you assemble an electronic circuit, don't forget that you might need to take it apart again. Service engineers have booked special places in hell for designers and manufacturers who ignore this! For home construction, don't ever use those cutters that not only crop the component lead, but also flatten the cut end. They may seem like a clever idea, because you can invert the whole board for soldering without any components dropping out... but just wait until you have to change a component! If you have to remove a component whose leads have been cropped in this way, the only safe way is to cut all the leads above the board, using normal sharp-pointed side cutters, and then remove each little stub of wire from below. If you pull the flattened end through the hole, it can do serious damage.

### LEAD-FREE SOLDER

Since even high-quality production or hand soldering is still not 100% reliable, G7RTC is very concerned that we are throwing away decades of sound experience and effectively starting again with lead-free solders. These solders are much less forgiving than traditional tin-lead, so it is inevitable that failure rates will rise. "Since its introduction by the major manufacturers, I have seen a worrying increase in bad joints, often in equipment almost fresh off the production line." Geoff believes that manufacturers are erring on the side of safety for small, heat-sensitive components, which means that joint temperatures for larger components are barely high enough. However, the problems are by no means confined to large components. Geoff continues, "I have had many problems also with small components such as surface-mount ICs with high pin densities. The soldering process for these devices relies on surface tension and capillary action to draw solder into the space between the pins and the pads. Clearly, the nature of these two parameters is different with

c/o RSGB HQ.

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lead-free solders, and when factory original joints on these devices are examined under a microscope, there is very little evidence of solder between the pin and the track. Replacing these items is much more difficult too: it is hard to raise the temperature of all the pins simultaneously to a level sufficient to reflow the solder, without causing de-lamination of the board and tracks.

"Bad joints also seem harder to find with lead-free solders. With normal tin/lead solder, bad joints tend to be easy to track down by gentle probing, or by application of heat and freezer spray, to which they are very sensitive. Above all, the experienced eye can spot a bad joint very easily. Not so with lead-free. To anyone experienced with tin/lead, every joint on a lead-free board looks 'bad' – dull and lumpy instead of shiny and smooth – so a visual inspection is a waste of time. Probing and tapping doesn't seem to work well either. It is also now much more time-consuming to repair or reflow bad joints. Even with a nice clean, hot tip, the joints do not melt quickly or readily accept new solder. The reworked joint often looks worse than the original, which makes you keep going back to a joint because your mind just can't accept that it's right."

G7RTC is by no means alone in these views. Other commentators are raising the unpleasant prospect of increased failure rates in safety-critical circuits, due to the enforced use of solders that are not only more difficult to use correctly, but also have a relatively short and hurried history of development. This does not bode well for the future reliability of electronics.

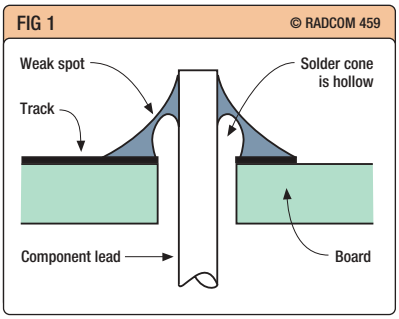
## PTH, PINS AND NEEDLES

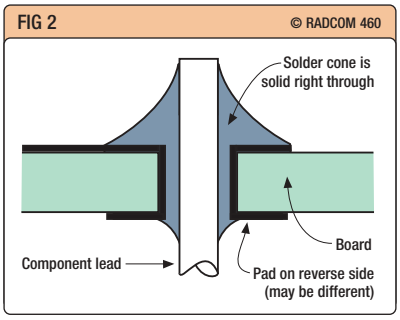
PC boards made with plated-through holes behave rather differently from boards with plain drilled holes. PTH boards are always double-sided, so every pad has a matching pad on the opposite side (**Fig 2**). Unlike conventional boards, PTH boards are drilled *before* etching the pads and tracks. Each hole is lined with a little tube of chemically-deposited metal, and only then are the pads and tracks etched on the top and bottom sides. On a PTH board, surface tension makes the molten solder completely fill the space between the component lead and the through plating. Unless the hole is ridiculously oversized, the solder cone is completely solid (Fig 2) so PTH boards are much less liable to the 'hollow joint' problem shown in Fig 1.

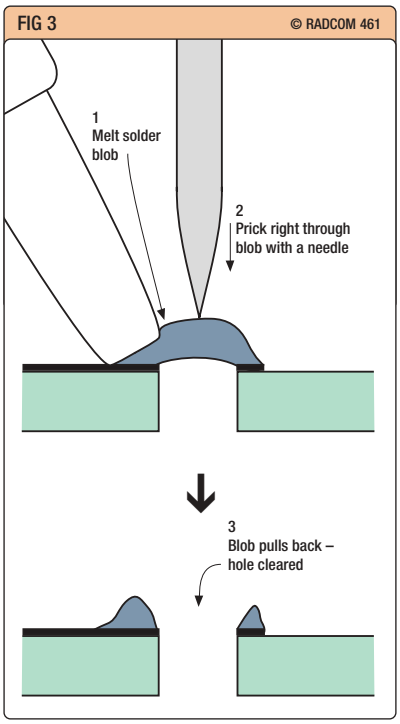
But when it comes to removing and replacing components, PTH boards have their own set of problems. Because the solder needs to be melted through the whole depth of the hole, there is a greater risk of overheating the board. In trying to avoid this, it's also very tempting to pull out the component too soon – which may rip out the through plating. If the top-side of the hole connects to a large area of copper ground-plane, it may be very difficult to melt the solder right through, even if you apply the soldering iron to that side of the board instead. And when the component has been extracted, you will probably find the plated hole still blocked with solder that you must somehow remove.

G3RZP points out that a simple darning needle in a home-made wooden handle can be useful for a variety of tasks, such as combing out coax braid when preparing it for a new connector, and cleaning dirt out of small crevices. Because solder doesn't stick well to needles, they can also be very useful for unblocking holes in PC boards. In conventional boards, you can use the darning needle to prick through a blob of solder that is covering an entire PC pad (**Fig 3**). Surface tension usually does the rest, and the solder pulls back onto the pad leaving a clear hole. Plated-through holes are more difficult, because surface tension tends to holds the solder inside, but again a needle can be used to open up a hole right through. Once you have broken the grip of the surface tension, either solder-wick or a solder pump can pull out the excess solder.

However, there is often another way to remove components from PC boards. If there is enough clearance between the lead and the hole, you can sometimes slide a hypodermic needle down over the lead (**Fig 4**). When the solder has cooled and set, gently remove the needle. The lead will come straight out, leaving the hole clear and ready for the replacement component. Contrary to common belief, hypodermic needles are easy to buy, though only in boxes of 100 [2]. But please remember the most obvious 'point' about needles! Before doing *anything* with a hypodermic, take a very fine grindstone and remove that razor-sharp slicing edge – these applications don't need it. ◆



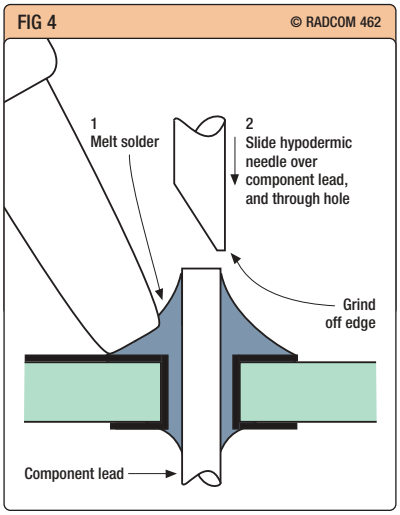




**Fig 1**
**If the hole in a PC board is too big for the component lead, the solder cone can be thinned inside, leading to eventual failure of the joint.**

**Fig 2**
**The holes of PTH boards are plated inside, so the solder cones are solid... but components can be more difficult to remove.**

**Fig 3 and 4**
**Uses for darning needles and hypodermic needles in PC board servicing.**

## NOTES AND REFERENCE

[1] See the 'In Practice' Cumulative Index on the website (URL above).

[2] Follow the links from the 'In Practice' website.

**Pat Hawker,** G3VA

37 Dovercourt Road, London SE22 8SS

# TT

**This month, Pat considers the parameters used for specifying HF receivers ◆ Phase noise and how it may be reduced ◆ More on LED and diode mixers ◆ Cleaning variable capacitors**

## HF RECEIVER SPECIFICATIONS

At one time, an amateur preparing to purchase a new HF receiver tended to be influenced by the advertisements, seeing the model at a shop, such as Webb's Radio in London, comparing the price with competitive models, and particularly by recommendations from other amateurs. While all these continue to be used as guides, the role of the detailed technical review, such as that by Peter Hart, G3SJX, in this journal or by the ARRL in *QST*, has assumed especial importance. This, I would suggest, is partly due to the fact that very few amateurs have the complete set of test instruments needed to check for themselves the technical specification or claimed operational features until they have parted with quite substantial amounts of hard-earned cash.

I am not suggesting that current receivers and transceivers do not conform with their advertised performance, although there is a natural inclination for some 'tweaking' in presenting features and figures in the most favourable way. Advertising tends to highlight particular characteristics without making it clear what these mean in operational use. *Caveat emptor* to some degree is often needed.

The usefulness of detailed technical reviews is well illustrated when the model concerned is brought to the market as an improved version of an earlier receiver or transceiver, at a considerable hike in price. It was interesting to read the reviews of the new top-of-the-line Icom IC-756PROIII HF/50MHz transceiver by the ARRL's Rick Lindquist, N1RL, in *QST*, March 2005, pp56 – 59 and earlier by G3SJX in the February *Radcom*.

Both give the new model a thumbs up, but N1RL more specifically questions whether the improvements relative to the PROII are worth the extra $800 cost. The bottom line, he writes, is "If you like the PROII, you'll like the PROIII even more – but you will have a tough choice about whether or not to upgrade"

It is noticeable that Japanese manufacturers including Icom, Yaesu, etc, have in the past few years finally got round to improving the IP3 performance of their receiver front-ends, which for some 30 years have not really been capable of coping with the multitude of strong 7MHz broadcast signals that beset European amateurs during the evenings. This problem goes right back to the early post-war period when so many high-power broadcast stations established themselves in Region 1 between 7100kHz and 7300kHz, although this remained an amateur band in Region 2. With multiple very-strong signals, the effect is largely to produce an artificially-high noise level.

The availability of 7100 to 7200kHz as a shared band in the UK and some other European countries has increased awareness of the shortcomings of most equipment currently in use. A partial solution is either excellent pre-mixer selectivity with *variably tuned* resonant circuits (very expensive with six or more high-*Q* tuned circuits) or extreme dynamic range (high IP3, IP2 etc). Amateur-bands-only receivers with multi-pole bandpass filters are vulnerable, since these will pass to the mixer any signals within the band 7000 – 7300kHz. It is particularly a problem with relatively low-cost general-coverage receivers with a minimum of pre-mixer selectivity. Remember, the majority of Far-East export sales are to North America where the problems are not so evident.

IP3, IP2 and instantaneous dynamic range figures are thus very important, but they are not the only measures of a receiver's performance. Do not take an advertised IP3 or dynamic range figure as a sole criterion, unless it can be extended by the additional close-in figures provided in the *QST* and *RadCom* reviews. And remember that even then there are other operational features that matter a great deal.

As N1RL puts it: "Icom's advertising for the PROIII trumpets what it calls '+30dBm-class third-order performance on 20 metres'. This would put it on a par with some of the best receivers we've run through the lab. Third-order intercept (TOI) is a number that many like to use as an all-in-one performance benchmark, since its value derives both from the receiver's sensitivity and its front-end selectivity (specifically, two-tone, third-order IMD dynamic range). The more positive the number, the better, and TOI figures can also be negative [ie below 1mV].

"Although the PROIII instruction manual doesn't specify the advertised TOI number, an Icom product guide, originally in Japanese, spells out the measurement conditions: 100kHz spacing (wider than our Lab's widest 20kHz spacing measurement), preamps off and a 2.4kHz filter bandwidth.

"Nonetheless, under the least stringent measurement standard the ARRL lab uses, the PROII came pretty close to meeting the +30dBm mark. At 20kHz spacing, we calculated the TOI at +25dBm on 14MHz with both preamplifiers turned off. That works out [for the PROIII] to a slightly less than 5dBm improvement over the PROII, all other things being equal.

"Under the same conditions at 5 kHz spacing – something much more akin to *real-world* amateur conditions (and this time well within the passband of the receiver's 15kHz roofing filter) we determined the PROIII's TOI to be –17dBm, 1.8 dB better than the –18.8 dBm we calculated for its predecessor. With one pre-amp switched on and 20kHz spacing, the 14MHz figures become +14 and +5dBm, respectively. With 5kHz spacing, the corresponding figures are –16.5 and –29dBm, respectively.

*QST* policy is always to base reviews on models purchased in the market rather than on the less-costly *RadCom* policy of reviewing models on loan from suppliers.

Nevertheless, although the measurements by G3SJX on the PROIII cannot always be compared directly with those by N1RL, as they are based on different spacings and omit the case with both pre-amps switched on, they are roughly the same. G3SJX gives for 14MHz, 50kHz spacing +32dBm with pre-amps off, and +21dBm with one pre-amp on. For 5kHz close spacing on 3.5 MHz -16.5dBm and with one pre-amp on, -27.5dB. Peter also gives the 3.5MHz 3kHz spacing as –18dBm and -20dBm.

These are good figures compared with those of a few years ago, even for top-of-the-range models, but it is interesting to note that the IP3 performance of the CDG2000 home-built transceiver prototype described (Part 1) in *RadCom,* June 2002, pp19 – 22 shows that the IP3 figure of approximately +40dBm "is maintained for close-in signals and that this is largely due to the use of the two-tank oscillator circuit as developed by G3SBI and first described in 'TT', January 1995". A two-tank circuit is also used in the AOR7030 receiver which remains an outstanding factory model for its excellent close-in performance.

The CDG2000 offers a spurious-free dynamic range greater than may strictly be needed for general use except on 7MHz, but it shows what can now be achieved. The K2 kit also achieves close-in performance that was shown by *QST* to be better than that of the PROII.

## IMPORTANCE OF PHASE NOISE

The striking difference in most models of the IP3 figures with wide and narrow spacings when tested with two strong input signals underlines the importance of reducing the oscillator phase noise. This problem was discussed at some length in 'TT', December 2002, pp61 – 62, with reference to the excellent close-in performance of the K2 kit transceiver, and the use of a double-tank local oscillator in the A0R7030 receiver and in the CDG2000 home-built transceiver. Incidentally, it is interesting to note that some 250 CDG transceivers have been built by amateurs, with more than half of them built overseas using the information provided on the web.

Peter Chadwick, G3RZP, writes: "As I showed in my *QEX* article 'HF Receiver Dynamic Range: How Much Do We Need?' (*QEX,* May/June 2002. pp36 – 41) IMD isn't potentially as big a problem as phase noise. This is because the IMD from two or three large signals is easier to cope with than the summed phase noise from ten or more signals 10dB lower in level. Thus, phase noise can limit dynamic range to a much greater extent than can IMD. This isn't to say that IMD can be ignored, but that there really isn't the evidence that going from a +20dBm intercept point to +30dBm will make that much difference (if any at all); even going from –10 to +20 probably won't make much difference in practice. With pretty big antennas, my article showed that you don't actually need more than 100dB of instantaneous dynamic range, although you do need a [front end] attenuator and some operating ability. The bottom end is limited by noise, and bigger antennas bring in more signal and noise, so the required dynamic range is determined there. Generally speaking, the presence of the big signals is accompanied by the presence of a higher noise floor, fixing the dynamic range requirement.

"Incidentally, intercept points are notoriously difficult to measure with accuracy. If you take the generator level as ±0.75dB to a 99.5% uncertainty, add the mismatch, combiner and cable loss uncertainties, you can easily get to ±2.5dB overall uncertainty in the absolute level into the receiver, and this reflects a ±7.5dB uncertainty in intercept point. There are a couple of ETSI documents on mobile radio equipment which are well worth reading, although they are fairly heavy going."

## REDUCING PHASE NOISE

Oscillator phase noise affects both transmitted and received signals. Phase noise will continue to represent interference or an artificially-raised noise floor from other people's transmissions even when your own has been reduced to the minimum possible. While close-in sidebands are dominated by oscillator phase noise, far-out sidebands are greatly affected by amplitude noise. Consequently, it is important that all of us, including manufacturers, should try to understand and strive to bring about a general reduction in both phase- and amplitude-noise produced by variable LC oscillators and frequency synthesisers.

It is recognised that quartz-crystal-controlled oscillators, run at reasonable power and using low-noise high-gain semiconductors or valves, produce very little phase-noise. The present target must be to bring LC VFO phase and amplitude noise as close as possible to that of a good crystal oscillator.

As noted in a long paper 'Oscillator Phase Noise: A Tutorial', by Thomas H Lee and Ali Hajimiri (*IEEE Journal of Solid-State Circuits,* March 2000, pp326 – 36), the key parameters include power dissipation, oscillation frequency, resonator *Q,* and circuit noise power. Another even more relevant source is the paper 'Low-Noise Voltage-Controlled Oscillators Using Enhanced LC-Tanks', by Jan Craninckx and Professor Michiel Steyaert in Belgium (*IEEE Transactions on Circuits and Systems: II Analog and Digital Signal Processing,* December, 1995, pp794 – 804).

One approach to reducing phase noise is to design the LC tank circuit as closely as possible to the equivalent circuit of a quartz crystal, implying that the resonator should be of the highest possible *Q*. Harold Johnson, W4ZCB, has adopted this. Quite recently, he wrote an (unpublished) article 'Helical Resonator

FIG 1 © RADCOM 463

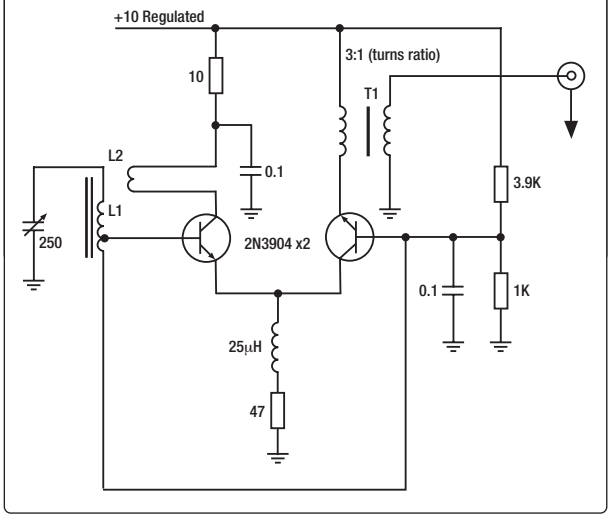



**Fig 1**
**K7HFD's low-noise 10MHz oscillator. L1 is 1.2µH (17 turns on a T68-6 toroid core, tap at 1 turn from grounded end while link is 2 turns wound over L1. The link must be properly phased for oscillation. Although not shown, ferrite beads were used on both bases and collectors. (Source: *Experimental Methods in RF Design*)**

FIG 2 © RADCOM 464

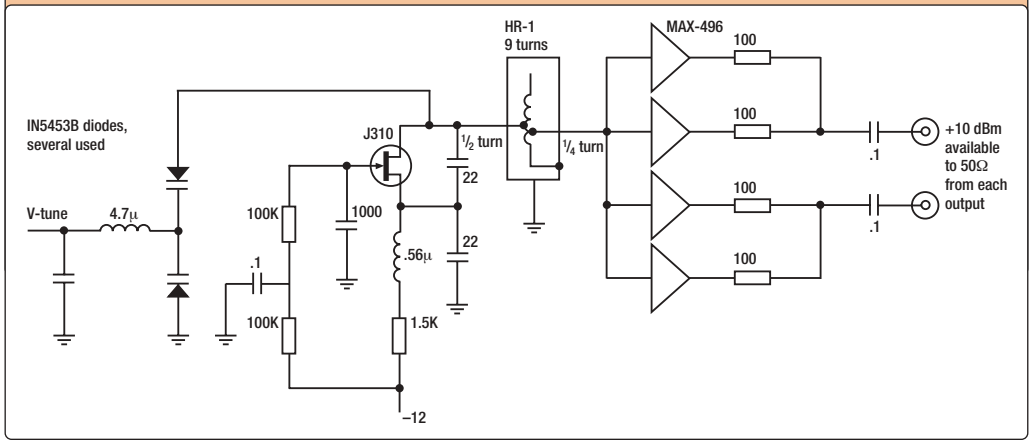



**Fig 2**
**The low-noise oscillator using a helical resonator (HR-1) as developed by W4ZCB.**

Oscillators' from which I will quote briefly.

"After trying a dozen oscillator circuits, from Vackars to Colpitts, Hartleys, Seilers, [Gouriet-] Clapps and even K7HFD's ingenious class-C low-noise 10MHz oscillator (**Fig 1)** described in *Solid State Design for the Radio Amateur*, by Hayward and DeMaw (ARRL 1977, p126) and also in the section on 'Designing Quiet Oscillators' in *Experimental Methods in RF Design*, by Hayward, Campbell and Larkin (ARRL, 2003, pp4.12 – 4.13), it really dawned on me that it's not so much the circuit (though some are better than others) as the components and the way you choose to use them. What was needed was an oscillator with such high tank *Q* that it would swamp any other characteristics of the circuit.

"Hewlett Packard and its pre-synthesis signal generators pointed the way. Their 8640, one of the quietest oscillators that it ever made, is built around a gorgeous coaxial cavity that tunes 256 to 512MHz and is subsequently divided down to frequencies below that in octave bands."

Coaxial resonators are hard to find. W4ZCB turned to producing helical resonators using copper tubing for an oscillator covering 75 to 105MHz which could be divided down to cover all amateur bands (including WARC) from 1.8 to 30MHz. He designed and built 105MHz helical resonators with *Q*s in the region of 1000. Various problems were encountered before and after coming to England to check performance with Colin Horrabin, G3SBI, "the one to blame for starting all this".

After describing in detail the constructional details and completing some three dozen helical resonator oscillators (**Fig 2**) for friends, he writes: "What it will give you is an oscillator that is *free running* at 100MHz, and when divided-down to be the local oscillator for a HF sideband receiver, will copy a sideband round-table for an hour without being retuned. It is readily tuned three-quarters of an octave or a shade more. Measured noise sidebands with a divisor of eight (each *synchronous* division by a factor of two provides close to a 6dB improvement in phase noise) are better than -123dBc/Hz at 1kHz and drop to -144dBc/Hz at 5kHz. At 20kHz spacing with divide-by-eight, those numbers are -156dBc/Hz and at 50kHz they exceed my ability to measure them… This is better at *1kHz* spacing from the carrier than a current commercial offering reviewed in one of our periodicals at *any* spacing."

W4ZCB also gives a reminder that one of the things to watch out for in building a low-noise oscillator is the power supply for the oscillator device: "A perfect oscillator will not be perfect with a noisy source of power. A year or so ago, I ran across an article on the Wenzel Associates web page called 'Finessing Power Supply Noise'. Basically, a shunt AC-coupled regulator **(Fig 3)**, it functions by shunting the noise to ground through a small series impedance. With no adjustment at all, it is capable of reducing power supply noise by 20dB. With a bit of tweaking, that can be raised to a 40dB improvement, contributing directly to oscillator sideband cleanliness… I don't build oscillators or frequency control circuits without it."

The helical resonator approach is not without its constructional problems, and is not to be tackled lightly. The use of twin- or even multiple-tank coils is still regarded by G3SBI as a better way ahead. His two-coil oscillator was published first in 'TT' February 1996 (see also *TTS 1995-1999)*, with a further discussion in 'TT', November 2002, pp77 / 78, noting the use of a similar approach in the still-esteemed AOR7030 receiver (designed in the UK by John Thorpe in the mid-1990s) and is also one of the key features of the CDG2000 transceiver.

The Belgian paper cited above endorses the use of multiple tank coils as an effective means of reducing phase noise in low-voltage oscillators claiming that with *n* coils, phase noise *decreases* proportionately with *n,* and power and [board] area *increase* proportionately with *n.*

**Fig 3**
**W4ZCB recommends the use of this shunt regulator to remove noise on power supplied to oscillators, etc. Design comes from web page of Wenzel Associates.**

**Fig 4**
**G3UUR's modified diode ring mixer. T1 & T2 – 3 turns primary and 3 turns secondary on Fair-Rite 2843000302 two-hole core. R1, R2, R3, R4 – 100Ω 0.25W carbon film resistor. D1, D2, D3, D4 – matched on forward voltage drop and reverse leakage current.**

FIG 3 © RADCOM 465

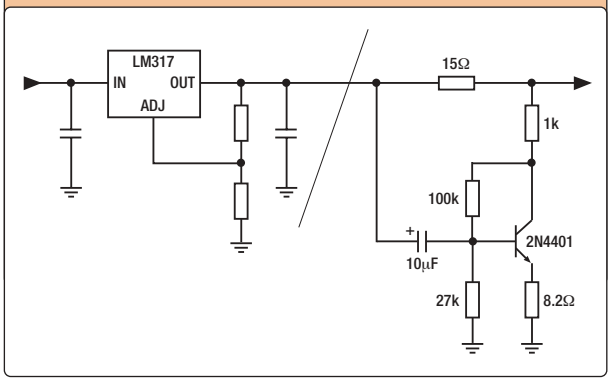
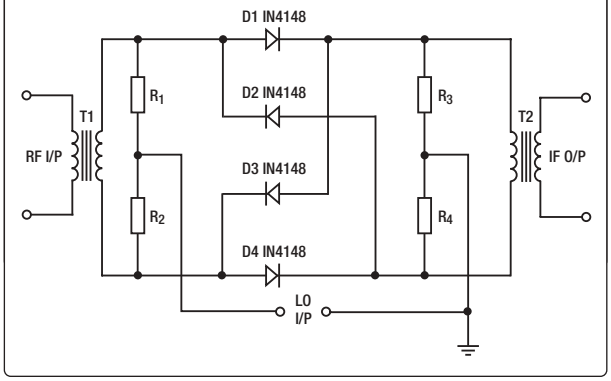



FIG 4 © RADCOM 466



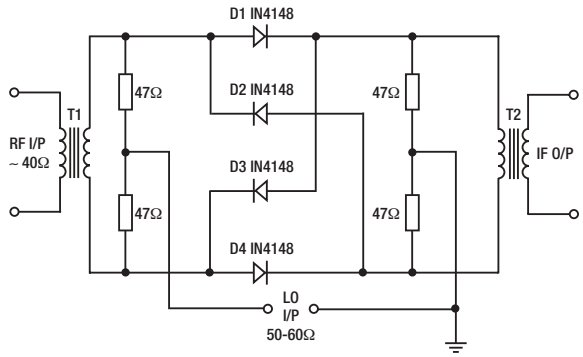

## MORE ON LED & DIODE MIXERS

Dave Gordon-Smith, G3UUR, writes: "I see the blue LED mixer ('TT' January and March, 2005) has created a lot of interest. I wonder whether the fragility of GaInN LEDs will create a reliability problem in mixer applications, though. The original Si microwave diodes used by Fazi and Nuedeck had a reverse breakdown voltage in excess of 50V. The GaInN LEDs have a reverse breakdown voltage of only 5V. In the ring mixer configuration the forward-biased diodes provide some protection for the reverse-biased diodes by clamping the voltage at about 3.2V. However, there is a transformer winding in series with the forward diode drop across each reverse-biased diode that could add a transient voltage from the switching waveform, or RF signals, and exceed the 5V reverse breakdown voltage across the non-conducting part of diodes. Normally, the energy associated with this voltage peak would be tiny for signals received off-air, but locally-generated signals or static could easily provide enough energy to damage the GaInN diodes. It will be interesting to hear how people get on with these LEDs in mixer applications.

On a more general mixer topic, G3UUR writes: "Back in the early 1980s, Wes Hayward, W7ZOI, sent me a copy of a British paper by H P Walker: 'Sources of Intermodulation in Diode-Ring Mixers', *The Radio and Electronic Engineer,* May 1976, pp247 – 55. The author concluded that the time taken to switch stages is a parameter crucial to IMD production in mixers. Thinking about this aspect of IMD performance led me to question the wisdom of applying a fast switching waveform through the inductance of the transformer windings. This arrangement is bound to slow down the switching cross-over and degrade the IMD performance, even with fast-switching LO waveforms, because the current through an inductor can't change quickly. The steady-state resistive nature of loaded transformer windings doesn't apply to fast-switching waveforms. My KISS solution was to feed the switching waveform to the diodes through resistors: **Fig 4**

"The resistors cause some additional insertion loss, but this only amounts to 2dB, or so. The load presented to the LO source is more resistive and, although it absorbs some LO signal, it provides the driver with an almost-constant load – around 100Ω resistive – and this aids faster switching. Another advantage is that the transformers don't have to be centre-tapped. The transformers I used had a 1:1 turns ratio, and presented about 40Ω to the input and output ports. They could easily be changed to provide a

FIG 5 © RADCOM 467




50Ω input by using an 8:7 turns ratio. To provide a 50Ω input impedance for the LO signal, the input and output transformers could be wound for a 3:2 turns ratio, and the resistors changed to 47Ω, as in **Fig 5.** More LO signal would get to the diodes in this case, so this version ought to be better for strong-signal handling than my first attempt at an improved ring mixer, but with slightly increased insertion loss. The transformer step-down ratio and the LO fixed resistor values can be juggled to give the best compromise between insertion loss and signal handling. I have no figures to back my belief that this mixer circuit is better than the original diode ring mixer, just some subjective tests done on 7MHz years ago with a 3.5Vp-p square wave LO signal. I think it's an improvement, but it requires someone with the right test equipment to determine whether it is, or not."

Incidentally, Colin Horrabin, G3SBI, tells me that he has recently tried the effect of biasing the Fairchild FST3125 fast switching bus in his H-Mode mixer. Preliminary results seem most promising, particularly for up-conversion but they also confirm that present production of these devices do not give quite the performance of the original production devices as switching mixers. It is hoped that the new circuit with biasing will be described before long in 'TT'.

**Fig 5**
**G3UUR's further-improved modified diode ring mixer. T1 – 6t to 4t on Fair-Rite 2865000202 core for 1 – 30MHz. T2 – 4t to 6t on core as for T1.**

## HERE & THERE

Jan Martin Noeding, LA8AK, writes, re 'TT' January 2005: "I am rather surprised to read – once again – that the German Torn E.b covers 100-6670kHz. I have seen many examples of this receiver, but have never seen a model with this frequency range. The 6670kHz may be right for the 1933 Spez 445 version, but every Torn E.b I've seen covers 98 – 7095kHz. There is another version, with later valves (RV2, 4P700) sold to the Swedish army and covering 195 – 15,410kHz. More details on **http://home.online.no/~la8ak/22a.htm**

# CLEANING VARIABLE CAPACITORS

As a March 'Here & There' item, M0MAC sought information on a method of cleaning the plates of variable capacitors recovered from old valved equipment that he believed was published some years ago in 'TT' using baking powder and hot water. This has produced a number of varied responses.

John Alford, G3DOE, confirms that some baking powder should be dissolved in hot water. The capacitor is immersed in the solution and left for about an hour. A recent test has confirmed that components come out looking like new. He insists that it must be baking powder and not caustic soda.

George Ashford, G2AOZ, dates relevant 'TT' items to (1) March 1981 p224, with a follow-up note (2) in May 1981. He adds: "I, too, have a recollection that baking powder (sodium bicarbonate) entered the equation".

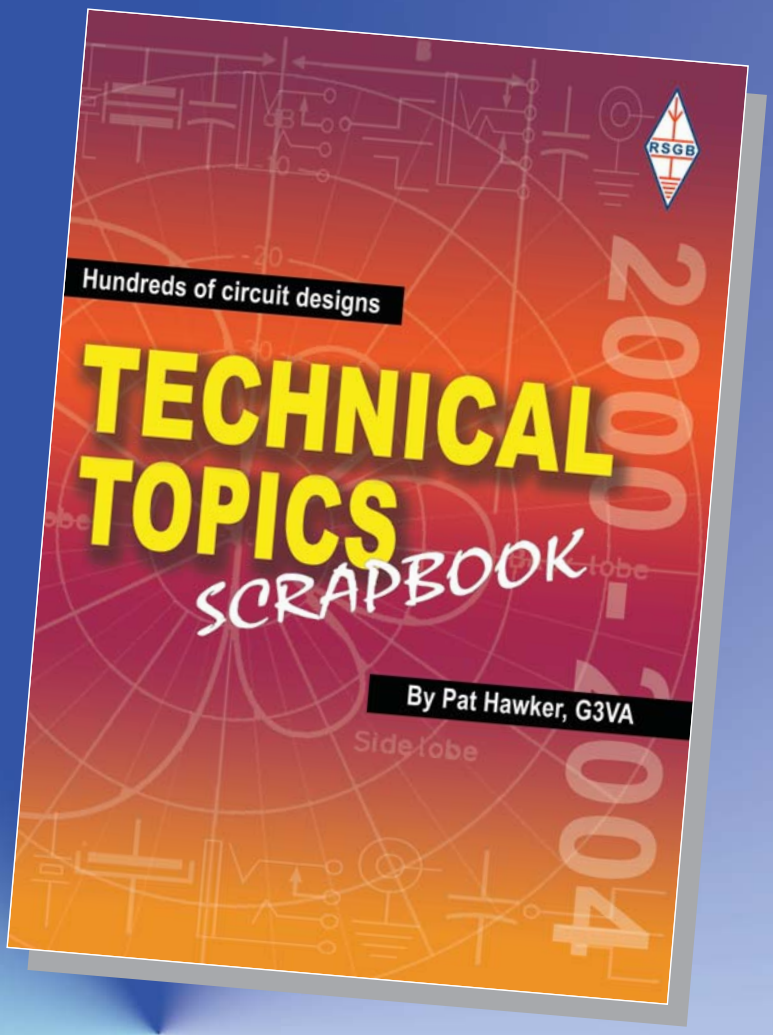
(1) A tip given by Bill Pickens, WB5NGF (*QST*, December 1980, p54): "For corroded and otherwise dirty variable capacitors, which are almost impossible to clean with a brush, I use a mixture of 4oz (120ml) of concentrated lemon juice in eight to 10oz (240 to 300ml) of water placed in a saucepan. By placing the capacitor in this mixture and boiling for 10 to 15 minutes, the device can be made to look like new. A few drops of liquid detergent might be helpful. A drop or two of oil should be placed on the bearing when dry." The item also contained my comment: "The importance of ensuring that any variable capacitor used in a high-grade VFO is really clean has been stressed on a number of occasions, up to and including the use of an ultrasonic cleaning bath."

(2) WB5NGF's tip stirred R L Halls, G3EIW, to mention that, for the past 30 years, he had used Goddards Silver Dip for cleaning all silver-plated radio components, including variable capacitors. He finds that this transforms blackened silver items into a gleaming 'like new' condition in just a few seconds. Any grease or oil should be removed first with hot detergent. He added a warning: "Goddards Silver Dip can stain 'stainless steel'; any attempt to carry out operations on the stainless kitchen drainer is likely to make you highly unpopular with 'she who must be obeyed'."

Alan Strong, G3WXI, recalls that a colleague used to clean intricate silver components very successfully by standing them on a sheet of aluminium cooking foil placed in the bottom of a polythene washing-up bowl containing a solution of washing soda [sodium carbonate]. He restored a substantial portion of a Chain Home [radar] transmitter that he used in his research work in this way. Unfortunately, I cannot remember whether the component must or must not be in contact with the aluminium foil, but I think he used to cover the foil with a cloth."

I believe that for cleaning fine antique silver objects, cigarette ash is preferable to commercial cleaners such as Silvo that can be rather abrasive. But I don't want to encourage this since the cigarette smoke can be as harmful (long term) to radio equipment as to humans! ◆

# NEW NEW NEW

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# A harmonic trap for 50MHz

**Our licence requires us to keep 'out-of-band' emissions to the lowest possible level, and this is of special importance when operating on the 50MHz band. This design is presented by two radio amateurs – Tony, G6TTL, who did the constructional work, and Doug, G0UYC, who did the testing**

The second harmonic of your 50MHz signal may be anywhere between 100 – 104MHz, which lies in the FM broadcast band, as **Fig 1** shows.

The third harmonic also has to be considered, as this lies between 150 – 156MHz, which is in the spectrum used by the emergency services, HM Coastguard etc. The fourth harmonic range of 200 – 208MHz is currently used for mobile services, but is not far from the newly-popular DAB spectrum and could cause blocking to nearby digital radios.

So how can these harmonics be reduced to a level that won't cause interference to our neighbours' radio sets?

## LOW-PASS FILTER

One way to achieve this is to insert a low-pass filter, between the transmitter and aerial, which will pass the 50MHz signal, but attenuate the higher frequencies, including the harmonics from the transmitter. The dashed line in Fig 1 shows the performance of an 'ideal' low-pass filter.

The filter's match to the transmitter and aerial must be good and the loss at the signal frequency must be small, ie it will have a minimal insertion loss to avoid losing signal power on the way into, and transmitter power on the way out of the filter, which would be dissipated as heat.

## TRAP FILTER

Another way to reduce harmonics is to design a filter that specifically attenuates each harmonic by means of a resonant circuit. A popular example of this type of filter is the coaxial stub filter [1] which is designed to appear as a short circuit at harmonic frequencies and as a high impedance at the transmission frequency – see the peaked curve in Fig 1. The advantage of this type of filter is that it is often possible to achieve a much higher harmonic attenuation using a simple design than with a conventional low-pass filter. A trap filter can also be designed with a very low loss at the transmission frequency.

FIG 1 © RADCOM 468

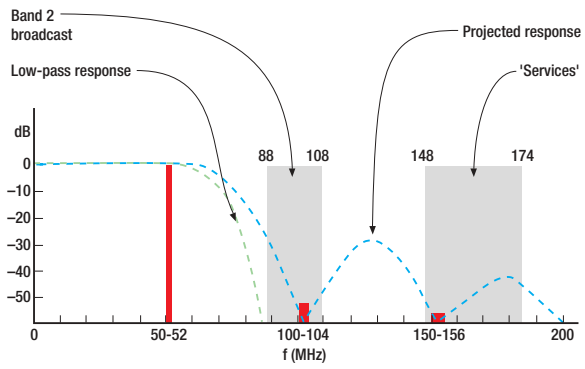
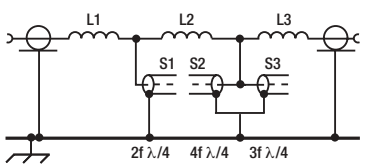



**Fig 1**
**Projected filter responses.**

FIG 2 © RADCOM 469




| ITEM | 50MHz |
|---|---|
| L1 = L3 | 175nH |
| L2 | 340nH |
| S1 | 48.9cm |
| S2 | 24.7cm |
| S3 | 32.7mm |

**Fig 2**
**Circuit of the stub filter, with component details.**

FIG 3 © RADCOM 470

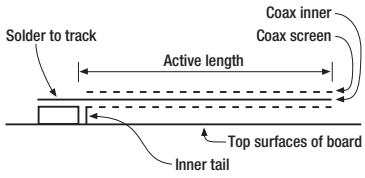



**Fig 3**
**Stub detail.**

## CONSTRUCTION

The filter described here is a 'harmonic trap', ie it attenuates just the harmonics of the signal. The design is one of several by John Regnault, G4SWX [1], and uses open-circuit quarter-wavelength co-axial stubs instead of the capacitors used in a more conventional low-pass filter. An open-circuit quarter-wavelength of coax will be a 'short circuit' at the resonant frequency, and a 'shorted stub' presents an 'open circuit'!

It was also a 'minimal cost' exercise, using items found at rallies over the years or already held in the spares boxes! I used:

- Scrap double-sided copper-clad boards
- 16SWG copper wire
- RG-58 coax
- N sockets. If you insist on using PL259s then use good-quality silver-plated types
- Case
- Solder tags, nuts and bolts.

The original article didn't give detailed construction notes, but the circuit is shown in **Fig 2**. The elements comprise just three coils and three coax stubs, which are cut from RG-58 according to the lengths shown in Fig 2.

Do check the quality of the coax; there should be a good covering of copper braid. Cut the cable stubs as accurately as you can, and remember that the length given is the 'active' length (see **Fig 3**), so make some allowance for the connecting tails.

Connect the tails as closely as possible to the tracks. I coiled the stubs up as tightly as I could, as the size of these will determine how large a box is needed.

The coils were designed using information from the *VHF / UHF Manual* [2] from which the graph of **Fig 4** is taken. It shows that, for 16SWG wire, 4 turns are required for L1 and L3 with 6.5 turns for L2 – this is for an internal coil diameter of 0.5in, spacing the turns by the wire diameter.

Using a large drill to act as a mandrel, L1 and L3 can be wound together, thus automatically providing the wire-diameter spacing – just

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be careful how you separate them afterwards. Rotate one with respect to the other, thus 'unscrewing' one coil from the other.

In the original article, it was commented that: '…the attenuation of the 4th harmonic was lower than expected, but this was cured by screening the input coil, L1, from the output coil, L3'. Acting on this point, I took the decision to screen *all* components from each other and a sub-chassis was made out of scrap $^1/_{16}$ in fibreglass double-sided copper-clad board. I also decided to use the copper cladding for striplines throughout the unit. This makes the mechanical design more stable. I cut my lines approx 5mm wide to give 50Ω impedance.

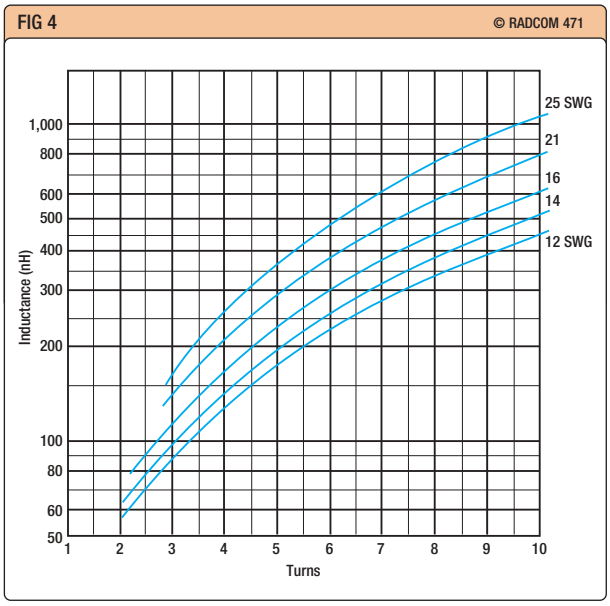
From the board, I also cut pieces for the two screens with slots at the bottom for the track crossing and three smaller screens with holes for the coax stubs. These were all assembled as shown in the photograph.

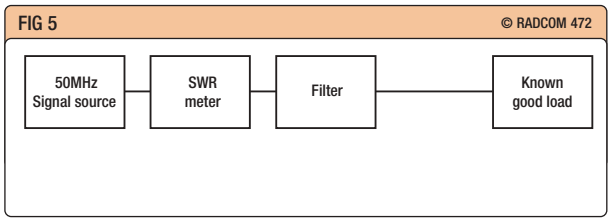
With care, the base, screen and track can all be cut from a 12in x 8in (305mm x 203mm) piece of board. I used superglue to fix the striplines in place. If you use the same, read the instructions and safety precautions on the box.

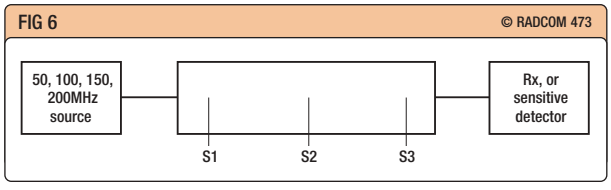
When the filter has been completed, check for constructional errors and then set up the test system to fine-tune the filter to your requirements, as follows.

## VSWR

First of all, check the in and out VSWR using the setup shown in **Fig 5**. My filter was measured at 50.5MHz, a compromise towards the bottom of the band. It assumes a greater interest in DX. As constructed, the following values were obtained. Input VSWR 1.6 : 1; output VSWR 1.7 : 1. This is not low enough for ordinary solid-state output transceivers, which begin reducing output if the VSWR rises above about 1.5.



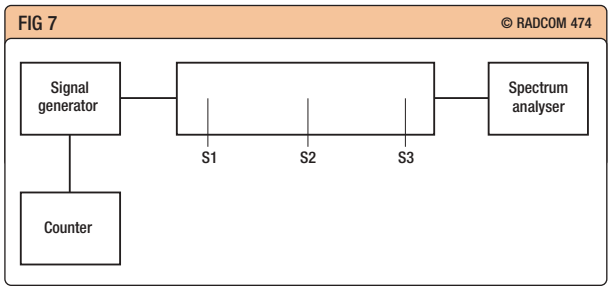




**Fig 4**
**Coil winding details.**

**Fig 5**
**Arrangement for checking VSWR.**

**Fig 6**
**Suggested setup for cutting and checking stubs.**

**Fig 7**
**Making the final measurements.**

A gentle spreading of the coil turns reduced the VSWR to better than 1.15 to 1 on both the input and output sides – just what was wanted, and the filter was now symmetrical. The greatest improvement was made by adjustments to L1 and L3.

## ADJUSTING THE NOTCHES

The lengths of the stubs need to be tuned to place the notches at the correct frequencies. Initially, very deep notches were observable at 100.5MHz and 144.25MHz, and a shallower notch at approximately 195MHz. At this point, it may well be worthwhile enlisting the help of a friendly local club member if you don't have the necessary equipment. The set-up shown in **Fig 6** is suitable for establishing the stub lengths. The stubs should be tuned in turn to the correct lengths starting with the longest. They are tuned by trimming the cable lengths in small stages, about 2mm at a time, and even less as you approach the desired frequency.

## PERFORMANCE

Using the setup in **Fig 7**, with 1V into the filter at 100, 150 and 200MHz, the output disappeared into the noise on the spectrum analyser baseline, representing an attenuation in excess of 55dB. The passband loss was less than 0.3dB.

**David Berry,** G4DDW

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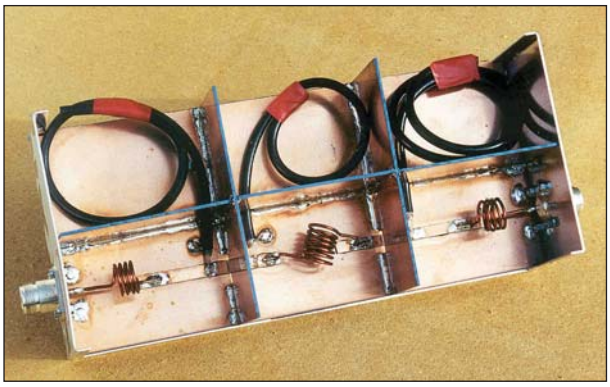

Internal construction of the 50MHz filter.

## USER FRIENDLINESS?

To check on the suitability for a novice constructor, a kit of parts was given to Andy Woods, G7SQW, who is an avid six-metre enthusiast with limited constructional skills.

Andy commented that:

"As a keen operator on six metres, I am concerned that I don't cause problems with the electronic appliances of my neighbours, as we have good relationships with them all, so any transmissions have to be clean and interference-free, so I was very pleased when I was asked to have a go at building this filter.

"It was completed in about one hour, but I am sure it could have been done a lot more quickly by someone having more experience with a soldering iron. Winding the coils and soldering were not a problem.

"It went together easily for me, with a bit of guidance from G0UYC. Tuning-up was a little bit more difficult, with very fine adjustments having to be made with the coils and coaxial stubs but, with the test equipment available, it went OK.

"The filter has been in constant use here, and I have found that there is no difference in the VSWR on six metres with or without the filter in line.

## NOTES

For the signal source, you can use either a signal generator or possibly a PCB-mounted encapsulated 50MHz crystal oscillator (originally from a computer) which has a square-wave output rich in harmonics. Do not use a wideband transmitter as a source, as you may damage the output stages, resulting from the poor match of the filter outside the intended passband.

With care, the filter is easily reproducible and provides an excellent means of removing those unwanted harmonics. This is a reasonably easy filter to construct, relatively inexpensive, and will suffice for the power levels used in the UK. ◆

**REFERENCES**

[1] 'Stub Filters Revisited', *RadCom* November 1994, pp46 – 48.

[2] *RSGB VHF / UHF Manual*, fourth edition, Appendix A2.

# An IBP beacon clock for under £10

**Sometimes the simple ideas are the best. Used in conjunction with your HF receiver, David Berry suggests a novel way to follow the IBP HF beacons and learn about propagation**

There are 18 beacons round the world making up the International Beacon Project (IBP). Each beacon sends its callsign once on a given frequency in Morse code at 20WPM at 10-second intervals, followed by three dashes at 100W, 10W and 1W. Having sent its callsign and the three dashes on 14100kHz, each beacon changes frequency to 18110kHz for 10 seconds, then to 21150kHz, 24930 and finally to 28200kHz.

I bought an MSF radio-controlled clock from Argos for £8.45, cut a circle of paper to cover the figures, then coloured in the minute panels, drawing the segments at 12, 2, 4, 6, 8 and 10 o'clock. (Don't forget the callsigns are the other way up on the 4 to 8 o'clock segments; I did!)

The minute hand indicates either a red, blue, or green panel which corresponds to the beacon callsigns in the circles of the same colour. The second hand, now shortened, is marked 14100, the other second hands are 10 seconds behind each other thereby showing when the signals in the 18, 21, 24 and 28MHz bands can be expected from the beacon so indicated. The five second hands are made from a plastic food box and are stuck on to the centre boss with Araldite. The hour hand is blanked off.

Starting on the hour 00.00 on 14100kHz the 4U1UN beacon will be heard, followed by VE8AT and so on round the red circle of callsigns on this clock to VK6RBP. After the first minute the beacons in the blue circle will be heard and after two minutes the beacons in the green circle, ending with YV5B. Then the three-minute cycle starts all over again (propagation conditions notwithstanding).

To monitor a particular beacon through all the bands, put the frequencies in your receiver's memory and just press the memory button every 10 seconds.

If you do not read Morse code at 20WPM this clock is very helpful. Also if conditions are poor and you only hear part of the signal the beacon is more easily identified. ◆

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# Generators: how good at RF?

**This article was prompted by a question to the RSGB Technical Committee concerning portable power supplies, mainly battery, for high-power (100W) linears, primarily at VHF. The problem was 'distortion' in the SSB transmission, probably caused by interaction of the load, the battery and the drive transceiver. Inevitably, a question arose as to how clean the supply would be if it were run from one of the very low-cost generators which have become widely available in the last year or two.**

**Fig 1**
Local noise level, VHF/UHF antenna.

**Fig 2**
Noise output from generator, control side.

FIG 1

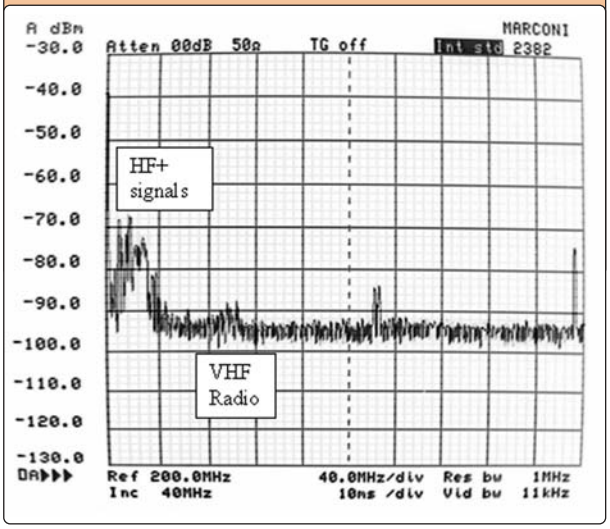
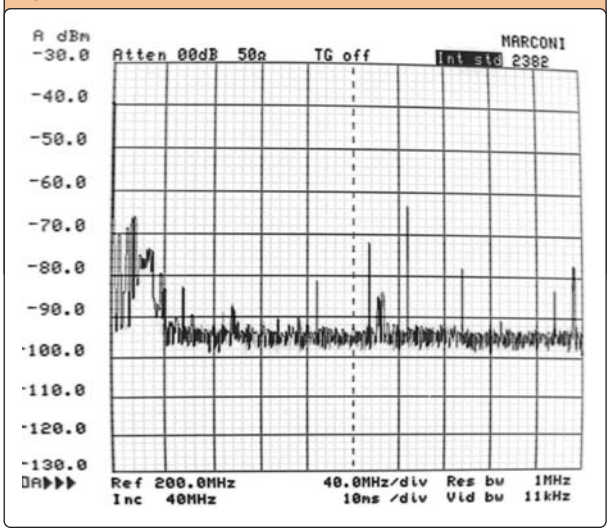



FIG 2




These generators range in price from £80 to £200, and are variously rated from 650W to 950W. One example, bought about a year ago, is quoted as 650W continuous, 950W intermittent. All of the units appear very similar, with just a difference in paint finish and colour, and brand name. All have a small two-stroke engine of about 63cc, a recoil starter and a single 230V UK mains outlet socket. Many, but not all, have a 'battery charger' outlet capable of charging a 12V lead-acid battery at about 6A. Since a spectrum analyser was also available, some basic measurements were carried out as a reference point for anyone contemplating using these units in a portable mode.

Two antennas were available for the measurements, a 'broadband' VHF/UHF type, for measurements up to 400MHz, and a 10m wire from the analyser input to the vicinity of the generator. No great accuracy is asserted for these measurements, but the measured signal levels give some pause for thought, since they are real signals which must be contended with on the various bands. The analyser was a Marconi 2382, and each plot below indicates the relevant data on frequency centre, span per major division and resolution bandwidth.

**Fig 1** shows the received noise, at ground level, in the short VHF antenna, over the range 0–400MHz. The major divisions are at 40MHz on this scale. It was surprising that the received 'noise', ie signals plus interference from other sources, was as high as 40MHz in a semi-urban environment. The VHF broadcast signals were relatively low; this was for an antenna at ground level, shielded by local buildings. Quite persistent lines were noted at about 220MHz and 390MHz. Other signals would appear very briefly, especially around 170MHz from taxis and emergency services. The analyser did not reach the UHF TV channels.

**Fig 2** shows the result of starting the generator. In the VHF region, there were several signal spikes, which appeared random, across the range. They were not persistent, but more a group of spectral lines which 'walked' across the frequency range. The wide resolution bandwidth made them visible; on a narrow-band audio receiver they would appear as clicks. The HF spikes seemed more consistent, but at around the general background level. The signal levels were lower by 10dB on the side of the generator with the power outlet sockets, suggesting that, where interference is a problem, re-orientation of the generator may give a useful improvement. This applied both to HF and VHF.

A 10m wire antenna showed qualitatively similar results, shown in **Fig 3**, although, of course, with a greater HF content.

For a more detailed HF appraisal, the analyser was limited to 50MHz, with the centre at 25MHz. The no-generator measurement is in **Fig 4**. Note that the horizontal scale remained linear; it was easier to see the effects using a linear scale.

Turning the generator on (**Fig 5**) showed almost no difference in the spectrum. There was still the possibility of problems at specific fre-

**Fig 3**
Generator noise, 10m antenna.

**Fig 4**
10m wire antenna, spectrum to 50MHz, generator off.

**Fig 5**
As Fig 4, but with generator on.

**Fig 6**
Local noise at inverter, 50MHz limit, wire antenna.

**Fig 7**
Local noise from switched mode inverter.

FIG 3

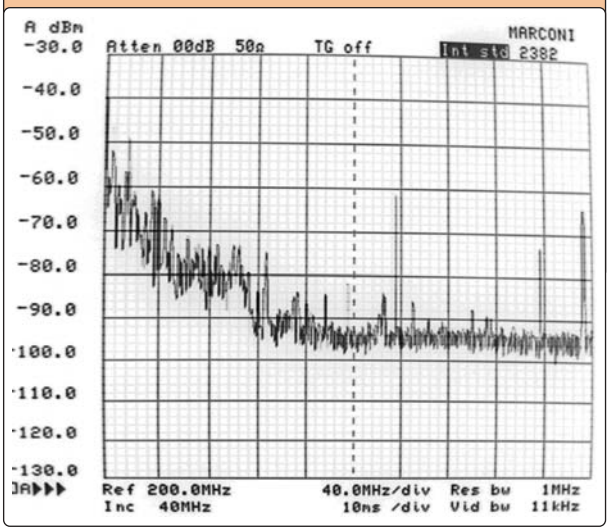



FIG 5

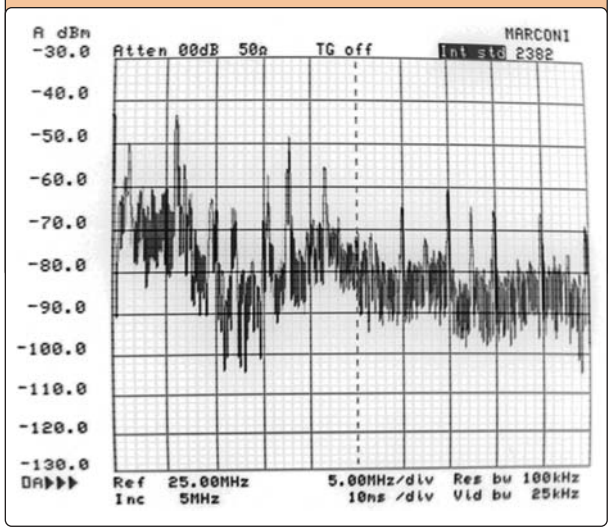



FIG 4

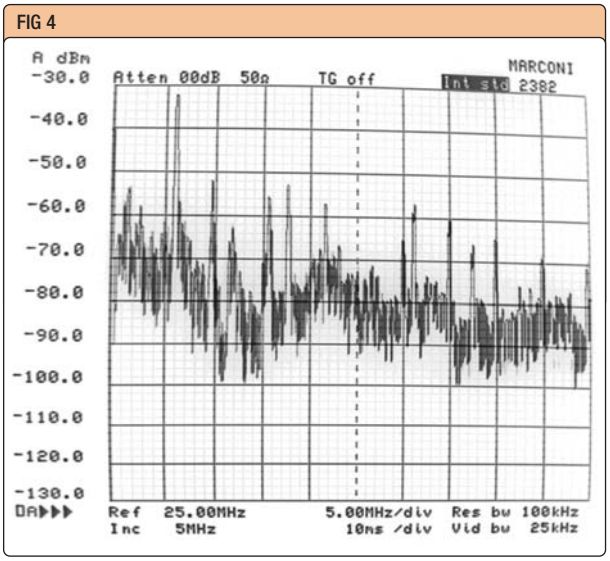
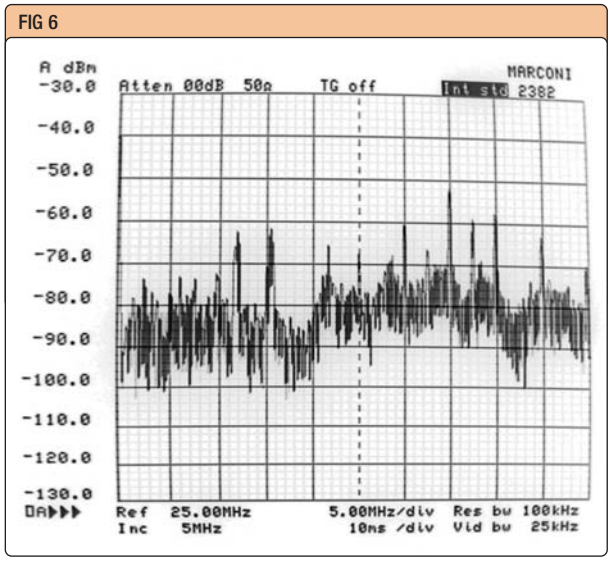



FIG 6




quencies, but the net effect over a wide bandwidth was a marginal increase in the noise floor.

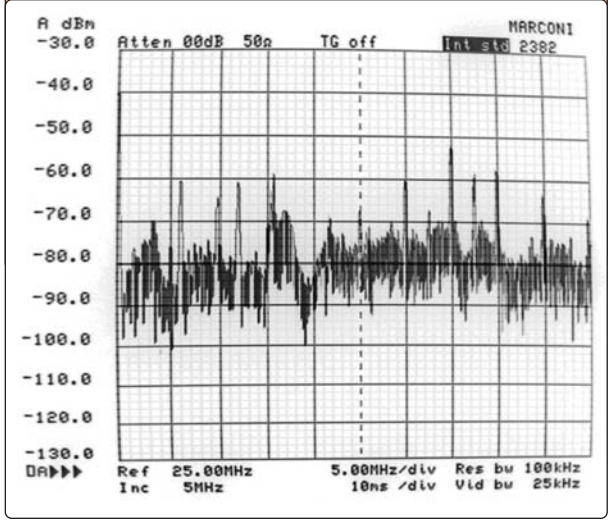
One alternative to a generator was a battery and switched mode supply. These units are also commonly available at low cost, although in many different types. Just one was examined for this note. **Fig 6** shows background noise and **Fig 7** shows the noise from a switched mode inverter box. The noise increase, even with the wire antenna coiled over the box, was remarkably low.

Finally, a scanner was used, on SSB, to check the SSB calling frequencies for the spurs from the generator. None was found on 50MHz, 70MHz, 144MHz or 432 MHz. This does not mean that a given setup can be guaranteed, but that there is no obvious problem from this class of generator at VHF and UHF. The possibility of interference will exist to some extent at HF, but was shown not to be a major problem.

## IN CONCLUSION

In summary, these low-cost generators should be considered for portable operation *provided that they are operated within their power limitations*. They do have a transient speed-up under load, which could give rise to problems on SSB or CW; a better approach would be to use the generator to top up a substantial battery which would even out the loading; this is an experiment not yet undertaken. In terms of spurious generation, ie potential receiver interference, they have been shown to be surprisingly good. ◆

FIG 7



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# Slow-scan wobbulator

**A VLF ramp generator and voltage-controlled IF oscillator are described for studying narrow or steep-sided filters. The author presents only the circuit diagrams and explains how to use the instrument. It is left to the constructor to lay out and box the wobbulator**

Any home constructor who has ever tried to line up his crystal filter using a conventional wobbulator will quickly have discovered that the resulting actual response can be very different from the shape displayed in the process of alignment. For those who haven't come across the term, perhaps I should first explain that the term 'wobbulator' refers to a frequency-swept RF signal generator, the sweep voltage of which is used to drive the X-axis of an oscilloscope, in place of the normal time base. The RF signal output is applied to the input of the IF stages in a receiver (or other tuned amplifier) and the resulting output from one of the later stages (possibly after rectification and smoothing) goes to the Y-axis of the oscilloscope, thus directly displaying the overall frequency response curve of the stages in between. This was all very well with the usual, medium-*Q*, LC tuned circuits of a conventional domestic radio set or the older type of communications receiver with which we 'oldies' were brought up.

With crystal, and other high-*Q*, steep-sided filters, however, this type of rapid sweep – which is effectively a frequency-modulated signal – can produce severe distortion of the apparent response plot and a much slower sweep rate is called for. Conventional oscilloscopes may – or probably may not – incorporate a long-persistence display but, even if they do, it is very unlikely to provide a satisfactory display at the very slow speeds that are necessary when dealing with crystal filters. What is required, ideally, is a storage oscilloscope – or possibly the computer equivalent – with an X-input to take an external time-base, together with a signal source, the frequency of which is swept very slowly through a variable portion of the appropriate spectrum. Auto-synchronisation of the display is then achieved because the X (time base) deflection of the 'scope *is* the linear ramp voltage which is causing the frequency deviation. With a digital storage oscilloscope that doesn't allow storage when plotting X against Y, the setting up procedure is rather more complicated but, for that situation, this design does provide an output trigger pulse which permits manual synchronisation of the oscilloscope's own time base.

## CIRCUITS (Using a stabilised ±15V supply)

### Ramp generator board (Fig 1)

In the 'Auto' position of the switch, the circuit supplies a linear 'Ramp out' voltage, climbing from 0 to about +13V in a time that can be varied from 2 – 35s by the 'Scan Time' control. 'Trigger out' is a +13V short pulse, coincident with the start of the ramp

In the 'Manual' position, the ramp output voltage climbs to +13V and stays there indefinitely.

FIG 1 © RADCOM 475

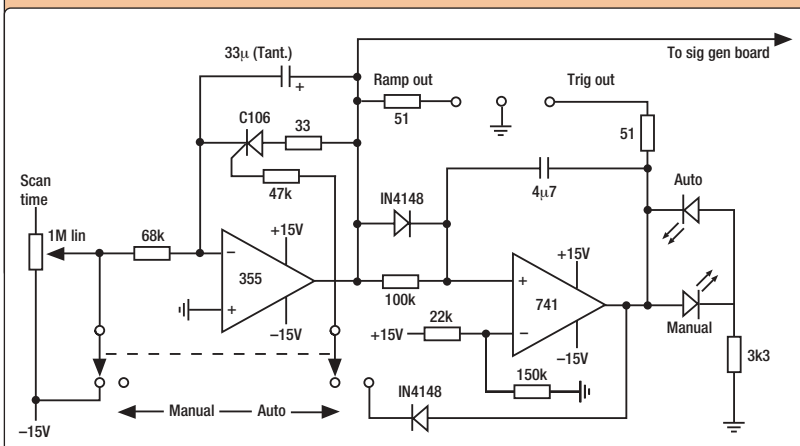



**Fig 1**
**The ramp generator circuit.**

**Fig 2**
**The RF signal generator board.**

FIG 2 © RADCOM 476

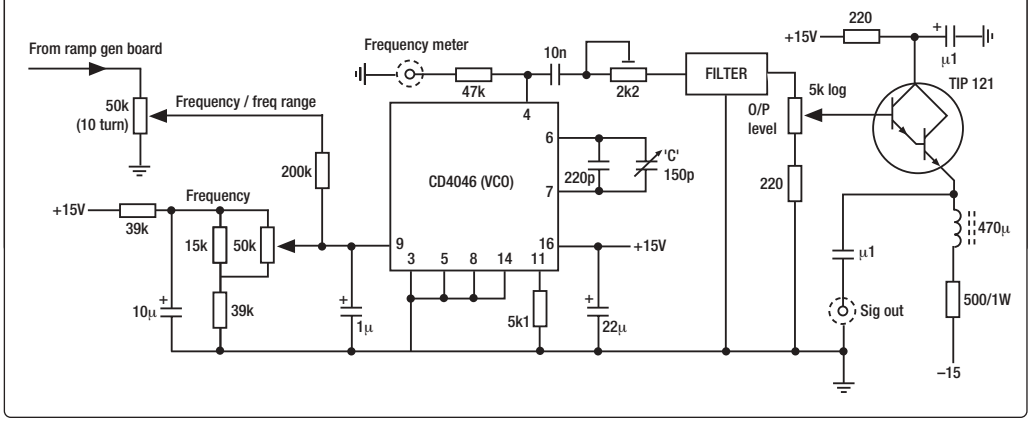


FIG 3 © RADCOM 477

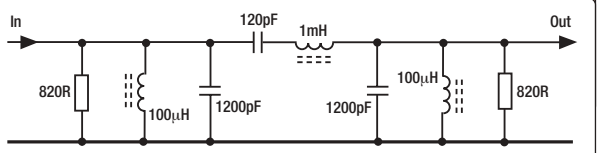



**Fig 3**
**Circuit of the band-pass filter in Fig 2.**

FIG 4 © RADCOM 478

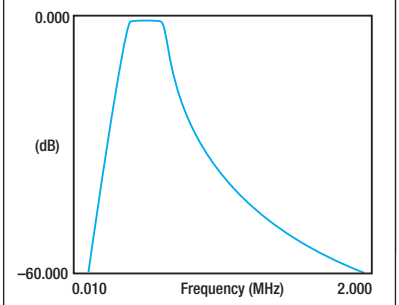



**Fig 4:**
**Theoretical response of the circuit of Fig 3 (due to EI9GQ)**

### RF signal generator board (Fig 2)

The VCO (voltage-controlled oscillator) actually produces a square-wave output, but the band-pass filter (**Fig 3**) converts that to a pure sine wave for frequencies within its pass-band – set by the capacitive trimmer, C, with the 'Frequency' control at the mid-point of its range and the 'Frequency / Frequency Range' control at zero. The 10-turn potentiometer (which is actually located between the two boards) then controls the proportion of the voltage from the ramp generator board (either the varying ramp output or the fixed +13V) which is applied to deviate the CD4046 control voltage, on pin 9, from its set value. My frequency range is from 400 to 500kHz with a little overlap (contrary to the marking on the front panel!), and the Butterworth filter ensures that the sine wave amplitude at 0dB (1V RMS into 75ohm) remains within ± 0.2 dB over that range. For other frequency ranges, filter component values can be determined from the spreadsheet, 'Bandpass Filter.xls', available on request from the author. The theoretical plot of the response (**Fig 4**) was produced by Ed, EI9GQ, from my calculated values.

### 400 – 500kHz band-pass filter

My inductors (see Fig 3) are a miscellaneous collection of fixed, ferrite-cored, and standard components, and the capacitors are polystyrene (some of them with series, higher capacitance, plastic-film types to pad them).

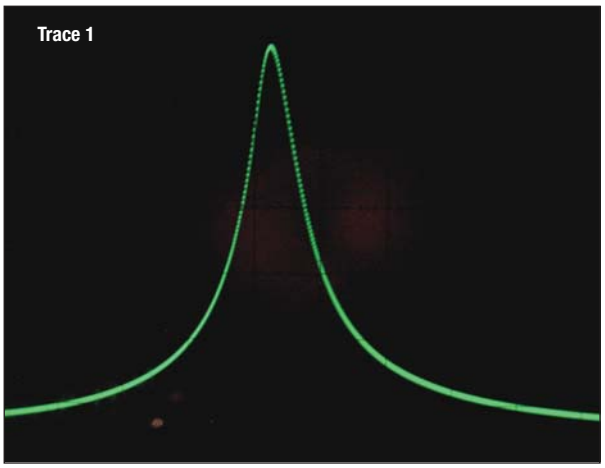
### IN PRACTICE

When I first completed this project I was quite disappointed to find that it didn't appear to have solved the problem as regards the distortion introduced by higher sweep speeds. After further investigation, I was soon relieved to discover that there was another factor involved – one that should have been obvious with a little thought, but which does reveal an object lesson for others. Many commercial wobbulators display the recovered signal, from the output of the test subject, as the RF envelope and there would now have been no difficulty if I had chosen to do the same. But I was using a Marconi Instruments Video Voltmeter, Type TF2600B, adapted to bring out the rectified DC from the meter circuit as a single-ended signal to the oscilloscope input – *and it had a rather long time constant*, τ! That is what was causing those unsatisfactory results initially. Introducing another modification enabled me to switch to a much shorter value of τ when dealing with these higher frequencies – the original specification allows the meter to be used down to 10Hz – and it is my instrument of choice when aligning the filters in my home-made receiver and exciters. Even with the new time constant being one-tenth of what it was, I still have to be conscious of a possible problem and, in extreme cases, need to check by slowing the scanning rate and comparing the resulting trace (see below).

With its high input impedance (and very low capacitance when using a 10x probe), very large meter and wide choice of ranges, accurately calibrated in both linear and decibel scales, all the Marconi meter lacks is a logarithmic response to be perfect in all other respects. (And it only cost me a fiver at the Rochdale QRP Club Rally! There were quite a lot of them on the surplus market a few years ago.) I use an old Farnell Digital Storage Oscilloscope, Type DTS12T, that doesn't allow X – Y operation in the storage mode, so I have to employ the 'Trigger output' from the wobbulator for synchronisation. For the delicate adjustments required in the final stages and for actually quantifying the ultimate response, I switch the wobbulator to 'Manual' and just use it as a stable signal generator with


**The completed wobbulator.**

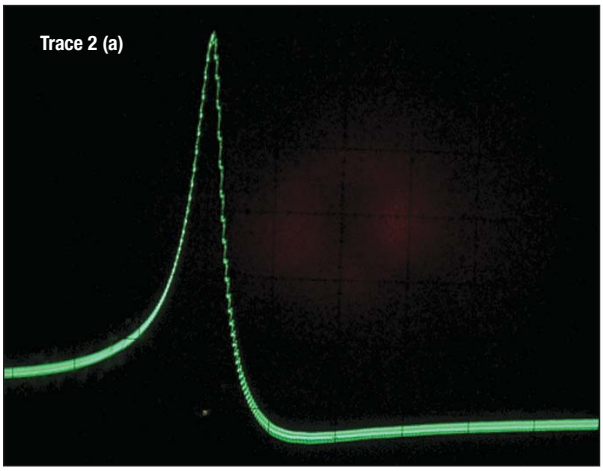
**Inside view, showing the two separate boards and the three-terminal regulator power supply.**

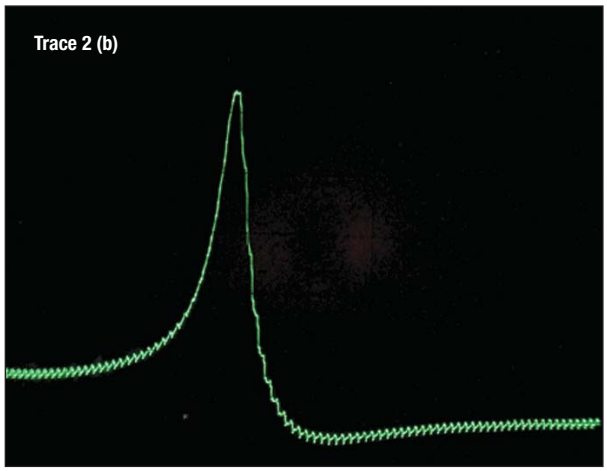


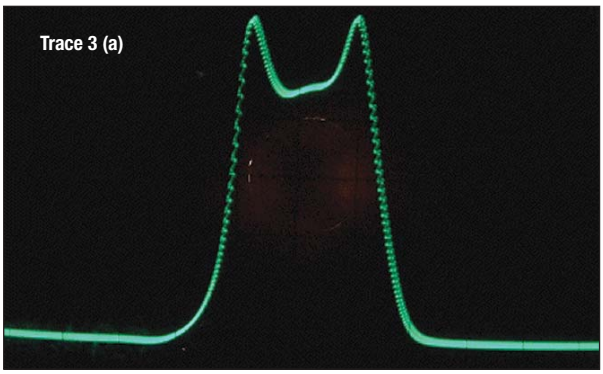

**Trace 1**
**A Toko 470kHz transformer.**

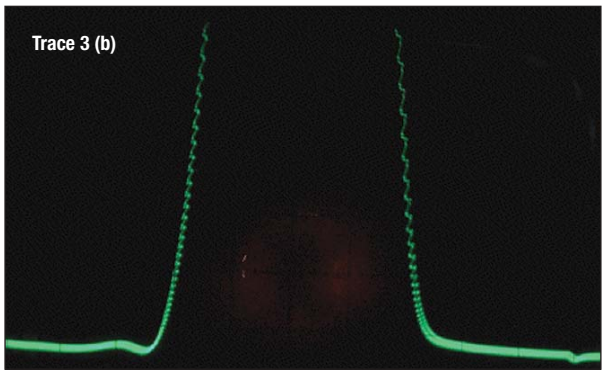
**Trace 2**
**FT241 crystal response. (a) 8s scan. (b) 2s scan.**

**Trace 3**
**Two half-lattice crystal filter. (a) normal. (b) Same trace at 10x Y-sensitivity.**




very fine tuning – employing the 10-turn pot – and that is where the TF2600B really scores. In the absence of a logarithmic display, the skirts of the filter are examined by switching to the more sensitive ranges, which are in 10 dB steps so the relative level of any side responses can be directly read in dB.

## RESULTS

The frequency response curves to follow were obtained using the wobbulator with the Farnell oscilloscope in the real time mode, ie not storage. The ramp voltage was fed to the X-input and these single-scan traces were photographed for the illustrations using a light-tight box in front of the display with a long exposure on a digital camera – set to suit the scan time.

### Toko 470kHz IF transformer

**Trace 1** is a 10-second scan of virtually the full signal generator output frequency range of 400 – 500kHz. As suggested in the introduction, there would probably be no problem with this type of filter using a more conventional wobbulator and it certainly displays no difference in the plot with scan times between 2 and 30s.

The total 'scan time', ie the *time* for the full horizontal deflection of 10cm, is equivalent, in the above case, to a scan *rate* of 100kHz in 10s, or 10kHz per second.

### Series resonance of a single crystal

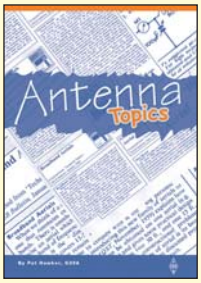
Obtained with a 463kHz FT241 crystal in series with the wobbulator output – the Y-input is the voltage across a 10kohm load. The scan is 4kHz, from 461 to 465kHz: in **Trace 2(a)**, the scan time is 8s; in **Trace 2(b)**, it is 2s. This is even *with* the modified time constant in the TF2600B.

### Two half-lattice crystal filter

Both **Trace 3(a)** and **Trace 3(b)** are 12s exposures of a 12s scan covering the 10kHz from 457 to 467kHz. In the absence of a logarithmic response, Trace 3(b), showing the skirts, is at 10x Y-sensitivity.

Note: the apparent size of the 'rabbit's ears' shown in the Trace 3(a), amounting to only about 2dB, is accentuated by the linear scale. Also, there are two more half-lattice filters in the IF chain of my receiver – giving a much flatter, *overall* response ◆

# ANTENNA

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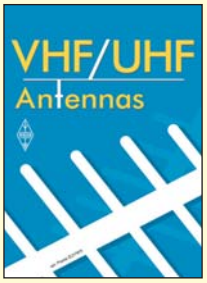


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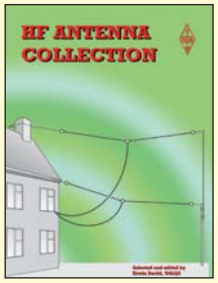


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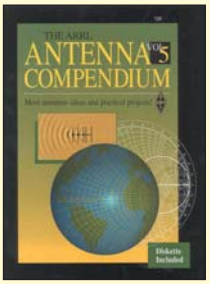


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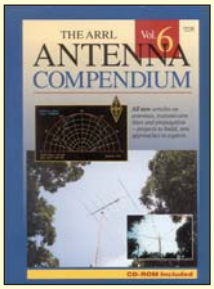


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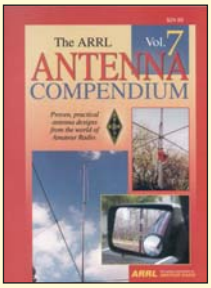


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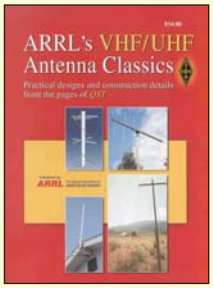


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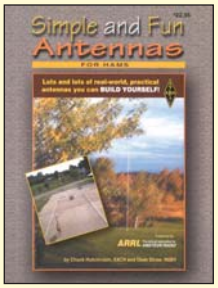


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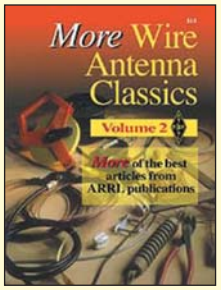


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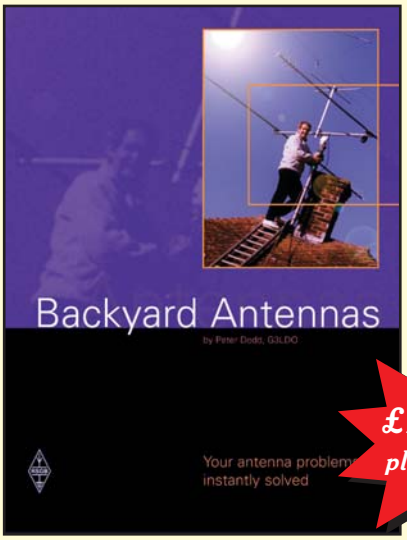


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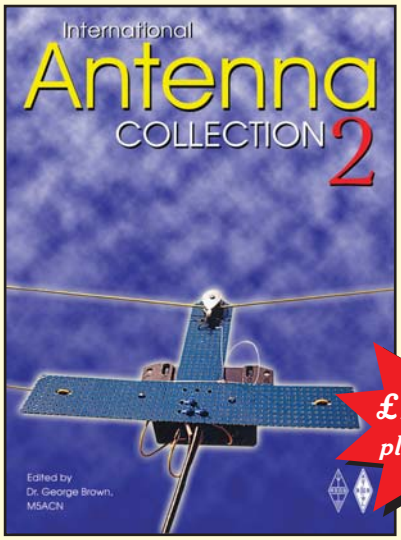


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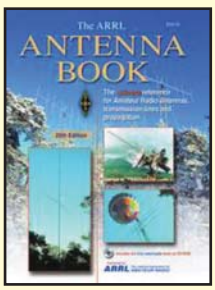


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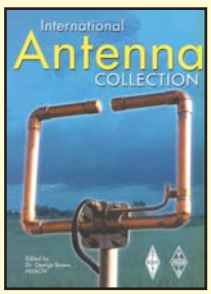


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# Members' ads

## FOR SALE

**100W** gen cov tcvr Icom IC-735 fully serviced, £375 delivered. Alinco DX-70TH inc EDS4, just serviced and tested, £375 delivered. 4-ele 4m Eagle Yagi, £45. 4-ele 6m Eagle Yagi, £50. High-power Yaesu 2m FM tcvr FT-270RH, £50. Trev, G2KF, 07974 892 179 (Cornwall).

**4-WAY** antenna switch, MFJ LPF 200W 1-30MHz. New boxed Intel 56K internal modem. Each item £12.50 + p&p. John, G3OAZ, QTHR, 01256 465 126 (Basingstoke).

**AMERITRON** AL-82 linear amp complete with spare valves, £750 ono. GW3KDB, QTHR, 01545 560 451 (Llandysul).

**FIVE-**bedroom detached house in sought-after east Essex village. Adjacent golf course and highly-rated primary school. Railway station 2 miles. 0.3-acre plot. Cushcraft R-7000 vertical. Rear garden long enough for G5RV. Indoor coax runs from ground floor shack to roof, £430k ono. G3HTF, QTHR, 01621 828 576 (Maldon). E-mail: lesbarclay@iee.org

**FLUKE** Scopemeter 199, 200MHz hand-held scope and DMM. New with probes, charger and man, £1100. HP-141T spectrum analyser kit: three mainframes with IF units, four RF units plus more, £1100 the lot or may split. 07973 502 741 (Ely). E-mail: jc@g4fit.com

**FSTV** Ex-broadcast 'roger' dual-channel synchroniser 19in rack, man, PAL, genlock, store, levels, etc. Offers? You collect. Brian, G3HZR, 01422 845 148 (Halifax). E-mail: hzrbrian@aol.com

**GALAXY-5** tcvr (500W) in mint cond. Separate VFO for split-frequency operation, 230V PSU, spare set of valves, Shure mic, man etc, £300 ono. Hy-Gain 18AVT 5-band antenna, £100 ono. John, G3WTO, QTHR, 01228 819 962 (Carlisle).

**GAP** Challenger 80/40/20/15/10m vertical, GWO, 10yrs old, buyer collects, £35. Carolina Windom CW-5160 Radio Works, new, boxed, unused, £70. 01380 725 075 (Devizes). E-mail: g3wzr@inweb.co.uk

**HEATHKIT** HW8, £120. Kent twin paddle boxed, £50. Watson PSU W25SM, £55. FC-250 frequency counter, £20. Lake AF2 CW filter, £10. Mel, 01274 817 178 (Bradford). E-mail: melslateruk@yahoo.co.uk

**HEATHKIT** SB-101 HF tcvr, £95. KW-2000B HF tcvr, £95. Eddystone 888 hamband rcvr, £75. Kenwood DM-81 dip meter, £25. Heathkit GD-1U dip meter, £15. Yaesu FT-7 tcvr plus FL-110 amplifier, £185. Nevada G4JEV roller coaster, £25. G3YOL, QTHR, 01934 843 144 (North Somerset). E-mail: stephen.cole@amserve.com

**IC-735** 100W HF with mic. Exc cond, gwo, £300 ovno. 01435 866 129 (Heathfield).

**IC-756PROII** mint cond, boxed and manual, £1100. 01494 778 686 (Chesham). E-mail: rupert@g4xrv.fsnet.co.uk

**ICOM** IC-271E multimode complete 2m base station incl rotator, SWR and frequency meters, 6 ele-cross antenna, all manuals, books etc. Ready to plug in and go on air, £325 ovno. G6NBD, QTHR, 01474 359 929 (Gravesend). E-mail: chris@ceansell.freeserve.co.uk

**ICOM** IC-2KL HF linear amp 500W with PSU, £495. Icom IC-703 HF/6m QRP. New boxed, £500. Icom IC-737A boxed, £435. Standard C-5900 6/2/70 FM rcvr, 44-100MHz – 225-1020MHz, very sensitive, £250. IC-735 boxed, £350. Yaesu G-1000DXC, heavy duty rotator, accept £250. Cushcraft A3WS 12/17m beam, £130. Daiwa CN-620A SWR/power meter, £25. Yaesu YH-77 headphones, £20. G4AFY, 01562 747 480 (Kidderminster).

**ICOM** IC-703 as new, boxed, complete, £340. High sierra HS-1800PRO HF, base, mobile antenna, 80m to 10m as new, complete, £270. Buyer to inspect and collect. Mike, M3BOU, 01926 810 294 (Warwickshire).

**ICOM** IC-756PRO. HF plus 50MHz tcvr, £995. Yaesu FT-847. All bands 1.8 – 430MHz tcvr, £750. Both have original packing. Prefer buyer inspects and collects. Carriage extra if required. G3WZT, QTHR, 01403 864 222 (Horsham). E-mail: g3wzt@dsl.pipex.com

**ICOM** IC-775 DSP HF tcvr, 200W + auto ATU, DSP, internal PSU, vgc, boxed, h/book, £1200 ono. Peter, G3ZRS, QTHR, 01964 550 921 (E Yorks). E-mail: peter@linamp.co.uk

**ILL** health forces sale. SG-2020 tcvr + SG-239 auto tuner, £300. See working bargain, cash only. Mr H Froggatt, G3SOX, 5 Goodwin Road, Ramsgate, Kent, CT11 0LP.

**KENWOOD** R-5000 rcvr with man and VHF converter unit, £400. 01474 743 003 (Gravesend).

**KENWOOD** R-5000 in vgc, £450. John, 01386 852 249 (Broadway). E-mail: m3dvm@btopenworld.com

**KENWOOD** TR-751E, £200. Yaesu VX-1R, £50. Keys J38 straight key, Hi-Mound HK-708 straight key, Samson E7M-SQ twin paddle. Offers. 07802 920 434 (Bedale, N Yorks). E-mail: paul_rollin@hotmail.com

**KENWOOD** TS-440S HF tcvr, vgc, boxed, man, £395. Matching TS-711/811 VHF/UHF rigs available. Whole package negotiable during inspection/collection. Yaesu FT-726R, exc cond, 2m/70cm/rare HF modules, £425. FT-227R 2m-mobile, £70 or swap for old Trio TS-430S filters YK-88C & YK-88SN. Keith, G0OZK, 07974 953 018 w/e or after 6pm weekdays (Stockport).

**KENWOOD** TS-850S/AT with CW filter and voice synthesiser, man and carton. Non-smoker. Mint cond, £375. G5BM, QTHR, 01531 820 960 (Newent).

**MFJ-784B** tunable DSP filter, £130. MFJ-462B CW/RTTY decoder, £85. Both boxed, unmarked, with mans. Half new price! Robin, GW3ZCF, QTHR, 01792 234 836 (Swansea). E-mail: robin@broadmead.eclipse.co.uk

**MOONRAKER** vertical antenna 10-20m with ground planes. As new, cost £130 will accept £85. Harry, M3HVC, 01767 640 423 (Beds)

**RACAL** RA1792 rcvr, £500. Yaesu FT-757GX HF all mode tcvr + FP-757HD PSU, £395. Kenwood TH-77E 144/430 MHz FM dual-band with two batteries, £70. Datong multimode filter FL3, £30. Datong automatic RF speech processor, £30. 01704 567 565 (Southport). E-mail: robert-baxter@beeb.net

**RADIO** Shack 'Realistic' DX-394 comms rcvr. 150kHz to 30MHz. Dual conversion. Digital readout. AM, USB, LSB, CW. 150 memories, scan facility. Hardly used. VGC, £65. Neil. G0LNV, QTHR, 07850 119 453 (Sheffield). E-mail: tnealapple@onetbl.com

**SGC-230** Smartuner 200W, boxed, protected from the elements, man, £250. Adonis mic, model, AM-601 SSB/FM Variable gain, boxed, manual, £25. Cushcraft AR-6 6m half-wave vertical, hardly used, instructions, £25. Pye L-200 4m 50W linear amp, vgc, £25. Comet triplexer 6m, 2m and 70cm, £25. G4PHC, 01643 706 936 (Minehead). E-mail: ganop@srbartonrd.freeserve.co.uk

**SHACK** refurbishment. Yaesu FT-990 mains. XF10.9-XF445 crystals fitted. Desktop mic MD-1C8. MH-118 mic. SP-6LS. FIF-232C CAT interface. Low pass filter CF-30MR. Kenwood TM-241E 2m tcvr. AEA Pakratt T-232 MBX unit. 3 – 10A 13.5V PSU, £850 no split. Buyer inspects and collects. GW0PUM, QTHR, 01267 231 352 (Carmarthen).

**SILENT** key. Drake R-8A comms rcvr little used, £400. Corkish, GD0IFU, 01624 629 455 (Isle of Man).

**SILENT** SWL rcvrs: AR-88D, HRO, Hammarlund SP-600, Drake SPR-4, BRT-400, BC-342N, Nems-Clarke, all vgc. US Army headphones R14 Hi-Z, AVO-8, new horn antenna with coaxial switch, £6. PTFE 50ohm silver-coated 52ft new, £8.50. Watkins Johnson VHF rcvr. 01942 255 948 (Wigan).

**SONY** SW-100 + AN-100A active antenna - SSB, CW, FM – excellent rcvr, perfect, £120 ono. Yaesu VX-5R, leather case, h/set charger etc, perfect, £140 ono. Q-Tek Penetrator, £50 ono. All plus postage. 01502 561 230 (Lowestoft). E-mail: susan.feasey@btconnect.com

**STRUMECH** 46ft HD lattice tower, c/w all winches cable, rotator, cage, mounting post etc. Buyer pays postage, £230. 01983 295 809 (Whippingham). E-mail: m0tam@wightwonder.co.uk

**YAESU** FT-847 plus MD-100 desk mic, Avair AV-600 VSWR/power meter, Kenwood SP31 speaker all boxed as new, £850 ono. Paul, M1DBX, 0116 235 1827 (Leicester). E-mail: p.a.denman@lboro.ac.uk

**YAESU** FT-920AF HF/6m tcvr 100W o/p, twin rcvrs, voice stores. Mint cond, hardly used. 3 months' warranty left, £725. Terry, G4OXD, 01462 435 248 (Hitchin). E-mail: tm.rose@tiscali.co.uk

## WANTED

**ANTHRACITE** (coal) brickette, also: plain SRBP board, ie, PCB without copper. Godfrey, G4GLM, QTHR, 020 8958 5113 (Edgware). E-mail: cgmm@thersgb.net

**DISABLED** fan of old days seeks pre-1975 QSLs, magazines, logbooks. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk, IP18 6PQ.

**ICOM** IC-475H or IC-475E, 70cm all-mode base station in good cond and working

## SILENT KEYS

**We regret to record the passing of the following radio amateurs:**

| | | |
|---|---|---|
| G0EBH | Rev C G Montgomery | 10/02/05 |
| G0FJW | Mr D S Sage | 03/05 |
| G1TCF | Mr G J King | |
| G3CDE | Mr E G A Jackson | 02/05 |
| G3JKZ | Mr F W Lynes | 19/02/05 |
| G3JQQ | Mr D A Bundey | 04/03/05 |
| G3MWG | Mr D E Bootman | 20/02/05 |
| G3TIS | Mr J A Clarke | 18/03/05 |
| G3XNG | Mr L D Grant | 24/02/05 |
| G4AIQ | Mr G J Mitchell | 30/12/04 |
| G4NDQ | Mr R F Brett | 11/03/05 |
| G7NZQ | Mr J Roberts | 09/03/05 |
| G7WSN | Mr K Harris | 03/05 |
| M0DEH | Mr P Cumpsty | 22/02/05 |
| M3CWY | Mr C W Woolley | 23/02/05 |
| RS86194 | Mr A H Hadcocks | 08/03/05 |
| RS95988 | Mr L T Poyner | 10/02/05 |
| VK2BE | Mr L W Louttit | 26/02/05 |

We apologise to the friends and family of the late Rev C G Montgomery, for printing his call-sign incorrectly in the April issue. It is shown correctly here.

## CONGRATULATIONS

to the following, whom our records show as having reached 70, 60 or 50 years' continuous RSGB membership:

**70 years**

| | |
|---|---|
| VE3XE | Mr E C Ilott |

**60 years**

| | |
|---|---|
| G3FBN | Mr W J Bolton |
| RS10128 | Mr A C Lees |

**50 years**

| | |
|---|---|
| 5B4AGF | Mr I Cable |
| G0VEH | Mr J E Mulye |
| G3DVK | Mr F F Oldfield |
| G3NRZ | Mr C A Hogg |

We send our apologies to Mr D H MacLean, G3DNQ, who was omitted accidentally from our Old Timers' Honour Roll on p89 of the February issue. Mr MacLean joined in May 1948.

order. Can collect. Malcolm, G3NZP, QTHR, 01342 713 573 (Crawley).
E-mail: Malcolm.fr263@ntlworld.com

**KENWOOD** DSP-100. Must be in exc cond with interface cables for TS-850. G4MJA, 0191 389 2822, 07840 894 823 (Durham).

**LEATHER** cover and spare batteries for Icom IC Delta-1E handheld. 01380 725 075 (Devizes). E-mail: g3wzr@inweb.co.uk

**MORSE** keys wanted please. Early brass keys, especially by Marconi, GPO etc, but all considered. John, G0RDO, 01626 206 090 (Newton Abbot).
E-mail: john@morsemad.com

**POWER** supply type 3 mark II. An unassuming 11in x 4in unit with voltage selector panels, to power a B2 set; B2 coils, Morse key, spares box, WHY? Also Trio VB-2300 amplifier. Thanks. Ken, G3XSJ, 01453 845 013 (Gloucestershire).
E-mail: ken.brooks@iee.org

**Q-TEK** Penetrator vertical antenna (wire version). Can collect within reasonable distance from Lincoln. Robin, G1AHU, QTHR, 01522 509 721. Thank-you.

**SILENT** key clearout or just not needed. I collect QSL cards for their historic interest, preferably from periods before 1970. Please don't throw them away. I can collect or arrange collection. Tony, G4UZN, 01132 693 892 (Leeds).
E-mail: g4uzn@qsl.net

**SMC** Yaesu 1045L2, UHF mobile, 2-ch tcvr. Must be version appropriate for RB0 (433MHz), good cond. Richard, G0OII, QTHR, 07816 016 537 (Scarborough).
E-mail: sendall2me@tiscali.co.uk

## RALLIES

**TI** - Talk-In; **CP** - Carp Park; **£** - admission; **OT** - Opening Time - time for disabled visitors appears first, eg (10.30/11am); **TS** - Trade Stands; **FM** - Flea Market; **CBS** - Car Boot Sale; **B&B** - Bring and Buy; **A** - Auction; **SIG** - Special Interest Groups; **MT** - Morse Tests; **MA** - Foundation Morse Assessments; **LB** - Licensed Bar; **C** - Catering; **DF** - Disabled Facilities; **WIN** - orize draw, raffle; **LEC** - LECtures/seminars; **FAM** - FAMily attractions; **CS** - Camp Site.

### 2 MAY 2005

**DARTMOOR RC Radio Rally** – Tavistock College, Tavistock, Devon. OT 10.15/10.30am. CP, TS, B&B, C, picnics, FAM, TI on 145.550MHz. Ron, G7LLG, 01822 852 586.

**MID-CHESHIRE ARS Rally** – Civic Hall, Winsford. OT 9.45 / 10am. CP, C. David, G4XUV, 01606 77787.

### 8 MAY 2005

**DUNSTABLE DOWNS RC 22nd Amateur Radio Car Boot Sale** – Stockwood Park, Luton. Access via M1 jn 10. OT 9am, parking £2 per car. C. Phil, G8XTW, 01525 384 419, 07880 737 594. Full details visit [www.ddrcbootsale.org]

**Magnum Rally 2005** – Magnum Leisure Centre, Irvine, Ayrshire. OT 10.15 / 10.30am, £3, under-14s free. CP free, B&B, WIN, C, TS, TI on 145.550MHz. Helen, MM0HLN, 07776 385 247, helen@magnumrally.co.uk [www.magnumrally.co.uk]

**QSL COMMUNICATIONS 20th Anniversary Open Day** – Unit 6, Worle Industrial Centre, Coker Road, Worle, Weston-Super-Mare. Jayne, 01934 512 757, ayne@qslcomms.f9.co.uk

### 14 MAY 2005

**Radio Amateurs Old Timers' Association (RAOTA) Get-Together** – *Brunswick Inn*, Derby. All members & guests welcome. Notify Ian, G4EAN, 0115 926 2360, ian@bartg.demon.co.uk, to arrange catering & seating.

### 15 MAY 2005

**MIDLAND ARS Drayton Manor Radio & Computer Rally** – Drayton Manor Park, Fazeley, Tamworth, Staffs, on A4091 near jns 9 & 10 of M42. OT 9am. TS in two marquees, FM, SIG, CBS, clubs. Norman, G8BHE, 0121 422 9787 or 07808 078 003, nlgutteridge@aol.co.uk [www.midamradio.com]

### 20 – 22 MAY 2005

**54th Hamvention** – Dayton, Ohio. [www.hamvention.com]

### 29 MAY 2005

**MID-ULSTER ARC Rally & Computer Fair** – The Embankment, Derrymacash, nr Lurgan, Co Armagh. OT 12 noon. TS, B&B, LB, C, TI on 145.550MHz. Ivan, GI0SZH, 028 3834 2501.

**Waters & Stanton PLC Open Day** – Hockley Shop. 01702 206 835.

### 5 JUNE 2005

**PLYMOUTH RC Rally** – Sparkwell Village Hall. OT 10am. Frank, G7LUL, 01752 263 222, 07702 456 401, frank@foxonezero.fsnet.co.uk

**SPALDING & DARS Annual Rally** – Sir John Gleed Technical School, Halmer Gardens, Spalding. OT 10am. CP free, TI on 145.550MHz, TS, C, DF, CBS. Ambrose, M0DJA, 07989 636 520, or John, 07946 302 815. [www.sdars.org.uk]

**WEST MANCHESTER RC 9th Red Rose QRP Festival** – Formby Hall, Alder Street (off High Street), Atherton, Manchester. OT 11am, £1.50. TS, Clubs, RSGB, G QRP low-cost B&B, CP free, DF, C, LB, TI on 145.550MHz. Les, G4HZJ, 01942 870 634, or g4hzj@ntlworld.com

### 12 JUNE 2005

**36th Elvaston Castle National Radio Rally** – Elvaston Castle Country Park, Elvaston, Derby, on the B5010 between the A6 and A52, 5 miles SW of Derby. OT 9am, CP £6. Radio, computers & electronics, FM, B&B, crafts, FAM, C, etc. Les, G4CWD, 01332 559 965, secretary@elvastonrally.co.uk [www.elvastonrally.co.uk]

### 19 JUNE 2005

**BANGOR & DARS Summer Radio Rally** – Crawfordsburn Country Club, nr Bangor, Co Down. OT 12 noon. Radio & computer TS, B&B, etc. Norman, GI3YMY, 028 9146 6557, nornewell@beeb.net [www.bdars.com]

**East Suffolk Wireless Revival (Ipswich Rally)** – Suffolk Showground, Bucklesham Road, Ipswich. OT 9.30am. CBS, B&B, RSGB bookstall, CP, TI via GB4SWR on 145.550MHz from 8am. Iain, G0OZS, 01206 396 419, or John, G3XDY, 01473 717 830.

**NEWBURY & DARS Car Boot Sale** – Ackland Memorial Hall, nr Thatcham, Berks. Kevin, G6FOP, g5xv@ntlworld.com Directions and map on website. [www.nadars.org.uk]

**WORTHING & DARC Rally** – Newhaven Fort, midway between Brighton and Eastbourne, well-signposted. OT 10.30, £2.50, incl access to all fort facilities. FAM. Jim, G4XRU, 01273 473 505, g4xru@aol.com

### 24 – 26 JUNE 2005

**Hamtronic Friedrichshafen** – [www.messe-friedrichshafen.de]

### 26 JUNE 2005

**West of England Radio Rally** – The Cheese & Grain, Market Yard, Frome. Follow signs for Town Centre & Tourist Information Office. OT 10am, £2, accompanied under-14s free. Half-price admission after 1pm. DF, TS, RSGB, clubs, CP free, TI in on 145.550MHz, C, Shaun, G8VPG, 01225 873 098, rallymanager@westrally.org.uk [www.westrally.org.uk]

## GB CALLS

**These callsigns are valid for use** from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 – 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Please send operational details of your special event station to the RadCom office at least five weeks before publication. The only QSL Bureau sub-manager for special event station callsigns is as follows: Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntlworld.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

| | |
|---|---|
| **1 May** | GB0ESM Nr Rochdale, Lancs. LH27 (G4TMV) |
| | GB1BC: Bickershaw Church. Wigan, Lancs. TLHV27 (G1EFU) |
| | GB4SCL: Settle Carlisle Line. Ingleton, North Yorks. LH (G0FQN) |
| | GB60VE LH2 (G4ZMP) |
| | GB60VED: Victory in Europe Day. Chatham, Kent. LH2 (G4AKQ) |
| **2 May** | GB0SK: St Kilda. LH (G0RCI) |
| **5 May** | GB4YOU: Youlbury Scouts & Guides. TLH27 (G0REL) |
| | GB4YOU: Youlbury Scouts & Guides. Oxford. LH27P (G0RJX) |
| **6 May** | GB0VED: Victory in Europe Day. LH (G4AKQ) |
| | GB2WBM: West Blatchington Mill. Hove, East Sussex. L2 (G4JZC) |
| **7 May** | GB0CMW: Cattells Mill Willingham. Willingham, Cambs. LH (G0GKP) |
| | GB0DGW: Danzey Green Windmill. Stoke Heath, Worcs. L2 (M0COP) |
| | GB0HSM: High Salvington Mill. Nr Worthing, W Sussex. LH27 (G8MSQ) |
| | GB0KHM: Kingswood Heritage Mill. Bristol. LH2 (G0NQJ) |
| | GB0KLM: Killhope Lead Mine. Upper Weardale, Co Durham. LHV27P (G0GFG) |
| | GB0MOC: Museum of Communication. TLH2 (GM0REZ) |
| | GB0MW: Mountnessing Windmill. Mountnessing, Essex. LH2 (M0JKA) |
| | GB0NLW: North Leverton Windmill. Nth Leverton, Notts. LH27S (G4YRZ) |
| | GB0OHM: Old Herne Mill. L27 (G3NIR) |
| | GB0PUF: PUF of Fresh Norfolk Air. Stalham Norfolk. LHV2 (G0BXL) |
| | GB0RYK: RudYard Kipling. LH2 (M0CHW) |
| | GB0SX: Stone Cross Windmill. Westham, East Sussex. LH2 (M0RJO) |
| | GB0THG: Tiddington Home Guard. Stratford-upon-Avon. LH (G0MRH) |
| | GB0WSM: Whitchurch Silk Mill. Whitchurch, Hants. (G8NDN) |
| | GB2ARW: Aythorpe Roding Windmill. Aythorpe Roding, Essex. TL (G3TPJ) |
| | GB2GG: George Green (The Miller). Sneinton, Notts. TLHV2 (M0RMJ) |
| | GB2HQ: GCHQ. Scarborough, Nth Yorks. LH2 (G4SSH) |
| | GB2HWP: Herringfleet Wind Pump. Suffolk. TLH27 (M1TES) |
| | GB2LM: Longbridge Mill. TLHV27PS (M0SOX) |
| | GB2MMW: Marsh Mill Wyre. LH2 (G4BFH) |
| | GB2MVC: Moulton Village Celebrations. TLHV27 (G4YTB) |
| | GB2PW: Polegate Windmill. Polegate, East Sussex. LH2 (G3DQY) |
| | GB2PWW: Pakenham Water Wheel. Pakenham, Suffolk. (G4DHU) |
| | GB2TMI: Thwaite Mill Island. LH27 (G0BFJ) |
| | GB2TTM: Thorrington Tide Mill. Thorrington, Essex. LH27 (G0SBW) |
| | GB2TW: Tuxford Mill. Tuxford. TLV (M0HHF) |
| | GB2UW: Upminster Windmill. Upminster Essex. TLHV27 (M0MAC) |
| | GB2WMS: Water Mill Shepshed. Shepshed, Leics.. LH27 (G3KWY) |
| | GB4NHM: New Hall Watermill. Sutton Coldfield Warks. L27 (G7MWD) |
| | GB4SM: Stow Mill. North Walsham, Norfolk. TLH2 (G0GFO) |
| | GB5SW: Stock Windmill. Stock, Essex. LV27 (G3VOF) |
| | GB6MVC: Moulton Village Celebrations. Northwich, Cheshire. TLHV27 (G4YTB) |
| | GB6VSC: Victory Social Club. Bromley, Kent. TLHV27S (G0TLK) |
| **8 May** | GB2HAW: Horsworth At War. Leeds. LH2 (G0WRT) |
| | GB2LGW: Lytham Green Windmill. Lytham, Lancs. (G4FWM) |
| | GB6VIE: Victory In Europe. LH (G0SWY) |
| **9 May** | GB6LIB: Liberty of Guernsey. Guernsey, Channel Islands. LH (GU0SUP) |
| **13 May** | GB2SF: Sherwood Forest. Sherwood Forest. H27 (M0HHF) |
| **14 May** | GB0CWF: Caithness Walking Festival. Thurso, Caithness. LH (GM4JYB) |
| | GB2HLM: Himley Lifeboat Marathon. Dudley. LH2 (M0SJV) |
| **15 May** | GB0PRC: Porthmadog Radio Club. Porthmadog, Gwynedd. LH2 (MW5CAD) |
| **16 May** | GB6VIE: Victory In Europe. LH (M0BTY) |
| **19 May** | GB0BTA: Braintree 30th Anniversary. TLH27 (G0DEC) |
| **20 May** | GB8GS: Glanford Scouts. Brigg, N. Lincs. LH2 (M0AUS) |
| **23 May** | GB6VIE: Victory in Europe. LH (G4OHX) |
| **28 May** | GB0SMF: Celtic Maritime Festival. Ballycastle. TLH27 (MI0MSR) |
| **29 May** | GB4NGR: Narrow Gauge Railway. Lavendon, Bucks. TLHV27PS (M0RPM) |
| **30 May** | GB0BRC: Bredhurst Radio Club. Gillingham, Kent. TLH2 (M0AAK) |
| | GB2WW: 2nd World War. Epworth, Sth Yorks. LH27 (G4HOY) |

3 JULY 2005

**NORFOLK ARC Barford Radio Rally** – Barford, 9 miles SW of Norwich, near A11 and A47. OT 10am, CP, TI, CBS, B&B, C, TS. David, G7URP, 01953 457 322 or 01953 458 844, radio@dcpmicro.com [www.norfolkamateurradio.org]

**YORK RC Rally** – York racecourse. Arthur, G8IMZ, 01904 413 342, 07841 120 738. [www.yorkradioclub.net]

10 JULY 2005

**CORNISH RAC 42nd Cornish Rally** – Penair School, Truro. OT 10.30am. C, B&B, MA, demonstrations, etc. For the first time in 16 years, the rally has returned to a Sunday! John, G4LJY, g4ljy@dsl.pipex.com, Ken, G0FIC, ken@jtarry.freeserve.co.uk

16 / 17 JULY 2005

**PORTLAND ARC Rally** – Southwell Business Park, Southwell, Portland, Dorset. Well signposted from the north of the island. OT 10am both days, admission free to rally, but charge for steam show. CP, TS, SIG, C, LB, DF, FAM (steam show), WIN, CS, TI. [www.portland-amateur-radio-club.org.uk]

17 JULY 2005

**McMichael Amateur Rally & Car Boot Sale** – Reading Rugby Club, Sonning Lane, Sonning, Reading, Berks. OT 9.30am. Min, G0JMS, 01189 723 504, g0jms@radarc.org [http://go.to/mcmichael rally]

24 JULY 2005

**COLCHESTER RAC Rally** – St Helena School, Sheepen Road (off Avenue of Remembrance), Colchester. OT 10am, TI, C, CP, DF, TS, B&B, FM, RSGB, IOTA station. Gary, M0JJH, 01621 818 620, m0jjh@despammed.com, or James, M0ZZO, 01255 242 746, james@mcginty.net

**Horncastle Radio Rally** – Horncastle Youth Centre. OT 10.30, £1. C – famous Horncastle bacon butties. Tony, G3ZPU, 01507 527 835, g3zpu@hotmail.com

29 – 31 JULY 2005

**AMSAT-UK Space Colloquium** – University of Surrey, Guildford. GB4FUN, beginners' sessions. Jim, G3WGM, 01258 453 959, g3wgm@amsat.org [www.uk.amsat.org].

30 JULY 2005

**Martin Lynch & Sons' Summer Barbecue & Boot Fair** – Guildford Street, Chertsey. sales@hamradio.co.uk [www.hamradio.co.uk]

6 AUGUST 2005

**RUGBY ATS Annual Radio Rally** – T M Humphries, G0OLS, 01455 552 519, thumph3426@aol.com

7 AUGUST 2005

**FLIGHT REFUELLING ARS Hamfest** – Mike, M0MJS, 01202 883 479, hamfest@frars.org.uk [www.frars.org.uk]

**KING'S LYNN ARC 16th Great Eastern Radio Rally and Car Boot Sale** – andy-jackson@2e1klp.freeserve.co.uk

**LORN ARS Radio Rally** – Shirley, GM0ERV, gm0erv@dsl.pipex.com or John, GM8MLH, 01838 200 304. [www.gm0lra.freeuk.com]

12 AUGUST 2005

**COCKENZIE & PORT SETON ARC Annual Junk Night** – Bob, GM4UYZ, 01875 811 723, bob.gm4uyz@btinternet.com

28 AUGUST 2005

**MILTON KEYNES ARS Annual Rally** – Dave, M0BZK, 01908 647 662, rally@bletchley.net [www.mkars.org.uk]

**TORBAY ARS Communications Fair** – Colin, G4FCN, 01803 812 117, or Peter, G3VTO, 01803 864 528. [www.rally@tars.org.uk]

29 AUGUST 2005

**HUNTINGDON ARS Bank Holiday Monday Rally** – Peter, M5ABN, 01480 457 347 (between 6pm and 10pm), peteherbert@aol.com

4 SEPTEMBER 2005

**SUFFOLK DATA GROUP Five Ss Rally** – Peter, G8HUE, 01473 631 313, peter@sdgrally.org [www.sdgrally.com]

**Telford Rally – *** Temporary change of venue ***** – West Midlands Agricultural Showground, Shrewsbury. Mike, G3JKX, 01952 299 677.

10 SEPTEMBER 2005

**W&S @ Lowe Open Day** – Matlock Shop. 01629 832 375.

10 / 11 SEPTEMBER 2005

**50th Weinheim VHF Convention** – df1gw@amsat.org

11 SEPTEMBER 2005

**LINCOLN SWC Hamfest** – Roger, 01522 693 848, hamfest2005@mail.com

30 SEPTEMBER / 1 OCTOBER 2005

**Leicester Amateur Radio Show** – Geoff, G4AFJ, 01455 823 344, geoffg4afj@aol.com [www.lars.org.uk]

7 – 9 OCTOBER 2005

**RSGB HFC2005** – Gatwick Worth Hotel, Sussex. 0870 904 7373. hfc@rsgb.org.uk [www.rsgb-hfc.org.uk]

9 OCTOBER 2005

**BLACKWOOD & DARS Rally** – George, 2W1JLK, 01495 724 942, or Dave, GW4HBK, 01495 228 516.

**GREAT LUMLEY AMATEUR RADIO & ELECTRONICS SOCIETY Rally** – Nancy, G7UUR, 0191 477 0036, 07990 760 920, nancybone2001@yahoo.co.uk

15 OCTOBER 2005

**W&S @ Jaycee Open Day** – Glenrothes Shop. 01592 756 962.

16 OCTOBER 2005

**HORNSEA ARC Annual Rally** – G4YTV, 01964 562 498.

22 / 23 OCTOBER 2005

**HAMEXPO 27ème Salon International Radioamateur** – Auxerre. [www.ref-union.org]

23 OCTOBER 2005

**GALASHIELS & DARS Annual Open Day & Rally** – Jim, GM7LUN, 01896 850 245, mail@gm7lun.co.uk

5 / 6 NOVEMBER 2005

**NORTH WALES RS 19th North Wales Radio, Electronics & Computer Show** – Jenny, MW0BET, 01492 549 413. [www.nwrs.org.uk]

13 NOVEMBER 2005

**West London Radio & Electronics Show** – Paul, M0CJX, 01737 279 108, m0cjx@radiofairs.co.uk [www.radiofairs.co.uk]

3 DECEMBER 2005

**Martin Lynch & Sons' Christmas Hog Roast & Boot Fair** – sales@hamradio.co.uk [www.hamradio.co.uk]

## RSGB MEMBERS' ADVERTISEMENTS

RSGB members wishing to place an advertisement in this section should use the official form printed in *RadCom* each month and send it to 'Memads', *RadCom*, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. No acknowledgement will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due.

An advertisement longer than 60 words will be charged *pro rata*. **The RSGB believes that it is inappropriate for members trading in whatever way in radio equipment to place members' advertisements. We therefore regret that we are unable to take such advertisements, although we do welcome these in the 'Classified' advertising section of *RadCom*.** The editor reserves the right to refuse any advertisement for any reason. In such matters, the editor's decision is final.

The RSGB accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain.

Please note that because this is a subsidised service to members, no correspondence can be entered into. Members may submit *one* photograph of equipment being sold / wanted at an additional cost of £5.00. This *must* be a .jpg or .gif file and the file name *must* be included on the Order Form. The photograph may be e-mailed to radcom@rsgb.org.uk or sent on a floppy disk or CD.

Licensed members are asked to use their callsigns and QTHR, provided their addresses in the current edition of the *RSGB Yearbook* are correct. RS members will have to provide their names and addresses or telephone numbers. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition. Please do not send Members' Advertisements to Danby Advertising (advertising agents). The closing date for copy is the first day of the month prior to publication, e.g. the deadline for the May issue is 1 April.

**Warning:** ***Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid. Members' Ads also appear on the members-only website: www.rsgb.org/membersonly/membersads***

The Members' Ads order form is published below. If members do not wish to cut the form out of the magazine, photocopies will be accepted, as will recent copies of the form from previous months. As a last resort, members may also send in their advertisements on separate sheets of paper, but if you choose to do this, you must supply an accurate word count and, of course the correct fee in the normal way.

## RSGB MEMBERS' ADS ORDER FORM

**Application form for one For Sale, Exchange or Wanted advertisement. Do not mix classifications on this form; separate applications must be made.**

Please ensure you read and understand the conditions of acceptance of these subsidised Members' Advertisements, printed at the top of the Members' Ads page of *Radcom*

☐ I enclose a cheque/PO for £ ☐☐.☐☐ p

☐ Please charge to my credit card

Number ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Expiry date ☐☐☐☐ Issue number (Switch only) ☐☐

Signed _____ Date _____

Section: ☐ FOR SALE ☐ EXCHANGE ☐ WANTED

RATES: UP TO 20 WORDS £5.50; 21-40, £6.50; 41-60, £7.50.
PHOTO (jpg or gif only) ADD £5.00

**Free entries**

Photo file name (if applicable) _____.jpg/gif

Town _____

E-mail _____

Phone _____

# The last word

Letters published in 'The Last Word' do not necessarily reflect RSGB policy. 'Last Word' letters may be e-mailed to radcom@rsgb.org.uk Please note that letters submitted for 'The Last Word' may not be acknowledged. The RSGB reserves the right to not publish any letter, with no reason being given. It is a condition of publication that all letters may be edited for grammar, length and / or clarity. Due to the limited space available, please keep letters as short as possible. Additional letters may be published on the RSGB members-only website at www.rsgb.org/membersonly/lastword

## Politics of envy?

From: Steve Craske. G3ZLS

**I suppose it was inevitable that the politics of envy would find its way into amateur radio, but I still find the comments of G4OWY ('The last word', April) to be rather sad and somewhat worrying. I do not possess an HF beam, and my present aerial system could well be described as "bits or wire strung out here and there", but an HF Yagi is something to which I can still aspire. I for one am grateful to *RadCom* for pointing out that any aerial system is subject to corrosion and wear, no matter how grand or humble it may be, and I hope some of your readers might have been prompted to carry out a timely inspection of their own aerial systems as a result.**

**As M0CUS rightly points out, we should all be on our guard against conveying any impression that effective aerials are not a vital part of our hobby. If we allow the idea to be propagated that amateur radio aerials are just some kind of antisocial indulgence for the well off there is a real danger that the politicians will quickly come to view anyone with a short-wave aerial as fair game for discrimination and a soft target for possible revenue-raising measures.**

### Mobile amateur radio

From: Rob Scadden, G3TFM

I was very interested in the letter from G0NMD ('The last word', April) and am glad to see some sense being spoken at last about fist mics not being used when driving. I was appalled to see, when the legislation was being discussed, that the RSGB had got the concession that it would not apply to radio amateurs and fist mics. It should apply to every and all type of mic and mobile phone because the only place your hands should be when driving is on the steering wheel unless you are indicating (something not often done these days) or changing gear. I would not go as far as G0NMD because if you have a hands-free kit it is no different to talking to a passenger. I was astonished by the General Manager's reply to the letter in the March *RadCom* because that basically said "look how good we were in getting this concession; you can still use fist mics". No, if you are driving and you don't have a hands-free mic then don't use the radio - no ifs and no buts. It makes sense. Those non-radio amateurs who have asked about fist mics haven't been able to understand how we could have had any concession to use them.

From: Godfrey Manning, G4GLM

... Referring to 'Legality of Mobile operation' ('The last word', March), please let me remind readers that motor vehicle driving is the only opportunity that most of us have to injure or kill another person. It is also the most likely way in which any of us could be injured or violently killed. There's a 1:200 chance that I, Geoff, or any other reader will end our lives by this cause. In comparison, the threat of those much-celebrated terrorists is insignificant.

Dangerous driving is not an 'accident', it is avoidable and often premeditated. An apple (or radio microphone) doesn't get into a driver's hand by 'accident'. When you are driving, you are driving. That means: not eating, having a meeting, doing office work, just driving. Do you make solder joints while eating or doing office work with the other hand? No, you probably realise that you need both hands and all of your concentration. Why is driving different? Only the consequences are different: careless soldering could burn your finger. A moment's inattention on the road could (and eight times every day does) mean that an innocent third party dies.

The 'apple-eating / driving girl' in Geoff's letter cost the public purse £10k to achieve a conviction. Why? Not because the pursuit of the conviction was wrong, but because, amazingly, she still contested her right to drive dangerously despite being warned otherwise. If the taxpayer doesn't want these sums expended, then that same taxpayer is going to have to learn to stop arguing when told that dangerous behaviour is unacceptable. It's the apple-eating motorist, not the police, who caused the expenditure, so let's please be clear in our minds as to where the blame lies.

Money well spent? If this conviction has prevented some innocent bystander from ending up in a wheelchair for the rest of their lives, it's cheap at the price. And what's the amateur radio context? The enjoyment of our hobby cannot justifiably be extended to the point that it endangers others. Let's give a responsible impression of ourselves and set a good example.

From: Dave Healey, M3CVM

...I feel that Mr Kirby's reply on this topic is very misleading. Mr Darcy enquired if the Northumbria prosecution had any bearing on working mobile for radio amateurs and Mr Kirby replied that "an exemption was placed in the new act which allowed for the operation of mobile radio using a fist mic".

The mobile phone law does not apply to two-way radio equipment under many guises (such as two-way radio equipment and the frequency of amateur radio equipment is also exempt) but as stated on various government websites you could "... still be distracted and prosecuted under other powers ..." In fact, the same powers you could have been prosecuted under before the new mobile phone law came into power.

Nothing has really changed as far as the new mobile phone law is concerned for the radio amateur operator. The case in Northumbria could have been a fist mic instead of an

apple, the need to be a safe driver whilst operating mobile is the priority. Info taken from www.dft.gov.uk/stellent/groups/dft_rdsafety/documents/page/dft_rdsafety_025216.hcsp

### Computer 'QSOs'

From: Edgar Powell, GW1TDW

I feel G Mack, M0CUS ('The last word', April), is burying his head in the sand. *Echolink*, the amateurs' site on the net, is after all another means of communication and that's what amateur working is all about. I've found that radio amateurs who have dropped the hobby are renewing their interest because of this mode and are therefore now swelling our ranks. *Echolink* enables one to talk to any amateur throughout the world, especially when HF conditions are poor and at any time of the day, no QRM or QSB or the dreaded knock on the door from neighbours with "you are interfering with my TV or hi-fi". No bad feelings and peace reigns.

I was on the edge of dropping the hobby myself before another amateur installed this for me on my computer. Before I was passionately fond of 2m and working into my one and only local repeater almost every day, until it was moved to a new location, after which my signal dropped from 59 to just 53. It became impossible to access even at 50 watts into a 6-element Yagi. So my amateur interests gradually waned, until I was put on to *Echolink*. It has made me even more enthusiastic, renewed my interest and made me friends throughout the world. So *Echolink* has helped to save, not kill off, amateur radio, at least for me. Having now made 400 contacts in the short time I have been on it, I also feel that I have become an ambassador for this part of Britain.

From: Philip Brown, G3WUZ

… The letter from M0CUS ('The last word', April) is one with which many of us will heartily agree. The use of a computer may be an art in itself, but it is not amateur radio. I correspond with my relatives in Australia by e-mail, which is a use of my computer but cannot be called DX in any sense. I used to work from my car using 10W to a quarter-wave whip and have worked areas that I have never worked from home. It is all part of what my licence called self training in radio communication.

### Australian 'Travellers' Net'

Alan and Barbara Willson, G3WNS and G8AKU

My wife and I have just returned from an extensive tour around Australia, covering 38,000 miles in a small campervan. I would like to pass on our experience of the Australian Travellers' Net (ATN) to those planning such a trip. I obtained a VK6 call on presentation of my G licence at the Australian Communications Authority offices in Perth. I installed my Yaesu FT-100 and fitted an Outbacker Perth HF mobile aerial on the front 'Roo Bars' of our campervan. As VK6WNS/M I was able to make daily contact with the ATN from all areas, VK1 to 8. The ATN has grown like Topsy over a number of years through a need for those travelling through the sparsely-populated northern and central areas to keep in touch. Despite Telstra the national telephone company and satellite phones there is still need for the ATN and it is very reassuring when hundreds of miles from anywhere that there is a friendly voice, same time, same place on the dial every day of the year.

The main controllers Roy, VK6BO, and Peter, VK6HH, alternate daily operation including Christmas Day from Perth at 1100 (local )on 14116kHz. In addition, Maurie, VK3ZT, is the main back-up from Melbourne with several others around the continent helping from time to time.

The total experience is highly recommended. During our trip we combined visiting family and friends along the way with our interest in Radio Scouting which culminated in being on the VI5JAM team at the Australian National Jamboree with 11,000 Scouts in camp.

### Change of life-style

From: Denis Jackson, GW8OQV / MW0CBC / ex-VP8AQG

I've worked in the electronics industry for more than 25 years, latterly as Head of Marketing with a global IT service company. Offered the choice of a transatlantic relocation or redundancy back in December, I decided instead to 'opt out' of the commercial sector and being a keen bird watcher / bird ringer I've taken the opportunity to start a new career in wildlife conservation. Now working for the RSPB and based at Symonds Yat Rock in the Forest of Dean, my project for the summer is to ensure that the 50,000 people who visit during the season get the best possible views of the nesting Peregrine Falcons which have bred at this site for more than 20 years.

If there are any radio amateurs planning on visiting the area before 29 August I'd love to see you, so please do call in and introduce yourself or better still, make a donation or perhaps even think about joining the RSPB - Europe's largest conservation charity. Symonds Yat Rock is easy to find, being well signposted off the B4432 to the north of Coleford in the Forest of Dean.

### Credit where credit's due (1)

From: Geoff Stainton, G1MQQ

On 15 March I heard M3WTD working VK2HFM. Oh yeah, 10W and a half-size G5RV, "and the rest", I thought. I chipped in with my callsign which M3WTD acknowledged and asked VK2HFM to listen for me at the end of their QSO, which he did. M3WTD stood aside for five minutes whilst we had our QSO. Puzzled at getting little better signal report than M3WTD despite my 100W and multiband vertical antenna I glanced at my power meter. Less than 20W! I'd turned the 'wick' down earlier to join the local 6m natter net and never turned it back up.

Two lessons I think: 1) Just because an M3 is working DX on a tenth of your output don't assume he's running illegal power. It could just be 'overkill' on your part. 2) M3s are not by definition rude CBers by another name who only hog the VHF repeaters (an accusation commonly levelled at G1s of course).

### Credit where credit's due (2)

From: Mark Harper, MW1MDH (Chairman & webmaster, Wrexham ARS)

Given the letters in recent issues of *RadCom* regarding customer service, I feel I should take time out to mention a good example of customer service from within HQ itself - the Amateur Radio Department and in particular Rod Wilkinson, G3TXA. Rod has been responsible for sorting out the NoVs for many of the Wrexham ARS's recent events, including our trip to the Isle of Man. However, given that I have not got the neatest handwriting, I usually find a call from Rod, or someone in the department, on my mobile. Usually it is due to something they can't read - my fault entirely!

However, once the matters have been cleared, and everyone's happy, the NoV is popped in the post there and then. So far, on all recent occasions applying for an NoV, the NoV was on my doorstep the following morning (I suppose the Royal Mail played a part as well!) Given that the process could take around 28 days, to have an NoV on your doorstep in under 48 hours, is some achievement. Well done!

### Pay for your software!

From: Julian Moss, G4ILO

As a software developer, I consider the RSGB's decision to award the 90th Anniversary Award for "significant contribution to the development of amateur radio technology" to the developers of *Ham Radio Deluxe* [reviewed in *RadCom* April 2005 - *Ed*] to be short-sighted. *HRD* is a nicely produced program, to be sure, but the only significant thing about

it is its zero price tag. There's a common belief that radio software should be free, and one often hears the argument that hams should not try to profit from their fellows. This ignores the fact that most of the people who design, build and sell equipment are also licensed amateurs. If engineers and salesmen can earn a living from their hobby, why shouldn't programmers?

Many hams, myself included, write simple programs mainly for their own use and then give them away, but you soon get tired of requests for features you don't personally want, and the endless support e-mails. The only reason most software continues to get developed and supported far beyond its author's needs is because it's his bread and butter. By honouring with an award a program that does nothing new, but pulls the rug from under commercial rivals, the RSGB is giving a slap in the face to commercial software developers.

### Restoring valve equipment

From: Mike Solomons, G8DKW, London Sound

Reading in the April *RadCom* (pp56-57) the often suggested approach of a variac for powering up an old valve unit, may I pass on the 'London Sound' approach? This was first devised over 20 years ago and applies to all valve units that have not been used for two years or more. Assuming the equipment looks OK (no mould, mice or dampness) and fuses are in place, turn on for 30 seconds. Switch off, and about five minutes later, turn on for a minute, and see if it's showing signs of life. Switch off. After another five minutes, turn on for five minutes, and see if it still seems to work. Stick to this limit. Switch off. After another five minutes, try the unit for 10 minutes. Switch off for a further five, then try for 15 minutes. Allow a further five minutes, then run it for 30 minutes. After the final 30-minute run, switch off until the following day, when you can repair any faults that became evident.

When first switched on after a long time, various components will draw excessive current. Electrolytics are not the only culprits - anything that can absorb moisture over a while will have done so, and may malfunction. Obviously, abandon the process if there's a big puff of smoke and a loud bang, or any other serious malfunction. However, the short intervals should allow circuits to function, but not overheat badly. The final switch-off overnight after 30 minutes is as important as the other parts of the process, as even during the 30-minute test, some parts of the circuitry may be still be overheating due to electrolytics being unhappy, or moisture still evaporating.

If unsure, do not take chances. I own a wireless purchased new by my grandfather in 1932, which I recently part restored. The operating HT voltage virtually doubled when I replaced the original metal rectifier. After half an hour's operation, I noticed a strange sound. When I realised what it was I cut the power and left the room: it was a completely sealed original electrolytic capacitor which was literally boiling! If I hadn't noticed this, it would have exploded - with bits of the metal can flying across the room, accompanied by boiling electrolyte. If that had happened, it would probably have killed me, and I would not be writing this now!

### Short doublets

From: Bruce Fleming, KI7VR

I am interested in 160m DXing and was therefore intrigued by the comments of G3UUR in the December *RadCom* (p34). He has "worked around the world with modest power" on a 96ft long inverted-V antenna on 160m. This is indeed impressive, especially as it seems he was also receiving on the transmitting antenna (most 160m DXers listen on special receiving antennas, eg pennants or Beverages). Another fact that surprised me was that the G3UUR antenna resembles the G5RV antenna which was always a poor performer on 160m. My friend Frank, VE6CB, has modelled the G3UUR antenna using NEC. He found that, just as G3UUR states, there is low-angle, vertically-polarized radiation off the ends of this short inverted-V and the gain (at 20 degrees elevation) is only 0.7dB down on that of a full-size half-wave dipole! This is the good news.

However, losses are incurred when matching this short antenna because of its low radiation resistance - the impedance at the centre was 7.0 -- j1587 ohms and, using a 55ft feed line, became 1.4 -- j302 ohms in the shack. This result is somewhat different to G3UUR's measurements, but within error limits in this area of the Smith Chart. The 450 ohm feed line losses calculate to 2.6dB and the loss in a typical matching network was estimated at 2.8 dB - for a total feed system loss of 5.4dB. All together, the short inverted-V would be about 6dB down on a flat top half-wave dipole with the same centre height.

Oh, and the G5RV? Well it turns out that the antenna is OK, but it loses 15dB in 55ft of G5RV-type feed line on 160m. A "G5RV" fed only with 450 ohm line would do much better on 160m - but then it wouldn't be a G5RV.

### Best bent wire

From: G R Brookes, G0SER

In 1948/49 whilst serving in the RAF I attended a nine month WOP/TOP (Teleg) course at Compton Basset. Our Morse instructor was an ex-RAF Wireless Operator whose name was Tommy Tickle (at least that was how we referred to him). To instill in us a sense of rhythm he recommended that we practice sending the expression "Best Bent Wire E S E I". The last four characters of course mean nothing at all, they just round off the rhythm.

I have been using the last four characters, E S E I, for the last two years as a form of signature and as a tribute to Tommy Tickle at the conclusion of my CW QSOs. I have heard other hams sending this combination at the end of their QSOs and in one case hearing them state they didn't know what it meant - now they do!

### Electrical safety

From: Stan Green, G7OUC

I am writing in connection with your article in the March edition of *RadCom* which dealt with the 'Part P' documentation on electrical safety which has been allowed to creep into the Building Regulations. I have always been convinced that practising radio amateurs are far more experienced and knowledgeable on the question of electrical safety than are the run of the mill electricians that will now be permitted to interfere with certain aspects of radio amateur electrical installations. After all, just for starters, they will have no knowledge of things like RF burns off a simple aerial.

I went to the trouble of taking the City & Guilds theoretical and practical exams for the inspection and testing of electrical installations, domestic and industrial, and I also invested in the necessary test equipment costing over £1000, which should place me ahead of the average Part P approved electrician, but does it? When one looks at, say, the latest registration schemes (eg Corgi, Part P) I believe there are loopholes which do not ensure that the engineer you receive has actually undertaken the full training (as I had to for my City & Guilds certificate) providing he works for the right organisation, and I presume there will be apprentices employed. However, the real crux of the matter is the annual registration fees which will no doubt be of financial benefit to the government.

As I see no end to the list of 'good safety ideas' which people can dream up to keep themselves in bureaucratic employment, isn't it time we started to query the necessity of these ideas before they are allowed on to the statute books? ◆

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## MISCELLANEOUS

**-PATENTS - TRADE MARKS - DESIGNS**. Kings Patent Agency (Est 1886).J.B.King (G5TA) Regd. Patent & Trade Mark Attorney, 73 Farringdon Road, London, EC1M 3JQ. 020 7404 7788
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Switch box allowing up to 6 items to connect to one bhi speaker/module.

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1)no reduction
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Output 3A, 13.8V DC, supply 230V AC

**W-5A** £29.95 B
Output 5A, 13.8V DC, supply 230V AC

**W-10AM** £59.95 C
Output 10A, 0-15V DC, supply 230V AC

**W-25AM** £89.95 C
Output 25A, 0-15V DC, Dual meters

**W-30AM** £119.95 C
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A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver. *Dual analogue meters *Over current protection *Large power terminals for rigs *Quick snap connectors for ancillaries

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*Output voltage: 1 - 15V DC *Output current 30A continuous *Built-in cooling fan *Supply 230V AC 50Hz *Size 250 x 150 x 240mm *Weight 9kg

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12-way 13.8V DC (25A,10A,5A,1A)

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*1.6 - 200MHz *0-5W / 0-20W / 0-200W (max power 200W) *SO-239 *50 Ohms *Size 190 x 85 x135mm *Weight 790g *Accessories: DC lead for 12V illumination

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118-530MHz, 0-5, 0-20, 0-200W, SO-239

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1.6-530MHz, 0-5, 0-20, 0-200W, SO-239

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Ideal for HF and VHF operation. It features high power handling up to 1kW * 1.8-160MHz * 5W, 20W, 200W, 1kW * Av or PEP

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*3.5-150MHz **(AV-20)** *Impedance 50 Ohms *Power 0 - 15W / 0 - 150W switched *Measures forward / reflected power + VSWR *Sensitivity 3W for full scale deflection *Accuracy 10% at full scale *Sockets SO-239 *Size 85 x 87 x 95mm *Weight 280g

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144-470MHz, power 0-15W/0-150W switched

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*Frequency Coverage 1.8 to 470MHz *Antenna Analyser *Frequency Counter *SWR & impedance or SWR Bargraph *VSWR Meter *Signal Generator *LCD readout, analogue meters

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1.8-170MHz, Freq Counter, VSWR meter

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### WATSON HUNTER

*10MHz-3GHz *Impedance 50 Ohms *LCD readout *8- digit display *BNC Whip Antenna *Black anodised case *Internal Ni-Cads *AC charger *9V DC 300mA *68 x 80 x 31mm *210g

**£49.95 B**

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1MHz-3GHz, 10 digit readout

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**£32.95 B**

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Port1: HF + 6m Port 2: 2m + 70cm

**DIAMOND MX-610** £54.95 B
Port 1: HF Port 2: 6m + 2m + 70cm

**WATSON WD-25** £24.95 A
Port1:HF+6m+2m Port2:70cm, SO-239 sockets

**WATSON WD-24** £22.95 A
As WD-25, SO-239 and dual PL-259

**WATSON WD-24N** £24.95 A
As WD-25, SO-239, PL-259, N-type

## Diamond Triplexers

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*1.6 - 60MHz 800W PEP Loss 0.15dB *110 - 170MHz 800W PEP Low 0.2dB *300 - 950MHz 500W PEP Low 0.25dB *SO-239 socket & 3 x PL-259 plugs *Cable length 300mm to plug. *65 x 85 x 23mm approx.

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**MX-3000** £56.95 B
Port1:HF+6m+2m Port2:70cm Port3:23cm

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144 - 146MHz 68dB @ 136MHz / 55dB @ 155MHz. Less than 1dB loss. 200W. 30 x 8 x 13cm SO-239

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430 - 440MHz 47dB @ 415MHz / 50dB @ 455MHz. Less than 1dB loss. 200W. 30 x 8 x 19cm N socket

**DCI-145/435-DB** £199.95 B
This has similar performance to above 2m and 70cm individual filters. 200W Duplexer inside. N socket. Designed for single coax dual band operation.

## Antenna Rotators

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| | |
|---|---|
| Vert load: | 400kg |
| Horiz. load | 800kg |
| Torque | 80kg/m |
| Stub size | 48-63mm |
| Weight | 5kg |

**£369.95 C**

Lower mast clamps needed for mast mounting. MC-2 **£59.95**

### Create

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|---|---|---|
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|---|---|---|
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| G-650C | Light/medium c/w 25m cable | £379.00C |
| G-1000C | Med/heavy c/w 25m cable | £449.00C |
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### Hy-Gain

| | | |
|---|---|---|
| CD-45II | Light/med needs 8-core cable | £399.95C |
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| HAM-IVX | Med duty needs 8-core cable | £549.95C |
| HAM-VX | Med duty needs 8-core cable | £929.95C |
| T-2XX | Med/heavy with digital display | £639.95C |
| HDR-300AX | Heavy duty with digital display | £1499.95C |

NOTE: Many of the rotators are for tower mounting and require a lower mast clamp for mounting on a pole.

**Carriage Charges: A=£2.75, B=£6, C=£10**

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