# Variable Power for the Alinco DX-70TH

0801

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# RadCom

This Month's Special Offers See Page 9

£3.95 Vol 77 No 8 ♦ August 2001 The Radio Society of Great Britain Members' Magazine


## Microwave Radio via Oscar 40

## Build a Beacon Repeater DTMF Controller

## Chris Lorek Reviews the Yaesu VR-5000 All-Band Multi-Mode Receiver

# WATERS & STANTON

e-mail: sales@
Enquiries: 01702 20683
Fax: 01702 20584

## FT-817

**160m - 70cms 6W Portable**

**£799.95**
Plus £8.00 Carr.

FT-817 is an incredible design feat by Yaesu, and world reviews agree that there has never been anything like it. It's not expensive either. So why not get out in the fresh air, or put one in the car, and put the fun back into your radio. Check out the exciting AT & ATX portable antennas elsewhere in our add.

**QAMP Single band 20 Watt Linear**


Ideal for the FT-817 but only available as a kit. Models for 80m, 40m, 20m
**£49.95 Case £13.95**

**Z-11 Auto ATU for FT-817**
**160m - 10m £199.95**
Kit £169.95


**OTT-1 One Touch Tune**


Plugs into rear of FT-817and gives immediate carrier for adjusting ATU or checking VSWR
**£59.95**

YAESU

## YAESU FT-1000MP Mk-V

**200W HF All Mode Transceiver**

FREE 3 YEARS WARRANTY

**£2899**
Plus £8.00 Carr.

***The New Industry Standard ..... Would a Serious DXer accept anything else ?***

**In choosing the FT-1000MP Mk V, you will be proud to own a rig with an impressive specification, reputation and lineage. Its outstanding performance and attention to detail, makes this the premier HF transceiver for the 21st Century. This radio is a class leader.**

## YAESU FT-1000MP AC

**160 - 10m All Mode**
**19.4% APR Available**

SAVE!

**£1899**
Plus £8.00 Carr.

***If you are looking for the rig with every feature including dual receive - then look no further!***

**It has stood the test of time and used by the worlds top DXers and DXepeditions. Its excellent receiver combined with its superior transmitted signal makes this a natural choice for the HF enthusiasts.**

*19.4% APR: Deposit £199 and 36 months at £57.77.*

## ICOM IC-746

**160m - 2m All-mode**

**£1395**
Plus £8.00 Carr.

FREE 3 YEARS WARRANTY

**Your chance to purchase one of the most popular "all-band, all-mode" transceiver at a very competitive price. The IC-746 offers 100 Watts output on all bands and has a receiver performance to match. Limited stock at this price.**

*19.4% APR: Deposit £145 and 36 months at £45.13.*

## KENWOOD TM-241E 2m Mobile

SAVE

**£149**
Plus £6.00 Carr.

**£100**

Your chance to purchase this 50W 2m mobile at a fraction of the original price. We have purchased the entire stock. Includes CTCSS tones and can be wide-banded. Limited stocks available.

## KENWOOD TS-2000

**160m - 70cms + 23cms**

FREE 3 YEARS WARRANTY

**£1695**
Plus £8.00 Carr.

The amazing TS-2000 offers coverage from HF to UHF. And you can go right up to 23cms with the optional module Monitor the DX cluster whilst working other DX, optimise your satellite contacts, enjoy the benefit of built-in ATU. It's all there in one very compact box.Colour brochures available on request.

*19.4% APR: Deposit £299 and 36 months at £90.27.*

## ICOM IC-756PRO

**1.8 - 62MHz 100W**

FREE 3 YEARS WARRANTY

**£1895**
Plus £8.00 Carr.

Free desk/mic

**You've read the rave reviews, and you have seen our recommendation on the web site. This radio with its amazing receiver and digital filtering, also includes auto ATU and real-time spectrum scope. A great DX rig.**

*19.4% APR: Deposit £229 and 36 months at £71.13.*

## YAESU FT- 920AF

**HF 160m-6m-100w**

SAVE!

**£1099**
Plus £8.00 Carr.

**Includes full DSP and internal ATU. High tech receiver with dual tuning controls. Uses many of the FT1000 MP features but at a more attractive price. Full break-in on CW and includes a data port for TNC.**

*19.4% APR: Deposit £129 and 36 months at £35.02.*

## ICOM IC-775 DSP 200W HF

**Last of The Many**

SAVE **£900**

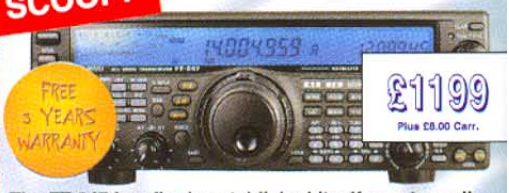
**£2099**
Plus £8.00 Carr.

## YAESU FT-847

**160m - 70cm All Mode**

SAVE!

**SCOOP!**



FREE 3 YEARS WARRANTY

**£1199**
Plus £8.00 Carr.

**The FT-847 has firmly established itself as a true all-band, all-mode transceiver. Loved by the VHF & UHF operators, and superb for satellite operation, it also offers great HF performance. We have sold more than any other dealer, which says a lot about our reputation and our price. Phone for free leaflet today. And remember, our stock is genuine UK, not modified overseas models!!**

*19.4% APR: Deposit £129 and 36 months at £38.63.*

## ICOM IC-706MK2G

**160 - 70cm All Mode**

FREE 3 YEARS WARRANTY

**£999**
Plus £8.00 Carr.

**Still a firm favourite with mobile operators and those who want a compact all-mode, all-band station. Phone for latest leaflet.**

## KENWOOD TS-670DG

**160 - 10m All Mode**

FREE 3 YEARS WARRANTY

**£849**
Plus £8.00 Carr.

**19.4% APR Available**

**Probably the most underestimated transceiver on the market. Don't be fooled by the low price, the TS-570 has one of the best receivers around. One of the best buys if you want top HF performance on a budget.**

*19.4% APR: Deposit £89 and 36 months at £27.43.*

## KENWOOD TS-60S HF 100W

SAVE

**£599**
Plus £8.00 Carr.

Kenwoods TS-5 has stood the te of time. 100W from 160m to 1 makes this a gr value rig. Ideal mobile or portal

WATERS & STANTON

**TH-D7E**

£299
Plus £6.00 Carr.

**TM-D700E**

£449
Plus £8.00 Carr.

JC Jaycee

GLENROTHES SHOP
20 WOODSIDE WAY,
GLENROTHES,
FIFE,
KY7 5DF
01592 756962
Tue - Fri: 9.00am to 4.00pm
Sat: 9.00am to 4.00pm

**IC-2800H**

£419
Plus £7.50 Carr.

LOWE

MATLOCK SHOP
CHESTERFIELD Rd,
MATLOCK,
DERBYSHIRE,
DE4 5LE
01629 582380
Mon - Fri: 9.00am to 5.00pm
Sat: 10.00am to 4.00pm

**VX-1R**

£169
Plus £6.00 Carr.

WATERS & STANTON

**VX-5R**

£269
Plus £6.00 Carr.

HOCKLEY SHOP
22 MAIN Rd,
HOCKLEY,
ESSEX,
SS5 4QS
01702 206835
Mon - Sat: 9.00am to 5.30pm

NEW SCOTTISH PREMISES

GLENROTHES

EDINBURGH

MATLOCK

BIRMINGHAM

HOCKLEY

LONDON

MasterCard VISA

# WATERS & STANTON

Order details on inside page

VISA MasterCard

## Out and About Antennas

Mobile "Drive About" 80m - 6m

### Driveabout Mobiles

Multiband base loaded whip. Choice of powers. 3/8" stud base.

| | |
|---|---|
| Driveabout LP 50W | £69.95 |
| Driveabout HP 200W | £89.95 |
| Centre load adaptor | £t.b.a. |

### Walkabout Portables

Multi & single telescopic whips. Covers 80m to 6m BNC. Ideal for FT-817 and similar QRP radios.

| | |
|---|---|
| **ATX** Walkabout 80 - 6m | £69.95 |
| **AT-80** Single band | £24.95 |
| **AT-40** Single band | £24.95 |
| **AT-20** Single band | £19.95 |
| **AT-17** Single band | £19.95 |
| **AT-15** Single band | £19.95 |
| **AT-12** Single band | £19.95 |
| **AT-10** Single band | £19.95 |

### WMM-3 Data Modem

£69.95
Carr. £6.00

This modem permits a wide range of data to be sent and received. Starterdisc for SSTV, CW, RTTY, Pactor, 1200baud Packet etc.included. The unit is powered from the PC serial socket.

### WSA-1 PSK-31 Adaptor

All you need to connect up to your sound card and run PSK-31. Includes CD software.

£39.95
Carr. £2.00

### SP-170F Mobile Speaker

Fitted with volume control and switched filter, it measures 97 x 67 x 27mm and has a 3m lead with 3.5mm mono plug.

£12.95
Carr. £2.00

### WEP-400 Earpiece

This high quality earpiece fits snugly over the ear and provides extra fidelity over normal models. Fitted with 3.5mm mono plug.

£14.95
Carr. £2.00

### WDC-12

£6.95
Carr. £2.00

Fused DC lead with plug to match current mobiles.

### FBI-8 Almost Invisible!

This beige coloured earpiece is almost invisible at a distance and is left/right adjustable. Fitted with 3.5mm mono plug.

£9.95
Carr. £2.00

### Flexweave Copper Wire

£29.95
Carr. £2.00

It won't tangle and is ideal for wire antennas.

### Handy Adaptors

| | |
|---|---|
| **PL-5/8** | PL-259 to 3/8" socket £3.95 |
| **W-CN3** | SMA to BNC socket £3.95 |

**Connector Set**

Connect annything to anything. 6 mating pcs. to produce "N", BNC, SO-239, PL-259, SMA, Mini UHF, TNC, plugs or sockets

£49.95
Carr. £2.00

### WM-308 Base Mic

The perfect answer for a high quality base microphone. Built-in pre-amp powered from rig or 2 x AA, electronic PTT and FM/SSB response switch. Includes lead with 8-pin plug.

£59.95
Carr. £6.00

### Station Clock WWC-411

This smart wall clock offers 12 or 24 hour display. It also indicates date and temperature in C or F. Size is 26.6cm diameter and it requires 2 x AA cells.

£34.95
Carr. £6.00

### DS-112 Speaker Mic

Models for Yaesu, Kenwood, Icom, Alinco and Motorola.

£16.95
Carr. £2.00

### Frequency Counters

Each counter is supplied with internal Ni-Cad pack, AC charger and whip antenna.

| | | |
|---|---|---|
| Hunter | 10MHz - 3GHz | £59.95 |
| FC-130 | 1MHz - 3GHz | £79.95 |
| S. Hunter | 10Hz - 3GHz | £149.95 |
| S. Searcher | 10MHz - 3GHz | £99.95 |

### W-6MV Deluxe Key

A high quality Morse key made of brass with wood base. Full set of adjustments

£39.95
Carr. £2.00

### NiMH Cells & Chargers

1400mAh AA size cells for high current applications.
**Pack of 4xAA £9.95**
Automatic 4-way AC charger for NiMH and Ni-Cad cells.
**230v AC charger £9.95**

### CS-600 2-way Coax Switch

This well-made 2-way coax switch is ideal for HF, 2m and 70cms. Fitted with SO-239 sockets.it will handle up to 500 Watts RF

£12.95
Carr. £3.00

### WCT-321 Lapel Talker

Earpiece with combined lapel hanging mic and PTT. Models to suit most radios.

£19.95
Carr. £2.00

### Hands-Free Mobile!

Models to suit almost any rig. Head/neck band with adjustable mini-mic boom and transmit/receive switch box.
**Drive safely!**

£44.95
Carr. £2.00

### SPM-102 Speaker Mic

Incredible value! Has 4-way 3.5mm plug for VX-1, VX-5, FT-50 and IQ-7E

£9.95
Carr. £2.00

Limited stocks.

### Torch Radio with Dynamo & Solar Panel

£12.95
Carr. £3.00

This amazing torch incorporates a full FM and AM radio. It can be powerd from 4 x AA cells (extra), the internal dynamo, or from the solar panel on top. And all at an amazing price!

### Avair VSWR Power Meters

Great value and great performance. There's one just right for you.

| | | |
|---|---|---|
| AV-200 | 1.8 - 200MHz 5/20/200/400W | £49.95 |
| AV-400 | 140 - 525MHz 5/20/200/400W | £49.95 |
| AV-600 | 1.8 -525MHz 5/20/200/400W | £59.95 |

*All fitted with SO-239, PEP/RMS readings, 3W for FSD approx. AV-600 has dual sensors.*

### WATSON

**Great value mobile antennas**

| | | |
|---|---|---|
| **W-285** | 2m 5/8th whip with PL-259 base | £14.95 |
| **W-7900** | 2m/70cm 5 & 7.5dB length 1.58m | £32.95 |
| **W-627** | 6m / 2m / 70cm 2 / 4.5 7.2dB length 1.6m | £34.95 |
| **W-770HB** | 2m/70cm whip 3dB / 5.5dB length 1.1m | £24.95 |

All with tiltover bases.

W-285
W-7900
W.627
W-770HB

### Base Co-linears 2m/70cms Fibre Glass

| | | |
|---|---|---|
| W-30 | 3/6dB L1.15m | £39.95 |
| W-50 | 4.5/7.2dB L 1.8m | £49.95 |
| W-300 | 6.5/9dB L3.1m | £59.95 |

These antennas are pretuned and have short base radials

### HF Mobile Whips

All whips are 2-section helical 2.25m.

| | | | |
|---|---|---|---|
| WHF-160 | £49.95 | WHF-17 | £18.95 |
| WHF-80 | £19.95 | WHF-15 | £18.95 |
| WHF-40 | £18.95 | WHF-12 | £18.95 |
| WHF-30 | £18.95 | WHF-10 | £18.95 |
| WHF-20 | £18.95 | | |

### Whip Accessories

| | | |
|---|---|---|
| W-BM1 | Ball mount 3/8" | £19.95 |
| MMT-1 | Impedance matching xfr. | £19.95 |
| 3401 | 3-way mag mount 3/8" | £39.95 |
| SS-504 | Heavy duty spring 3/8" | £6.95 |

### HF Accessories

| | | |
|---|---|---|
| ECW | 50m 16g enamelled copper wire | £12.95 |
| HDCW | 50m hard drawn 16g copper | £14.95 |
| PVC-50 | 50m clear covered multi-strand | £39.95 |
| WAL-55 | 16.76m alloy wire 3.5mm | £7.95 |
| WEW-50 | 50m Lightweight pvc wire | £9.95 |
| WGR-330 | 30m Polyprop 14kg strain | £6.95 |
| WGR-430 | 30m Polyprop 45kg strain | £14.95 |
| WGR-630 | 30m Polyprop 130kg strain | £29.95 |
| Kevlar | 60m 181kg strain (Dacron) | £22.95 |
| Insul-8 | Black ribbed insulator | £0.99 |
| LadderLoc | Centre insulator for 450 Ohm | £12.95 |

### Base Antennas

2m / 70cm fibre glass colinears with stainless steel fittings, 3 short radials and SO-239 sockets. Pre-tuned and all hardware for mast mounting.

**Dual Band 2m/70cms**

| | | |
|---|---|---|
| W-30 | 3/6dB 1.15m long | £39.95 |
| W-50 | 4.5/7.2dB 1.8m long | £49.95 |
| W-300 | 6.5/9dB 3.1m long | £59.95 |

**Triple band 6m/2m/70cms**

| | | |
|---|---|---|
| W-2000 | 0/6/9dB 2.5m long | £69.95 |

### Ladder Line Spacers

*PACK OF 25 MAKE YOUR OWN LADDER LINE*

Product Code WS-2580

£3.50
Carr. £2.00

## SANYO WS-1000 WORLD SPACE DIGITAL RECEIVER

NEW IN STOCK

£149.95
Carr. £6.00

KH-ANT external antenna kit in stock £49.95

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

## SEC-230 SMART TUNER

£359.95
Plus £8.00 Carr.

Covers 1.6 - 30MHz and handles 3 - 200W. Designed for end fed wires, just connect to 12V and feed with RF via coax. Can be mounted outside or at top of mast.

## MICROSET AMPLIFIERS

All FM/SSB with GaAsFET pre-amps and RF switched. 13.8V DC powered.

| | | |
|---|---|---|
| R-25 | 2m 1-4W in / 30W max out | £84.95 B |
| RV-45 | 2m 3-15W in / 45W max out | £95.95 B |
| R-50 | 2m 1-7W in / 50W max out | £89.95 B |
| SR-100 | 2m 4-25W in / 100W out | £169.95 B |
| SR-200 | 2m 10-50w in / 200W max out | £299.95 B |
| VUR-30 | 2m/70cms 1-5W in / 20/30W out | £199.95 B |
| RU-20 | 70cms 3-15W in / 20W max out | £119.95 B |
| RU-45 | 70cms 3-15W in / 45W max out | £165.95 B |
| RU-432-95 | 70cms 6-12W in / 95W max out | £499.95 C |

WCN-3 Adaptor. For all transceivers using SMA connector. Converts to BNC £3.95 A

## ICOM IC-R3 PICTURE THE DIFFERENCE 'Phone

Plus £8.00 Carr.

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

also receives 23 & 13cm amateur FM-TV 900-1300MHz 2250-2450MHz

## CUSHCRAFT HAM RADIO ANTENNAS

MA5B MINI-BEAM

£299
Plus £8.00 Carr.

| | | |
|---|---|---|
| 2 El. on: | 20m, 15m 10m | |
| Gain: | 3.6dB, 4.8dB, 5.3dB | |
| F/B | 10dB, 12dB, 22dB | |
| Dipole: | 17m and 12m (0dB) | |
| Power | 1.2kW (2:1VSWR) | |
| Boom: | 2.2m | |
| Element | 5.2m | |
| Radious | 2.7m | |

| | | |
|---|---|---|
| A3-S | 10-15-20m 8dB 2kW 3 el. 4.27m boom | £389.95 D |
| A-743 | 10/7MHz kit | £129.95 C |
| A4-S | 10-15-20m 9dB 2kW 4 el. 5.84m boom | £469.95 D |
| X7 | 10-15-20m 13dB 2kW 7 el 5.48m boom | £549.95 D |
| X9 | 10-15-20m 14dB 2kW 9 el 8.5m boom | £799.95 D |
| R-6000 | 6 - 20m vert. | £299.95 D |
| R8 | 6-40m vert 8.7m | £399.95 D |
| TEN-3 | 10m 3 el. | £159.95 D |
| D4 | 10-40m 10.92m 2kW rotary dipole | £259.95 D |
| D3 | 10 - 20m 7.86m 2kW rotary dipole | £189.95 D |
| XM240 | 40m 2 el | £569.95 D |
| XM520 | 5el 20m | £629.95 D |
| XM515 | 5 el 15m | £359.95 D |

Phone for catalogue.

## MFJ-269 ANALYSER

160m - 70cm On-site Antenna Analyser.

£299.95
Plus £8.00 Carr.

MFJ-259B 1.8 - 170MHz £229.95

Imagine being able to plug into your antenna or feed line and make meaningful adjustments on site. Or be creative and turn hours into minutes and ideas into antennas! Read what RadCom says and make your own mind up. One of the best investments you will ever make!

## HEIL AUDIO

Appointed by Heil as UK Distributor

| | | |
|---|---|---|
| Proset-4 | H'phone/boom mic | £129.95 |
| Proset-5 | H'phone/boom mic | £129.95 |
| Micro-4 | Lightweight ver. | £99.95 |
| Micro-5 | Lightweight ver. | £99.95 |
| AD-1 | Cables Y. K. or I | £14.95 |
| HM-10-4 | Stick mic | £69.95 |
| HM-10-5 | Stick mic | £69.96 |
| CC-1 | Cables Y. K. or I. | £25.95 |
| HC-4 | Spare insert | £32.95 |
| HC-5 | Spare insertt | £32.95 |

You can convert your mic to Heil by simply pur chasing HC-4 or HC-5 insert.

## MFJ-CUB QRPERS

NEW

The MFJ Cub single band transceivers are small enough to sit in the palm of the hand. They provide up to 2 Watts CW output (variable to mWs), have full break-in and on-air sidetone. Available ready built or as a half kit. The kit version has all the surface mounted components installed. You only need to add the larger items, knobs and case.

Kit £89.95 Built £139.95

Models available for 80m, 40m, 30m, 20m and 15m.

Includes cabinet and controls.

Postage £6.00

## WSMA-460

Extremely low profile antenna with transmit (Tx) capability on three bands as well as useful wideband reception on additional bands. Ideal for use with covert transceivers/scanners.

£12.95
Plus £2.00 Carr.

*4.5 cm long

## THE TOUGHEST JAPANESE ROTATORS

These are tough rotators that weigh almost twice as much as similar priced units and have great turning capacity. Made by Create of Japan, they will handle 4 element HF yagis with ease. Our own Create model has been on our roof for 12 years turning a 4-element HF beam. We wouldn't use anything else!

RC5-1 Standard control box, OK for 4-el Yagis - needs 7-core cable £349.95C

RC5-3 Control box features pre-set or manual control. Otherwise the same as RC5-1 above £449.95 C

MC-2 Lower mast clamps £49.95 B

## LINEAR AMP UK AMPLIFIERS

British made Amplifiers with a Pedigree

Full Range Stocked

| | | |
|---|---|---|
| Challenger | HF 2 x 3CX800 AT 1.5kW out | £2095 D |
| Explorer | HF 2 x 3-500ZG 1.3kW out | £1595 C |
| Hunter | HF 1 x 3-500ZG 750W out | £1195 C |
| Hunter | 6m 1 x 3-500ZG 800W out | £895 C |
| Ranger | HF 4 x 811A 800W out | £895 C |
| Discovery | 2m 1 3CX800 400 - 1KW out | £1395 C |

NEW

## W-40SM 40 AMP SWITCH MODE

£149.95
Plus £6.00 Carr.

Digital display, 3 - 15V rated at 40 Amps continuous. Fully protected and very low noise. Ideal for a wide variety of ham applications. Light weight of 3.5kg and measuring 220 x 110 x 300mm Fixed 13.8V switch.

## KH-WS1 WORLD SPACE DIGITAL RECEIVER

KH-ANT external antenna kit in stock £49.95

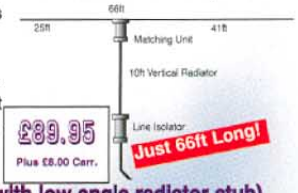
£149.95
Plus £8.00 Carr.

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

## CAROLINA WINDOMS

### CW-80 Special

Just 66ft long yet covers 80m - 10m. It will out perform a G5RV and give lower angle of radiation because of the 10ft vertical section which is forced to radiate. It will handle 1.5kW




£89.95
Plus £8.00 Carr.

Just 66ft Long!

### Other Models (all with low angle radiator stub)

| | | |
|---|---|---|
| CW-160 | 160 - 10m 171ft long | £109.95 |
| CWS-160 | 160 - 10m 133ft long | £99.95 |
| CW-80 | 80 - 10m 133ft long | £84.95 |
| CW-40 | 40 - 10m 66ft long | £79.95 |
| CW-20 | 20 - 10m 34ft long | £77.95 |

Plus £8.00 Carr.

## 80-40-20M MINI DIPOLE

The "80 plus 2" Mini - Dipole was designed by our Director, Peter Waters, G3OJV. Just 52ft long, it uses linear loading - no tuned traps. It can be directly fed without ATU and also operates at 2.5:1 VSWR on 15m. Amazingly efficient, it handles 400 Watts and is balun fed. Erect it as an inverted V and it takes up less than 40ft of space. If you have a small garden, don't miss out on the LF bands anymore. £79.95 Carr. £6.00

## POWER SUPPLIES

SEC-1223

13.8V PSU

£99.95
Plus £8.00 Carr.

23 Amps - 3.2lbs!

Back In Stock

Beware of cheap noisy supplies that have poor filtering & construction!

Lighter than an IC-706 and about the same size! The SEC-1223 switch mode power supply delivers 23 Amps at 13.8V Thermo fan cooled, it measures just 57 x 177 x 190mm. Will power all 100W rigs and can be changed for 115V AC

WATSON

UK'S TOP SELLING POWER SUPPLIES


£89.95
Plus £8.00 Carr.

Watson power supplies guarantee the very best performance and value for money. Tried and tested, they have been submitted for independent laboratory testing for safety and electrical performance.

| | | |
|---|---|---|
| W-3A | 3 Amp fixed supply. | £22.95 B |
| W-5A | 5 Amp fixed supply | £29.95 B |
| W-10AM | 10 Amp variable supply | £59.95 C |
| W-25AM | 25 Amp variable supply | £89.95 C |
| W-30AM | 30 Amp variable supply | £119.95 C |

### COMPACT 10 AMP SWITCH MODE PSU

£49.95
Plus £6.00 Carr.

The W-10SM is small enough to fit in a brief case. Measuring just 230 x 100 x 65mm, it's ideal for 50 Watt mobile's etc. Over voltage and current protection.

# FT-817
# Ham Radio
## FOR THE Great outdoors
*from* Martin Lynch & Sons


**£799.00**

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## Front Cover:

The Yaesu VR-5000 all-band multi-mode receiver is reviewed by Chris Lorek, G4HCL, on page 28 this month.

August 2001

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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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**THIS MONTH:**
**Get Active on Oscar 40 with Simon Lewis's article - see page 18**

## News and Reports



## Technical Features



## Down To Earth - Amateur Radio From The Ground Up



## Reviews



## Regulars

# RSGB Matters


RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

Founded in 1913 incorporated 1926
Limited by guarantee
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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## AGM GOES NORTH OF THE BORDER

Photo: Tommy Menzies, CMHCEC

**Strathclyde Fire Service HQ in Hamilton, venue for the 2001 RSGB AGM.**

FOLLOWING THE OUTSTANDING success of last year's AGM in Harrogate, the RSGB Board has decided to once again take the AGM away from London.

This year the AGM / RSGB Roadshow will be held in Scotland, at the headquarters of the Strathclyde Fire Service in Hamilton. The event, which is scheduled to take place on **Saturday 1 December 2001**, will follow the same successful format as last year. The AGM will take place in the late morning. The afternoon will be taken-up with an open forum and in the evening there will be an amateur radio dinner. The dinner will be held at the Bothwell Bridge Hotel, Bothwell. Further details of the day's activities will be published later in the year.

## PORTABLE OPERATION IN RSGB IOTA CONTEST

THE RSGB HF Contests Committee has announced that although foot and mouth disease has not been entirely eradicated, the outbreak appears to have been reduced to a point at which controlled access to the countryside is acceptable. The Committee is therefore prepared to accept entries in the RSGB IOTA Contest (on **28/29 July**) from UK stations signing /P, provided that the landowner has given his express permission. Any precautions specified by the landowner must be strictly followed. Written permission to use a site should be obtained from the owner in any case.

## THE '£81 LICENCE' - A CLARIFICATION

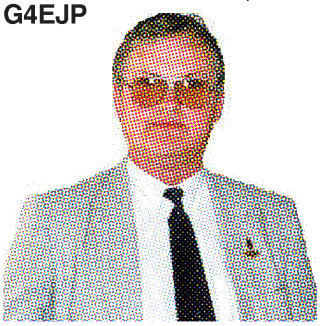
THE ITEM IN RSGB Matters last month ('Board Highlights') perhaps did not make clear the full situation on the £81 licence fee issue. Some months ago, the RSGB was informed that the RA was to undertake a survey of radio spectrum users. This survey, conducted by the economists in the RA, gave the RSGB great concern, and we expressed our concerns to the RA at the time. We received assurances that we should not be concerned.

When the survey results were published, we were as surprised as anyone to see the £81 figure mentioned. The Society immediately wrote to the RA, registering in strong terms our concern about the implications of the report. We were particularly concerned about the coincident timing of a Treasury-led further review of spectrum pricing, and the publication of this RA report. The Society has received assurances from the Agency Chief Executive that the figure of £81 does not represent Agency policy.

Let me reassure all members that the RSGB will continue to resist any attempts by the RA to escalate the costs of an amateur licence.

**Don Beattie, G3BJ, RSGB President**

## PETER SHEPPARD, G4EJP



PETER SHEPPARD, G4EJP, the RSGB Board Member responsible for regional matters and RSGB Regional Manager for North-East England, was involved in a serious road accident on 10 June. There has been some improvement in his condition but as of 11 July Peter remains in hospital and it is thought that it will take some considerable time before he is back to full health.

Jeff Smith, MI0AEX, the RSGB Regional Manager for Northern Ireland, has taken over temporarily Peter Sheppard's responsibility for regional matters on the RSGB Board. Geoff Darby, G7GJU, the Deputy Regional Manager for District 13 - Northumberland, Tyne & Wear, Cleveland and County Durham - has taken over Peter's Regional Manager duties for the North-East Region.

## RRM VACANCY

JOHN LAYTON, G4AAL, has resigned from his position as RSGB Regional Manager for the Midlands with immediate effect, due to the pressure of his work for the Red Cross. The RRM position is now vacant. If you are interested in being considered for this position, please contact in the first instance the RSGB General Manager, Peter Kirby, G0TWW, at RSGB HQ.

## QRP WEB SITE

A WEB PAGE has been set up for those who have bought the *Low Power Scrapbook*. It is at www.rsgb.org/books/extra/low_power_scrapbook.htm

## RSGB LF AWARDS 2001

### Nevada Cup

THE RSGB HF Committee is delighted to announce that the RSGB LF Experimenter's Award is again sponsored by Nevada. It is now time to submit nominations for this award. The Cup will be presented at the LF Forum at the RSGB International HF and IOTA Convention in October.

This annual award is for the most significant contribution, by any RSGB member, towards scientific or engineering development of receiver and / or transmitter design, modulation technique, aerial design or propagation on the 73kHz or 136kHz UK amateur allocations.

The HF Committee will make the award in consultation, as required, with the sponsor Nevada. The submission for the award must come either from a holder of a UK amateur licence or a person who is a member of the RSGB. The sponsor must not be the potential recipient of the award or a close relative. The submission must contain either a full description of relevant work or references to published work. The submission must state which part of the work is original.

The HF Committee reserves the right to nominate candidates alongside or in the absence of any individually-sponsored nominees. The RSGB HF Committee's view is final.

Send nominations: by post to *RadCom*, RSGB, Lambda house, Cranborne Road, Potters Bar EN6 3JE; by fax to: 0870 904 7374, or e-mail to radcom@rsgb.org.uk to arrive by **14 September**.

### Peter Bobeck Awards

AS PART OF the Transatlantic Challenge set up in memory of the late Peter Bobeck, DJ8WL, certificates will be issued for the holders of the 136kHz distance record between 1 October 2000 and 31 March 2001 in the following categories:

(a) Two-way QSO, with callsign and signal report exchange using receiving equipment and communication modes common on the HF bands, eg normal speed CW, PSK31, etc;

(b) Two-way QSO, with callsign and signal report exchange using receiving and / or transmitting equipment where low-information rate techniques are used which require something in excess of 30 minutes to complete a QSO;

(c) A reception report verified by the transmitting amateur station.

The certificates will be presented at the RSGB HF & IOTA Convention, 12 - 14 October 2001. For these and subsequent claims, send details to RSGB HF Awards Manager Fred Handscombe, G4BWP, Sandholm, Bridge End Road, Red Lodge, Bury St Edmunds, Suffolk IP28 8LQ, or e-mail: hf.awards@rsgb.org.uk

The complete rules can be seen at www.g3wkl.freeserve.co.uk/awards/136_trans_challenge.html

## CALL FOR SCOTTISH TROPHIES NOMINATIONS

TWO RSGB TROPHIES ARE awarded annually in Scotland. The first is the Jack Wylie Trophy, awarded to the Scottish club, society or RSGB member thought to have done most for amateur radio in Scotland, in general terms, during the past year. The second is the Jock Kyle Trophy, awarded to the Scottish club, society or RSGB member thought to have done most in Scotland in the field of VHF during the past year. In the case of an award being made to an individual, that person must have been resident in Scotland during the period the award refers to.

Nominations and citations for each of the trophies for 2001 are invited from at least five RSGB members resident in Scotland. They should send them to John Martindale, GM4VPA (QTHR), who is RRM for Region 1, or to Tommy Menzies, GM1GEQ (QTHR), who is RRM for Region 2, to be received by **30 September**.

**A new acquisition on display at RSGB headquarters is a 1947-vintage AM transmitter built into a 6ft-high 19in rack. It is in 'as-new' condition and was presented to the RSGB by the widow of Tony Wall, G3ANJ, who died last year.**

## THIS MONTH'S SPECIAL OFFERS

THIS MONTH there are two special offers available exclusively to RSGB members. *CallSeeker 2001*, containing the complete contents of the *RSGB Yearbook* on a CD-ROM, and the RSGB's acclaimed 'coffee-table book', *Amateur Radio - the first 100 years*, are available at very special prices for the calendar month of August. See the advertisements on pages 11 and 12 for full details.

## PACKET RADIO: ADVERTISEMENTS

THE RA HAS announced that, following consultation with the RSGB, the following form of words can now be added into the Notice of Variation for mailbox SysOps in order to allow mailboxes to send advertisements to other mailboxes:

"The Mailbox Station may additionally, at the discretion of the Licensee and on a voluntary basis without charge, be used to store and forward messages, generated by any licensee, which are in accordance with sub-clause 3(4) of this licence."

SysOps who wish to partake in this experiment are invited to request a new NoV with this clause included. The RSGB Data Communications Committee will simply issue a 'new' NoV. This will help to judge the demand for this facility and at the same time gives the Agency a list of SysOps, which will be consulted, following the end of this experimental period. Both the RA and the RSGB will then be able to discuss whether the experiment can become a permanent arrangement.

SysOps wishing to obtain the 'new' NoV are invited to contact the RSGB DCC Mailbox Co-ordinator, Martin Green, G1DVU, c/o AR Dept, RSGB HQ, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE; e-mail: g1dvu@rsgb.org.uk or fax: 01424 755916.

## AMATEUR RADIO OBSERVATION SERVICE - UPDATE

THE PROGRAMME OF talks on the work of the RSGB Amateur Radio Observation Service (AROS) at radio clubs around the country got under way with a visit by the Co-ordinator to the Sutton and Cheam Radio Society in June. The remainder of this year is now fully booked: the AROS Co-ordinator is trying to conduct two talks per month, around other commitments. To all those clubs that still do not have a date, please be patient - the outstanding list is currently 12 and each will be contacted as soon as possible. The response to this venture has been much greater than anticipated.

On the observation front, AROS reports that there is now a register of 50 volunteer observers, but we could still do with a couple in the South of England, Dorset, Hampshire and Sussex areas.

There is little AROS activity at the moment. Over 30 cases have been opened in the last 12 months but only two now remain open. So to all observers, thanks for 'standing by'.

AROS continues to work closely with the Radiocommunications Agency's Policy Enforcement Unit and at present is helping with one of their investigations.

# RadCom NEWS

## Lodgings Wanted

17-YEAR OLD Bhishma, EA1ETS, has contacted RSGB HQ to ask if any UK radio amateur family would be prepared to offer him lodgings. He has learned English at school but is now looking for work or a place to lodge in England to allow him to improve his English. If you are prepared to help, please contact Bhishma by e-mail at: bhishma_h@hotmail.com

## Lighthouse and Lightship Weekend

THE INTERNATIONAL Lighthouse and Lightship Weekend takes place on **18 / 19 August**. Around 200 stations from 40 countries are expected to participate from lighthouses, lightships or maritime beacons. The full list can be found on the Internet at www.vk2ce.com/illw Further details can be obtained from the organiser, Mike Dalrymple, GM4SUC (QTHR), e-mail: gm4suc@compuserve.com

## Waters & Stanton @ Jaycee

WATERS & STANTON plc has announced the extension of its 'shop within a shop' scheme to Jaycee Electronics at Glenrothes in Fife. Located conveniently close to Edinburgh and Glasgow, the shop will trade as Waters & Stanton @ Jaycee. Peter Waters explained that the Midlands shop at Matlock in Derbyshire, which opened in January, had been so well received, it was decided the premises of Jaycee Electronics was ideally placed to offer the same kind of service to Scotland and the border counties. The shop has been run for many years by Bill Hay, GM6AOJ, and his wife Betty. Peter Waters emphasised that the shop will still remain under the control of Jaycee Electronics Ltd, but will be stocked and supported by Waters and Stanton plc. Waters & Stanton @ Jaycee (tel: 01505 503824) is located at 20 Woodside Way, Glenrothes, Fife KY7 5DF, two minutes from the A92 and with free parking. The shop is open from Tuesday to Friday 9.00am - 5.00pm and Saturday 9.00am - 4.00pm.

## CFA Tests

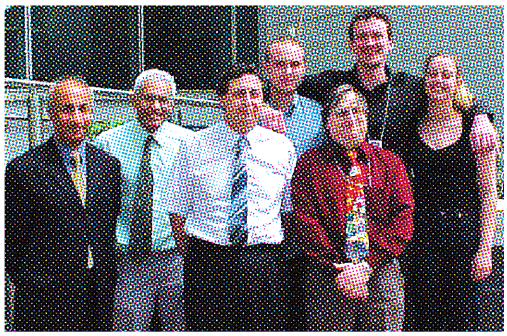
PROFESSIONAL TEST transmissions on a Crossed Field Antenna (CFA), from a site at Shifnal in Shropshire took place in June. News of the test transmissions was released towards the end of last year, but the project was delayed for several months, first by the intense flooding in the area and then because of site access restrictions caused by foot and mouth disease. The test transmissions were on 972kHz mediumwave at a power level of 2kW. Two independent American broadcast engineers carried out field strength and other measurements in an attempt to determine whether or not the controversial CFA design is suitable for use as a medium-wave and long-wave broadcast transmitting antenna.

Jack, G0FQN, operating GB2SCL on 1 May from Ribblehead station, with Bill, G3NQX, in the background talking to the station master. The operation from the platform of a main-line railway station is thought to be a first for an amateur radio special event station. Other operators at GB2SCL were G3UCA, G3RJQ and G1PIE.

● CO-INVENTOR of the CFA antenna, Maurice Hately, GM3HAT, will be lecturing on cross-field loops and delay-line radiators at the WACRAL Conference in Bournemouth (**12 - 14 October**). Further details from Geoff Peterson, G4EZU (QTHR), tel: 01474 533686; e-mail: geoff.peterson@zetnet.co.uk

## RA Staff Pass RAE

SEVEN MEMBERS of the Radiocommunications Agency staff at RA HQ in London attended an RAE course over the last year, sitting their exam in May 2001. All seven are delighted that they passed. The members are Rasik, Paul, Alan, Dave, John, Hayley and Andy. Several members of this group plus others from the RA are now starting a Morse class and some are awaiting a pass in that too before getting their licences. Enquiries for an RAE class for next year have started arriving already.



Left to right: Rasik; Paul; Alan, G0HIQ, the tutor; Alan; Dave; John and Hayley. Andy was away and still did not know he had passed at the time this photograph was taken!

## Adventure Radio

**THE EUROPEAN Adventure Radio Society has proposed a new award scheme called 'Summits on the Air' (SOTA). The idea of the scheme is to encourage lightweight portable operation from UK mountain tops. An exciting format has been devised by John Linford, G3WGV, that has some elements in common with the popular RSGB Islands on the Air awards programme. Comments and suggestions are sought from all amateurs before the scheme is formally launched and these can be registered at the European Adventure Radio Society web site at www.qsl.net/ars-eu/proposed.html**

## Tristan da Cunha Appeal Success

WE REPORTED IN *RadCom* last month, and on GB2RS news bulletins, about the devastating hurricane that hit the tiny British South Atlantic island of Tristan da Cunha at the end of May. The storm caused the total loss of transceivers, tower and antennas at the station of Andy and Lorraine Repetto, ZD9BV and ZD9CO. Colin Topping, GM6HGW, launched an appeal for the donation of surplus amateur radio equipment to allow Andy and Lorraine to get back on the air. We are now delighted to say that Colin reports that this coverage resulted in the donation of a Yaesu FT-102 transceiver, an ATU and a Cushcraft R-6000 vertical. This equipment was provided by Didier, F5OGL; Des, G3LCS, and Sheila, G4PSA, but Colin says that many other e-mail messages were received with offers of equipment and sympathy. Sincere thanks are offered to all who responded so generously with offers of help. The full story of the hurricane and pictures can be found at www.sthelena.se/tristan/disaster/

## Plastics - Safety

WITH REFERENCE to the item in 'TT' July 2001 (pp 63 - 64), it has been pointed out to us that some plastics may release toxic fumes when heated. You are therefore advised *not* to carry out this method of identifying plastics. Another (safer) method is described in 'TT' next month.

## Museum Radio Week

THE PORTHCURNO Museum of Submarine Telegraphy in Cornwall is holding a radio week between **12 and 18 August**. GB2PK will be on the air and during the week there will be a kite flying day with a modern replica of the Marconi's 1910 kite used for live radio transmissions.

## Licence Revoked

THE RA has informed the RSGB that it has now revoked the amateur radio licence of Mr R F Colwell, G4ZEC. No further information was available about this case.

## HF Convention Programme

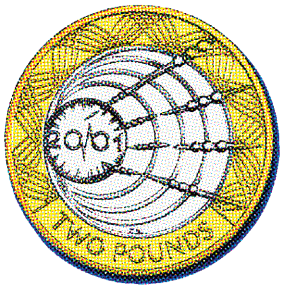
THE PROVISIONAL lecture and presentation programme for this year's RSGB International HF and IOTA Convention is now available on the RSGB's web site at www.rsgb.org/hfc2001 The Convention takes place at Old Windsor in Berkshire on **12, 13 and 14 October**.

## Junk Sale Site

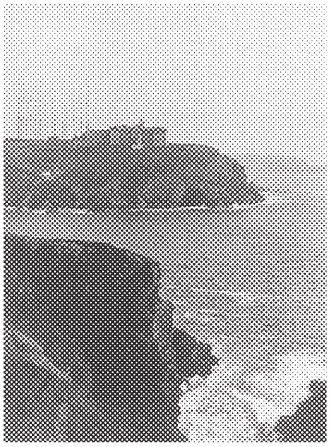
CHRIS RICHMOND, G0TOO, has set up a web site where radio amateurs and SWLs can advertise unwanted items of equipment or advertise for items required. Check: www.junksale.co.uk

*Announcing the Marconi Centenary Contest - 29 December 2001*

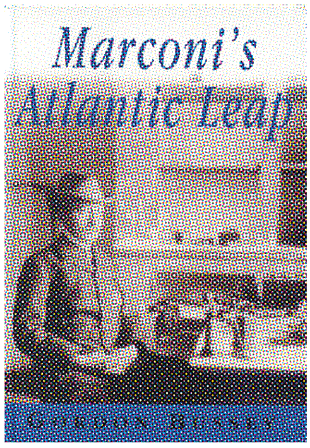
# 51 Prizes to be Won in Marconi Centenary Event




THE MARCONI Centenary Contest (MCC) is an operating event to commemorate the 100th anniversary of the reception by Marconi in Newfoundland of transmissions from Cornwall on 12 December 1901. The contest, on **29 December**, will be between radio amateurs in Canada and the United Kingdom. The MCC will be sponsored by Marconi plc in conjunction with Radio Amateurs of Canada (RAC) and the RSGB. A silver Marconi commemorative £2 coin will be awarded to the UK single operator station making the largest number of contacts with Canadian stations. In addition, 50 copies of *Marconi's Atlantic Leap* by Gordon Bussey (pictured above) will be awarded to other UK stations making the most contacts with Canadian stations in each entry category. The intention is to stimulate as many QSOs as possible between the two countries in a 24-hour period.



**Marconi's site at Poldhu, Cornwall, in 1901 (*Marconi's Atlantic Leap*).**




The Marconi Centenary Contest is to be part of the RAC Winter Contest, which takes place between 0000 and 2400UTC on 29 December. UK participants should work as many Canadian stations as possible during the RAC Winter Contest, using the Winter Contest rules.

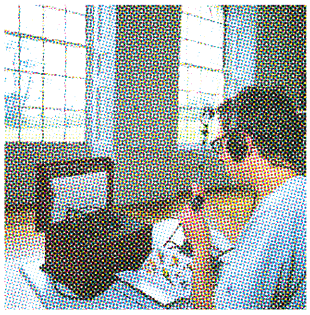
Radio amateurs in Canada and the United Kingdom only will be eligible for the MCC. All participants are required to enter the RAC Winter Contest 2001. The full rules are available at www.rac.ca/CANWIN.htm and will be published in the December 2001 issue of *RadCom*. In brief the key points are:

- The RAC and MCC contests are phone and CW, 160m - 2m. Stations may be worked twice per band, once on phone and once on CW.
- Only QSOs between radio amateurs in Canada and UK will be eligible for the MCC, but non Canada-UK QSOs are valid for the RAC contest. A minimum of 10 Canada-UK QSOs is required for the MCC. MCC entrants must enter the number of Canada-UK QSOs on their cover sheet. Exchange for UK stations is RS(T) + serial number and for Canadians RS(T) + province.
- There are five categories, namely: Single Operator All Band, Single Operator Low Power (100 watts max), Single Operator QRP (5 watts max), Single Operator Single Band and Multi-operator. If entrants use *PacketCluster* they must enter as Multi-operator. All of the UK counts as a single call area.
- The MCC prize books will be distributed to the highest-scoring stations in each category. The number of prizes will be distributed in proportion to the number of UK MCC entries in each category, subject to there being at least one prize per section. This should give everyone a good chance of winning a prize.

This Canada Winter Contest will be a special one. Special VE call prefixes are in the planning stages and UK Marconi special event stations are expected to be active during the contest. *Double circle **29 December 2001** on your calendar now!*

# RadCom NEWS

## Amateur Radio as Art



GB2CV WAS ON the air over the period **20 - 22 July**. It was operating from Compton Verney House Trust near Warwick as part of a performing art project. The performance, in the words of the press release, was to "combine different but very similar cultures of communication, the communication between wild birds and between amateur radio operators". Marcus Coates and members of the Stratford upon Avon Amateur Radio Society asked those contacted to imitate the calls of birds. These were recorded and used in a performance at Compton Verney and on a CD. Sounds intriguing!

## Membership Survey Overseas

DUE TO A late delivery, the July survey form for overseas members has been enclosed with this month's edition. The Society apologises for any inconvenience caused by this delay.

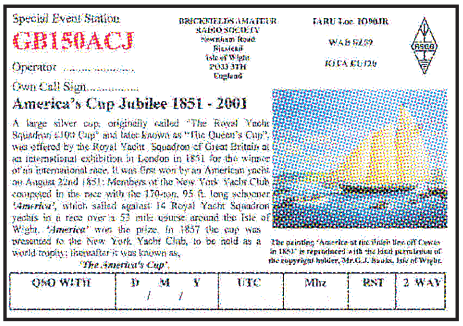
## Equipment Stolen

DO YOU KNOW anyone who acquired a Weltz twin meter VHF/UHF peak reading power meter at the Northern Mobile Rally at Harrogate Ladies' College in April? The unit is of specialist interest mainly for VHF / UHF SSB use. It is quite distinctive, having a remote-reading sense head with N-type connectors on a bracket at the rear of the unit. Valued at over £200.00 when new, it is in immaculate condition. This donated equipment was being sold to raise money for a school radio club project and 'disappeared' from a stand at the rally. If you have any information concerning its whereabouts, or perhaps wish to return it anonymously, please contact Richard Constantine, G3UGF (QTHR), tel: 0870 6087373, e-mail: g3ugf@norcomm.co.uk

## US Ham is Spy

FORMER FBI agent Robert Hanssen, K9QVL, has pleaded guilty to spying for Russia. He struck a plea-bargain with the US government that averts a trial and spares him the possibility of facing the death penalty. Hanssen admitted to 15 counts of espionage and conspiracy to commit espionage. Six other counts were dismissed as part of the plea agreement. The plea agreement calls for Hanssen to face life in prison, although he has not yet been sentenced. (*Bill Pasternak, WA6ITF, 'Newsline'*)

## America's Cup Jubilee


Special Event Station

GB150ACJ

Operator .....

Own Call Sign .....

BRICKFIELDS AMATEUR RADIO SOCIETY, Newnham Road, Binstead, Isle of Wight, PO33 3TH, England

IARU Loc. IO90IR

WAB SZ59

RSGB EU126

**America's Cup Jubilee 1851 - 2001**

A large silver cup, originally called "The Royal Yacht Squadron £100 Cup" and later known as "The Queen's Cup", was offered by the Royal Yacht Squadron of Great Britain at an international exhibition in London in 1851 for the winner of an international race. It was first won by an American yacht on August 22nd 1851. Members of the New York Yacht Club competed in the race with the 170-ton, 95 ft. long schooner 'America', which sailed against 14 Royal Yacht Squadron yachts in a race over a 53 mile course around the Isle of Wight. 'America' won the prize. In 1857 the cup was presented to the New York Yacht Club, to be held as a world trophy; thereafter it was known as, 'The America's Cup'.

The painting 'America' at the finish line off Cowes in 1851' is reproduced with the kind permission of the copyright holder, Mr.G.J. Brooks, Isle of Wight.

| QSO WITH | D / M / Y | UTC | Mhz | RST | 2 WAY |
|---|---|---|---|---|---|

AMATEUR RADIO will be helping to celebrate the 150th anniversary of the America's Cup yacht race, with GB150ACJ being activated by the Brickfields Amateur Radio Society between **4 and 26 August**. In 1851 a group of American businessmen challenged 14 British contenders to a race around the Isle of Wight for a trophy now known as the America's Cup. The jubilee is being celebrated with an international gathering of 196 large yachts, some 200ft long, on the Isle of Wight.

## New EI 10m Beacon

THE OFFICE OF the Director of Telecommunications Regulation in Ireland has recently granted permission for a 10-metre beacon to be established in the Republic of Ireland. The licence is initially for three months on a 'non interference' basis, after which time a permanent licence will be issued if all is satisfactory. Operating on 28.209MHz using A1A CW, the beacon uses the callsign EI0TEN. It is capable of 25 watts output although it will be run initially at 5 watts to a dipole antenna. After about six weeks the beacon will be changed to use four phased quarter-wave verticals beaming north-west, north-east, south-east and south-west. Reception reports are requested by QSL via the bureau to EI4HQ.

## VHF Award News

QUITE A FEW months have produced claims solely for the 50MHz band, so it was no real surprise that June continued the trend. The first claim was from Ken Filmer, G3XPO (CT), who successfully claims a certificate and stickers for 10, 20 and 30 Countries (2-way).

Lee Humphrey, G6BFP(HP), submitted a two-part claim, the first of which gained him a sticker for 40 Countries (2-way) and the second a sticker for 75 Squares.

Congratulations to both recipients. Details of all VHF / UHF Awards can be found in the current *RSGB Yearbook* and are available via the RSGB web site at www.rsgb.org/awards Information may also be obtained on receipt of an A4 SASE from the Awards Manager Tony Jarvis, G6TTL (QTHR).

*Summary of Award Recipients for June*

50MHz: 10Countries (2-way): G3XPO. 20c: G3XPO. 30c: G3XPO. 40c: G6BFP

75Squares: G6BFP.

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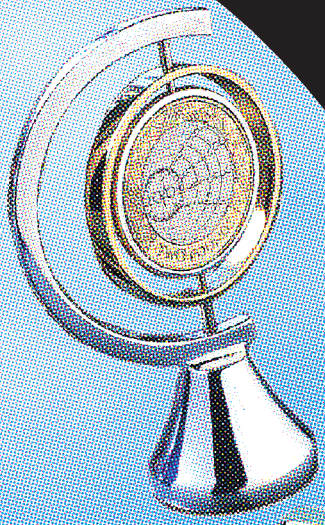
## Executive Spinning Desk Toy

Featuring a 2001 uncirculated £2 coin commemorating the achievements of Guglielmo Marconi.

**£27.85**



## Keyring

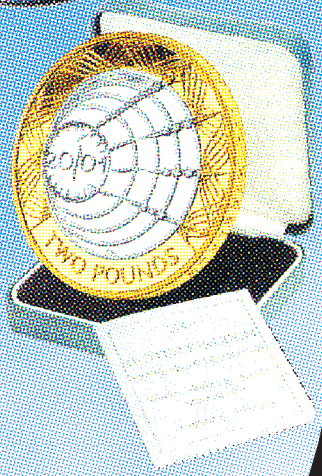
With spinning £2 Marconi coin which sits in a silver plated frame.

**£13.90**

## Marconi £2 coin

Uncirculated sterling silver with outer ring plated with 22 carat gold Limited Edition.

**£26.50**




## Crystal Timepiece

Finely crafted from Edinburgh Crystal, and shaped as an old fashioned radio featuring uncirculated £2 Marconi coin.

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YAESU FT890 .....100W HF TRANSCEIVER.....399
YAESU FT900 .....100W HF MOBILE BASE .....599
YAESU FT920AF .....HF + 6M 100W TRANSCEIVER ..995
YAESU FT1000 .....200W HF TRANSCEIVER.....1299

### VHF/UHF TRANSCEIVERS

ADI AR446 .....70CM 35W FM .....149
ALINCO ALM-203E ..HANDIE 2M .....75
ALINCO DR-430 .....70CMS MOBILE .....169
ALINCO DR 510E ....2M/70CM MOBILE TRANS.....179
ALINCO DR MO6.....10W 6M MOBILE TRANSCEIVER 149
ICOM IC280E .....2M FM MOBILE .....85
ICOM IC2100H .....2M FM MOBILE TRANSCEIVER ..169
ICOM IC2350 .....TWIN BAND MOBILE .....199
ICOM IC2500E .....70/23CM MOBILE TRANSCEIVER 329
KENWOOD TH 79E ..2M/70CM HANDIE TX .....159
KENWOOD TM 231E..2M MOBILE .....139
PALSTAR KH6 .....6M HANDIE TRANSCEIVER .....59
STANDARD C8900 ..2M FM MOBILE .....125
YAESU FT411 .....FM HANDIE - BOXED.....125
YAESU FT736R .....6M/2M/70/23CM BASE.....945
YAESU FT5100 .....2M/70CM MOBILE TRANS.....269
YAESU FTL2014 .....VHF PMR TRANSCEIVER .....75

### AMPLIFIERS

TOKYO HL700 .....SOLID STATE HF AMP.....599
TOKYO HL100B .....100W AMP 21 - 28MHZ .....129
TOKYO SAGRA 600 2M 700WAMP 2X4CX250R.....799

### SCANNERS & RECEIVERS

AOR AR8000 .....HANDHELD SCANNER .....185
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BEARCAT UBC9000XLT BASE SCANNER .....199
COMMTEL COM510..HANDHELD SCANNER.....139
GRUNDIG YB400 ....SHORTWAVE RECEIVER .....79
ICOM ICR72 .....HF RECEIVER .....399
JRC NRD345.....HF RECEIVER .....325
MAYCOM AR108 ....HANDHELD VHF SCANNER .....49
JRC NRD545.....DSP HF RECEIVER .....899
SONY ICF-2001 .....SHORTWAVE RECEIVER .....75
YAESU FRG100.....HF RECEIVER .....279
YUPITERU MVT9000 HANDHELD SCANNER.....245
YUPITERU MVT7000 HANDHELD SCANNER.....129

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AMDAT ADC60 .....FREQ STANDARD CLOCK UNIT ....99
DEWSBURY S/TUTOR..SUPA MORSE TUTOR .....25
FDK KP100.....ELECTRONIC KEYER .....49
KENWOOD DRU3 ....VOICE RECORDER TS870 .....69
KENWOOD SO-2 .....TCXO UNIT TS950 .....65
KENWOOD VS2 .....VOICE BOARD .....40
MFJ 989C.....ANTENNA TUNER.....245
PALOMIR VLF .....VLF CONVERTER .....19
PALSTAR AT-300.....ANTENNA TUNER.....69
SWAN WM6200 .....50-150MHZ PWR/SWR M .....30
TIMEWAVE DSP FILTER 59+.....249
TOKYO HX-240 .....2M - HF TRANSVERTER .....99
TONO Q-550 .....TERMINAL UNIT.....125
YAESU FIF232 C VAN COMPUTER INTERFACE (FT736R) 79

**NEW ITEMS COMING IN DAILY - CALL**

## PALSTAR USA PRODUCTS

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HIGH POWER HF ANTENNA TUNER with CERAMIC ROLLER INDUCTOR for HIGH RELIABILITY

- 1.5kW
- 1.8 - 30MHz
- Built in 4:1 Balun
- 6 position ant switch
- SWR/Power meter

NEVADA PRICE £369

### PALSTAR AT300 ANTENNA TUNER

- 150W
- 1.8 - 30MHz
- 4:1 Balun

NEVADA PRICE ~~£129.95~~ £99

### PALSTAR AT300LCN

- 1.8-30MHz
- 4:1 Balun
- Dummy Load
- 8-way Ant switch
- Peak/Av pwr mtr

Housed in a larger heavy duty cabinet with many improved features - this has to be one of the best antenna tuners on the market!

NEVADA PRICE £139.95

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B1500C...1.5kW 1:1 current Balun .....£35.95
R128C....2kW 28μH ceramic roller ind....£99.95
C240.....240pf 4.5kV var capacitor .....£49.95
C350.....350pf 6.0kV var capacitor .....£69.95

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PORTABLE COMMUNICATIONS RECEIVER

- 100kHz -30MHz
- 100 memories
- Ceramic filters fitted
- 4 pole XTAL filter @ 45MHz
- Analogue S meter

NEVADA PRICE £399.95

## DAIWA ACCESSORIES

### SWR/POWER METERS

CN801H .....1.8 - 200MHZ 2KW.....£109.95
CN801V .....140 - 525MHZ 200W....£119.95
CN101.....1.8 - 150MHZ 1.5KW.....£59.95
CN103.....140 - 525MHZ 200W.....£65.95

PLUS £6 P&P (UK MAINLAND)

### DAIWA TRIPLE BAND ANTENNAS

IDEAL REPLACEMENT ANTENNAS 144/430/1200MHZ

HA45S....SMA Triple band L: 4.5cm ..£12.95
HA45B ...BNC Triple band L: 4.5cm ..£12.95
HA96B ...BNC Triple band L: 9.5cm ..£16.50
Add £2.75 p & p for all antennas (UK MAINLAND)

### COAXIAL ANTENNA SWITCH

CS201A.....0 - 600MHZ 1kW SO239 .£19.95

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THE DX'ERS CHOICE FOR OUTSTANDING AUDIO

**PRO SET 4** For contesters & DX'ers who want to cut through the pile ups. Using hc4 insert. .....£129.95 £5 P&P (UK MAINLAND)

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- New dual band transceiver
- 5W/1W/0.5W output power
- Super wide RX (76-999MHz)
- Includes wide FM mode
- CTCSS enc/dec fitted
- 200 memory channels
- Up to 6 character alpha-tagging

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### DJS 193E

- New design 2m (144-146MHz)
- Up to 5W VHF, 4W UHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted
- 40 memory ch + 1 call ch

NEVADA PRICE £139.95

### DJG5EY

- 2m/70cm handheld TX
- Up to 5W output (switchable hi/lo)
- Wide RX possible (typical 118-999MHz with gaps)
- AM mode for Airband receive
- Listen to both bands at once
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- Real time monitor scope

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LARGE RANGE OF ACCESSORIES AVAILABLE

### DJS 195E

- 2 metre (144-146MHz) handheld
- Easy to use, direct entry keypad
- Wide RX possible (typical 135-173MHz)
- Up to 5W output (0.8W low power)
- 40 memory ch + 1 call ch

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## COMET HIGH QUALITY JAPANESE ANTENNAS

### NEW UHV-6 MULTIBAND MOBILE ANTENNA

*40M - 70cms on ONE ANTENNA!*

40/*20/15/10/6/2/70cm
** 20 optional coil*

A 6/2/70cm Whip that accepts 1, 2 or 3 HF coils for up to 6 Band operation. Simply screw on any combination of HF coils you choose.
Standard PL-259 connector allows easy mounting.
Convenient fold-over hinge for entering garages, parking structures, etc.
£89.00 *P & P £10 (UK MAINLAND)*

### NEW LOW PROFILE 'FLEXIBLE' ANTENNAS for the YAESU FT817

CHF-412
7, 21, 144MHz, 0.74M Long....£59.95
CHF-816
3.5, 28, 50MHz, 0.74M Long...£59.95
*postage & packing £4.75 (UK MAINLAND)*

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SM-A3..SMA connector 144/432/900MHz .....£19.95
SH-95..BNC connector 144/432/1200MHz .....£26.95
RX-5....SMA connector 144/430MHz + wide RX..£26.95
*p & p £3.75 all items above (UK MAINLAND)*

### COMET MOBILE ANTENNA CABLES/MOUNTS

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CK-3M4B ..SO239...Base w/4mtrs coax c/w PL259 plug ...£24.50
MG-4M.....Heavy duty mag mount/4mtrs /PL259.....£29.95
RS-700 .....Gutter Mount fully adjustable .....£17.95
RS-730 .....Hatch/Trunk Mount fully adjustable.....£19.95
TBR.....Hatch/Trunk Mount standard model.....£14.95

### COMET FILTERS

CF-30S.....32MHz low pass filter, 150W CW .....£19.95
CF-30MR ...32MHz Low pass, 1kw PEP.....£37.50
CF-50S.....50MHz low pass filter, 150W CW .....£21.50
CF-50MR ...50MHz low pass, 1kw PEP.....£37.50

### COMET BAND PASS FILTERS

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CF-BPF2 ....144MHz band pass filter, 150W CW .....£42.50

### COMET BASE ANTENNAS

GP-15N.....50, 144, 430MHz, L: 2.4m 300W PEP.....£89.95
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GP-3 .....144/430MHz 4.5/7.2 1.78mtrs 200W .....£59.95
GP-6 .....144/430MHz 6.5/9.0 3.07mtrs 200W .....£89.95
GP-9B .....144/430/1.2GHz 2.94mtrs.....£129.95

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CA-UHV .... 7, (14) 21, 28, 50, 144, 430MHz 1.9 mtrs ....£89.00
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UHV-6.....7, 21, 28, 50, 144, 430 1.9 mtrs .....£89.00
*p & p £9.50 all items above (UK MAINLAND)*

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CHL-285 ...50/144MHz Mobile 300W, length 1.32 mtrs...£24.95
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SB-15 .....50/144/432MHz with w/fold-over .....£46.95
SBB-2 .....Dual band Mobile 144/432 length 0.46 mtrs..£19.95
SBB-4 .....Dual band Mobile 144/432 length 0.92 mtrs..£29.95
SBB-14 .....Tri band Mobile 50/144/432 lth 1.08 mtrs .....£39.95
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### COMET BALUNS

CBL-2000..0.5 - 60MHz 2kW 1:1 .....£27.50
CBL-30.....1.7 - 30MHz 1kW 1:1 .....£21.95

### COMET DUPLEXERS

CF-416A ....144/430MHz SO239/PL/PL.....£27.50
CF-416B ....144/430MHz SO239/PL/'N'.....£28.50
CF-360A ...1.3-30MHz/49-470MHz SO239/PL/PL.....£37.95
CF-530 .....1.3-90MHz/125-470MHz SO239/PL/PL.....£39.95

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## SG-239 HF AUTOTUNER

INTRODUCING THE NEWEST MEMBER OF THE SMARTUNER FAMILY!

*Ideal for FT817, TS50, 1C706*

Power.....1.5 - 200W
Freq.....1.8 - 30MHz
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| FREQ | LOSS PER 10 MTRS |
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| 28MHz | 0.20dB |
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| 100MHz | 0.35dB |
| 400MHz | 0.82dB |

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**NEVADA RG213** — Popular low loss 50 Ω cable

| FREQ | LOSS PER 10 MTRS |
|---|---|
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| 50MHz | 0.45dB |
| 100MHz | 0.67dB |
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| FREQ | LOSS PER 10 MTRS |
|---|---|
| 28MHz | 0.78dB |
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| 100MHz | 1.4dB |
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| FREQ | LOSS PER 10 MTRS |
|---|---|
| 28MHz | 0.69dB |
| 50MHz | 0.86dB |
| 100MHz | 1.28dB |
| 400MHz | 2.82dB |

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50-144-430MHz Wide Band Receiver
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- All modes fitted, LSB, USB, CW, AM & FM
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High class 21W 10 mtr Multimode Transceiver
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25W Multimode 10 mtr Transceiver
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- Repeater shift

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DC to Daylight! HF to 1200MHz*
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- Gain 11-13dBi
- 'N' type connector
- 500W

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50 Amp heavy duty supply with meters. 13.8V DC 40/50 Amp
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- GPS commands
- APRS adaptor avail.
- Includes PK-TERM 99 demo software

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Up to 6W Output • Built in TNC!
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**AMPRO 40** mt ..... £16.95 *(Length 7' approx)*
**AMPRO 80** mt ..... £19.95 *(Length 7' approx)*
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**MR 700** 2 Metre 70 cms (¼ & ⅝ wave) (Length 20") (SO239 fitting) ..... £9.99
**MR 777** 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting) ..... £16.95
**MR 777** 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (SO239 fitting) ..... £18.95
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|---|---|---|
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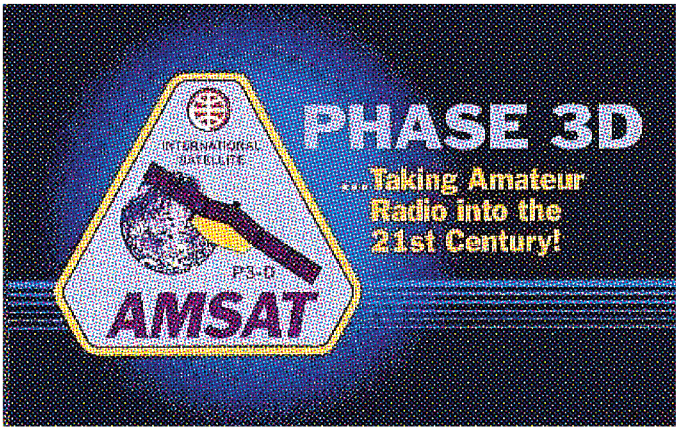
# Microwave Radio via AMSAT Oscar 40

By Simon Lewis, GM4PLM *

ON 27 NOVEMBER last year, an Ariane 5 rocket roared off from French Guiana bound for space. On board it carried a payload of four satellites, one of which is now transforming amateur radio. Officially known as AMSAT Oscar 40 (or AO-40), this new satellite is unlike anything that has been built by radio amateurs before.

Firstly, it is the largest amateur satellite ever built, weighing in at a hefty 650kg. Secondly, it is the most complicated amateur vehicle ever launched, carrying a range of transponders for analogue and digital communications. With the inclusion of this wide range of transponders, along with camera and mailbox experiments, AMSAT Oscar 40 will make the biggest impact on the hobby for several years.




The logo of the Phase 3-D satellite (now Oscar 40).

Currently undergoing testing and commissioning prior to orbit fine tuning using its Arcjet manoeuvring motor, AO-40 is already in a high-altitude elliptical orbit that sees large areas of the globe at apogee, while appearing to move slowly across the sky, allowing amateurs across the world to communicate via its analogue and digital transponders. AO-40 is a complex unit and to describe the satellite, its capabilities and how to operate via it, would take a whole book! This article looks specifically at the microwave aspects of the satellite and what is required to operate through its SHF transponders and what has been achieved with it so far.

I have centred my attention on microwaves for a number of years. They form a very interesting area of our varied hobby. There are numerous reasons for this interest. Microwaves are still not fully understood, and many of the propagation modes are still being investigated, especially as the commercial world is not interested in the 'anomalous' propagation events that we get excited about!

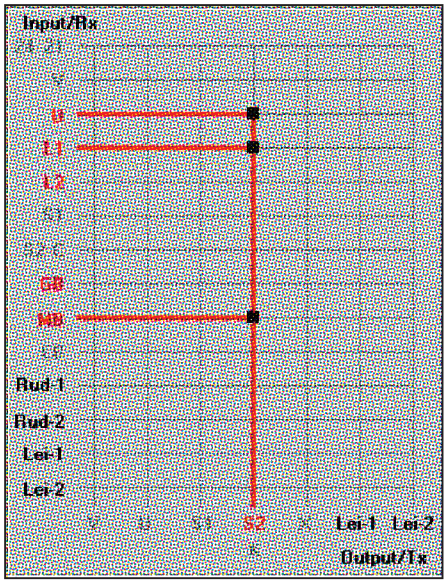



Fig 1: Screenshot of the AO-40 transponder matrix in Mode UL/S.

It is also an area where homebrewing is normal (and, indeed, a necessity for the higher microwave bands), as the 'big three' manufacturers do not currently produce equipment for any band above 1.2GHz. The microwave bands are thus ripe for experimentation, where homebrewing your own equipment and modifying commercial units are common. I was therefore very pleased to hear that AMSAT Oscar 40 would carry a range of microwave transponders, a move I think will transform the world of satellite amateur radio.

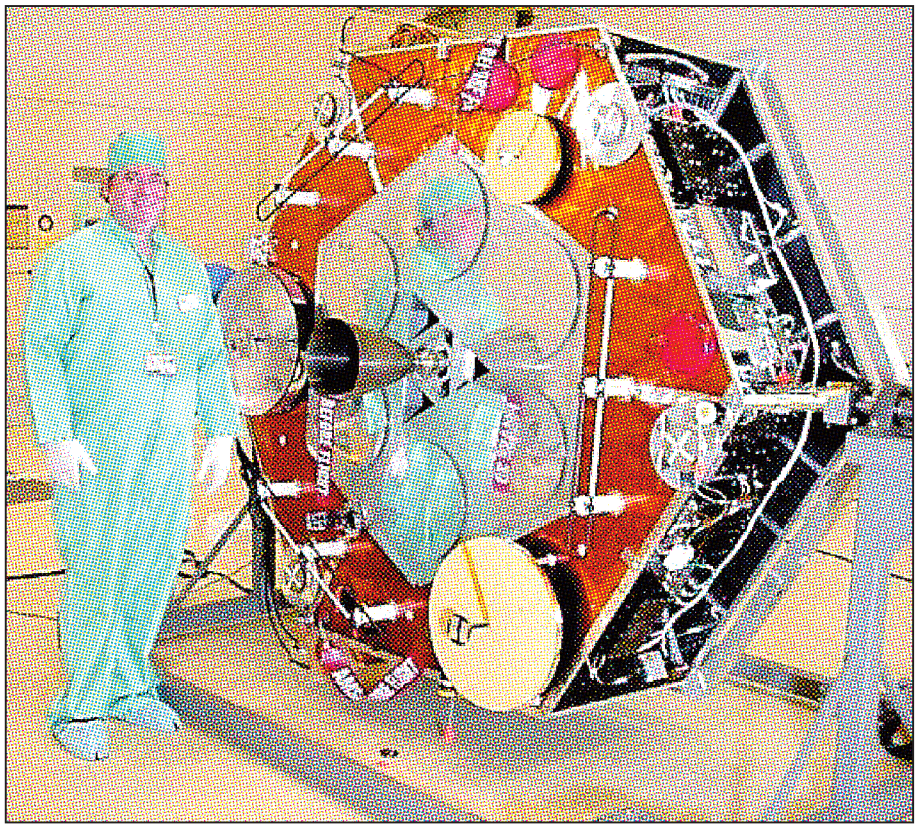
## WHAT ARE MICROWAVES?

IN AMATEUR parlance, the term 'microwave' refers to any frequency above 1GHz, so any band from 1.2GHz and up can be referred to as a 'microwave' band. [Strictly speaking, the lower limit of the microwave band is 3GHz - *Ed.*] As for AO-40, this new satellite is a revolution for the amateur world. For the first time an amateur satellite is carrying a full range of new and exciting equipment allowing global amateur communications using compact ground stations.

The AMSAT Oscar 40 satellite carries a range of transponders covering almost the entire amateur microwave spectrum. The lowest band covered is the 23cm (1269MHz) band and the highest is the 12mm (24GHz) band. There is even an infrared laser experiment on board! The full list of microwave transponders is shown in **Table 1**. The AO-40 transponders operate on a matrix allowing any one transponder to 'talk' to any other. This allows several combinations of transponders (**Fig 1**) to be configured by the ground control stations. The satellite also allows multiple combinations of uplink and downlinks that can be used to produce a variety of operating options.

Each transponder also has a set of beacons transmitting a variety of information. These beacons will primarily transmit 400b/s PSK (Phase Shift Keying), a mode already used on previous AMSAT missions because of its low power requirements and its ability to be copied under weak signal conditions. More importantly, it is a mode for which many ground stations are already equipped. These beacons also transmit at a known power level. That is a vital piece of information because, knowing that the beacon transmits at a set power level, you can make improvements to your station or carry out measurements, and have the ability to measure these changes using the beacon as a known standard. It's a

* Creoch Farm, Ochiltree, Ayrshire, KA18 2QH.



The AO-40 microwave antenna array.

sort of flying signal generator as well as a medium for broadcasting the latest telemetry information and satellite operating news.

The satellite carries standard analogue transponders that will allow SSB/CW signals to be handled, but there is also a variety of digital experiments being flown, including digital cameras, a mailbox system and high-speed digital modulation experiments. The microwave bands make these experiments particularly interesting. The downlinks are strong and the bandwidth of each transponder is wide enough to carry some interesting signals and some unusual experiments. Once AO-40 has been fully commissioned, some very unusual experiments will be carried out using these programmable DSP-driven units.

The satellite is bristling with antennas for the microwave bands and these allow AO-40 to produce excellent signals on the ground as these antennas have compact beam widths and high gains. The photograph above shows the impressive array of microwave antennas on board the satellite, and was taken during the launch campaign at Kourou, French Guiana, home of Ariane's European Spaceport Centre. It is relatively easy to calculate the power required versus antenna gain by using a small spreadsheet program. One such spreadsheet has already been produced for Microsoft *Excel* and is available on the AMSAT website, and shows that very small amounts of uplink power are required, in conjunction with the right downlink receiver and very modest antenna (small dish or Yagi), to achieve success via AO-40.

## MICROWAVES AND SATELLITES

FOR A LONG TIME now, VHF and UHF have become very noisy - in some places, almost unusable. Users of the FM repeaters on the UoSAT satellites will tell you that in some parts of the world they are unworkable due to the variety of ground-based services that illegally (and sometimes legally) use the VHF and UHF satellite sub-bands. In 1992 James Miller, G3RUH, said that Mode S (1.2GHz up - 2.4GHz down) would become the preferred option for Phase 3 satellites and I would support that theory wholeheartedly. Here are some reasons why - and before you die-hard VHF/UHF satellite operators jump off the deep end, think about the points carefully and consider their technical merits.

- 145MHz is noisy. This comes from a variety of sources - electrical, the weather, the sun, sky, other users, computers, satellite TV - the list is almost endless, and it's getting worse! Is this the right band for downlinks?
- Antenna sizes for two metres are big - with planning development problems becoming common and gardens becoming smaller (in Europe anyway!) antenna size has become a major factor in amateur operations. Which would be easier to install and maintain? A 10- or 11-element crossed Yagi for two metres or a 1m SATTV dish on a ground-based tripod?
- Technically, VHF is a poor choice. The typical noise temperature at VHF is approximately 1200K. At 1.2GHz, this is typically 120K, a factor of 10 quieter. Thus for a given satellite radiated power, the ground station antenna could be one-tenth the size. Given that a 60cm dish could have 25dB gain at 2.4GHz and a typical 10-element Yagi approximately 10dB gain, that size decreases even further.
- Given smaller antenna sizes, this also relates to cost and station equipment. No more large antenna arrays, less mechanical engineering, less windage, less maintenance, less neighbourhood impact. It goes on and on!

Demonstrations at the AMSAT-UK colloquium on the UoSAT Oscar-36 low-earth-orbit satellite, showed how suitable 2.4GHz is for satellite downlinks. A quote from Peter Gülzow, DB2OS, summed this up suitably: "The S-band downlink demo given by Freddy, ON6UG, was a real eye-opener for all. It gave a pretty good idea what we can expect to see on Phase 3-D (now AO-40). Freddy said that the dish antenna he demonstrated (a 60cm tripod-mounted parabolic - see the photograph on the next page) was already overkill. Many people understood why Phase 3-D will be the 'Easy-Sat'."

And that demonstration was with a whopping 1 watt down from UO-36 with the antenna off-beam by several degrees. AMSAT Oscar 40 will have nearly 50 watts of 2.4GHz downlink power! Since 1992, technology at microwave frequencies has marched on and access to microwave frequencies is easier now that it has ever been. So what technical reason is there for not using microwaves for satellite up- and down-links?

## BACK TO THE REAL WORLD

SO WHAT KIND of equipment will be needed for AO-40 microwaving? Well, let's look at antennas first. Starting on the lowest band at 23cm, a helical antenna or small dish (60cm - 1m approx) will be required. These are available cheaply commercially, or even cheaper if home-brewed. Many people have 80cm 'Sky' analogue dishes lying about and these have already been proved to work well with a small home-made helical feed (see Howard Long's 60cm Sky dish array referenced on the WWW list). The *ARRL*

## UPLINKS

| Uplink | Digital (MHz) | Analogue Passband (MHz) |
|---|---|---|
| 23cm (1) | 1269.000 - 1269.250 | 1269.250 - 1269.500 |
| 23cm (2) | 1268.075 - 1268.325 | 1268.325 - 1268.575 |
| 13cm (1) | 2400.100 - 2400.350 | 2400.350 - 2400.600 |
| 13cm (2) | 2446.200 - 2446.450 | 2446.450 - 2446.700 |
| 6cm | 5668.300 - 5668.550 | 5668.550 - 5668.800 |

## DOWNLINKS

| Downlink | Digital (MHz) | Analog Passband (MHz) |
|---|---|---|
| 13cm (1) | 2400.650 - 2400.950 | 2400.225 - 2400.475 |
| 13cm (2) | 2401.650 - 2401.950 | 2401.225 - 2401.475 |
| 3cm | 10451.450 - 10451.750 | 10451.025 -10451.275 |
| 1.5cm | 24048.450 - 24048.750 | 24048.025 - 24048.275 |

## TELEMETRY BEACONS

| Beacon | General Beacon [GB] (MHz) | Middle Beacon [MB] (MHz) | Engineering Beacon [EB] (MHz) |
|---|---|---|---|
| 13cm (1) | 2400.188 | 2400.338 | 2400.588 |
| 13cm (2) | 2401.173 | 2401.323 | 2401.573 |
| 3cm | 10450.975 | 10451.125 | 10451.375 |
| 1.5cm | 24047.835 | 24048.035 | 24048.285 |

**Table 1: Official AMSAT Oscar 40 Microwave Frequencies.**
**Notes: [a] Beacon frequencies have been measured prior to launch, but may change due to ageing, vibration, etc; the 13cm (2) beacon has already been measured in orbit; [b] all receivers are inverting; [c] telemetry beacons are for command purposes and are modulated at 400b/s BPSK, AMSAT format. [d] The Middle Beacon can be switched between IHU-1 and IHU-2 telemetry sources.**

**Fig 3: Freddy, ON6UG, and his 60cm 2.4GHz downlink antenna.**

*Handbook* [1] and *Radio Communication Handbook* [2] contain the design details for suitable antennas and the Internet is now a veritable library of information, as amateurs publish their station details for others to copy.

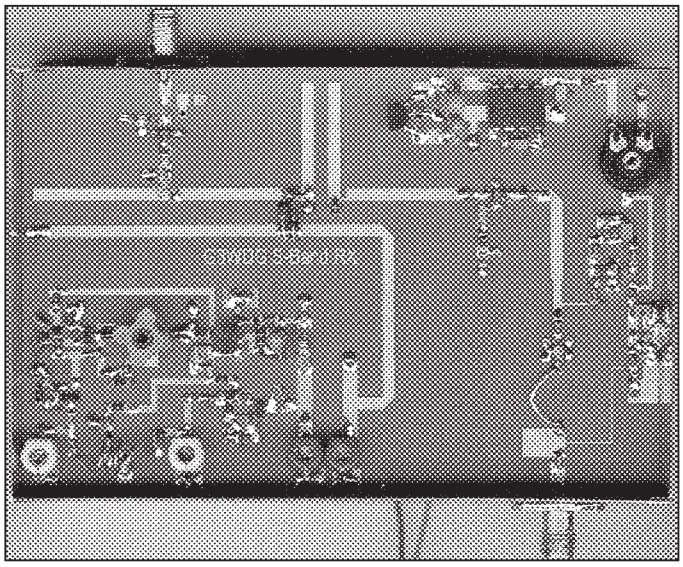
For the higher bands, small parabolic dishes will be the norm although, for 2.3GHz, small helical antennas are still perfectly feasible. The dishes do not need to be anything special, and many SATTV suppliers sell a range of dishes that will be perfect for the job. An offset 80cm Sky dish feed is easy to make using a few turns of copper wire mounted on an N-type connector at the focal point of the dish. There is plenty of design information available to make your own. The beauty of such small dishes and simple feeds is that the beamwidth of the dish will still be quite wide (5 - 10°) and thus will be much easier to point at AO-40. More expense, I hear you groan! Not really. There is a plethora of ex-SATTV parts available at rallies and boot sales and a SATTV screw jack positioner will be perfect to use as an elevator, and even better if you still have the original control unit! Of course AO-40 also moves quite slowly at the highest part of its orbit (apogee) and the age-old 'armstrong' method of turning the antenna is still viable!

Feeding the antenna is worthy of note. Microwave power is expensive to generate and you don't want to lose that power in poor cables and connectors. Use only the correct frequency-rated connectors (N and SMA types above 1GHz); interconnecting cables and feeders should be the best possible rigid foam coax, or hardline coaxial cable if you can get your hands on some. Here is another advantage of using microwaves. The dish or Yagi and positioner do not need to be mounted high, as long as they have a clear view of the sky. Mounted on the apex of a roof or on a small tripod on a garage or conservatory flat roof will be fine. The closer to the shack the better, keeping feeder lengths as short as possible. In my station the tripod is mounted on the lawn outside the shack window - a distance of only 12 feet.

RF equipment for AO-40 is readily obtainable and many people own a 2-metre multimode transceiver in the shack already. This is an excellent starting point, as most microwave transverter designs use 2m as the driving band. High power is not necessary for the transverter, most require just a couple of watts input. 23cm modules are available for older radios such as the Kenwood TS-790 and Yaesu FT-736R. More modern radios such as the Icom IC-821 and Yaesu FT-847 are also suitable, having the built-in satellite functions required for AO-40. New radios such as the TS-2000 and IC-910 will both be 'satellite ready' and have 23cm options available. Of course, two separate 2-metre multimodes driving individual transverters are perfectly acceptable, and there are several ready-built 23cm designs available from commercial sources. The RSGB Microwave Component Service, SSB Electronics, Down East Microwave and DB6NT all produce suitable equipment. [See list of web sites on p22 - *Ed.*]

Life gets a little more complicated on the higher bands, and we have to overcome what is known as 'Microphobia' - an irrational fear of constructing anything for the microwave bands. Outlining how amateur microwave equipment is constructed

could be the subject of a completely separate article. Again, the web is an excellent resource for such information. It really is quite simple and the rule of thumb is that if you can follow a set of basic construction rules, place components exactly as the designer originally intended on a PCB as shown in the documentation, and can learn to solder surface-mount components using a small soldering iron (just another technique), you really *can* construct microwave equipment. I managed to construct a 10GHz transverter that worked first time, having never constructed a piece of microwave equipment before. I can do it, many others have done the same, and you can do it too - honest, trust me! It's quite simple and not rocket science (excuse the pun), and within most amateurs' capability.



The new G3WDG 2.4GHz downconverter.

Modern microwave units usually have very low component counts. A Mode-S downconverter designed by Charlie Suckling, G3WDG, and available as a kit from the Microwave Components Service of the Radio Society of Great Britain, is shown in the photograph.

Of course, radio amateurs have always practised the art of using ex-commercial equipment for the most outlandish uses in amateur radio, and operations on AO-40 are no different. Many amateurs are operational on AO-40 using modified SATTV downconverters, and quite successfully, too. There are several of these (which can be modified for amateur satellite use) available on the market. One of these models simply requires a crystal change, others require a little more surgery but, again, all is well documented and easy to perform, if you follow the simple instructions.

A variety of kits and modules for the higher bands is available from a multitude of sources and many of these kits are easily constructed following the basic microwave construction rules. Many of these kits have been in the planning stages for some time, awaiting the day that AO-40 flew (see the URLs at the end for further details).

## THE GROUND STATION

SO HOW DOES a station fit together? **Fig 2** shows the basic block diagram of a simple station for use on AO-40. Most stations simply require either a multiband multimode transceiver, such as an FT-847/FT-736/TS-790 and transverters, or rely on separate dedicated 2m and 70cm multimodes and dedicated transverters for uplinks/downlinks. The transponder matrix in Fig 1 indicates that any uplink could be connected to any downlink, and so it is easy to come up with a few basic building blocks that can be mixed and matched to provide capability for a variety of transponder modes.

One bit of advice. The radios do *not* need to be the latest and greatest. Older radios like the FT-290 and FT-790 are quite adequate for use and will save you a small fortune compared with the latest all-singing-and-dancing multiband multimodes. I even use an old Belcom Liner 2 as a downlink receiver using a modified SATTV converter fed by a 1m SATTV dish fished out of a skip and a home-made dish feed using a square of PCB material that was sitting under my bench and a length of H100 coax centre-wound round a socket-set bit to form the helical part of the feed. Total cost £60 including the radio. Now that hardly breaks the bank and I can hear the satellite loud and clear.

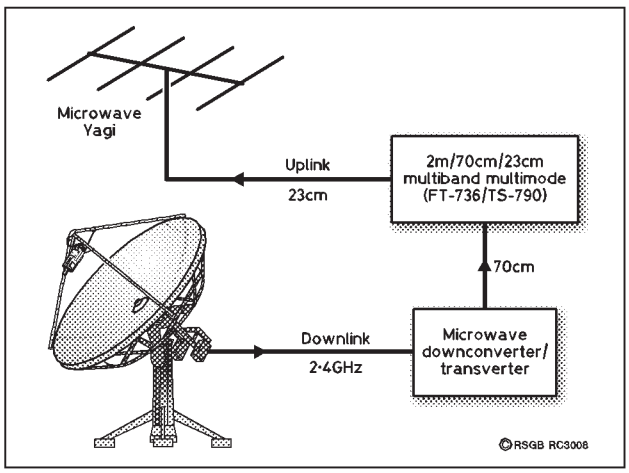



Fig 2: Block diagram of a typical AO-40 ground station.

Operating AMSAT Oscar 40 is a joy using microwaves. Initial test signals from the 2.4GHz beacon and transponder are being received loud and crystal clear with little noise received from other sources. The microwave bands are relatively quiet at these high frequencies and AO-40 downlinks will not suffer from the terrestrial interference suffered by VHF and UHF systems. As antenna beamwidths are relatively narrow compared with VHF/UHF Yagis, stations using just a few watts will be the norm and a multi-transponder ground station will be neat, compact and very efficient. The ability to work stations world-wide with just a small dish antenna and miniature helical antennas on the lawn or garage roof will be very pleasing and will open the door to many amateurs who may previously have been limited in their operations.

I predict that there will be a surge of satellite activity as many amateurs take advantage of these features and the ability to operate long-range communications from such compact antenna systems. Certainly the recent commissioning tests have been very successful.

The interest in AO-40 has been phenomenal; the AMSAT-BB Internet mail reflector has been very busy with news and information about the new satellite. The Internet has been a huge help to the AMSAT ground stations as well. The ability to communicate video and voice via the Internet has been of great help; some stations have set up telemetry servers broadcasting the audio and 400b/s PSK telemetry decoded from their satellite modems using IP servers that allow users from anywhere in the globe to 'see' the satellite even when not in view. In the past, ground stations relied on telephones for communications; now multimedia global communications are possible via the Internet; these have revolutionised the flow of information about the new satellite. I even watched the live launch of the new satellite via an Internet TV broadcast!

The microwave bands will also be valuable when using the high-speed data projects such as RUDAK (digital mailbox) and SCOPE (digital camera project). It is almost certain that the mi-

crowave downlinks will be essential to make the most of these projects.

## GETTING STARTED

YOU'VE STARTED already by reading this article! In the box below you will find links to further reading, details of where to purchase equipment, and where to find more information on the Internet to assist you in your construction of an AMSAT Oscar 40 microwave ground station. The second stage is to assess what equipment you already have spare and to decide whether this equipment is to be permanently allocated to satellite communications. Once you have decided what bands to use and what equipment you can spare, you can then make a judgment on what equipment you will need to buy or construct. One word of advice, however. Don't be afraid to look at SATTV equipment for use within your station. Surplus satellite dishes and positioners are all suitable, in fact highly desirable. If you can obtain them, you will save hundreds of pounds compared with new, dedicated amateur items that will do the same job. Antennas, dish feeds and Yagis are all easily constructed using simple hand tools, if you do not wish to buy new. Where you *should* spend money is in feeder or RF equipment, providing an excellent basis from which to work.

Of course, you do not need a full microwave station to hear AMSAT Oscar 40. Try modifying a SATTV downconverter (available for less than £50) and connecting it to your two-metre radio using a simple hand-made Yagi and, if the satellite is in view, you should hear a sort of buzzing sound, interspaced with data-sounding tones. This is the 400b/s PSK beacon, transmitting a lot more information than you could imagine. That won't be the only buzz you get either!

So far, photos from the on-board cameras have downlinked pictures of the earth from 35,000km distance. An on-board microphone recorded the launch sound and all these data have been downloaded using this link. Apart from the image and sound data, the beacon transmits telemetry data from a variety of sources on board the satellite and also sends out the latest operational information on the satellite. If you want to know what's happening on AO-40, this is the place to be.

On previous satellites, the 400b/s signal has required a hardware decoder to produce useful data and, indeed, you can still buy a PCB for a hardware decoder, but with the advent of modern PCs, a number of sound-card demodulators is available. Simply plug the audio from your radio into the sound card, run the program and watch the data fly by. Isn't modern technology wonderful?

A very useful thing to know is where the satellite is. After all, if you cannot 'see' it, you won't be able to hear it or work through it. There are plenty of shareware tracking software packages available and you can download some of these from the AMSAT website. Apologies for keeping referring to the Internet but, if you're not already on it, then you really need to be! It's an amazing reference library and provides communication tools that support amateur radio brilliantly. You really cannot afford not to have access to it, and *not* just for amateur satellite operating.

WWW.

| | |
|---|---|
| AMSAT-UK | www.amsat.org |
| AMSAT-DL | www.amsat-dl.org |
| RSGB Microwave Committee Components | |
| Service (Mode S Downconverter) | www.g3wdg.free-online.co.uk |
| DB6NT | www.db6nt.com |
| Down East Microwave | www.downeastmicrowave.com |
| SSB Electronic USA | www.ssbusa.com |
| Online Catalogue for RSGB MCCS | www.emn.org.uk/mcs.htm |
| Sky 60cm dish for Mode S | www.g6lvb.com |

## AO-40 CURRENT STATUS

AO-40 WAS LAUNCHED on 27 November 2000. Unfortunately, the satellite went silent after the initial boost to a higher orbit was carried out, and then was not heard for some time. An amazing recovery programme was then set in motion and the satellite was re-acquired on 2.4GHz, well away from its initial 2m and 70cm intended downlinks. Further investigation revealed that an incident had occurred that silenced the downlinks on VHF and UHF shortly after the preparations to fire the 400N liquid-fuelled kick motor were made. Tests showed that the 70cm and 1.2GHz command receiver and transponder uplink receivers were working well and that the 2.3GHz downlink was working successfully. Even with this basic configuration, the satellite was capable of being a huge success.

Preparations for a limited period of transponder use were made at the beginning of May and the first period of operation proved a complete success. Tests on the other microwave uplinks and downlinks are continuing as this article is written and it is still very early to say in black and white what is available or lost. One thing that AO-40 has shown is that it is a very resilient satellite and, where perhaps a less-complicated mission would have failed, this satellite is still capable of carrying out a very successful mission and one which still holds many exciting surprises in store. Many rumours and untruths are circulating as to its current status and I would recommend that you accept *only* what is published on the AMSAT web sites. These carry the latest information and status of the satellite and represent the official word. Don't rely on rumour.

AO-40's microwave transponders offer an excellent way of becoming involved in amateur satellite operations, and the UK is already seeing an upsurge in activity as people gear-up for AO-40. Many of the UK microwave fraternity were among the first heard when the satellite opened its transponders for the first commissioning tests. This new satellite offers amateurs the perfect opportunity to become involved in one of the most interesting aspects of amateur radio and one which surely changed the face of amateur satellite operations from the moment it was launched. Hopefully, some time later this year when the satellite becomes fully operational, you should get the opportunity to become part of that history. Be brave and listen to the technical reasons for using microwaves. The future is here and it is a bright one in the microwave spectrum.

## *STOP PRESS*

THE LATEST information available at the time of writing follows.

Preparations for cold-firing the Arcjet motor are underway and the satellite is being magnetorqued into the required position. Tests on the 70 and 23cm uplinks and 13cm downlink proved highly successful and the transponder was opened for a few weeks, with many stations active and making live QSOs through the vehicle. The transponder has now been disabled (due to poor antenna angles in relation to earth) until the Arcjet firing and orbital fine tuning have taken place. The digital communications experiment has been active and is under test. Live tests on the 5.7GHz uplink, 10 and 24GHz downlinks have been less successful, but it is still early days and problems may simply be due to bad antenna angles. Further tests are planned. ♦

### FURTHER READING

[1] *ARRL Handbook*
[2] RSGB *Radio Communication Handbook*
Both available from the RSGB Shop.

# Variable Power for the Alinco DX-70TH

by Steve White, G3ZVW*

THE ALINCO DX-70TH is a miniature HF - 6m transceiver. It has a control that permits the user to switch between full power (100 watts output) and low power, which, as standard, is adjusted so that the transceiver delivers approximately 10 watts. The low-power setting is adjustable by means of a sub-miniature potentiometer inside the transceiver, but I felt that it would be useful if it could be equipped with an external control to vary the power continuously. The main criterion I placed upon the exercise was that I didn't want to modify the transceiver in order to do it! The way to achieve this is to apply a variable DC voltage to the ALC socket on the back of the rig.

## ALC CHARACTERISTIC

THE ALINCO manual states "The ALC input voltage must be from 0 to -3V DC". I decided to put this statement to the test, so connected the transceiver to a dummy load, hooked up a 4.5V battery through a potentiometer to the ALC socket, and measured the output power as I cranked the pot back and forth.

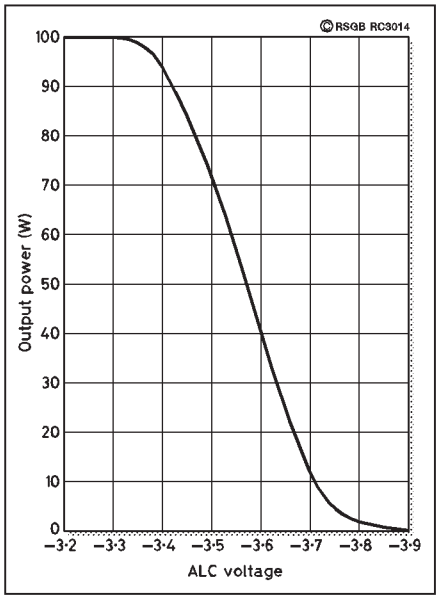



**Fig 1: ALC characteristic of the Alinco DX-70TH. Half power is achieved by applying approximately -3.57V to the transceiver's ALC socket.**

A graph of the results can be seen in **Fig 1**. It shows that, up to about -3.3V, the transceiver delivers its full output power. At -3.4V the power is just starting to drop. Thereafter the power falls away quite rapidly, the half power mark being at about -3.57V. By the time you get to -3.9V, less than 1 watt emerges at the output.

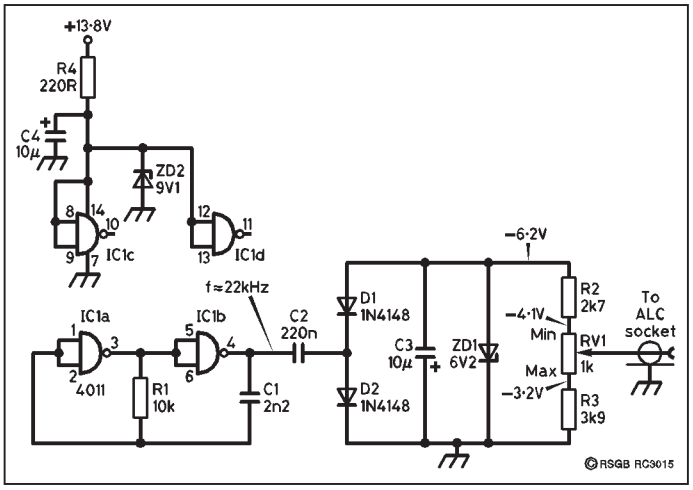



**Fig 2: The power controller uses a cheap CMOS logic chip as an oscillator. Followed by a rectifier, smoothing and stabilising, it produces the negative voltage needed to operate the transceiver's ALC circuitry.**

Clearly the requirement was for a control with about -3.2V on the top end and about -4.0V on the bottom, but it occurred to me that the transceiver might represent a significant load and pull the voltage down. I measured the current drawn as just 3µA - an insignificant amount.

## NEGATIVE FROM POSITIVE

THE SIGNIFICANT thing about ALC voltage is that it is negative with respect to ground, whereas the transceiver runs from +13.8V. Of course it would be possible to employ a separate mains power pack to provide a smooth, stable, negative supply; you could even use a battery; but I wanted to avoid both of these approaches. What I decided instead was to use the positive supply that was already being fed to the transceiver to generate a negative supply.

This may sound complicated, but all you need to generate a negative voltage from a positive voltage is an oscillator, capacitively coupled to a rectifier... simple as that.

## INEXPENSIVE APPROACH

THERE ARE NUMEROUS circuits for oscillators. I decided to make one (**Fig 2**) based on an integrated circuit that costs no more than a few pence. It employs two of the gates in a 4011 CMOS quad NAND gate as an oscillator - very much a standard circuit. The values of R1 and C1 were chosen so that the frequency of oscillation was over 20kHz, so there would be no chance of ripple being heard if any got through to the output. C2 capacitively couples the oscillator to the rectifier part of the circuit, the oscillator's power supply being stabilised by ZD2 and R4.

Connected with the cathodes of the diodes facing ground, D1 and D2 form a half wave voltage doubler. The rectified voltage is smoothed by C3 and limited to -6.2V by ZD1.

The final part of the circuit is a potential divider, the object of the exercise being to place -3.2V on one end of RV1 and -4.0V on the other. The output is taken from the wiper to a phono plug that goes to the ALC socket of the transceiver.

One thing to note about the circuit is that the inputs of the unused gates (IC1c and ID1d) are connected to +9V. It is good practice to tie the unused inputs of logic gates to a supply rail (either rail would be OK in this instance), as it prevents the possibility of them floating to a point somewhere between and causing instability.

## CONSTRUCTION

THERE SEEMED little point in designing a printed circuit board for a project with so

* 31 Amberley Road, Palmers Green, London N13 4BH.

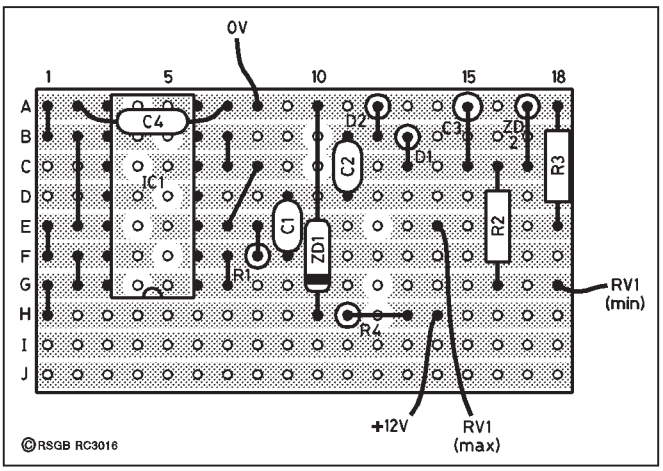
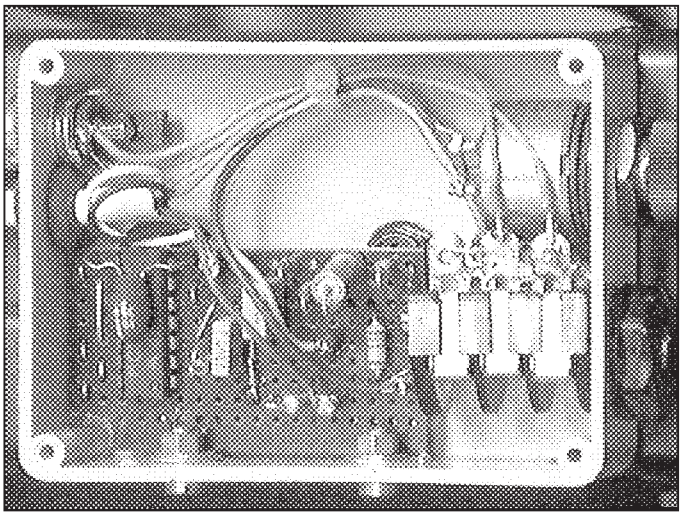



Fig 3: Veroboard layout of the power controller.



Inside the power controller. The two jack sockets are for more convenient connection of heaphones and extension speaker.

few components, so I elected to use Veroboard. The layout is shown in **Fig 3** and the completed project in the photo above right. The tracks should be cut in the 12 places shown. The important thing to remember when placing components is the orientation of C3, C4, and all the semiconductors.

If you have the special plug for the accessory socket located at the top right corner of the back of the DX-70TH, good. Otherwise, take two 25mm lengths of 2.5mm 'twin and earth' mains cable, strip back about 10mm of the sleeving from one end and 5mm from the other, solder the power leads from the power controller to them, cover the soldered joints with rubber sleeves or self-amalgamating tape, then insert them into the accessory socket as shown in **Fig 4**. The photo below right shows this. You'll find these makeshift pins a snug fit in the socket, but they are not so large as to damage it and you can easily pull them out if required.

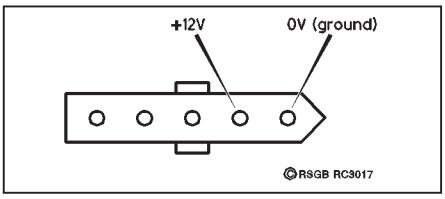


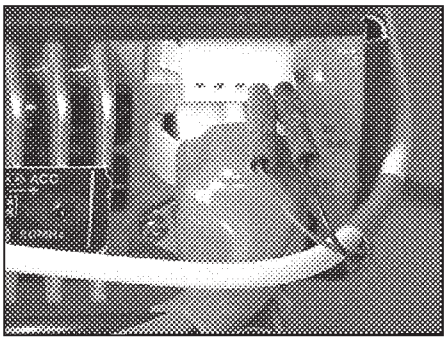

Fig 4: How to connect the power controller onto the accessory socket of the Alinco DX-70TH.

In the photo below left, the power controller is seen fitted to the left side of the transceiver using two of the M4 screws that would otherwise be used by the mobile mounting bracket, the third threaded hole in the side of the transceiver being used to mount a cable tie strain relief pad. The power controller could just as easily be fitted to the right side of the transceiver or allowed to sit on the shack bench.

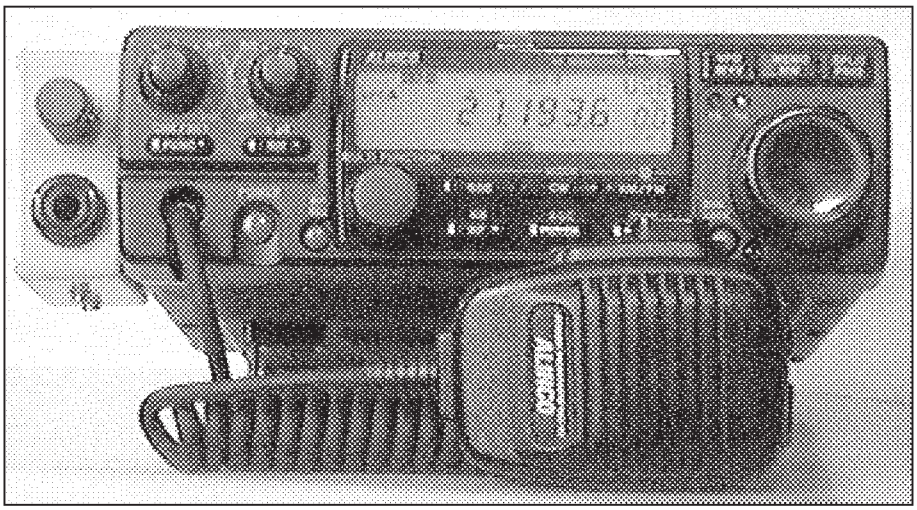
## COMMISSIONING

ONCE YOU HAVE finished building the power controller, I advise that you check the voltage that appears on the pin of the phono plug, *before* you insert it into the ALC socket of the transceiver. With the power controller connected to the accessory socket and the transceiver powered on, you should get about -4.1V when RV1 is set fully anticlockwise and about -3.2V when RV1 is set fully clockwise. This being the case, the phono plug can now be inserted into the ALC socket.

You should now find that, on transmit, the output power can be continuously adjusted from milliwatts up to 100 watts - very useful if you enjoy QRP operation or if you have a linear amplifier that requires a specific drive level. ♦



The improvised connections to the accessory socket.



The Alinco DX-70TH with the power controller in position. It presents the operator with a handy extra control.

## COMPONENTS LIST

**Resistors**
(all 1/4W, 5%)
R1 10k
R2 2k7
R3 3k9
R4 220R
RV1 1k linear

**Capacitors**
C1 2.2nF
C2 0.22µF
C3, 4 10µF, 16V

**Semiconductors**
IC1 4011
D1, 2 1N4148
ZD1 6.2V, 1W
ZD2 9.1V, 1W

**Miscellaneous**
Veroboard
Vero pins
Wire
Phono plug
Project box
5-pin Alinco accessory plug (or see text for alternative)
Cable ties
Strain relief pad
Miniature control knob

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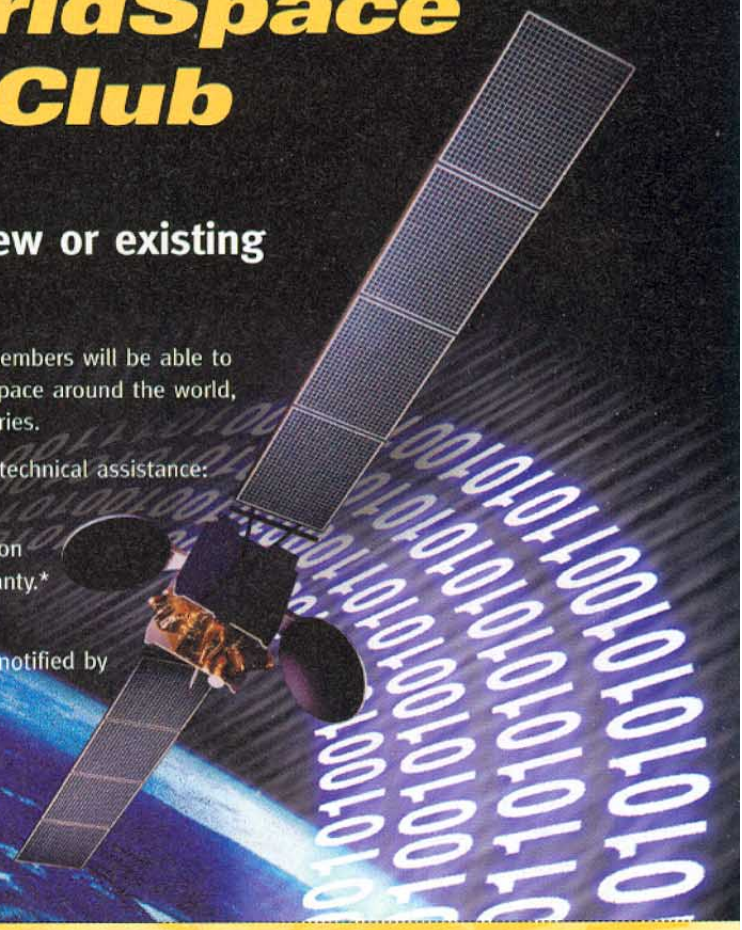

Receiver Serial ID Number

Date of purchase (Day, Month, Year)  Place of purchase

Name:

Mailing address:

City  State/Province

Zip/Potal code:  Country

Phone  E-mail _____

Including yourself, how many people are currently living in your household? _____ What is preferred language? _____

What is your occupation?
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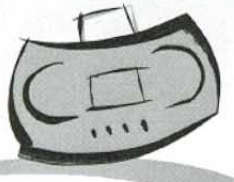

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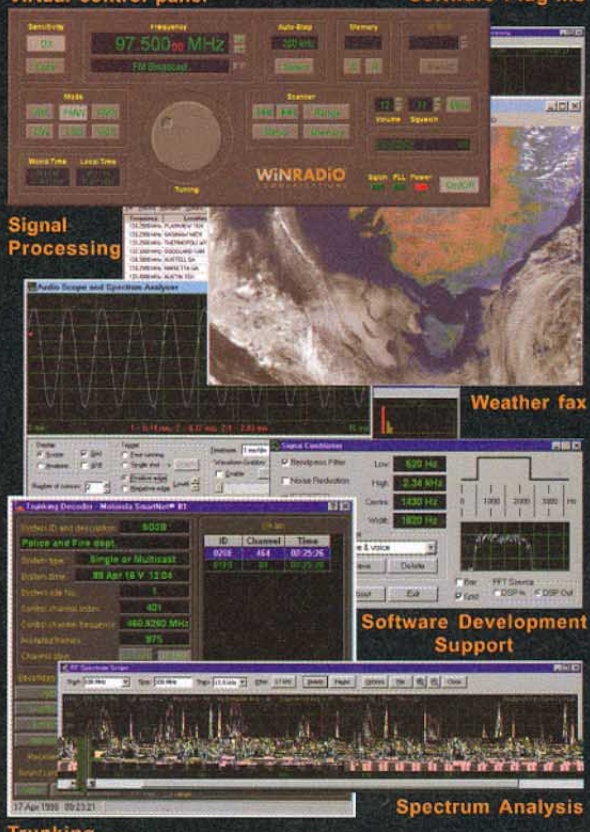


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# THE YAESU VR-5000 RECEIVER

## Reviewed by Chris Lorek, G4HCL*

AROUND 20 years ago Yaesu launched its first VHF / UHF all-mode wide-coverage base scanner receiver, the FRG-9600. Over the years, after-market modifications to give even greater extended coverage to this including an HF add-on have been very popular. Now Yaesu (or more correctly its new name of Vertex Standard, though Yaesu is still a marketing name) has launched the VR-5000, with all this included and plenty more.

It covers from 100kHz right up to 2600MHz, with modes of LSB, USB, CW, AM with selectable narrow, normal and wide bandwidths, FM and Wideband FM. To try to make life a little easier, an 'auto' mode can also be switched in where the receiver automatically selects a mode for you depending on the frequency you're tuned to. If you'd like to keep an ear open on another frequency as well, Yaesu has thought about that also. A built-in sub-receiver which operates on AM and FM can be used to tune to within 20MHz of the main receiver frequency. This gives you simultaneous dual-frequency reception, each receiver having its own separate volume control. A front panel keypad lets you enter frequencies directly and the large rubber-covered 'soft click-step' knob acts as a VFO tuning knob, with further up / down buttons for faster tuning steps.

Wide-band receivers sometimes suffer from out-of-band strong signals due to their necessarily wide-band front-end circuitry. In an effort to overcome this, the VR-5000 has a built-in RF tune preselection bandpass filter in the 1.8 - 1000MHz tuning range. This can be manually fine tuned to get the best results. If you need greater rejection, an RF attenuator can be switched in, and there's a switchable IF noise blanker fitted to reduce impulse noise such as that from car ignition systems.

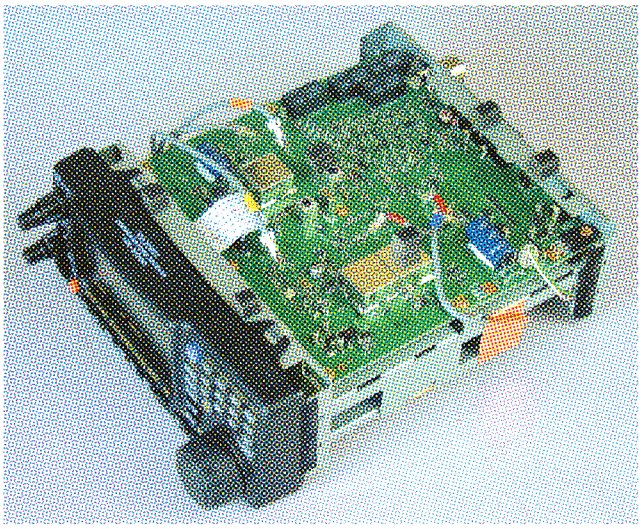
### FEATURES

THE SUB-RECEIVER facility can also be used to give you a 'real-time' spectrum scope, with a graphical display of signal activity above and below your tuned frequency. The spectrum scope will sweep the band and display the relative strengths of received signals in the lower half of the set's large dot-matrix display. You can also switch the display to give you an audio oscilloscope display of the received signal.

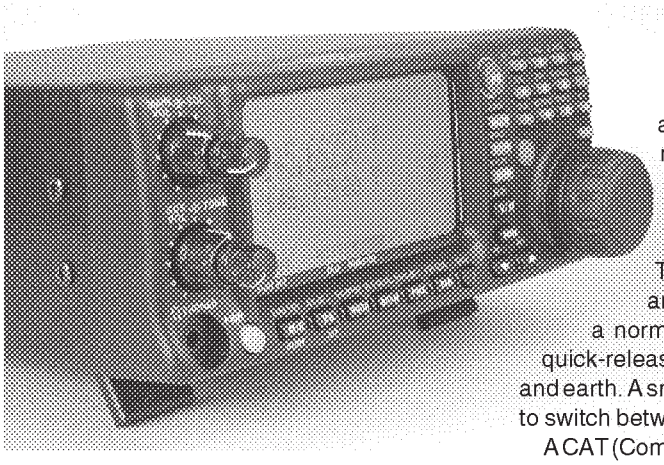
A plug-in audio-based DSP (Digital Signal Processing) option is available, which adds an SSB / FM / AM digital bandpass filter with variable low and high cut frequencies, a CW narrow bandwidth audio peaking filter with 25, 100, 200 and 400Hz bandwidths, a CW tone pitch control, a notch filter which automatically notches out beat signals, and switchable noise reduction.

The receiver has 2000 available memory channels, with 100 memory groups into which to organise your channels. To help in identification, you can give a short alpha-numeric name to each of the memories and groups. Besides storing the receive frequency and associated name, each memory can also store noise blanker status and DSP information. Five further quick-access preset memories are also fitted, which give you instant selection of your favourite pre-stored frequencies. Once you've recalled the memory channel you want, you can easily tune away from it using the front panel rotary tuning knob. After tuning, you can either leave the memory channel on its original frequency, or replace it with your current tuned frequency with a single button push.

You can scan through the memory channels, either all of them or just those within a selected memory group. A VFO scan can



*PO Box 400, Eastleigh, Hants SO53 4ZF.



sweep the entire tuning range of the receiver looking for activity, or between any two preset frequencies with 100 band-limit channels being available, in effect giving you 50 search ranges. A 'Smart Search' can automatically program up to 100 memory channels with frequencies when it finds activity for you. Other scanning modes include a two-channel scan which switches between the main and sub band frequencies, and a priority watch where the set receives on one channel while it periodically checks another for activity, pausing on the priority channel when it finds activity there.

A programmable memory readout display mode is (possibly) a unique feature. This shows a 'chessboard' pattern of up to 50 channels, with active channels in black and those not active in white, quickly displaying activity. A similar search and display mode is also available with pre-programmed radio control channels for various countries. So, for example, you could turn up at a radio control model meeting and instantly see which channels are free for your own model's use. You can switch between Surface, Aircraft, and 27MHz radio control bands.

A further specialised display can show you the current relative field strength of a signal in bargraph form next to a bargraph reference. This could be useful for checking the signal level of distant beacons or repeaters as a guide to conditions, or as a health check if you're the one who maintains a local radio system.

The VR-5000 comes pre-programmed with 22 banks of frequencies, each bank containing frequencies of a particular shortwave radio broadcaster. These include European favourites like Deutsche Welle, Radio Sweden, the BBC, Swiss Radio International, Radio France Internationale, Radio Netherlands and so on, and you can change the pre-stored frequencies if you wish.

A built-in world clock displays the local time zone anywhere in the world, with a programme timer that you can set to remind you of 'skeds' or timed broadcasts while you're listening to something else. It'll even switch the VR-5000 to your programmed frequency at the time you've selected. An alarm timer can be set to wake you up by switching the receiver on at a pre-set time, and a sleep timer can turn the receiver off after 30, 60, 90 or 120 minutes of listening.

## REAR PANEL

TWO ANTENNA connections are fitted, an SO239 socket for a normal coax feed, and a pair of quick-release connectors for a long wire and earth. A small rear panel switch is fitted to switch between the two.

A CAT (Computer Aided Transceiver) port is also present in the form of a standard 9-way D-type RS-232 connector, for direct linking to a PC for remote control. This connector also lets you clone the frequency and memory details directly from one VR-5000 to another.

A mute input lets you use the receiver together with a transmitter, and an external speaker plus a fixed-level 'Rec' audio output for tape recording or data terminal connection are fitted. There's a low-current 8V output for powering accessories, and a 10.7MHz IF (Intermediate Frequency) output for you to use with an external spectrum monitor or even specialised DF (Direction Finding) equipment.

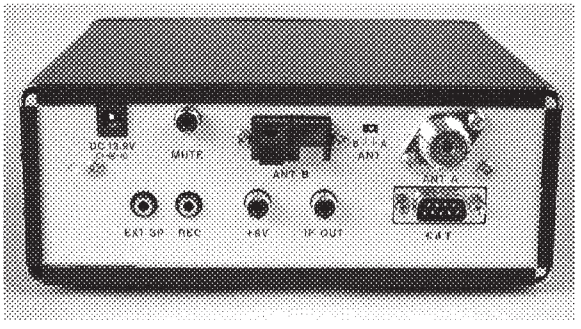
## POWER

THE VR-5000 operates from an external 13.8V DC supply, requiring 0.7A at its rated audio output of 1W. A suitable plug-in AC wall adapter is supplied, plus a fused DC lead for you to use with a different power supply or when operating mobile (you'll have to make your own mobile bracket though!)

The VR-5000 measures 180W x 70H x 203Dmm and weighs 1.9kg. As well as the AC adapter and DC cable it comes supplied with a plug-in telescopic whip antenna and a 60 page user instruction manual.

## OPTIONAL ACCESSORIES

BESIDES THE DSP unit, an optional digital voice memory unit is also available. This was supplied for test with the review model, and can record received signal for a maximum of 16 seconds, for subsequent playback through the set's speaker. If the recording time is eight seconds or less, a further eight seconds of recording time on a second channel automatically becomes available. For visually-impaired users a plug-in voice synthesizer option is also available which gives an audible announcement of the main band's operating frequency.




## IN USE

CONNECTING UP, switching on, and tuning around was very simple, and I appreciated the wide coverage which even went up to and above the amateur 13cm band. On HF SSB, I was pleased to find that 20Hz steps could be selected, which allowed me to tune correctly not only to SSB speech signals but also to demodulate correctly plenty of utility data stations with the receiver's 'Rec' output connected to my PC's sound card input, with the PC running appropriate multi-mode decoding software. I soon realised the pre-stored 'auto tune' steps were geared to non-UK use, for example 5kHz steps in the 144 - 148MHz segment and 10kHz steps on medium wave, so I always selected the non-auto mode for tuning around. In fact I preferred this, as the narrow / normal / wide AM modes were very useful for MW and SW broadcast reception. The SSB / CW bandwidth I found a bit on the wide side with a defined peak in the audio bandwidth and high-audio frequency 'splitching'. But then the VR-5000 hasn't really been launched or marketed to be in the league of a dedicated HF receiver, such as the FRG-100, which works really well here.

The variable preselector was really useful, particularly on VHF and UHF to get rid of strong unwanted high-power pager transmitters. Although some manual tuning was needed, the end result was readable signals when other receivers I've tried just keel over. The receiver was reasonably sensitive, though not quite up to that of, for example, a dedicated 2m or 70cm base rig on these bands.

Likewise adjacent channel rejection and the like was to the standard of a typical scanner rather than a high-performance (with associated high price!) base monitor. I must say that I found many of the 'day to day' operating keystrokes a pain to use and these kept me constantly referring to the user instruction book.

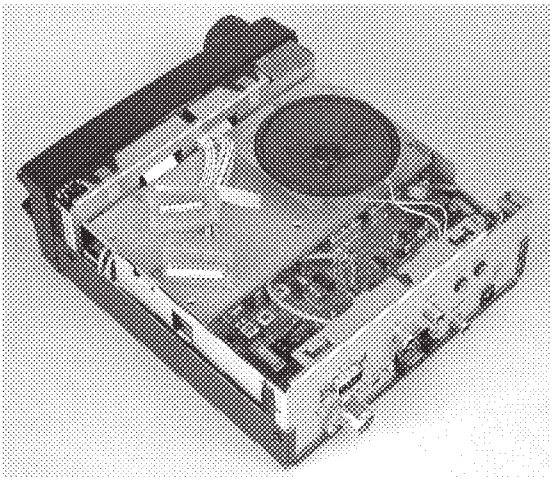
I gave up on the programmed memory search facility after several attempts, and with other attempted entries I often had to just switch the receiver off and then on again to try to clear incorrect keystrokes. Even setting the receiver's clock display to the correct time which must be done each time the power is disconnected from the radio for a short while (it hasn't an internal back-up battery to keep the clock running) needed 18 button and dial operations plus another four to enter the time itself. After a while I didn't bother setting it!

## SUB-RECEIVER TUNING

THE SUB-RECEIVER could usefully automatically track the main VFO tuning. For example, if I set the main VFO to 433.200MHz (my local 70cm repeater's output frequency) and the sub VFO to 434.800MHz (the repeater input frequency), as I tuned in 25kHz steps the sub-VFO could follow suit, so I could listen to both input and output repeater frequencies simultaneously. It could track in 1, 5, 9., 10, 20, 25, 50, 100 and 500kHz steps but not in 6.25 or 12.5kHz steps. These are the most-used frequency increments and offsets in the UK in amateur and PMR (Private Mobile Radio) use. The sub-receiver also has no squelch facility, so you get just noise with no signal. Even so, I often found it handy to leave the main receiver where it was and use the sub-receiver to tune around either side of my centre frequency for alternative listening. The real-time spectrum scope was very handy, it was nice to be able to listen simultaneously to a centre frequency and see what's on either side - many receiver 'spectrum scopes' mute the received audio while they're searching due to a single receiver being used.

## MEMORIES

ONCE THE memories etc had been alpha-tagged, I could command the receiver to search for a given 'string', and even automatically sort the channels into alphabetical order to make life that bit easier. The 'preset' memories were particularly handy, I often used these as a quick 'store and recall' when tuning around. In scanning, the receiver could also be programmed as a 'voice scan', ie to stop only on channels with audio rather than blank carriers.



I missed the ability to be able to link banks together for scanning, and to be able automatically to skip pre-programmed unwanted channels in VFO scan modes. The 16-second audio memory activated after I'd told it to start recording, stopping after the allocated time. I'd have preferred this to have been a constantly recording type, ie always recording and just remembering the last 16 seconds of audio for 'missed idents' and the like.

## CAT CONTROL

I RAN 'Scancat Gold' software to control the VR-5000 remotely, quickly making up an RS-232 lead with pins 2 and 3 (TXD and RXD) crossed over to link the VR-5000 to the RS-232 port of my PC.

I found this system very handy to store and recall frequencies, as an alternative to entering these manually into the VR-5000, also using the PC's hard disk for received audio storage. You can control the receiver's main VFO receive frequency, mode and channel step as well as receiving the squelch status and S-meter level from the receiver, but not the memory channel data. But with the power of a PC for storing this, it gave very easy operation.

## CONCLUSION

A GREAT WIDE-BAND multi-mode receiver for the price, as long as you can get used to the often complicated keystrokes required for various operating functions. All in all, after using and testing the VR-5000, in my professional capacity I decided to choose this receiver for a government security monitoring specification which required a DSP-capable receiver operating under PC control as part of an overall system. What more can I say? ♦

## LABORATORY RESULTS

**Sensitivity**
Input signal level in µV PD required to give 12dB SINAD

| Freq | CW / SSB | AM | FM | WFM |
|---|---|---|---|---|
| *2MHz* | 0.33 µV PD | 1.09 µV PD | 0.52 µV PD | - |
| *4MHz* | 0.25 µV PD | 0.82 µV PD | 0.36 µV PD | - |
| *6MHz* | 0.44 µV PD | 1.39 µV PD | 0.63 µV PD | - |
| *8MHz* | 0.32 µV PD | 1.01 µV PD | 0.48 µV PD | - |
| *10MHz* | 0.30 µV PD | 0.91 µV PD | 0.41 µV PD | - |
| *15MHz* | 0.17 µV PD | 0.53 µV PD | 0.24 µV PD | - |
| *20MHz* | 0.16 µV PD | 0.50 µV PD | 0.23 µV PD | - |
| *30MHz* | 0.13 µV PD | 0.41 µV PD | 0.20 µV PD | 0.61 µV PD |
| *50MHz* | 0.14 µV PD | 0.34 µV PD | 0.18 µV PD | 0.60 µV PD |
| *70MHz* | 0.18 µV PD | 0.41 µV PD | 0.23 µV PD | 0.77 µV PD |
| *100MHz* | 0.29 µV PD | 0.71 µV PD | 0.38 µV PD | 1.34 µV PD |
| *145MHz* | 0.17 µV PD | 0.39 µV PD | 0.23 µV PD | 0.71 µV PD |
| *170MHz* | 0.28 µV PD | 0.67 µV PD | 0.38 µV PD | 1.27 µV PD |
| *250MHz* | 0.46 µV PD | 1.15 µV PD | 0.64 µV PD | 2.07 µV PD |
| *350MHz* | 0.15 µV PD | 0.69 µV PD | 0.21 µV PD | 0.67 µV PD |
| *435MHz* | 0.17 µV PD | 0.38 µV PD | 0.23 µV PD | 0.72 µV PD |
| *450MHz* | 0.17 µV PD | 0.37 µV PD | 0.23 µV PD | 0.73 µV PD |
| *550MHz* | 0.45 µV PD | 0.91 µV PD | 0.56 µV PD | 1.95 µV PD |
| *750MHz* | 0.26 µV PD | 0.58 µV PD | 0.36 µV PD | 0.92 µV PD |
| *950MHz* | 0.38 µV PD | 0.51 µV PD | 0.38 µV PD | 1.13 µV PD |
| *1297MHz* | 0.39 µV PD | - | 0.46 µV PD | 1.52 µV PD |
| *1500MHz* | 0.31 µV PD | - | 0.37 µV PD | 1.19 µV PD |
| *1700MHz* | 0.40 µV PD | - | 0.43 µV PD | 1.41 µV PD |
| *1900MHz* | 0.36 µV PD | - | 0.32 µV PD | 1.08 µV PD |
| *2300MHz* | 0.38 µV PD | - | 0.34 µV PD | 1.15 µV PD |

**FM Adjacent Channel Selectivity**
Measured as increase in level of interfering signal, modulated with 400Hz at 1.5kHz deviation, above 12dB SINAD ref. level to cause 6dB degradation in 12dB on-channel signal.

| | |
|---|---|
| *+12.5kHz:* | 34.1dB |
| *-12.5kHz:* | 33.1dB |
| *+25kHz:* | 51.6dB |
| *-25kHz:* | 52.7dB |

**Blocking**
Measured as increase over 12dB SINAD level of interfering signal modulated with 400Hz at 1.5kHz deviation to cause 6dB degradation in 12dB SINAD on-channel signal.

| | |
|---|---|
| *+100kHz:* | 60.4dB |
| *+1MHz:* | 84.5dB |
| *+10MHz:* | 88.4dB |

*All measurements taken at 145.000MHz, NFM, main VFO, unless otherwise stated, using supplied external 13.8V power supply.*

**Intermodulation Rejection**
Measured as increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD on-channel 3rd order intermodulation product.

| | |
|---|---|
| *25kHz spaced signals:* | 58.4dB |
| *50kHz spaced signals:* | 57.5dB |

**Image Rejection**
Difference in level between unwanted and wanted IF image signal levels, each giving 12dB SINAD on-channel signals.

| | |
|---|---|
| *1st IF (640MHz) image* | >100dBdB |
| *2nd IF (45.775MHz) image:* | >100dB |
| *3rd IF (10.7MHz) image:* | 71.6dB |
| *4th IF (455kHz) image:* | >100dB |

**Maximum Audio Output**
Measured from external audio output socket using 1kHz audio, at the onset of 10% distortion
1.27W RMS

**Squelch Sensitivity**
Level of signal required to raise receiver squelch

| Sq Level | AM | FM | WFM |
|---|---|---|---|
| *Threshold:* | 0.82 µV PD (16dB SINAD) | 0.32 µV PD (19dB SINAD) | 4.62 µV PD (33dB SINAD) |
| *Maximum:* | 1.78 µV PD (23dB SINAD) | 1.08 µV PD (27dB SINAD) | 69.8 µV PD (33dB SINAD) |

**Signal Selectivity**
Single signal selectivity

| | CW/SSB | AMN | AM | AMW |
|---|---|---|---|---|
| *-3dB* | 0.14kHz | 3.96kHz | 8.45kHz | 16.30kHz |
| *-6dB* | 3.46kHz | 4.16kHz | 8.99kHz | 17.75kHz |
| *-10dB* | 4.06kHz | 4.18kHz | 9.44kHz | 18.62kHz |
| *-20dB* | 4.42kHz | 4.48kHz | 10.37kHz | 19.96kHz |
| *-40dB* | 5.02kHz | 5.20kHz | 12.11kHz | 22.69kHz |
| *-60dB* | 5.28kHz | 5.33kHz | 12.37kHz | 23.91kHz |

# RAE, Novice and Morse Courses

**Many radio clubs and colleges throughout the country start courses for the Radio Amateurs Examination (RAE), the Novice RAE, and Morse code tests in September . . .**

THE FOLLOWING IS a list of the courses of which we have been informed as of 13 July. A further list will be published in *RadCom* next month. The list of courses is also kept up to date on the RSGB Internet site at www.rsgb.org/beginners/exams.htm

If you are running a course at a college or radio club and wish this to be listed in *RadCom* next month and on the Internet, please send details as soon as possible either by post to: 'RAE Courses', *RadCom*, RSGB Headquarters, Cranborne Road, Potters Bar EN6 3JE, or by e-mail to: newsdesk@rsgb.org.uk The deadline for inclusion in the September issue of *RadCom* is **Monday 6 August**.

For further information on courses in your area, please contact the appropriate RSGB Regional Manager. A list of the Regional Managers appears on page 74 this month; their regions and districts are listed in full on page 73.

## North West Region

**Halton Radio Club** runs a continuing **NRAE** course and an **RAE study group** every Thursday evening from 7.00 to 9.00pm at the club's HQ. Details from Alan Parker on 01928 790228 (office hours only), or visit the club's website: www.hrc-uk.freeserve.co.uk

**Widnes & Runcorn ARC** will be runnng **RAE, NRAE and Morse courses** on Friday evenings starting in September at The Bunker, Simons Lane, Frodsham. For further details contact Dave Bibby, G1PIX, on tel: 01928 591401 or Dave Wilson, G7OBW, on tel: 01270 761608.

## North East Region

**Bishop Auckland RAC** will be running **RAE and NRAE courses,** starting at the beginning of September 2001. These will be held at the club, which meets 8.00pm every Thursday evening at the Stanley Crook Village Hall. Those interested should call Tim Bevan, M0ACV, on tel: 01833 832 948.

**Mexborough & DARC** will be holding **RAE and Morse courses** at Harrop Hall, Mexborough, South Yorkshire, starting 7.00pm Friday 14 September 2001. Enrolment for the RAE course is at 7.00pm on 14 September, or the Morse code rolling programme any Friday. For further details contact Tom, G0KSK, tel: 01709 586329 or Roy, G0FYM, tel: 01977 645691.

## Midlands Region

**Sandwell ARC** will be running a course for the **RAE** in September at its headquarters in Broadway, **Oldbury, West Midlands**. The course will commence on Thursday 13 September. Enrolment is on 6 September. The club is also a registered examination centre. For more information contact Martin, G2BXP, on tel: 0121 552 4902; Archie, G4OJJ, on tel: 0121 532 7039; Clive, G0TVR, on tel: 0121 429 6061; or send an e-mail Stuart, M0BTO, at: stuart@m0bto.freeserve.co.uk

**Spalding & DARS** is holding a course for the **RAE**, which started on Wednesday 20 June 2001, 7.30pm at The Old Fire Station, Spalding, Lincs. For further information please contact Robert Offer, G1ZJP.

**Tile Hill College** in Tile Hill Lane, **Coventry**, will be running an **RAE** course from September 2001 for 30 weeks. Disabled students are welcome, and external students (ie those not taking the course) should contact the college to find the closing date for exam entry. The tutor is Michael, G4GHJ. Successful candidates can enrol for the Morse code examination at 5 or 12WPM. Contact the college on tel: 024 76293237.

## London & Central Region

**Farnborough College of Technology** will be running an **RAE** course from 20 September, 7.30-9.00pm. They will also be running a **Morse** code course from 20 September at 6.30-7.30pm. Further details from their Information Centre on tel: 01252 407040.

**Newbury Technical College** will be running an **RAE** course on Thursday evenings 7.00-9.00pm, starting on 20 September 2001. For further details contact the tutor Ray, G3NDS, on tel: 01672 870892, e-mail: ray.oliver@which.net or the college on tel: 01635 845215 or e-mail: ace@newbury-college.ac.uk

## South West & Channel Islands Region

**Bristol Amateur Radio Group** is sponsoring a **Novice RAE** class from the end of September for the March 2002 exam, with additional homework and classes to prepare for the full **RAE** in May 2002. Classes will be one evening each week from 7.00 - 9.00pm at a school in Bath. As the classes are sponsored by the RSGB Bristol Group the only costs are for course books, materials and exams (which are run by the **Trowbridge and District Amateur Radio Club** under the RSGB satellite exam centre scheme). Details from Steve Hartley, G0FUW, tel: 01225 464394; e-mail: hartley_steve@hotmail.com

## East & East Anglia Region

**Bexley College** is planning to run **RAE** courses from 10 September 2001. Interested enthusiasts should contact the Guidance & Admissions Centre on tel: 01322 404000, leaving name, address and telephone number so that an enrolment form can be sent.

**Colchester RA** will offer **RAE** and **NRAE** courses leading to the examinations in March and May 2002, respectively. They will be held at St Helena School in Sheepen Road, Colchester, commencing on 18 September at 7.00pm. **Morse** practice sessions take place each evening at 9.15pm on 144.16MHz. For further details contact Frank, G3FIJ (QTHR), tel: 01206 851189.

**Newstead Wood School for Girls**, Avebury Road, **Orpington**, Kent will be the venue for an RAE course commencing Monday 10 September from 7.30 to 9.30pm, leading to the May 2002 exam. Enrolment is at **Bromley Adult Education College**, Widmore Centre, Nightingale Lane, Bromley, tel: 020 8460 0020. Further details are available from the course tutor Alan, G0HIQ, on tel: 01689 831123.

*Sorry, but at present we have no information on courses in the following regions: Scotland West and the Islands Region, Scotland East and the Highlands Region, North Wales Region, South Wales Region, Northern Ireland Region. Clubs or colleges running courses in these regions are asked to send details to* RadCom *by* ***6 August****.*

## RSGB CITY & GUILDS SATELLITE EXAMINATION CENTRES

THE SATELLITE EXAMINATION Centres scheme allows RSGB Affiliated Societies to register as City & Guilds examination centres, under the auspices of the RSGB. For the Radio Amateurs Examination or Novice Radio Amateurs Examination candidate, this provides a wider range of venues at which the RAE or NRAE may be taken, and often at considerably less cost to the candidate than at further education colleges.

As of 13 July, there are 60 RSGB Satellite Examination Centres throughout the country. The full list is published on the Internet at: www.rsgb.org/beginners/satcentres.htm or you may contact Sylvia Manco at RSGB HQ (tel: 0870 904 7373) for details of your nearest centre. Some of the satellite centres may also offer RAE/NRAE/Morse courses: please contact the appropriate exam centre secretary for further details.

Down To Earth

# Newcomers' News

*News and Comment from and for Amateur Radio's Newcomers. Compiled by Steve Hartley, G0FUW* *

TONS OF NEWS this month, so if you don't see your input it is probably in the queue!

## YOUNGEST NOVICE INSTRUCTOR

THE MID-GLAMORGAN Amateur Radio Group is still in the forefront of radio education and another successful year has seen the club go from strength to strength. Not only do they have a significant number of new licensees and Morse code exam passes, but it also has three new Novice instructors ready for its next courses.

One of the new instructors, Christopher Young, MW0KRS, is just 13 years old but he met the criteria to become a Novice instructor with the anniversary of his licence in March this year. Chris is probably the youngest Novice instructor in the UK, and anywhere else for that matter.

Contrary to those who would have us believe the hobby is dying on its feet, there is clearly still a wealth of enthusiasm in amateur radio waiting to take the hobby into the next decade and beyond. Chris is poised to take his knowledge into the school classroom, and put another subject into his school's extra-curricular activities, which could perhaps be a catalyst for the STELAR programme in the Swansea area. Great news!

The Mid-Glamorgan group chairman, tutor and founder member Tom Beedle, GW0TOM, observes that the cycle of education turns a full circle when the students themselves become instructors, applying the knowledge they have gained to promote the hobby and educate others. He says this is the ethos of the Mid-Glamorgan Group.

The group has made its mark within the realm of amateur radio education, with its tremendous pass rate at examinations Its accolades come from amateurs of long standing who bring their children and grandchildren to the club for tuition, purely on the group's reputation. There have already been calls expressing interest in joining the next set of classes scheduled to commence in September.

The Mid-Glamorgan Amateur Radio Group (callsign GW0VJS) meets every Thursday evening, regardless of term time, and there is a healthy social section which lends its support to almost all activities and events that are staged. These include the annual Club Calls Contest, an annual lighthouse station at Nash Point, an Alzheimer's awareness day, field day and special event stations.

I think the group is right to be proud of its achievements and we wish Christopher well in his new role. Keep in touch!

Christopher Young, MW0KRS (see 'Youngest Novice Instructor').

## TIPS FOR THE MK484

RAY NICHOLSON, G4SQG, saw my remarks about the MK484 replacement for the good old ZN414 radio chip and wrote with some handy tips for would-be builders. Ray helps to run a Scout radio station at Bramhope near Leeds and they used to use a simple ZN414 radio kit to introduce youngsters to amateur radio.

The MK484 has been found to be a good replacement but rather more sensitive to circuit layout. Ray built his first attempt on strip board and it refused to work. He then spotted an article in *Practical Wireless* with a layout that avoids problems.

In all, 10 units have now been built and all have worked first time. The receiver is completed using external components with pre-soldered leads and final interconnections via connector blocks. This avoids any problems with young fingers and soldering irons!

The Scout group has produced two excellent information sheets and I am sure Ray would be only too happy to share them with readers, subject to a small donation to the group and an SASE to Bramhope Scout Radio, Bramhope Scout Camp, Occupation Lane, Bramhope, Leeds LS16 9NR.

## QSLL HISTORY

THE REPONSES to my question about the meaning of the Morse code abbreviation QSLL continue to come in from yet more countries. Hubert Mulkens, ON4FP, sent me a copy of the Belgian *Le Code "Q"* from 1967. The list shows QSLL to mean "Envoyez carte QSL a reception de la mienne" or as Hubert translates, "Send your card after you receive mine". Going even further back, Hubert sent me a copy of a QSL card from EAR 16 dated 18 January 1932 annotated with "Pse QSLL". Many thanks for the input Hubert, fascinating.

Joe Hill, EA7FIC / G3JIP, sent in a library reference that also backs up Hubert's note. The 1968 edition of *The Amateur Radio DX Handbook*, by Don Miller, W9WNV, produced by the Cowan Publishing Corporation mentions the signal QSLL. On page 69, table 6.4, it is defined as "send card after receiving mine". Joe goes on to say that "Of course this is not a 'real' Q-code signal as, by international agreement, they are limited to three characters, including the initial letter Q".

So the next question is 'when did QSLL switch from "send me yours when you get mine" to "I will send you mine when I get yours"?' Any thoughts?

## A CHANCE TO WIN

PETER WATERS, G3OJV, of Walters & Stanton plc has kindly offered to give away four brand-new Datong transistor testers he found in their stock room. The testers will go to the first *Novice* licensees to send in details of their first QSO (radio contact). Nothing difficult, just send your name, address and callsign together with a copy of your first logbook entry (and any anecdotes) and you could be the lucky winner! Postal entries only to G0FUW - address at the foot of the page. ♦

The prize awaits.

* *5 Sydenham Buildings, Lower Bristol Road, Bath BA23BS; e-mail: newcomers.radcom@rsgb.org.uk*

Down To Earth

# One-Man DXpeditioning

*Phil Whitchurch, G3SWH*, gives us the benefit of his years of experience operating from a number of locations on four continents*

WITH THE increasing availability of truly portable radios, together with the explosion of interest in the Islands on the Air (IOTA) programme, it has never been easier to mount a DXpedition. Most of us take holidays abroad these days, whether it be across the channel to France, to southern Europe or further afield. Careful negotiations with your spouse can lead to the inclusion of a radio in the baggage and a mini DXpedition integrated with the family holiday. My first island expedition was to the Greek island of Mykonos (IOTA EU-067) in 1995; a place where my wife, Jan, and I had been taking family holidays since around 1980. When I first mentioned the idea, Jan's reaction was "you must be mad." After some discussion, she was persuaded to give it a try on the understanding that radio activities didn't interfere with holiday activities. It worked! Radio operating times fell almost naturally into a session in the mornings when Jan was sleeping late and a session in the early evenings whilst she was getting ready to go out. We still take an annual holiday in Mykonos and I have made about 7500 CW QSOs from there since 1995.

**The author with R-7000 vertical in ski bag and hand luggage containing the rest of the station.**

## LICENSING

SO, HAVING overcome the biggest hurdle to holiday expeditioning, what are the other considerations to take into account? Probably the most important is the matter of the licence. If you look on the bottom of your Amateur Radio Validation Document and to note (y) of BR68 booklet, you will see a list of some 37 countries that have implemented CEPT Recommendation T/R 61-01. This does not include the variations of the UK (GM; GW; GD; GJ etc) or the USA (KP2 US Virgin Islands; KP4 Puerto Rico; KL7 Alaska; KH6 Hawaii; etc) where no formalities are required other than to turn up and operate. Also included are Caribbean locations such as the Netherlands Antilles: Curacao, PJ2; Bonaire, PJ4; St Eustatius, PJ5; Saba, PJ6 or Sint Maarten, PJ7.

Interestingly, there are three different types of French overseas possessions and operations from them are slightly more complicated. The CEPT licence applies fully to the *Overseas Departments*: FM, Martinique; FG, Guadeloupe, which includes FJ, St Barthélemy and FS, St Martin; FR, Reunion and FY, French Guiana. FP, St Pierre et Miquelon and FH, Mayotte are both *Territorial Collectivities*, which are administratively similar to Overseas Departments and the CEPT licence applies. Lastly are the *Overseas Territories:* FK, New Caledonia; FO, French Polynesia and FW, Wallis and Futuna, where local permissions are also required. TK, Corsica is a part of metropolitan France and no other formalities are required.

Care must be taken with the other more exotic French territories, such as the islands in the Indian Ocean administered by Reunion, eg FR/G, Glorieuses Island; FR/T, Tromelin and FR/J, Juan de Nova, where additional local permissions are also required. However, these destinations are rather unlikely for holiday-type operations.

For details of a wider choice of destinations, the OH2MCN web site [1] gives in-depth information on the licensing formalities for almost every DXCC entity in the world and is an excellent starting point in planning your expedition.

If you are at all serious about your proposed operation, and want it to 'count' for DXCC and / or IOTA, it is very important that you abide by the rules set down by the relevant organisations. After all, it is a major waste of effort for an operation not to be 'allowed' for the lack of some minor piece of documentation. These rules generally mean providing copies of your licence, landing and / or operating permission, as well as evidence that you were actually where you claimed to be when you claimed to be there (copies of airline tickets, hotel bills etc). If you are in any doubt of what is required, do contact the appropriate organisation in advance of your trip.

## BAGGAGE REQUIREMENTS

THE EQUIPMENT that you take with you is limited only by the means of transport to get you there. If you are taking a car abroad on a ferry, you need only be limited by how much equipment (and how many people) the car will carry. For trips by air, a little more refinement is required. Most airlines limit hold baggage for economy class to a maximum of 20kg per person but allow one piece of hand baggage of around 55 x 40 x 20cm, plus a camera bag or similar to be taken into the cabin. This size is the optimum for fitting into the overhead lockers in most aircraft. There is a theoretical maximum weight of around 6kg for such hand baggage, which varies from airline to airline, but I have never been asked to have mine weighed. On my first expedition to Mykonos, I travelled by air with my ancient Yaesu FT-101ZD (20kg) as hand baggage without a problem (except for a dislocated shoulder).

Nowadays, I have a 100-watt station comprising an Icom IC-706, switched mode power supply, laptop computer, wire antennas, coax, ATU and sundry items packed into a 50 x 36 x 20cm suitcase with wheels and a handle. I also have a Cushcraft R-7000 trap vertical, which fits nicely into a 1.8m-long ski bag and can be assembled in less than an hour.

So, what can go wrong? Well, airlines have a nasty habit of losing hold baggage, so it's best to carry as much as you can in your hand baggage. Ferry companies have a habit of changing schedules at the last minute; scheduled

*21 Dickensons Grove, Congresbury, Bristol BS49 5HQ.

The main contents of the hand luggage.

sailings are delayed or cancelled, which can mean onward connections are missed. Advance information on what is and is not permitted to be imported into many countries is very difficult to obtain, as most regulations seem to be aimed at commercial imports. Most countries view amateur radio equipment in the same way as they view cameras and other personal effects, but it is advisable to have some evidence to confirm its age and value. A copy of your licence is also advisable. However, there are exceptions, and customs officers wield a lot of power. The possibility exists for heavy duties to be demanded or innocuous-looking equipment to be impounded for no apparent reason other than that the officials are not familiar with it. Arguing with them and / or extricating such equipment can be difficult if not impossible.

Travel insurance is essential, but do read the small print, as many policies do not cover loss or damage to electronic equipment not carried as hand baggage. They will almost certainly not cover any loss caused by customs or other officials legally taking your belongings. It may be that your domestic insurance policy covers such goods outside the home, but these are usually restrictive on value and location, so again check the wording carefully. Amateur Radio Insurance Services (e-mail: aris@stuartalexander.co.uk) offer an excellent policy to RSGB members that will adequately cover your equipment world-wide.

Wherever you are planning to operate, it is important to establish the attitude of your host towards amateur radio well in advance of your arrival. Most hotels are quite relaxed about such things as erecting 'unobtrusive' antennas and will occasionally make one of their gardening staff available to assist. It's well worth a few dollars to have a man shin up a 20m-high palm tree and attach a halyard to the top! I was once asked to give a talk to the hotel staff describing what amateur radio is about. Hotel managers sometimes ask for a copy of the licence but are generally only interested in establishing that your activities will cause no inconvenience to their other guests and whether the antenna will damage their building in any way. The possibility of interference with the hotel's TV systems etc is rarely an issue in my experience, but it is sometimes necessary to give an assurance that you will close down in the event of any sort of problem. By the use of e-mail and the Internet, it is increasingly simple to answer any queries and provide the requested reassurances in advance of arriving at your destination.

An alternative to taking equipment with you, is to visit a foreign amateur and operate his already-established and equipped station as a 'guest operator'. As a licence-holder in your own country, in many cases you should be able to operate the foreign station quite legally under his own callsign. Alternatively, you may wish to obtain your own call for the duration of the expedition. I operated as UI8A/G3SWH from the station of Nazim, UI8AA, in Tashkent, Uzbekistan in 1991 and as BY1QH/G3SWH from the Tsing Hua University's club station in Beijing in 1996. A useful source of holiday DX locations can be found on the Internet [2].

The author's hand luggage, packed and ready to go.

The IOTA Committee has available a couple of Yaesu FT-900AT transceivers, each complete with microphone, Bencher paddle key and switched mode power supply. These are available for loan to any licensed amateur wishing to put on an IOTA expedition. Neville Cheadle, G3NUG (QTHR), is the custodian and should be contacted well in advance of your proposed dates to ensure the equipment is available. Unfortunately, the superb carrying case is too big to fit in the overhead lockers of most aircraft and has to be carried in the hold.

## ANTENNAS, LOGGING & QSLS

YOUR CHOICE OF antenna can be a problem, as it is very difficult to predict beforehand the topography of your holiday location. I have experimented with a variety of different wire antennas over the years and come to the conclusion that the optimum is a simple antenna that allows you to change band quickly, hence the R-7000 vertical. In addition, I always carry an assembly of wire dipoles for 80, 40, 30, 20 and 17 metres connected to a common feed point and fed with 50Ω coax, primarily designed to be rigged as an inverted-vee. With a small ATU, this arrangement can be made to resonate on 12 and 10 metres as well, but takes a little time to erect. However, not all locations lend themselves to inverted-vees, and I also carry a wire dipole for 20 metres, which can be erected horizontally or as a sloper. Wire extensions with crocodile clips can be added for 30 and 40 metres but band changing is obviously not so efficient, as it means lowering the antenna, adding or removing the crocodile clips and raising it again (not so simple if you are on the top floor of a seven-storey building!)

Logging is best carried out on a laptop computer using one of the many programs available. Handwritten paper logs are less satisfactory, becoming quickly illegible in the heat of the pile-ups. I have used K1EA's *CT* version 7.10 in DXpedition mode for years and find it extremely simple to use. It can also be used to key the rig and further reduce the stress of running the pile-up. Having carried out a successful expedition and satisfied the needs of at least some of the 'Deserving', you have a moral obligation at least to provide a correctly designed QSL card. In addition to such obvious details as your name and callsign and the name of the DXCC entity, you may wish to include such things as the *CQ* and ITU zone numbers, latitude and longitude and (possibly) QRA locator. You might also care to include a few words of thanks to your partner, your host and anyone else who particularly assisted you in making the trip a success. With effect from 1 January 2001, the name of the qualifying island named in the *IOTA Directory 2000 must* be included on the QSL card if it is to count for IOTA. If you do not wish to carry out the QSLing chores yourself, there are several willing QSL managers - including the writer - who will take on that responsibility. It is better to make such arrangements and agree the details beforehand so that the correct QSL route information can be distributed both on the air and in advance of your expedition.

## FURTHER READING

*RSGB IOTA Directory 2000*, edited by Roger Balister, G3KMA. ♦

## WWW.

**[1] OH2MCN world-wide licensing information:**
www.qsl.net/oh2mcn/license.htm
**[2] DX holiday locations:**
http://pages.prodigy.net/k2kw/qthlist/

Down To Earth

# The Voices

## Part Fourteen, by Gordon L. Adams, G3LEQ *

THIS MONTH I shall discuss some unusual WWII 'Voices'.

### COMMUNISM V FASCISM

THE 1930s were characterised by the two political ideals - Communism and Fascism. Most people are familiar with communist ideals, but fascists almost totally disappeared at the end of WWII. It was an authoritarian and nationalistic movement led by Benito Mussolini in Italy, and the system of government that he represented was opposed to democracy or liberalism. In Germany in 1933 Dr Paul Joseph Goebbels became Reichsminister for Public Enlightenment and Propaganda. He arranged for a 'People's Radio Set' or *Volksempfänger* to be created, with the aim of having 100,000 manufactured in time for the August 1933 radio show. The model VE301 was so designated to commemorate 30 January 1933, this being the date that Hitler had come to power. It had no short-wave facility for obvious reasons, but was just adequate to receive the *Reichssender* regional programmes on medium wave and the *Deutschlandsender* national station on long wave. The retail price was half that of comparable sets, and in a year the number of licence holders had almost doubled from 4.3-million to 8.2-million. The result of this was that various opposing movements found that the only way to be heard was to set up secret radio stations.

The man generally accepted as the founder of secret broadcasting is Dr Otto Strasser, who played a considerable part in the formative years of National Socialism and the Nazi party in Germany. However, he broke with Adolf Hitler before the latter came to power, and formed instead an organisation called the *Black Front*. Strasser moved to Czechoslovakia in 1933 when Hitler became the German leader. He indicated that he would gladly come over to England, representing a so-called German National Council, and is believed to have been in touch with contacts in MI6. In fact, he became involved with a secret radio station called the *Deutsche Freiheitsender*, which was installed somewhere in Switzerland, Liechtenstein, Germany or France - depending upon the suggestions that were being broadcast at the time. It certainly transmitted, with minimal supervision, from locations in Switzerland and also just outside Paris, using gramophone records consisting of music and political speeches. The record player / transmitters used were of the same kind as those produced by the British JBC (see below). Some of its manifesto reached the BBC - which then broadcast it - just before an unsuccessful bomb attack took place against Hitler at a beer cellar called the *Burgerbraukeller* on 8 November 1939.

"All Germany hears the Führer with the People's Receiver".

* 2 Ash Grove, Knutsford, Cheshire WA16 8BB.

During the period from the summer of 1936 to the spring of 1939, civil war was raging in Spain and nearly 500 ideological radio stations appeared on the Spanish air waves. It was probably this chaotic period that influenced much of Goebbels' thinking regarding the importance of radio propaganda. In addition to its European and overseas short-wave services (*Kurzwellen-sender* or *KWS*), Germany also operated a series of secret stations or *Geheimsender*. The transmitters were sited between Zeesen and Königs Wusterhausen - about 30km south of the capital - whilst the studios were based in the Villa Concordia in Berlin.

### LIECHTENSTEIN CAPERS

I MENTIONED last month in Part Thirteen of 'The Voices' that Peter Eckersley had had to resign as the BBC's Chief Engineer before the war started. He then joined Sir Oswald Mosley's embryo commercial radio company 'Air-time'. He tried to negotiate a broadcasting licence with the Liechtenstein authorities. However, MI6 secretly stuck their oar in. A Colonel Richard Gambier-Parry, previously a Sales Manager at the Philco UK radio set manufacturers, had recently been appointed in charge of MI6's wireless communications. He in turn had employed an ex-Cambridge graduate engineer, Peter Hope. He introduced Hope to another ex-Philco employee, Harold Robin, who also joined MI6's payroll. Peter Hope somehow managed to obtain the commercial radio operator's concession from the Liechtenstein administration, and Robin was duly sent out to Vaduz to install two radio transmitters. A 10kW transmitter was set up to provide local services, whilst a larger 50kW sender was ordered from the German Lorenz company - presumably to allow the UK Political Warfare Executive (MI6) to compete with Radio Luxembourg. Peter Hope was based in London and the two of them kept in touch using 250 watt radio transmitters in the 7MHz amateur band! It was not long before licensed radio amateurs were complaining about these apparently 'commercial' intruders. However, on 29 August 1939, Peter told Harold to "drop everything and return to London at once" - because war was expected to break out with Germany.


Villa Concordia, the first HQ of the Berlin short-wave service and later of the *Geheimsender*.

### HAROLD'S AERIAL FARMS

HAROLD ROBIN'S first job, when he got back to England, was to install a new SIS transmitter at Woldingham in Surrey. This was used initially to carry coded signals in Morse back to Poland and Czechoslovakia. Gambier-Parry found himself a base at Whaddon Hall, a rented stately home a few miles west of Bletchley Park. Before moving in at Whaddon Hall too, Harold Robin first had to negotiate - with a farmer - another secret transmission site at Renscombe near Cirencester. Having laid-on an electricity supply, he built a studio in a caravan, and equipped the new station with three RCA communications transmitters rated at 250, 500 and 1000 watts. Initially, these carried Morse traffic to Latin America which emanated from a 'Ministry of Information' operator who was established in London University's Senate House tower, just off Tottenham Court Road. However, Gambier-Parry's secretary (shortly to become his wife), Lisa Towse, a French linguist, was soon travelling down to the caravan to run Britain's first clandestine radio station *Radio Beaux Arts*.

Harold moved on to search for more clandestine radio transmission sites. He located one at Gawcott, two miles south of Buckingham (see Part Eight of 'The Voices'), and a second at Potsgrove near to Milton Bryan and close to Woburn Abbey. The riding stables at Woburn Abbey had just become the 'country seat' of the Political Warfare Executive, who had adopted the HQ of Cable & Wireless in Electra House, Whitehall, as their London operations base. Gawcott was equipped with two 7.5kW senders of American manufacture, and was linked by land lines - along with Potsgrove - to a very well-equipped receiving site a few miles away at Poundon, near Bicester (see **Fig 9**).

### THE VENLO INCIDENT

THE ASSASSINATION attempt on Hitler, mentioned earlier, took place soon after the United Kingdom had declared war on Germany (3 September 1939), and

was followed - the next day - by an unusual incident which occurred in the little town of Venlo, situated on the German-Dutch border. On 9 November, the Führer's personal bodyguard, known as the *Schutzstaffel der NSDAP*, or SS, lured two senior British intelligence officers over the border, into Germany, and arrested them. They were the Chief of Continental Operations Major Richard H Stevens and his deputy Captain Sigismund Payne Best, and they were detained in a concentration camp by the Germans until the end of the war. The background to these two dramatic events remains a mystery; but Otto Strasser - and his secret broadcasting organisation - is known to have been involved. Apparently, British intelligence had been given the impression that there was a dissident group in the German army willing to lead a putsch against Hitler. Working for Strasser on secret short-wave radio stations at the time were Robert Trenkle, Heinrich Grunow and Willi Münzenburg - who was controller of the German communist press and an anti-Nazi propagandist. During 1939 Otto Strasser also operated, for the *Deutsche Freiheitspartei*, a clandestine short-wave broadcasting transmitter on board a fishing vessel in the English Channel.

Another Strasser assistant, Rudolf Formis, was reputed to be the first licensed German radio amateur. He was for a while the Chief Engineer at Radio Stuttgart, but he had been blamed by the Gestapo for various 'technical hitches' that had stopped an important speech by Hitler from being broadcast. He had built and operated the *Schwarze Front* radio station in the 49-metre band, from the attic of a riverside hotel in Zahori, about 35 miles south-west of Prague. However, he was murdered there by the Gestapo on 23 January 1935. Two gunmen and a female were involved. The girl tried to entice Formis into her room where the assassins were waiting. In the fracas that followed both Formis and the girl were shot. Having set fire to his body, the Gestapo team escaped in a Mercedes across the border, and back into Germany with the badly injured girl - who died on the way to a hospital in Dresden. Heinrich Grunow was also executed, by the Germans, for running another Strasser radio station at Le Cannet in France.

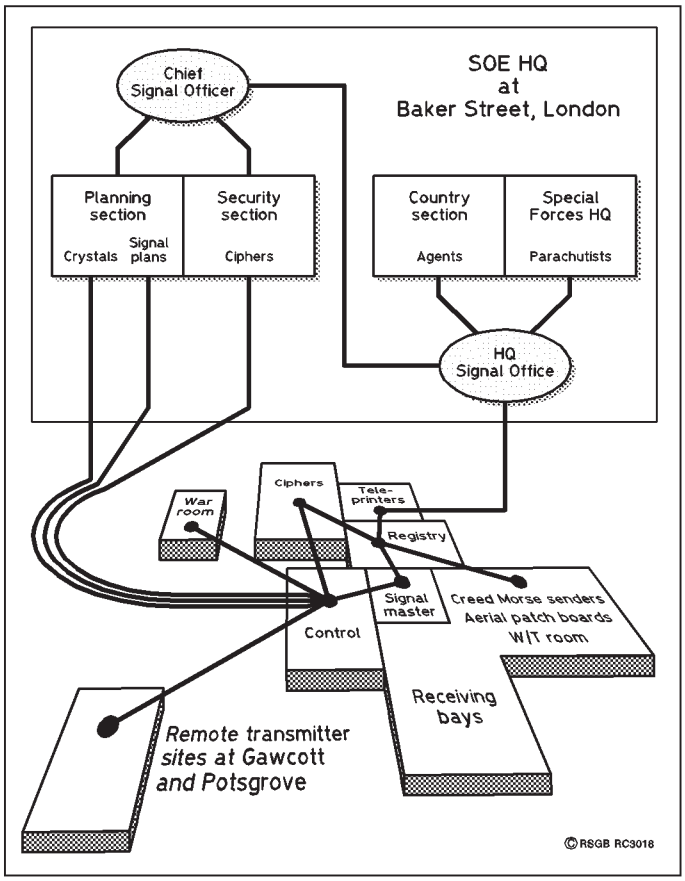



**Fig 9: Layout of SOE station 'Charlie' at Poundon, near Bicester.**

Willi Münzenburg was a communist, who also worked for the Comintern or Third International. It is interesting to note that the British politician Richard H S Crossman and the Soviet spy Guy Burgess also moved in Münzenburg's circle. At the start of the war Richard Crossman was involved in supervising the activities of the various British Political Warfare Executive secret propaganda broadcasting stations; which were set up in Buckinghamshire, Bedfordshire and neighbouring counties to the north-west of London. Crossman also settled himself in a comfortable country house called 'Dawn Edge' in Aspley Guise, just a few miles from Woburn Abbey. Here he also accommodated a number of left-wing German socialists and émigrés, who were connected with the *Neubeginnen* movement. They were all highly educated, and were putting together material to be broadcast back to Germany via the secret Gawcott and Potsgrove transmitters. The first two 'stations' carrying this German-language invective were *Das wahre Deutschland* or *DWD* (meaning 'The True Germany') and *Sender der Europäischen Revolution* or *SER*.

## SPIES IN CAHOOTS

GUY BURGESS was Talks Producer at the BBC before the war, and he invited Anthony Blunt to give several talks on modern art, having assured the BBC that Blunt was not a communist supporter. Burgess left the BBC in 1939 to become the producer for the UK government's highly-secret Joint Broadcasting Committee, which had just been created by MI6. The JBC was quite the most daring plunge into secret broadcasting that the government had yet made. It was intended to be just as adventurous as Strasser and Münzenberg had been in Europe.

**The Joint Broadcasting Committee's HQ in Chester Square, London.**

The HQ of the JBC was at 71 Chester Square in London. Burgess's own flat was conveniently situated in the same square. The function of the JBC was to make recorded programmes, for use in enemy and neutral countries, in accordance with the requirements of the Ministry of Information. This material was intended primarily for reception by German-speaking listeners, and the unit was supplied with mobile recording equipment, together with a large selection of German-made gramophone records. Some of the record playing units were attached to mobile radio transmitters, and could therefore be used as mobile *Freiheitsenders*. Soon MI6 was producing recorded speeches, made by Prime Minister Neville Chamberlain and others, for transmission over Radio Luxembourg. Indeed, there is evidence that some of these recordings were made for the JBC in BBC studios by junior technicians - without the knowledge of their superiors. After the war it was suggested that the JBC had become a 'double' clandestine set-up - in effect being run by the communist party in Moscow! Whatever the truth of the matter, it then became absorbed into the BBC's Transcription Service.

*Next month I shall terminate 'The Voices' by looking at the rise and fall of propaganda broadcasting from the days of the German 'Concordia Bureau' and the British 'Aspidistra' right up to the Gulf War and the recent Balkans wars. The RSGB plans to publish a book entitled* The Voices *shortly. If any of our readers have reminiscences that they would like to pass on, for possible publication, please send them to Gordon Adams, G3LEQ, at the address given on page 36.* ♦

# in practice

IAN WHITE, G3SEK

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## EASY PSU DESIGN

*MANY PEOPLE ASK about power supplies - either how to design them, or about problems due to poor design. Here's a new way to find your own answers.*

*PSU DESIGNER* is a 'freeware' program that you can download from the web site of Duncan Amplification, a British company that applies modern design techniques to valve audio amplifiers. The performance of electronic circuits - valve, solid-state, audio, RF and almost anything else you can imagine - depends critically on the quality of its power supply. Sadly, far too many power supplies are thrown together using whatever components happen to be available, or copied from published circuits that were made the same way. To meet the need for power supplies with predictable performance, Duncan Munro has developed *PSU Designer*, a Windows program that lets you try out your power supply ideas on-screen, and simulate their performance in detail before you commit yourself to building. Equally you can simulate an existing power supply, and test it to destruction without the usual blue smoke or exploding electrolytics.

*PSU Designer* produces detailed time-dependent waveforms of voltages and currents, including switch-on transients and the response to suddenly-changing loads. This gives insights that traditional pencil-and-paper circuit analysis cannot hope to achieve. More surprisingly, *PSU Designer* also has advantages over the general-purpose circuit simulation programs. Although these programs are potentially much more powerful, there's a lot to learn before you can apply them quickly to any specific problem. *PSU Designer* avoids this difficulty because it specialises in only one class of circuit - the unregulated part of a mains power supply - so it doesn't confuse you with options that don't apply. You create the circuit by choosing from a series of pre-defined circuit blocks, which the program then draws for you, and interconnections between the blocks are automatic. **Fig 1** shows a typical circuit in *PSU Designer*, created with just a few mouse clicks from the following options:

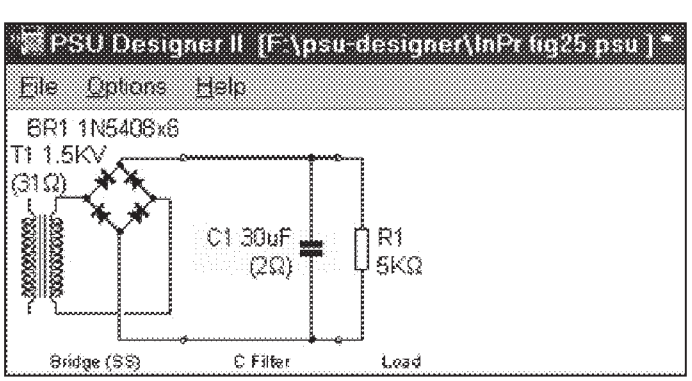


**Fig 1: *PSU Designer* has created this high-voltage PSU from three simple blocks: transformer/rectifier, capacitor filter and the load resistor.**

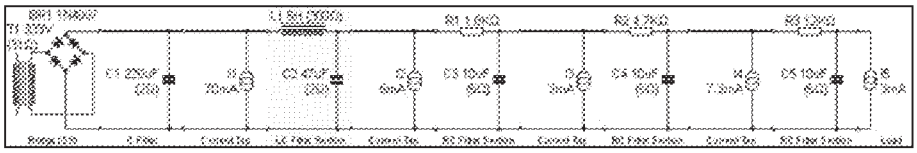

**Fig 2: *PSU Designer* has the versatility to simulate the PSU and 'cascade' HT filtering of a traditional multi-stage valve amplifier. Each stage is represented as a constant-current load.**

valve rectifiers, and the facility to define your own). Fig 1 is typical of a high-voltage PSU for a valve RF power amplifier, but with a few changes of values it could also be part of a low-voltage, high-current PSU, to be followed by a voltage regulator. *PSU Designer* can also expand to simulate the kind of cascaded filtering that you would find in a traditional multi-stage valve amplifier (**Fig 2**). Here, each stage of amplification is represented by a constant-current load or 'current sink', and the program simulates how the earlier (lower-level) stages receive a lower but also a better-filtered supply voltage. In all, *PSU Designer* can simulate just about any kind of linear (non-switching) mains power supply you'd reasonably ask for.

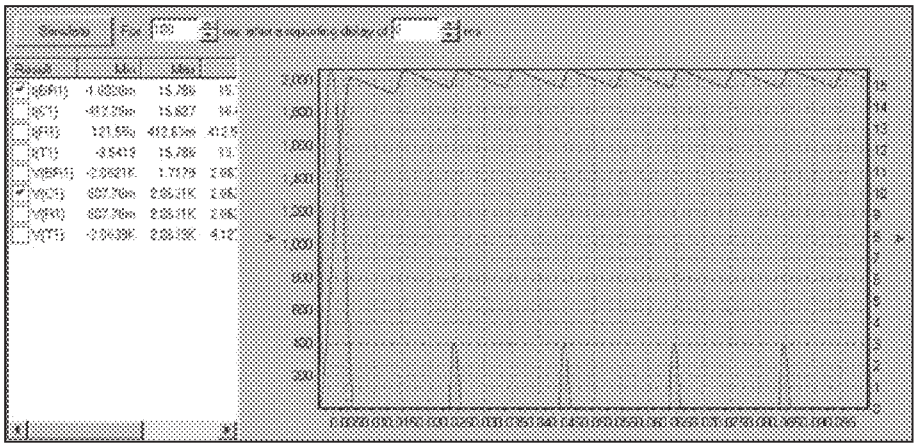

**Fig 3: Simulation of Fig 1 against time (X axis) showing the output voltage (upper trace, left-hand Y axis) and the large peak diode current in the first cycle after switch-on (right-hand Y axis). Afterwards, the diodes only conduct in short bursts to top-up the charge stored in C1.**

- Transformer/rectifier: choice of half-wave, full-wave (centre-tapped), bridge or voltage doubler
- First filter: choice of capacitor-input or choke-input (L-C)
- Optional additional filters: choice of capacitor, resistor-capacitor or L-C
- Loads: current sink (which draws a specified current) or resistor; multiple loads are also allowed.

Within each of these circuit blocks, you simply double-click on a component to change its value(s). Within the transformer/rectifier block you can change the transformer parameters (secondary voltage, turns ratio and winding resistance) separately from the rectifier parameters (a choice of pre-defined solid-state and

The simulation is very detailed, stepping through time from the moment of switch-on. You have two choices about applying mains voltage, either a sudden switch-on or a 'soft start' taking 500 milliseconds. In either case, you can choose not to see the results for an initial period of time - although the first few mains cycles after a 'hard' startup can reveal some alarming stresses on the components. The calculation is very quick with a modern PC, and the first thing you see is a comprehensive table of voltages and currents for all components in the circuit. The table gives the minimum, maximum, differential, mean and RMS values that have occurred during the time-span of the simulation. Click the check-box beside any value, and you can see it displayed graphically against time (**Fig 3**). Here's where it gets really interesting, because you can now start to play with various component values and see what happens. One handy feature of *PSU Designer*'s constant-current loads is that you can specify the

load current to change after a certain time. For example, this might allow you to see how the power supply starts up with a light load, and on the same graph to see how the output voltage falls (and the ripple increases) when full load is applied.

The 'In Practice' web site includes a series of downloadable circuit files for *PSU Designer* which show some features of typical high-voltage and low-voltage supplies. For example, the file named LV 20A.PSU shows how difficult it can be to design the unregulated part of a typical 13.8V 20A power supply. It's only a transformer, bridge rectifier and smoothing capacitor, so what could be difficult about that? Plenty! The circuit file has a current-sink load which draws only 1A at first, but then steps up to 20A. If you plot the output voltage V(C1), you'll find that the output collapses at 20A unless you get **everything** right: a transformer with a high enough secondary voltage **and** an extremely low winding resistance, **and also** a very large amount of reservoir capacitance. If you skimp on any one of these three essentials, you'll get negative ripple on the regulated output of the power supply. This is because of the minimum input voltage required by the regulator circuit; as shown in Fig 3 in the April 2000 column, if the negative ripple peaks fall below this minimum voltage, the regulator will 'drop out' and the ripple will appear on the output. But don't take my word for all this - download the file LV 20A.PSU into the same directory as *PSU Designer*, and load it into the program. Then you can double-click on any component to change its value, run the simulations and see for yourself.

Many home-builders have learned such lessons the hard way, wasting a lot of effort by building power supplies around components that turned out to be unsuitable. I have certainly done that, and probably you have too. With *PSU Designer* you can be warned in advance, and then move on to discover what components *will* work. Highly recommended!

## DEPTH STOPS FOR DRILLING

*HOW CAN I get or make a depth stop to fix to a drill?*

YOU CAN BUY sets of depth stops from a number of tool catalogues, but they're nothing more elaborate than a series of collars with grub-screws to fix them to the drill bit at the required position. You can get them for nothing from old mains plugs and other connectors! These will give a positive depth stop when drilling, although they are also likely to mark the surface you're drilling into. If you don't require a very accurate or repeatable depth, a simple alternative is to make a mark on the bit using a felt-tip pen, and do it by eye.

Another ingenious idea from the uk.d-i-y newsgroup is to attach a little 'flag' of masking tape to the bit at the correct point. When you see the chippings being swept away, you're there!

Of course, an even better way is to use a drilling machine with a depth stop on the vertical feed. It may be worth reminding you that the prices of 'hobby'-rated pillar drills are coming down all the time - see the tool catalogues referenced on the 'In Practice' website, and watch out for special offers in the DIY sheds. These aren't precision tools, but any pillar drill is vastly better than a hand-held electric drill. My pillar drill with a 13mm chuck gets used for everything from 25mm conical step drills for sheet metal down to 0.8mm drills for PC boards. Wouldn't be without it.

## NiCd NASTIES

*G8AKX REPORTS two problems related to the use of NiCd cells.*

INSTEAD OF REPEATEDLY buying sets of C-cells for a digital multimeter, G8AKX installed NiCd rechargeable cells and converted the external PSU socket for convenient charging. Not long afterwards, the meter stopped working. He found a PCB track had burnt out, and replaced it with thin wire which burnt out also. On investigating, he discovered that the range switch was make-before-break, and put a short-circuit across the cells when switched between two specific ranges. This had not been a problem with the non-rechargeable cells, but the internal resistance of the NiCd cells was low enough to provide a considerably higher current, enough to do damage if the switch was moved over a bit too slowly. Since the switch could not be modified, the problem was solved by putting a small torch bulb in series with the cells - **Fig 4(a)**. When the filament was cold, it had a low enough resistance to have no effect on normal operation, but the filament heated up to absorb the surge due to the short-circuit.

The second problem arose in a number of industrial units that used either a single NiCd cell as a backup (actually seven cells, about 8.4V) for a clock IC, or a PP3-type 9V NiCd battery to power an alarm. These units all used a very basic constant-current source to trickle-charge the battery, typically a series resistor fed from a much higher voltage. The battery in turn acted as a voltage clamp to limit the supply voltage to the rest of the circuit: **Fig 4(b, c)**. This worked fine when the batteries were new, but in time the cells deteriorated and the terminal voltage rose, eventually damaging the rest of the unit. Once again this was a problem with the original design. The quick fix was to add components to clamp the voltage independently of the NiCd. Two or three forward-biased silicon diodes in series were enough for a single cell, or an appropriate Zener diode for a 9V battery.

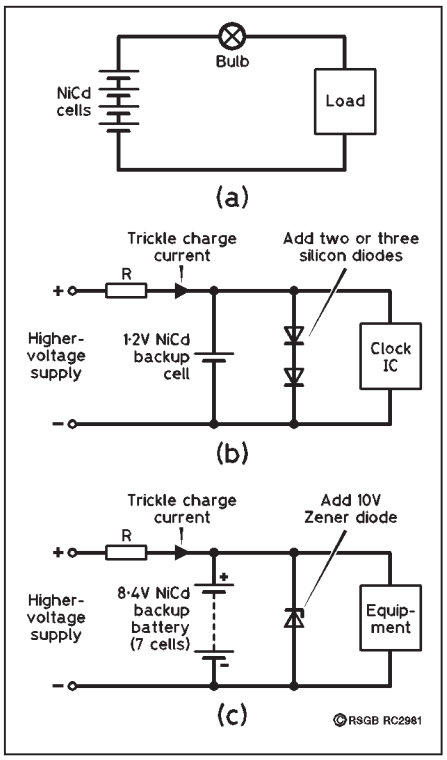


**Fig 4: G8AKX's two problems with NiCd batteries. (a) A small bulb in series with the battery has low resistance when cold, but can absorb a current surge; (b, c) In the long term, the terminal voltage across an old NiCd cell or battery can rise sufficiently to damage the rest of the circuit. Clamp diodes are needed to provide a 'backstop'.**

The second type of fault raises a more fundamental design problem for circuits that contain a voltage regulator, but use a supply voltage that is high enough to do damage. What can go wrong here? G8AKX has provided two examples (Fig 3(b, c)), but the even greater risk is that the terminals become corroded or a wire breaks, disconnecting the battery completely and exposing the circuit to the much higher supply voltage. A similar problem can arise with IC voltage regulators, which can fail with a low resistance between input and output. For highest reliability, you need to provide clamping diodes as a 'backstop'. ♦

---

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**The 'In Practice' site also has downloadable circuit files to illustrate the examples given here.**

If you have new questions, or any comments to add to this month's column, I'd be very pleased to hear from you by mail or e-mail. Please remember that I can only answer questions through this column, so they need to be on topics of general interest.

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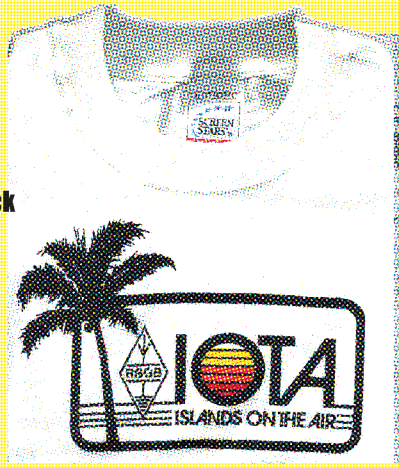


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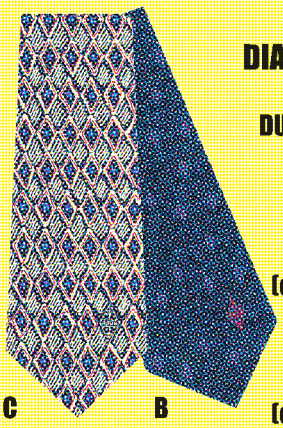

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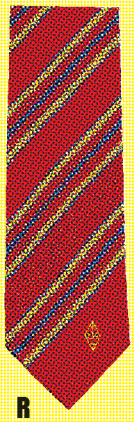

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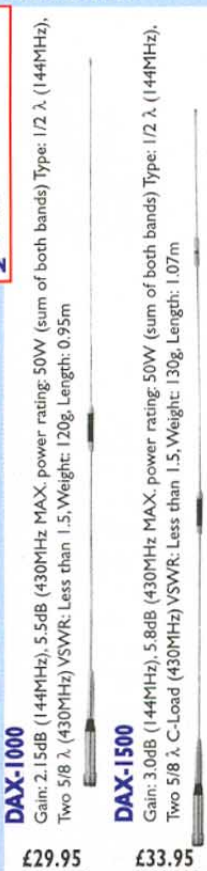

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# WHATEVER NEXT

**STEVE WHITE, G3ZVW**
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OVER THE PAST few years, apart from increases in processing power and storage capacity, laptop PCs have become progressively smaller, lighter, and thinner. The point has now been reached where the inclusion of removable media such as floppy disk and CD drives has become impossible. Typically, this deficiency is compensated for by the inclusion of a network connection, which is all very well when you have a network to connect to, but what about the times when you don't? Although these machines invariably have modems, it isn't really practical to e-mail file attachments back and forth all the time, especially large ones; and not everyone is going to want to buy a docking station.

## MICRO 'DISK' DRIVE

ONE POPULAR method of overcoming the problem is with Zip drives, which are quite inexpensive items these days. They plug into a USB port and provide up to 250MB of storage per cartridge, depending upon model. The cartridges are not much bigger than a 3.5in floppy, but the drives themselves aren't exactly tiny. Enter the ThumbDrive, a disk drive built onto the back end of a USB (Universal Serial Bus) plug. This new drive (pictured below), is currently available in various capacities from 8MB to 256MB (512MB and 1GB promised soon), measures just 58 x 17 x 10mm (ie smaller than a thumb), weighs 30g, features a write-protect switch, and requires no batteries or power source.

In reality the ThumbDrive is not a disk drive at all. There are no platters, no motor, and no heads. It is a flash memory device that emulates a disk.

## RETRO HAM RADIO?

WE ARE ALL familiar with 'retro' products, such as domestic radios, but is amateur radio about to head off down the same path?

Pictured (above) in the flea market at this year's Dayton Hamvention, the photo shows an elderly table microphone; and doesn't it bear a remarkable resemblance to the new Yaesu MD-200A8X pictured next to it?

To give you the details of this product, which was not available in the UK at the time of writing, the MD-200A8X incorporates a studio-quality dynamic element. Variable Side Pressure Control (patent pending) permits the user to adjust the audio response from flat to 'toppy'. A very nice touch is the inclusion of sufficient space in the microphone housing to take an extra, user-supplied microphone element. The MD-200A8X comes equipped with wiring and switch for this second element, be it dynamic, magnetic or crystal; so users can change between, say, a microphone suited to rag-chewing and a microphone suited to pile-ups without unplugging anything.

An elderly table microphone, year unknown, and Yaesu's brand new MD-200A8X.

Now don't get me wrong, I'm not anti-retro and I'm very much in favour of good quality audio, but *Whatever Next*? A transceiver with semi-hidden orange LEDs inside, glowing like valve filaments, a heating element built into the case . . . and something that makes it smell like an old transformer that's being made to work a bit too hard?

## CO-CHANNEL NON-INTERFERENCE

IN RECENT MONTHS I have featured a number of developments and innovations in the field of digital broadcast radio. However, it would be dangerous to think that just because digital radio is the in-thing, analogue FM is nearing the end of its life.

One of the most notable characteristics of FM is the so-called 'capture effect'. What this means is that so long as the signal remains above a certain level, the recovered audio sounds good, but if it falls below that level the audio deteriorates quite suddenly. The capture effect helps VHF broadcast planners to define areas of coverage, because they can say with a reasonable degree of certainty at which point the received signal will be sufficiently weak to drop into the noise or be overcome by a stronger station on the same frequency. All this is quite unlike AM, which disappears gracefully into the noise as the signal weakens.

By sending-in a cutting from *The Herald* (Scotland), Chris Tran, GM3WOJ, has demonstrated that someone, at least, is still looking at developing FM technology.

Anyone who has listened to, say, BBC Radio 4 in a car will know that you can't go that far before you need to re-tune to another transmitter in the network. In other instances you might find that, if you are listen-


The ThumbDrive. Up to 256MB of storage, built on to the back end of a USB plug.

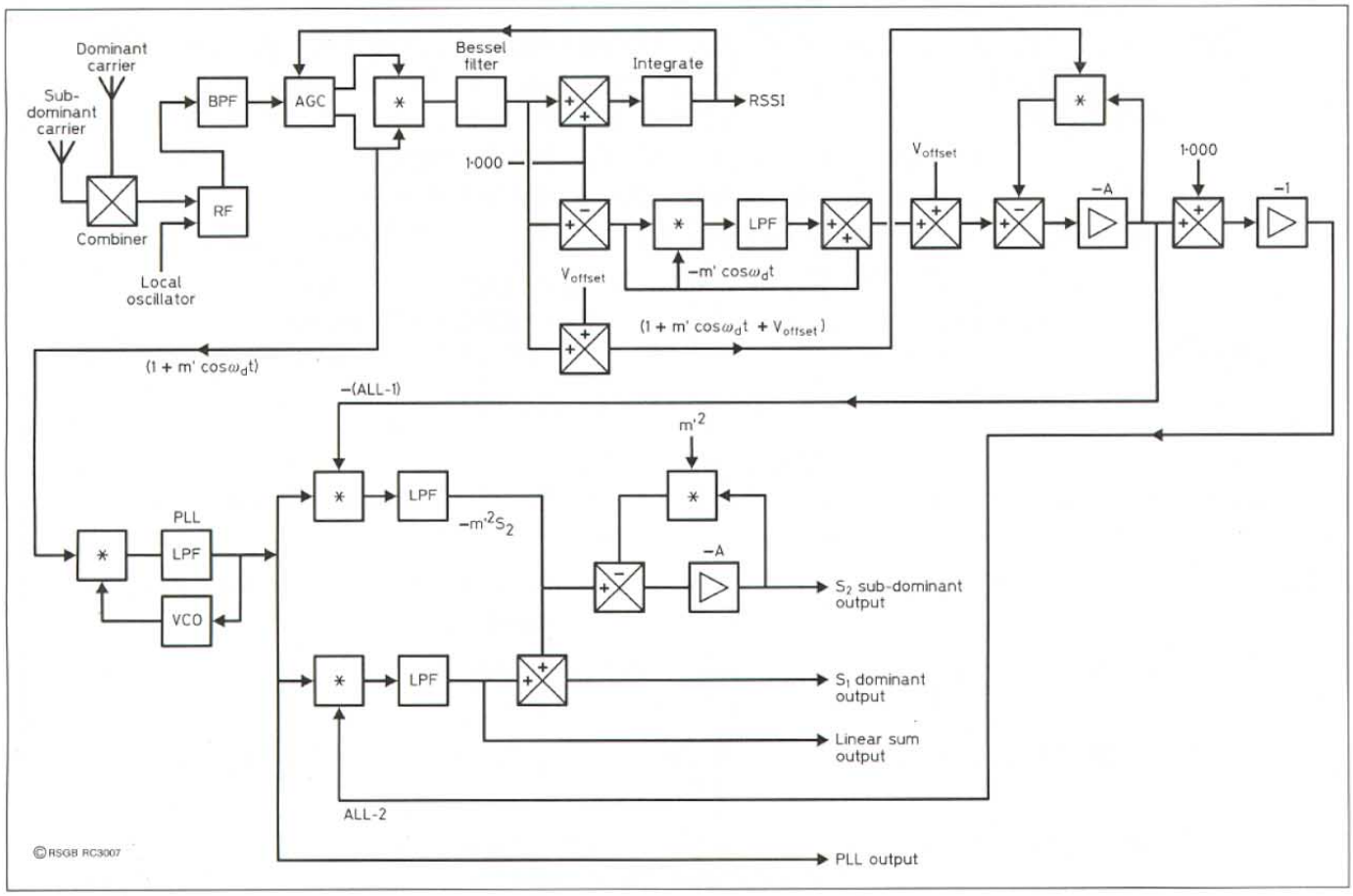


**Fig 1: Simplified block diagram of the Platinum III FM demodulator.**

ing to a local commercial station near the edge of its intended area of coverage, you get interference from a second local station (somewhat further away) that is on the same frequency.

Now, imagine interference-free reception without having to re-tune your radio as you drive along, because all the Radio 4 transmitters are on the same frequency. Even better, imagine being able to tune into that weak local commercial station that is being swamped by the stronger one! Impossible? Well, according to Andrew Pettigrew of Paisley University, the answer to both questions is "no", and the new technology that he has developed to prove the point is an FM demodulator called 'Platinum III'. It is a Eurocard-sized OEM module which can demodulate and separate two co-channel FM transmissions without distortion, crosstalk or beating, the core of the technology being an amplitude-locked loop (ALL).

Pettigrew's demodulation system, which has evolved over a number of years, started with a simple circuit that could demodulate an FM signal in the presence of a large unmodulated co-channel carrier at near infinite fading. The second generation could cope with infinite fading, quasi-synchronous conditions and any unmodulated interfering carrier. The third and current generation can demodulate the weaker of the two carriers - typically down to 20dB below the stronger or dominant carrier - using a new concept called the 'reverse capture effect'. There are three outputs from the demodulator, the dominant carrier output, the sub-dominant carrier output and the linear sum output.

To quote the Internet, "If, for example, infinite fading occurs due to a second multipath signal striking the antenna, the linear sum output is chosen and the signal will be demodulated without the infinite spikes which occur when the combined signals interfere destructively. The reception can actually improve as the direct and the delayed signals add up. Also, if there is more than 1dB difference in amplitude between the direct carrier and the delayed carrier, the demodulated signals start to separate out. They can be recombined in a variable delay line to reinforce the signal or reduce the bit error rate in data transmission.

"During quasi-synchronous reception, when the receiver is in the non-capture overlap zone between two transmitters, the spikes are removed, the beat tone is suppressed and the two signals add up. There is a near seamless transition between one antenna and the hand-off antenna.

"Using some simple external control logic, a wanted signal can be tracked continuously from, say, 20dB above the interference through infinite fading and down to 20dB below the interfering carrier. During infinite fading or when each carrier is within 1dB of the other, the linear sum of the two is heard, which is much preferable to the normal total loss of communication.

"Another mode of operation is to transmit a second channel, say, just 2dB below the normal carrier, effectively doubling the capacity of the system. The second channel would be secure from eavesdropping, since no existing demodulator circuit can hear the second channel due to the capture effect of the dominant carrier." This latter aspect of the system is something in which the military is apparently showing particular interest.

To facilitate the evaluation and adoption of the technology, a Platinum III demodulator has been built into a radio receiver using the Analog Devices AD607 device. A simplified block diagram of the demodulator is shown in **Fig 1** above. ♦

*If there is an item of new technology you would like to know more about - or one that you know about and think ought to be mentioned here - drop a line to the author, or e-mail him at the address at the start of the feature.*

**WWW.**

**ThumbDrive** www.thumbdrive.org.uk *or* www.megapixels.com
**Platinum III FM demodulator**
http://ces.paisley.ac.uk/ampsys/01platinum3.htm

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# Software Radio: a Closer Look

*Part two by Gerrit Buhe, DL9GFA, translated from CQ DL by Erwin David, G4LQI **

LAST MONTH, the author considered the general and receiving aspects of software radio. He concludes by concentrating on the transmitting side.

## SOFTWARE TRANSMITTING

IT SEEMS attractive to generate the signal to be transmitted, with its more-or-less sophisticated modulation, in the digital domain under software control. Even though the signal path is the reverse of that in the receiver, the considerations are much the same.

DACs (*digital-to-analogue converters*) with 12- or 14-bits resolution and very high clock rates are available. Some typical examples are shown in **Table 2**. Here, also, dynamic range is important because regulations and common sense require maximum signal purity, even more so as the following power amplifiers, at high powers and good efficiencies, add their share of distortion.

As in the receiver, oversampling can increase the dynamic range but again, there are spurii and harmonics. The DAC also reproduces its baseband output spectrum on both sides of the harmonics of the DAC's clock frequency, the so-called *sampling images* - **Fig 7.** Similar to undersampling in the ADC (and instead of using the baseband of a DAC through a low-pass filter) one can, through a band-pass filter, select and use one of the higher sampling images. This depends on the output bandwidth of the DAC. Here the requirements for clock jitter are the same as those for the ADC in the receiver, because the same mechanisms apply.

| DAC model | DAC14135 | AD9754 | HI5960 |
|---|---|---|---|
| Manufacturer | National Semiconductors | Analog Devices | Intersil |
| Resolution (bits) | 14 | 14 | 14 |
| Clock, (Msamples/s max) | 135 | 125 | 125 |
| SFDR 5MHz - sig, Nyquist (dBc) | 79 | 77 | 74 |
| SFDR narrow-band 2 - 4MHz (dBc) | 90 | 86 | 87 |
| Power requirement @ 5V (mW) | 180 | 190 | 180 |

**Table 2: Information on digital-to-analogue converters from different manufacturers.**

## USING AN IF ON TRANSMIT

DUE TO THE SINGLE-SIGNAL relationships, the transmitter can do without an IF more easily than the receiver but, even here, the results are better *with* an IF. This is because the spurii and harmonics, which greatly reduce the usable 'clean' dynamic range, can, by the choice of the sampling rate, be placed outside the signal bandwidth, where they are filtered out. This can raise the SFDR of a 14-bit DAC from, say, 70dBc in the Nyquist bandwidth, $f_s/2$, to over 85dBc merely by reducing the bandwidth to 4MHz. As the local oscillator has been configured for the receiver anyway, its two-way use is an obvious choice. See Fig 1, last month.

As the unwanted sideband (for SSB) is being suppressed in the DUC (*digital up-converter*), the transmitter signal need not be fed through the crystal filter; a simple LC filter adequately suppresses the spurii.

IF image problems are overcome in the same manner as in the receiver, by a low-pass filter after the transmit mixer if the IF is higher (eg 70MHz) than the highest transmit frequency, say 30MHz, or by co-using the receiver preselector filters if the IF is lower, (eg 9MHz).

* 22, Island Wall, Whitstable, Kent CT5 1EP.
E-mail: g4lqi@rsgb.org.uk

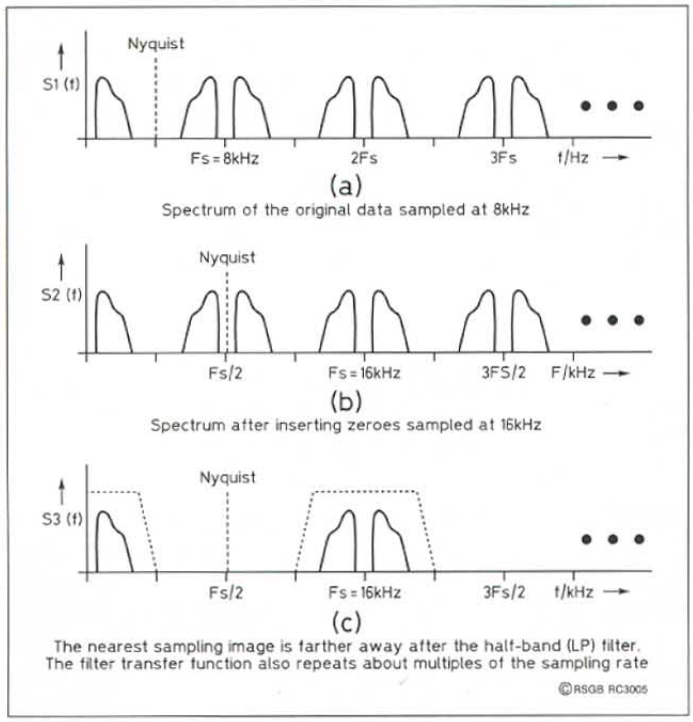



**Fig 7: Sampling images are shifted away from the wanted signal.**

## GENERATING A TRANSMIT SIGNAL DIGITALLY

HAVING LOOKED at the DAC as the key component in the transmit chain, the components generating its digital input need consideration. Analogous to the DDC (*digital down-converter*) in the receiver, a DUC is used, which consists essentially of the same components - compare **Fig 8** with Fig 6 last month.

Taking the SSB mode as an example, the DSP (*digital signal processor*) reads the speech signal from the microphone via an audio ADC, perhaps emphasising the treble somewhat, compresses the signal to raise average-to-peak power ratio, and sends this digitised audio with a low sampling rate of, say, 8kHz, to the DUC. It is still a two-side-

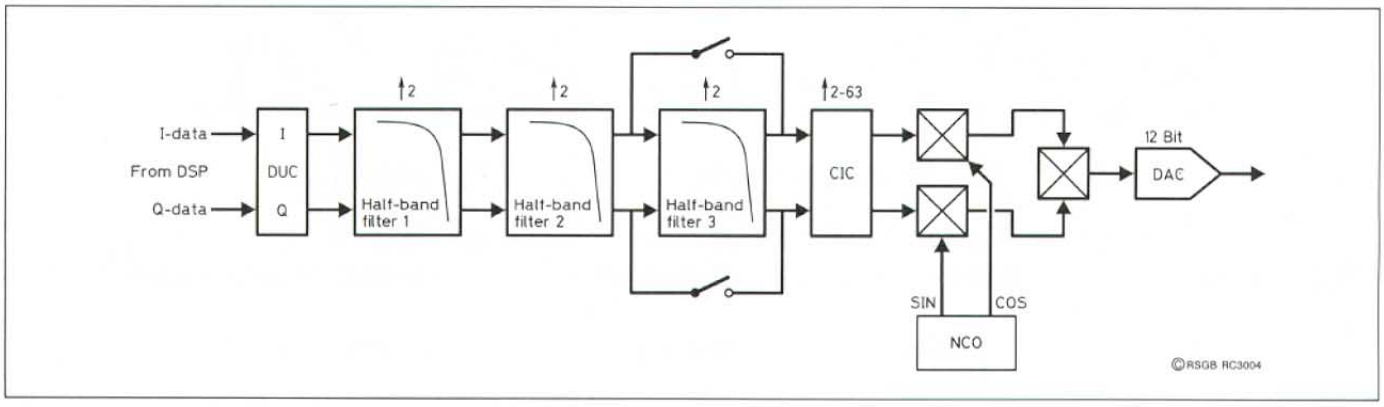



**Fig 8: Digital generation of the transmit signal (example - with AD9856).**

band signal, but the DSP sends its output direct on one channel and with a 90º phase shift on the other. Downstream quadrature modulation will suppress one sideband, creating a true digital SSB signal. As the digital phase relationships can be achieved very accurately, the sideband suppression will be near-perfect.

Before up-conversion to the IF, the sampling rate must be raised, lest the audio spectrum be repeated at every multiple of 8kHz and appear on the IF as such. The interpolation required to raise the sampling rate is done simply by inserting zeroes between samples, followed by low-pass filtering.

As Fig 7 shows for one stage at a time, each stage raises the sampling frequency by a factor of two and thereby increases the distance between the wanted signal and its *sampling images*, so the latter can easily be suppressed by a CIC (*cascaded integrator comb*) filter. Finally, the sampling rate of the DAC is reached. The baseband with this high sampling rate is now quadrature modulated with the NCO signal to produce a digital SSB signal at the IF. It is then is applied to a DAC.

## SOFTWARE FOR THE POWER AMPLIFIER?

ON FIRST CONSIDERATION, there does not seem to be any relationship between the analogue power amplifier stage(s) and software radio, or is there?

Best linearity of the transmitter chain is not only required for the SSB voice mode, but also for the new data modes. Traditionally, better linearity is achieved by reducing drive to the power stages, but at the expense of output power and efficiency.

An amplifier operates most efficiently at its *1dB compression point,* the power level above which the power gain of the amplifier is reduced by more than 1dB - see **Fig 9**. Not only the amplitude, but also the

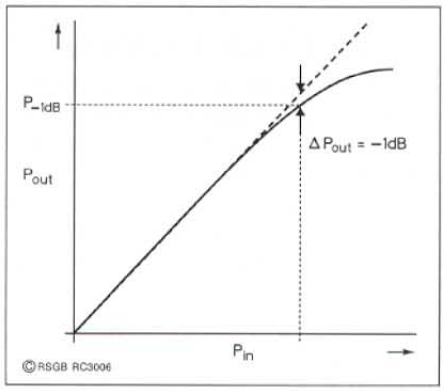



**Fig 9: The 1dB compression point.**

phase of the output signal is distorted; if the transfer function in terms of amplitude compression and phase rotation of an actual amplifier could be ascertained, it would be possible to increase the amplitude gain and advance its phase on drive peaks to permit linear operation up to the 1dB compression point; this is particularly important for sophisticated digital modes in which more than one bit per symbol is encoded by both amplitude and phase; given an adequate SNR, the precision of modulation determines the error rate. This technique of linearisation is called *pre-distortion*; it is not new and until recently it was achieved by analogue means.

In the digital transceiver, this function can be executed in the digital baseband. A sample of the PA output signal is 'received', which permits both amplitude and phase comparison with the microphone or other input source as, by virtue of the quadrature demodulation, the phase relationships are known. Clever modelling with mathematical functions (such as polynomials and splines), allows the input data to be multiplied with complex correction factors to create the required pre-distortion. That permits linear PA operation up to higher peak-power levels together with better efficiency.

Some extra precautions are required. To handle this pre-distortion, the transmit DAC needs extra headroom. As higher-order products further from the carrier frequency appear (which must be included in the measurement), and to avoid distortion by the filter proper, the receive filter for this application should not be too narrow, ie it should not be a crystal filter. The second channel in the DDC with an LC preselection filter could be utilised. ♦

---

● Jim, G3EGY, is looking for some valves for an 'old linear project'. He would appreciate any two of each type **EY81** - **6U4**. All expenses paid. G3EGY, tel: 01782 324 407.

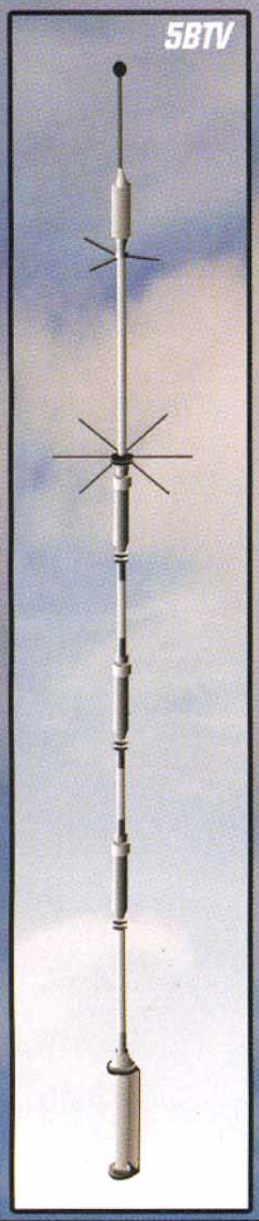
● David, G3RYP, is restoring an **FTDX-560** and needs a circuit diagram and, if possible, a service manual. All costs covered. G3RYP, QTHR. Tel: 01423 780 784 or e-mail g3ryp@qsl.net

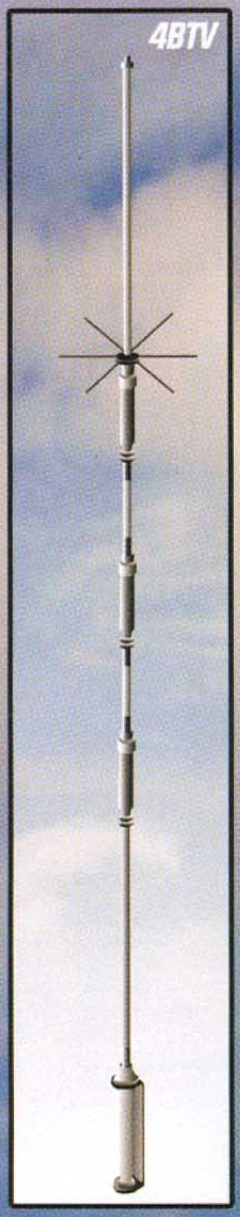
● G3ESB has an urgent requirement for the operating handbooks or manuals for the **Trio CS1022** oscilloscope and the **Airmec 304A** oscillator. All costs gladly defrayed. G3ESB, QTHR. Tel: 01332 735 896.

● G3NHU is seeking a circuit diagram or manual for the **Icom IC-28H**. He will pay any expenses incurred and will return anything sent to him for photocopying. G3NHU, QTHR. Tel: 01493 721 173.

● Umberto, I1BIN, needs circuit diagrams and manuals for the **Racal MA1072** Controller and the **Racal MA1720S** Drive Unit Transmitter. He will cover all costs. Umberto Bianchi, 81 Corso Cosenza, 10137 Torino, Italy.

● Peter, G3MZF, is looking for an operator's handbook for the **Tandy / Radio Shack DX394**. He will photocopy or will pay for you to photocopy. Tel: 01977 682 888, e-mail peterg3mzf@aol.com or write to him at 23 Beechwood Close, Sherburn-in-Elmet LS25 6HT.

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# DTMF REMOTE CONTROL
## for Beacons and Repeaters

*By Andy Talbot, G4JNT **

THE UNIT described here is intended for the remote control of beacons and repeaters where a permanent telephone line is available for secure control. The unit may be used with a duplex radio link, for example when controlling a repeater, but for simplex (transmit/receive) operation, hardware and software changes will be required. Furthermore, issues such as security of control codes may inhibit its use over a public radio channel.

On ringing the telephone number of the line to which the Controller is connected, it will automatically answer after approximately two rings. A Personal Identity Number (PIN) is then entered, followed by a command using DTMF tones generated by the calling telephone to control the remote circuits and read their status.

## CONTROL PROTOCOL

TWO LEVELS of control are allowed. One PIN, intended for issuing to persons *not* holding an amateur radio licence, will turn *off* all controlled circuits with no ability to switch them back *on* again using this number. This will be referred to as PIN1, and the associated all-off command referred to as a *Priority Command*. A second PIN gives access to individual *on/off* control of the remote circuits and allows the status of these, and of the Controller itself, to be read back using CW messages. This is referred to as the *User PIN*. If a Priority Command has been issued, this is indicated in the status message. Remote power supply monitoring is also featured, as the Controller maintains a backup battery to store the state of the controlled circuits during power failures. If the beacon or repeater goes off air this message allows the operator to see if power failure or a command or equipment failure is the cause. The internal battery should be able to power the PIC and DTMF decoder for one to two days. A full command listing is given later.

## DESIGN

THE CIRCUIT diagram of the Controller is shown in **Fig 1**, but without details of interfacing to the telephone line. Components within the box labelled 'Line Interface' are for illustration only. A dedicated MV8870 DTMF decoder IC performs all the audio filtering, validation and data decoding and outputs a four-bit code for the DTMF digit received, plus a strobe, to a PIC microcontroller. At all times the PIC is monitoring for valid DTMF codes, whether the interface is off-line or on-line. This allows for local on-hook signalling (see later) as well as non-phone-line, or leased-line use. The decoder chip requires a 3.58MHz clock generated by a crystal; the same oscillator is also used to supply the PIC clock. The PINs are stored in the PIC's non-volatile memory and every DTMF sequence received is checked for a valid PIN. Up to three circuits can be controlled from this design and, as shown, two command outputs are in the form of a switch closure to ground intended for operating relays or similar, and one is an uncommitted 0 - 5V logic level output. Do not forget additional back-EMF protection diodes across any relay coils!

**IMPORTANT NOTE**

Direct connection to a telephone line requires that equipment be approved for such connection, so no complete details can be given here for such an interface. However, a suitable interface module for connection that may meet type-approval regulations is given at the end of the article. Some alternative means for making a safe connection to the Public Switched Telephone Network are also suggested. In all cases the relevant approvals and specifications should be read and followed in construction.

The PIC generates the audio CW messages used for acknowledging data entry and status messages. An LED is included to show locally when audio responses are being generated. The LED is really there only as an aid during software development and is fully software-programmable.

The final task of the PIC is to respond to the telephone line and perform the auto-answer function. An opto-isolator in the line interface monitors the line for ringing voltage and, when this is present, C8 is charged. When the switching threshold on the PIC's A4 Schmitt trigger input is reached, A3 is activated which operates the relay or switch in the line interface via TR1, seizing the line. C8 is then discharged, ready for the next call. To ensure fail-safe operation, the PIC software maintains a continuous time-driven interrupt counter. When a particular value of count is reached (after 20 seconds) the Controller will release the phone line irrespective of the state of any command entry. Every time a DTMF digit is received, the counter is reset to zero, restarting the 20-second time delay. This means that is impossible to lock up the Controller in a state that keeps the phone line latched on; to terminate a control session, just hanging up or entering no tones for 20s is all that is needed. Immediately before going off-line, a tone is sent. A full software listing is available in the file *DTMFREM1.ASM*, available from the sources given later.

The nominally-5V power supply for the MV8870 and the PIC is generated by a NiMH battery which is float-charged by a constant-current source of 10mA. With a PIC current consumption of 6mA, this leaves 4mA to keep the battery topped up. The voltage input can be anything from 7 to 20V.

## CONSTRUCTION AND SET-UP

A SURFACE-MOUNT, single-sided PCB layout is given in **Fig 2(a)** and the component layout in **Fig 2(b)**. Alternatively, if SMT construction is not desired, constructors can make their own through-hole version or even use Veroboard or similar. Two wire links are needed on the PCB - one carries the clock signal from the MV8770 to the PIC, the other carries the power-monitoring signal from TR5. Observant readers may notice that the data lines from the DTMF receiver to the Controller are crossed over, Q1 to B4, Q2 to B3 etc. This was done solely to make PCB layout easier without resorting to wire links; the correction to the data is made in the PIC software.

Firstly, the charging current needs to be set up. Power up the whole circuit without any line interface or external relays supplied from the 5V supply, and measure the current into the battery. By selecting the value(s) for the parallel combination R13-R14, ensure the current into the battery is in the range 4 to 6mA. A typical value will be in the region of 60Ω total. The PIC and MV8870 will consume about 6mA between them, meaning the current source has to regulate to around 10 to 12mA. Note that, when measuring the input current to the Controller, this figure will be increased by that needed for the power indicator LED.

Programmed PICs using the *DTMFREM1* software are configured at switch-on with circuits 1 and 2 on, and circuit 3 off. Customised software will allow this to be changed. After switching on, check that the command outputs are in the correct state - this should prove that the Controller is working. Then, while monitoring the audio output with headphones or an audio amplifier, short the Ring Input (RI) to 5V. After about 1s, the auto-answer tone will be heard and the line-control output will be activated. Remove the short and, after approximately 20s, another tone will be heard and the line-control will be released.

The PCB layout allows for Commands 1 and 2, as well as the line-control, to be performed by

* *15 Noble Road, Hedge End, Southampton SO30 0PH.*

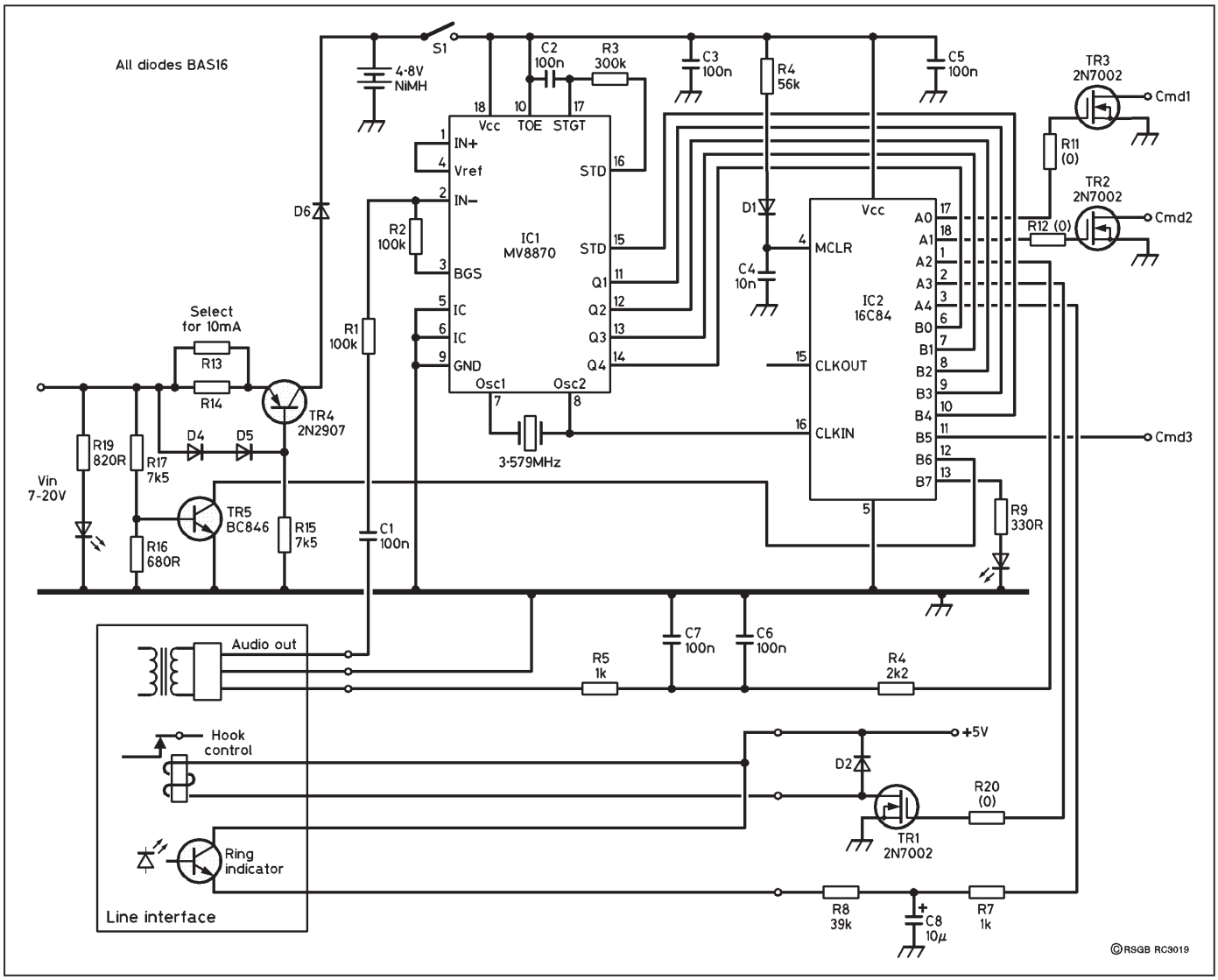


**Fig 1: Complete circuit diagram of the DTMF Remote Controller.**

relays with the driver transistors placed on the PCB. A spike-catching diode is provided for the line-control relay when used with the 5V supply. If using a line-control relay with a separate supply, this diode should be removed and replaced by one returned to the external supply. The replacement of the zero-ohm links with suitable current-limiting resistors on the gate drive of the drive transistors permits their replacement with bipolar transistors, perhaps of higher voltage or current rating. A 0-5V output can also be taken, and in the case of non-relay-switched control (see below), a resistor can be added here suitable for driving opto-isolators such as in a line-interface module

For complete testing, some means of feeding DTMF audio tones at a voltage level of greater than 0.1V RMS to the audio input is needed. If a phone line interface is in use, this can conveniently be done by connecting another phone in parallel to generate the tones (see note 1). Otherwise, an audio amplifier and microphone can be pressed into service, using a telephone or, preferably, a DTMF keypad to generate the codes.

The PIC is mounted in an IC socket, meaning that software updates and changes can easily be made by reprogramming. The use of a removable PIC also means operation can be customised to individual users' needs, as these may change.

## TELEPHONE LINE INTERFACING

TELEPHONE OPERATORS are very concerned that connections to their network should not cause any harm to exchange signalling equipment, personnel or correct operation of the network. As part of European and world harmonisation, the requirement for individual approval of all such equipment is no longer needed (BABT approval), but design specifications and rules are in place which must be adhered to if direct connections are contemplated and approval by random selection of production items is considered satisfactory. Most of these are concerned with safety isolation, voltage breakdown and testing, but also such matters as audio drive levels and out-of-frequency-band energy are specified (see note 1).

Fortunately, ready-made modules are now available to perform all the line interfacing and safety barrier functions. Using one of these means that, when coupled with correct construction techniques and housing, a design can be made that is capable of meeting the regulations. No details will be given here as it is each builder's own responsibility to ensure his own construction meets the requirements. One suitable module, the ETAL P3400, is available from Farnell, part number 761-000. Farnell can supply a data sheet on request, to which reference should be made. Etal also supplies a wide range of ready-made components for making up line-interfacing circuitry meeting the approvals. See their web page (2) for details of suitable components.

The design here will directly interface to this module with one minor change. TR1 and D2 are no longer needed to drive the On-Hook control input, as this is controlled by an internal opto-isolator rather than the more traditional relay. Instead, connection is made directly to A3 on the PIC adding a suitable current-limiting resistor at the R20 position. The audio input and output lines, and Ring Detect input, will interface directly to the respective module points. For all other interfacing and setting-up details, the data sheet should be consulted.

Other designs are suitable; various modems have been published in different electronics magazines over the years and many of the line-interfaces in these are approved designs, although obviously they all suffered from the same approval problems of home-constructed equip-

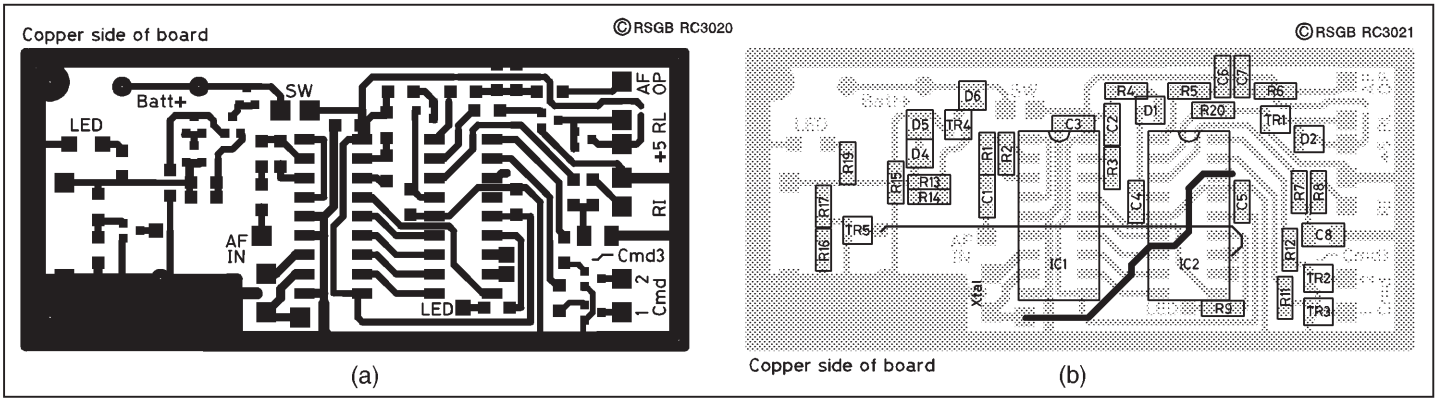


**Fig 2: (a) The PCB track layout of the DTMF Remote Controller; (b) The component placements. Both are shown actual size.**

ment. Another route might be to cannibalise an old modem (carefully) - ancient low-speed units (and even 28,800b/s ones) are frequently thrown away, as are fax machines. All will have suitable approved interfacing which, with care, could be pressed into service by carefully separating the line interface and removing the modem components (see note 2).

Many of the data sheets and application notes for telephone-line-interfacing components give helpful information on design and construction techniques - one of the most important, it appears, is the need for at least 5mm creep distance over a PCB surface, between any connection to the PSTN network and connections to the user's side.

## COMPONENT AVAILABILITY

SOFTWARE FOR THE PIC is available either from myself (3, 4) or from the RSGB web site (5). Ready-programmed PICs are available for £8 each, inclusive of post and packing. Please state your required PINs when ordering, so these can be programmed into the PIC. Some custom changes to software and command protocol may also be possible - you only have to ask!

Small quantities of surface-mount PCBs can be supplied on request. Price on application.

All components for the Controller module are readily available from suppliers such as Farnell.

## UPDATES PLANNED

SOFTWARE UPDATES will occur from time to time. One change underway while this article is being prepared is the inclusion of multiple Priority Command PINs, one for turning off each circuit instead of all together. Status messages available via the user PIN will be changed to reflect this. Another will be a command counter, to assist in monitoring commands issued by multiple users. The software name will be changed to reflect updates; look for files with the generic name DTMFREMx where x is a digit reflecting the upgrade number.

Another version planned will be a controller for use with simplex radio links. Here, apart from Tx/Rx control, a squelch input from the receiver will be needed for the Controller to be able to know when to send back acknowledgements and status messages. The same circuit and PCB layout will be adopted, with RI being replaced by Squelch and Hook Control by Transmit / Receive switching. A higher-security level of PIN entry will be needed to prevent hackers from intercepting the codes transmitted over the air and this will probably make use of a rolling code sequence where the PIN will change each time a command is sent. This is the same way that security for most wireless car entry and immobiliser systems is maintained.

## NOTES

(1) If testing by using another telephone in parallel and on an exchange circuit, do not choose a PIN which, when followed by any other PIN or commands, could generate a valid phone number, otherwise calls may be inadvertently made to unsuspecting subscribers! Starting the sequence the first time with a known invalid digit will be effective. For most of the time during testing, the exchange will be sending an annoying recorded voice saying the number is invalid, or giving a 'number unobtainable' tone, but this can safely be ignored.

(2) I developed my own lower-cost line interface with discrete components, based around one used for a modem published in *Wireless World* about 15 years ago. For the more adventurous and daring constructors, I can supply this circuit on an individual basis, *on the understanding that it is your responsibility to ensure that it meets safety and construction requirements.* ♦

www.

(1) **BABT approval** **www.babt.co.uk**
(2) **Line interface components** **www.etal.ltd.uk**

***PIC SOFTWARE***

(3) **actalbot@dera.gov.uk**
(4) **g4jnt@thersgb.net**
(5) **www.rsgb.org**

## OPERATING INSTRUCTIONS

**Version 1 - Instructions applicable to PIC code *DTMFREM1* only**

THIS REMOTE CONTROL unit will auto-answer a telephone line and command three circuits on or off depending on DTMF codes sent to it. CW responses are generated showing the status of the controlled circuits.

Two separate PINs are needed to access the Controller:

**PIN 1** issues a global turn-off and is intended to allow non-licence holders to turn off beacon or repeater equipment, without having the ability to switch it back on again. Receipt of PIN1 sets a status flag that can be read by the user.

**PIN 2** gives access to a command set which controls individual *on/off* for each command circuit and allows the Controller's status to be read back in the form of a CW message.

**OPERATION**

AFTER DIALLING the Controller's telephone number, it will answer after approximately two rings, and reply with a 1800Hz tone. At the end of this tone one of the two PINs may be entered:

Entering PIN1 will turn off all controlled circuits and respond with a double bleep (a slow 'I' or 'TT' in Morse) to show the command has executed. If this is not heard, repeat by entering the full PIN1 again.

Enter PIN2 and, after a short delay, the Controller will respond with a blip to indicate that it is now waiting for a single command digit. If no blip is heard, re-enter PIN2. After hearing the response, enter a command from the list that follows. Depending on the command entered, the Controller will respond with either a 'K' in Morse, or the status messages followed by a 'K'. Acknowledgement is sent even if invalid command digits are entered, invalid entries will be ignored.

The command sequence can be repeated continuously, with PIN1 + Command or PIN2 + Command entered each time. At any stage, if no response appears from a PIN or command entered, just repeat until accepted. Problems can occur if tones are entered too quickly and before an acknowledgement for a previous entry is sent. On completion of the commands, it is advisable to check the status with command '7' before closing the link.

The single digit commands are :

**1** Turns ON Circuit 1
**2** Turns ON Circuit 2
**3** Turns ON Circuit 3
**4** Turns OFF Circuit 1
**5** Turns OFF Circuit 2
**6** Turns OFF Circuit 3
**7** Replays the Status of the Controller; see below for status messages.
**8** Resets the Status flags, at the moment only P is implemented.
**9 # *** Not used.

**Status Messages:**

**'P'** Returned in CW if a Priority turn-off command, PIN1, has been issued. Cleared with the '8' command.
**'1'** Circuit 1 is ON
**'2'** Circuit 2 is ON
**'3'** Circuit 3 is ON
**'B'** Main power supply at the remote site is off (the Controller includes its own local battery to maintain status and auto-answer).

There is a built-in delay between hearing a PIN or Command and its response, to allow use with one-piece telephones, but units that mute the audio when sending tones may give problems if the un-mute delay is too long.

The Controller will send a 1800Hz tone and go off-line if no DTMF tones have been received for 20 seconds; there is no need to wait for this tone before hanging up.

CW messages are sent with a 900Hz tone; multiple responses are sent in the order they appear in the list.

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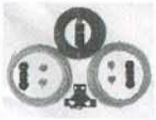

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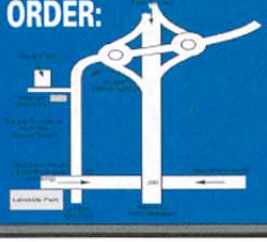

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### MA5V HF 5-BAND VERTICAL ANTENNA

* Bands: 10, 12, 15, 17, 20m
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* Height: 3.7m
* Wind survival: 160 kph
* Weight: 3.2kg

NEW

[TBA]

### CUSHCRAFT ASL-670 2, 4, 6M & 70CM LOG PERIODIC

* BANDS: 6, 4, 2M & 70CM
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* POWER RATING: 250W (CW)
* VSWR: 2:1 (TYPICAL)
* DIMENSIONS: 2 X 2.7M
* TURNING RADIUS:
* WEIGHT: 5.7KG

NEW

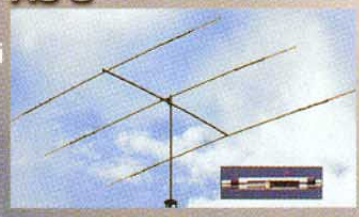
£249 C

### MA-5B

* Bands: 10, 12, 15, 17, 20m
* Max gain: 5.3, 0, 4.8, 0, 3.6dBi
* Front to back ratio: 10, 0, 12, 0, 22dB
* Power rating: 1.2kW
* VSWR: 2:1
* Bandwidth: 665, >110, 255, >100, 90kHz
* Boom length: 2.2m
* Turning radius: 2.7m
* Weight: 12kg

£299 C

### A3-S



* Bands: 10, 15, 20m
* Elements: 3
* Power rating: 2kW
* Forward gain: 8 dB
* Front to back ratio: 25dB
* VSWR: 1.2:1 (typical)
* Boom length: 4.27m
* Longest element: 8.45m
* Turning radius: 4.72m
* Weight: 12.9kg

£459 C

### R8

* Bands: 6, 10, 12, 15, 17, 20, 30, 40m
* Gain: 3dBi
* Power rating: 1.5kW
* VSWR: 1.2:1 (typical)
* Height: 8.7m
* Weight: 10.5kg

£469 C

### R-6000

* Bands: 6, 10, 12, 15, 17, 20m
* Gain: 3dBi
* Power rating: 1.5kW
* VSWR: 1.2:1 (typical)
* Height: 5.8m
* Weight: 5.6kg

£329 C

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C= £8.00
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| A3-S | 10, 15, & 20m 3 element yagi 8db gain 2KW 4.27m long | 459.95 D |
| A-743 | 7 MHz/10 MHz add on kit for A3S | 149.95 C |
| A3-WS | 12 & 17m 3 element yagi 8db gain 2KW 4.27m long | 349.95 D |
| A-103 | 10 MHz add on kit for A3-WS | 149.95 C |
| R-8 | 40-6m vertical 1.5kW 8.7m long | 469.95 C |
| R8-GK | Guy kit for R-8 vertical | 69.95 B |
| R-6000 | 6, 10, 12, 15, 17 & 20m vertical | 329.95 C |
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| D-3W | 10/18/24 MHz 2KW 10.37m long | 219.95 C |
| D-4 | 7/14/21/28 MHz 2KW 10.92m long | 299.95 C |
| D-40 | 40m 2KW 12.88m long | 259.95 C |
| XM-240 | 40m 2 element beam "Big Thunder" | 699.95 C |
| XM-520 | 20m 5 element beam | 629.95 C |
| XM-515 | 15m 5 element beam | 359.95 C |
| XM-510 | 10m 5 element beam | 279.95 C |
| TEN-3 | 10m 3 element beam 8dbd gain 2.44m long | 189.95 C |
| AR-10 | 10m vertical 3.75db gain 5.36m high | 74.95 C |

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|---|---|---|
| ASL-670 | 6m/4m/2m/70cm log periodic 6dBi gain 250 Watts CW 2m x 2.7m | 249.95 C |
| A6270-13S | 6m/2m & 70cm yagi | 189.95 C |
| A270-10S | 2m/70cms 5 element beam 10dB gain 1.9m long | 89.95 C |
| A270-6S | 2m/70cms 3 element beam 7.8dB gain 0.85m long | 69.95 C |
| AR-270B | 2m/70cms vertical 5.5/7.5dB gain 2.3m high dualband Ringo | 99.95 C |
| AR-270 | 2m/70cms vertical 3.7/5.5dB gain 1.13m high dualband Ringo | 79.95 C |
| 124-WB | 2m 4 element yagi | 74.95 C |
| 13-B2 | 2m 13 element beam 15.8dB gain 4.57m long | 149.95 C |
| 17-B2 | 2m 17 element beam 18dB gain "N" 9.45m long | 229.95 C |
| 26-B2 | 2m 26 element beam 18.8dB gain 4.75m long | 369.95 D |
| A148-3S | 2m 3 element beam 7.8dB gain 0.85m long | 48.95 C |
| A144-10SN | 2m 10 element beam 13.2dB gain 3.6m long "N" socket | 79.95 C |
| A148-20S | 2 x 10 ele beams c/w stacking frame & harness 16.2dB 3.6m | 189.95 C |
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| 729B | 70cms 29 element beam 17.8dB gain 6.7m long | 169.95 C |
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| A50-5S | 6m 5 element beam 10.5dB gain 3.7m long | 159.95 C |
| A50-6S | 6m 6 element beam 11.6dB gain 6.1m long | 279.95 C |
| 617-6B | 6m 6 element beam | 369.95 C |
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| PD-4 | Power divider for 4 x 13B2 | 64.95 B |
| 22-SK | Stacking harness and power divider for two 13-B2 | 92.95 C |
| 22N-SK | Stacking harness and power divider for two 17-B2 | 129.95 C |

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# Technical Topics

**PAT HAWKER, G3VA**
*37 Dovercourt Road, London SE22 8SS*

## WIDE-RANGE CAPACITANCE COMPARATOR

THERE IS A general requirement (not only for low-cost phasing networks) to be able accurately to compare capacitors (and resistors) taken from a batch of wider tolerance components to select components that match to within, say, ±1%.

It is possible to buy low-tolerance capacitors and resistors at a cost premium. André Jamet, F9HX, who has recently constructed a 144MHz SSB transceiver using Hilbert (two-path) phasing circuits rather than a four-path polyphase network, notes that both two- and four-path methods call for precise matching of resistors and capacitors to achieve the theoretically possible sideband discrimination. He writes: "You can find 1% metal film resistors (also rather more expensive 0.5%) and 1% polystyrene capacitors at RS Components. Maplin also supplies 1% resistors, but 1% polystyrene capacitors are no longer available from them."

For polyphase networks, as noted previously, the prime requirement is to select accurately-matching components from a batch. Resistors can be matched using good multimeters or bridge circuits. Accurate matching of capacitors needs a rather different approach. However, information on a precise, wide-range, capacitance comparator was contributed by José M Miguel of Barcelona to the 'Circuit Ideas' feature of *Electronics World & Wireless World*, (March 1994, p210): **Fig 1**. As shown, with two ICs and a few passive components, it can compare two capacitors within 1% over the range of about 100pF to 470nF. LEDs display whether a capacitor is higher or lower in value than a reference, or within a set percentage of its nominal value.

Its function is described as follows: "Two CMOS gates form an astable flip-flop, the unknown capacitor and the reference forming the timing components; unlike transistor astables, the circuit self-starts for capacitors in the range 100pF to 470nF. Capacitors Cx and Cref determine the on and off periods of the output square wave, whose duty cycle, d, is therefore given by

$$d = \frac{Cx}{Cx + Cref}.$$

After the R1-C1 filter, the direct voltage is dVcc, which is compared in the Siemens TCA905 window discriminator with a voltage derived from R4, R5 and R6 (the window centre) and R2, R3 for the window half-width. LEDs show the result of the comparison, giving over-, under-, or within-limits indication."

It would seem possible that, using two low-tolerance fixed mid-range capacitors for Cx and Cref, a similar comparison of the two resistors shown as R0 could be made, with one known low-tolerance reference resistor and one to be matched, though this was not suggested in the 1994 item. But, as noted above, matching of resistors can usually be achieved using multimeters or bridges.

## ANTENNAS ARBOREAL

SOME 27 YEARS AGO, a 'TT' item ('Plant your own aerial', April 1974, p235) drew attention to work at the US Army Electronics Command centre at Fort Monmouth in developing a new antenna matching device 'Hemac' intended to couple the 50-ohm output of an HF transmitter into almost any tree or metal pole or what-have-you that forms part of the landscape. It reminded me of a time when, living in a Bloomsbury flat in central London, I had made several unsuccessful attempts to couple my transmitter into a metal drainpipe that ran up to the top of the building.

According to the original article in *Electronic Design* (20 December, 1973), the use of a tree rather than a conventional short whip antenna could improve signals from packsets by up to 22dB. I commented that I suspected that this figure applied only when the whip was used in a damp and dense jungle where whips are notoriously virtually useless and the trees tend to be moist. But clearly, for some military applications, the ability to use a tree or an existing metal structure could prove extremely useful and deserved to be considered for amateur radio use. It was even suggested in *ED* that, by using several trees, it was possible to form a directional array!

To quote from the 1973 'TT' item: "Hemac, it is stated, is a leaky RF transformer in the form of a flexible toroid-shaped hybrid electromagnetic coupler which can sense and generate magnetic or low-impedance fields and electric or high-impedance fields. Judging by the photograph, the main part of the coupler consists of a number of large flexible turns of wire which are strapped around the tree or pole so that this forms an RF current transformer in association with a variable tuning and matching circuit which is similarly strapped on the tree.

"It is also pointed out that metal-frame buildings, window frames etc, all form potential antennas, although they require different coupling techniques. Finally, they have also been trying to assess how good an antenna can be formed from the human body (ie the old dodge of sticking your finger on the aerial socket) for transmitters of up to 1W rating. Fat, heavy people, it is claimed, are better aerials than slim, small ones! Generally, the efficiency of the body corresponds to that of a matched, centre-loaded whip 1.2m long at 4.2MHz."

Some ten years later, I added in *Everyday Electronics* (March 1984, p190): "A team of Indian scientists, led by S P Kosta, took the American work very seriously and, in the past few years, have described work on using date palm trees, cypress trees, coconut tree branches and. most recently. the green vegetation canopy of a whole series of tropical plants, to form VHF and UHF antennas. They have proved that certain geometrically-shaped vegetation, due to its water and chlorophyll content, can propagate electromagnetic waves when suitably fed with RF power.

"Tests at 1, 3 and 4GHz, when using these

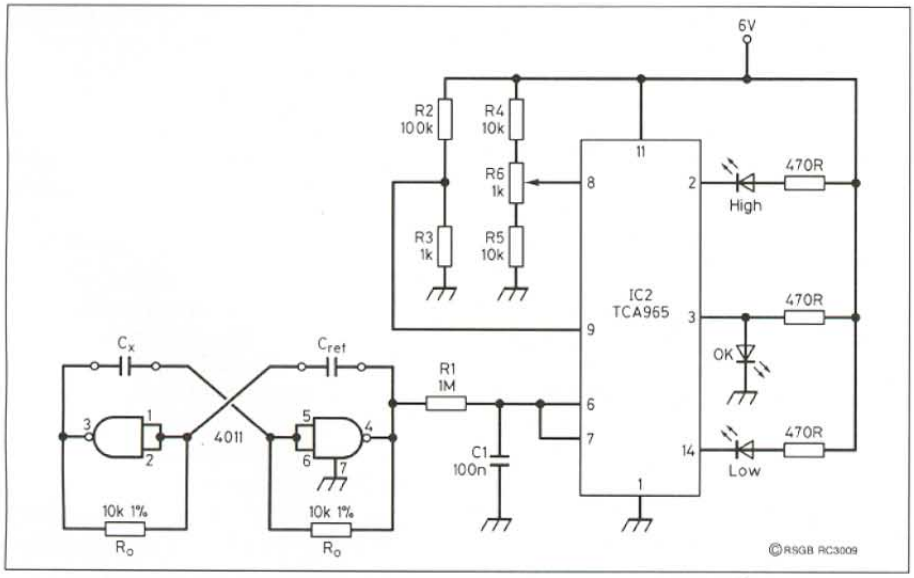


**Fig 1: Wide-range capacitance comparator, described by José Miguel in *EW & WW* in 1994, compares two capacitors in the range 100pF to 470nF to an accuracy of 1% with three LEDs giving over-, under-, or within-limits indication.**

as receiving antennas, have all proved satisfactory. In one test, TV pictures from the Bangalore TV transmitter were received over distances of 12 km and later 25km using live banana trees between 10ft and 15ft high."

Over the years various articles have appeared in the hobby magazines on the use of trees as antennas, but relatively little attempt has been made to investigate the subject in any depth. That is until a recent detailed article by John Pegler, G3ENI, and Danny Sharpe, G3ZUN, entitled 'Tree Antenna Experiments' in the *RNARS Newsletter* (Spring 2001). This provides some valuable basic information, ideas on matching techniques and practical results realised with an antenna based on a 10m-high Leyland Cupressus (cypress) tree about 30m from the G3ENI home with an ATU sited in a wooden shed adjacent to the tree. The transmitter had an output of about 20W on 3.5 and 7MHz, but tests were also made using the set-up as a receiving antenna in conjunction with a local signal generator. I think it is fair to summarise the results as rather disappointing, with a high proportion of the limited amount of radiation or reception apparently resulting from RF leakage from the co-axial cable to the ATU, although there was undoubtedly some small radiation from the tree.

The authors point out that "just inside the outer layers of the bark of a tree and its associated plant tissues is a wet, thin, bright-green layer of cells called the cambium. On either side of this layer there are cells that permit the movement of fluids up and down the tree, through Xylem and Phloem cells. Water and nutrients are taken up from the soil by osmosis through the root hairs. In reverse, starches made in the leaves are turned into soluble sugars and are taken down to the roots and other parts of the plant. Often this is stored as starch in the roots of some plants. These nutrients consist of a wide range of elements in a soluble form as ions. Since ions in solution form the basis of an electrolyte it is suggested that these fluids are capable of conducting electricity"

By means of aluminium probes inserted into the tree at heights of 1m and 2m above ground, G3ENI was able to show that there was a DC resistance of some thousands of ohms that could be reduced by inserting several probes to provide parallel paths. He also detected a small DC potential between the probes. It would be interesting to find out whether this could be increased by using probes of dissimilar metals (eg copper and zinc). The tree might then form a QRP power source!

The amount of leakage from the coaxial cable seems to have come as a surprise until a 1986 report by Delta Electronics was studied. This showed that with single copper-weave braid there is often only about 85% coverage and that RF leakage could be appreciable. [Some cheap TV cables have less than 20% coverage and can be responsible for EMC problems - *G3VA*].

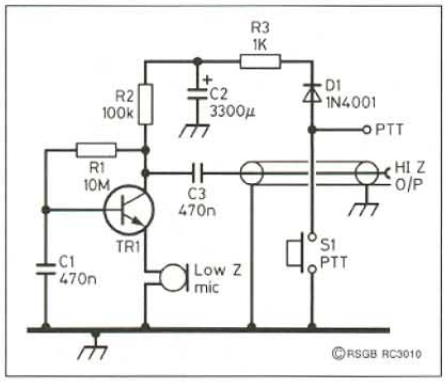


**Fig 2: High-impedance output from a low-impedance microphone, as originally described by ZS1J (source: *The Canadian Amateur*).**

Various systems were used to couple the coaxial feeder to the tree:

(1) A toroid around the trunk fed from the ATU in the shed via 300Ω feeder;
(2) three turns of wire around the trunk fed as above;
(3) direct connection of the coax to several probes;
(4) a Faraday loop 2m above ground;
(5) a 1:16 step-up transformer to probes;
(6) three turns series-tuned with a variable capacitor.

The authors summed up their findings, which were mostly readings taken with the tree used as a receiving antenna but which, by the law of reciprocity, should apply equally when transmitting: "There is a minimal radiation from the tree (signal only about 5dB above that of cable-leakage) and about the same amount as from the coupling devices. This, together with stray leakage from the feeder, accounted for the 7MHz contacts with G3ABH, G3VRB and GM0SIV/M. The majority of the transmitter's power is dissipated in the resistance of the tree."

While the investigation by G3ENI and G3ZUN is most valuable in providing additional information on the basics and in showing that a coniferous cypress tree in an unspecified season of the year, although providing some radiation, is in practice virtually useless as an antenna, it still, to my mind, leaves open a number of possibilities. One suspects that a deciduous type of tree, particularly in the late spring "when the sap is rising" or in damp tropical conditions, might exhibit much higher conductivity, and hence function more in accordance with the apparently successful US Army work at Fort Monmouth and the Indian experiments with palm and banana trees. But I would still think it advisable to look round first for a metallic structure to which the rig could be coupled. Or throw a wire over a branch!

## LOW-TO-HIGH-Z MIC AMP

FROM THE DIGEST column of Bob Eldridge, VE7BS (*The Canadian Amateur*, January/February 2001, p30), comes a useful-looking impedance-matching audio pre-amplifier that enables a low-Z microphone to be used with a transceiver requiring a high-Z microphone: **Fig 2**. This novel device, which can be built directly into the case of a microphone without requiring an internal battery, was published first by Roger Davis, ZS1J, in *Radio-ZS*.

It utilises the fact that there is usually a voltage available at the microphone in the form of a push-to-talk (PTT) wire carrying some 6 to 12VDC. However, this wire is normally grounded during the time you need it to power a preamp. The ZS1J design utilises this voltage to charge a high value (low leakage) electrolytic capacitor (C2) that is then used as a power supply source for the amplifier. The DC is fed to the capacitor through a type 1N4001 silicon diode and 1kΩ resistor. The diode prevents the charge from flowing to ground through R3 when the PTT switch is closed, with C2 capable of powering the preamp for up to about 25 minutes when used with an FT-101 with its 12V PTT line. C2 could, if necessary, be recharged for a further similar period by momentarily releasing the PTT switch.

The amplifier is designed to have high output impedance. With a 100kΩ resistor in the collector line and a 10MΩ resistor for base bias, the BC109A transistor draws only about 60µA with a current gain of 120.

## BE WARY OF SQUARE WAVE DC-AC INVERTERS

Dr PETER LOWENSTEIN, RS31144, writing from Zimbabwe, expresses his thanks to the several readers who provided information on ferroresonant regulating transformers ('TT' March and May, 2001). He writes: "The feedback is very interesting, particularly with regard to the observation that the 60Hz versions cannot be used on 50Hz supplies and vice versa, without changing the value of the capacitor. I was also interested to learn that the output waveforms can sometimes be a problem and now understand why some very peculiar shapes were displayed by my oscilloscope when I experimented with changing capacitor values.

"The comments by Malcolm Perry, G8AKX, on the effects of square waveforms, etc on the performance of equipment have prompted me to write again, since this applies to many of the inverters that are supplied to Zimbabwe. These usually generate 220V 'square-wave AC' from 12V solar-charged batteries.

"I have found that if a square-wave output is used to power equipment which contains a normal mains transformer very erratic performance tends to be obtained, not only from the equipment, but also from the inverter itself. This may include overloading the inverter and incorrect voltages being delivered

to the internal circuitry of the equipment being powered.

"This was well-illustrated when I tried to use a Nikki DA 500H (500VA) DC-to-AC inverter to power my Pace DSR600 Satellite TV Decoder and Philips 14PT2381 14in colour TV set through the Sellatek SVS 1000A voltage stabiliser normally used to protect these from the large voltage fluctuations in our local mains power supply. Feeding the SVS 1000A from the inverter resulted in heavy current being drawn from the inverter with consistently low input voltage indicated on the SVS 1000 input voltage LED bar-graph display - even though the load presented by the decoder and TV was only about 70 watts. Although the moving-coil voltmeter on the inverter indicated a correct 220V, the Sellatek input display indicated that the voltage input was at least 15% and sometimes 25% too low! The solution was to remove the voltage regulator and run the decoder and TV set directly from the inverter.

"Another problem occurs when I try to run a TV or video monitor that employs a degaussing coil from an inverter. Even when the quoted (average) power consumption of the TV or monitor lies well within the rated-capacity of the inverter, when the degauss coil is activated the momentary current drawn can be high enough to, at best, trip the overload switch, or, at worst, damage the inverter!

"Curious about the currents involved, I connected a large Sony KVJ29 29in TV set in series with an Avo M8037 Megger Multimeter which can measure crest (instantaneous peak) values. I found peak mains currents of up to 70A over 8 milliseconds can be drawn when the degauss coil kicks in! This represents a transient load of up to 15kW in contrast to the 160W quoted by the manufacturer. Small wonder that all the house lights flicker momentarily whenever this TV is switched on. Pity any but the most powerful inverter if the mistake is made of trying to use it to run such a TV!

"Yet, to the best of my knowledge, no warnings about this problem are issued in the instruction manuals supplied with either TV sets or inverters."

I recall that constructional details of a number of DC-AC inverters were published in *Electronics Australia* some 20-odd years ago that provided an output in the form of stepped (duobinary) pulses rather than as crude square waves. Inverters providing a reasonably accurate synthesised sine wave have been described elsewhere.

To quote directly from a 'TT' item that appeared in November 1989 (reprinted in *TT Scrapbook 1985-89*, pp334-35): "Several references have been made in 'TT' to the series of general-purpose DC-AC inverters designed to provide 240V pseudo-AC sine-wave output as published in recent years in *Electronics Australia*. Circuit details and waveforms of a low-power 15-watt 12-to-240V unit, originally intended for powering portable CD players, appeared in 'TT' December 1987, p915 [*TTS 1985-89*, p209].

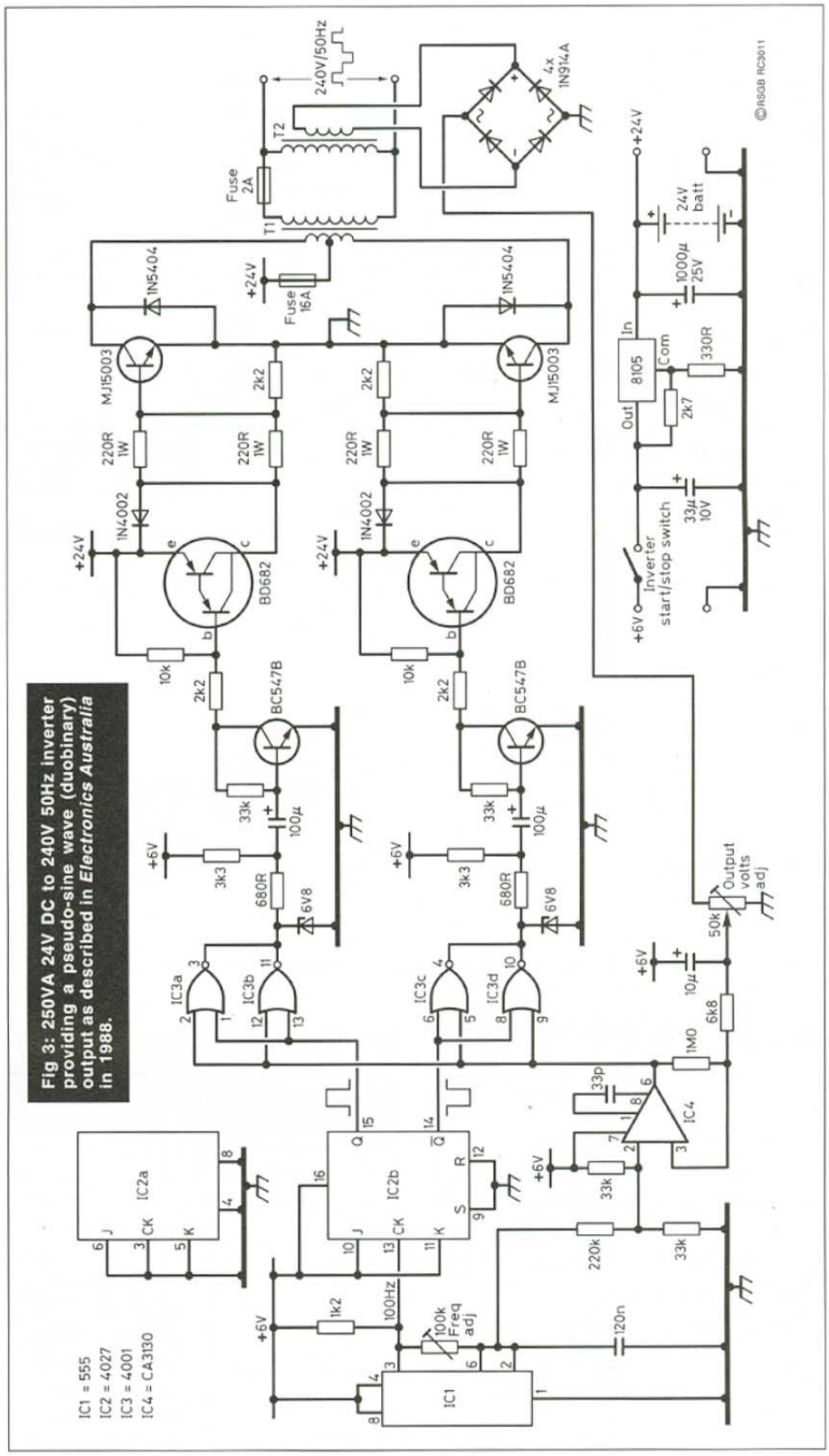


**Fig 3: 250VA 24V DC to 240V 50Hz inverter providing a pseudo-sine wave (duobinary) output as described in *Electronics Australia* in 1988.**

"For amateur radio applications, including their use instead of petrol-electric generators for powering 240V mains-type equipment in the field or at locations where there is no mains supply, or as a stand-by power source in areas where the mains supplies are subject to frequent interruption, higher power inverters are needed.

"The circuit diagram of an inverter providing a stepped waveform output with a power rating of 250VA appeared in *EA* (October 1988, p91) in a note from B Mortensen of Lae, Papua New Guinea where, apparently, there are frequent electricity blackouts.

"His circuit, **Fig 3**, uses ideas from earlier *EA* inverters and functions as follows: The oscillator (555) and 4027 flip-flop provide the 50Hz complementary square-wave which is

fed via the 4001 to the BC547B devices through 100µF electrolytic capacitors. These serve to keep the 6V and 24V DC parts of the unit separate. The BC547B devices drive the BD682 Darlingtons which, in turn, drive the MJ15003 output transistors. Voltage regulation is achieved by the CA3130 comparing a proportion of the output voltage with the 6V regulated supply and inhibiting part of drive circuit's waveform by turning low the output from the 4001 when required (in a form of pulse width modulation). Transformer T1 is an 18-0-18/240V toroid transformer (300VA). T2 is a PCB-mount 240/2V transformer.

"I have had the inverter, along with its mains failure start-up (relay) circuit and voltage-sensing battery-charger, in service for several months without any problems occurring. The transformer and the MJ15003 devices were the only costly items, but the unit still proved to be a cheap and reliable 250-watt inverter."

by A Ziemacki to be suitable for use between 2.5 and 25MHz: **Fig 4.** Based on half a standard 74HC123 monostable chip, it needs only three external components: two fixed resistors and a log-type 0.5MΩ potentiometer. By replacing the potentiometer with a fixed resistor (about 39k) and connecting a crystal across points X, it can provide a crystal-controlled oscillator in the range 10 to 20MHz.

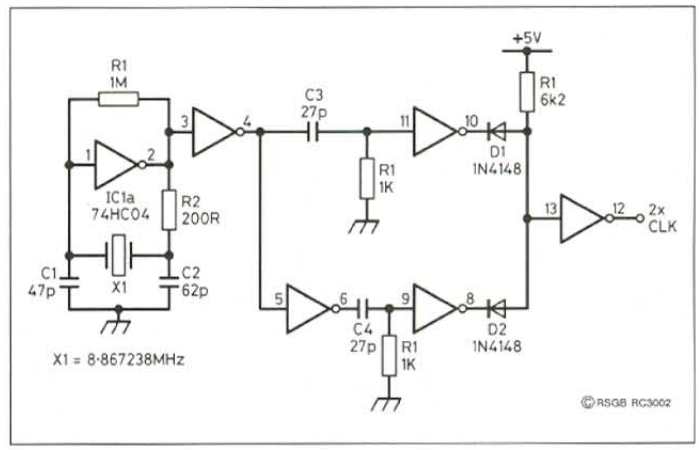


**Fig 5: Oscillator/doubler based on a single 74HC04 chip. Frequency shown intended for colour TV application, but could be used at other frequencies with modification of the crystal oscillator component values. (*Electronics World*).**

The June 2001 issue (p470) includes details of an oscillator/doubler based on a single 74HC04 IC which provides a clock output at twice the oscillator frequency, contributed by Emil Vladkov of Bulgaria: **Fig 5**. Although intended for a specific analogue colour TV application that requires a clock at four times the colour subcarrier frequency, there seems no reason why the same approach could not be adopted for amateur radio applications, although the oscillator stage components may need modification to suit the frequency concerned.

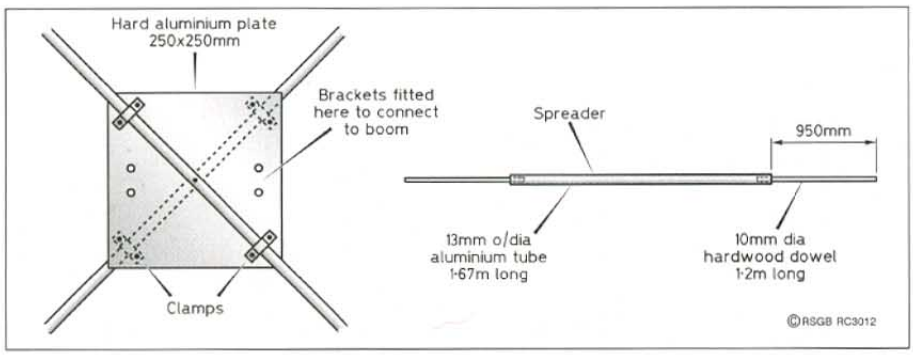


**Fig 6: Arrangement of spreaders and support plate for lightweight 21 & 28MHz quad antennas, as suggested by Z21FO.**

## OSCILLATORS AND DOUBLERS

A COUPLE OF potentially-useful ideas have been spotted in the 'Circuit Ideas' feature of *Electronics World*.

The April 2001 issue (p296) includes an extremely simple variable-frequency, voltage-controlled oscillator using only one IC, claimed

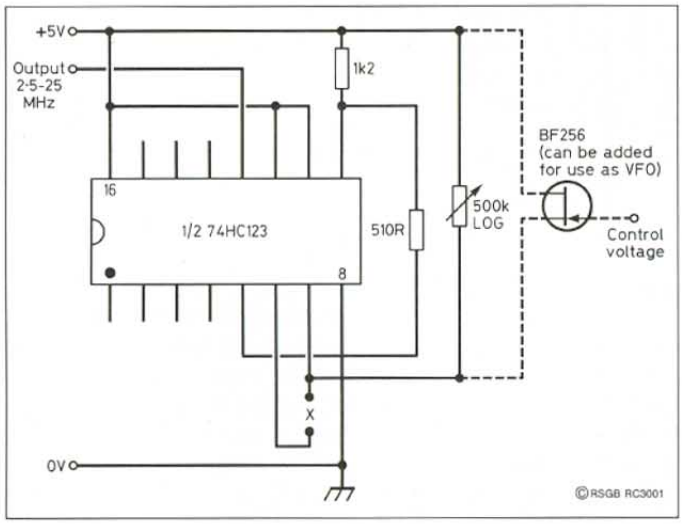


**Fig 4: Simple voltage-controlled oscillator for use between 2.5 and 25MHz based on one-half of a 74HC123 chip. For fixed-frequency operation, a crystal can be connected between X. (*Electronics World*).**

## HERE & THERE

ERIC Christer, Z21FO (RS167197), submits two useful-looking antenna construction tips. **Fig 6** illustrates a spreader technique for 21 and 28MHz quad antennas. He writes: "The usual arrangement shown in the antenna books etc shows the spreaders split in the centre with all the fitting done on one side of the centre plate. I find the arrangement shown in the diagram makes a neat and convenient system. Similarly, most illustrations for clamping antenna elements to booms etc show U-bolts being used. I find it just as easy to use scrap aluminium to form the clamps as shown in **Fig 7**. The thickness and dimensions of the plates can be selected to suit the size of the tubing to be clamped." ♦

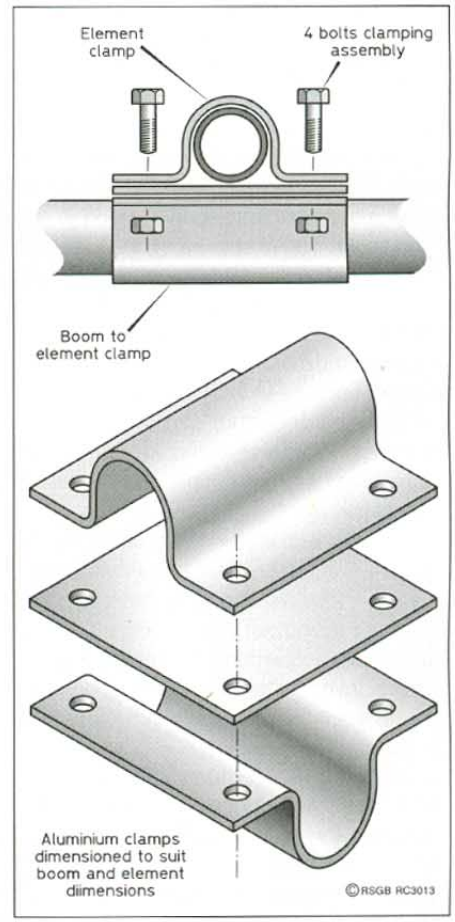


**Fig 7: Homebrew clamps to affix Yagi antenna elements etc to a boom or mast as used by Z21FO.**

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| ICOM | IC-R75 HF - 6m RECEIVER | £475.00 |
| ICOM | IC-T81E QUAD BAND HANDY | £250.00 |
| ICOM | IC-T8E HANDY TRANSCEIVER | £175.00 |
| ICOM | IC-W21E HANDY TRANSCEIVER | £199.00 |
| ICOM | PS-15 20A POWER SUPPLY FITS ALL ICOM | £110.00 |
| ICOM | PS-85 POWER SUPPLY | £175.00 |
| ICOM | SP-21 LOUDSPEAKER BOXED | £55.00 |
| ICOM | UT-102 VOICE SYTHESISER | £20.00 |
| ICOM | UT-84 TONE SQUELCH UNIT | £25.00 |
| ICOM | AT-120 ANTENNA TUNER | £200.00 |
| ICOM | IC-R7HF RECEIVER | £369.00 |
| JRC | NRD-535 HF RECEIVER | £600.00 |
| KANTRONICS | KAM PLUS TNC | £220.00 |
| KANTRONICS | KP-3 TNC | £89.00 |
| KENWOOD | AT-250 AUTOMATIC ANTENNA TUNER | £200.00 |
| KENWOOD | AT-50 AUTO ANTENNA TUNER | £175.00 |
| KENWOOD | AT-50 AUTO ATU | £175.00 |
| KENWOOD | DEC-230 FREQUENCY CONTROLLER | £70.00 |
| KENWOOD | PS-20 20A POWER SUPPLY FITS TR-9130 ETC | £55.00 |
| KENWOOD | PS-50 POWER SUPPLY | £145.00 |
| KENWOOD | PS-52 POWER SUPPLY | £150.00 |
| KENWOOD | SM-220 SCOPE 830 etc | £200.00 |
| KENWOOD | SP-120 LOUDSPEAKER | £30.00 |
| KENWOOD | SP-430 LOUDSPEAKER | £40.00 |
| KENWOOD | SP-950 LOUDSPEAKER | £90.00 |
| KENWOOD | TH-25E HANDY TRANSCEIVER | £49.00 |
| KENWOOD | TH-47E HANDY TRANSCEIVER | £100.00 |
| KENWOOD | TH-79E HANDY TRANSCEIVER | £189.00 |
| KENWOOD | TH-D7 2m - 70cms HAND HELD BUILT IN TNC | £195.00 |
| KENWOOD | TL-120 100W LOW DRIVE HF AMPLIFIER | £150.00 |
| KENWOOD | TL-922 HF LINEAR AMP 1Kw (AS NEW) | £900.00 |
| KENWOOD | TM-251E MOBILE TRANSCEIVER | £140.00 |
| KENWOOD | TM-255E 2m MULTI-MODE MOBILE TRANSCEIVER | £400.00 |
| KENWOOD | TM-455E 70CM MULTIMODE MOBILE TRANSCEIVER | £405.00 |
| KENWOOD | TM-D700E 2-70 DUAL BAND APRS Built-in TNC TRANSCEIVER | £375.00 |
| KENWOOD | TM-V7E MOBILE TRANSCEIVER | £290.00 |
| KENWOOD | TR-9000 2m MULTIMODE MOBILE TRANSCEIVER | £240.00 |
| KENWOOD | TS-120 HF SOLID STATE MOBILE | £225.00 |
| KENWOOD | TS-430 HF BASE - MOBILE INCLUDING FM | £375.00 |
| KENWOOD | TS-450SAT HF TRANSCEIVER | £600.00 |
| KENWOOD | TS-50S SMALL HF MOBILE 100W | £425.00 |
| KENWOOD | TS-570D HF DSP ATU - MOBILE-BASE TRANSCEIVER | £650.00 |
| KENWOOD | TS-570DGE HF DSP BASE - MOBILE TRANSCEIVER | £725.00 |
| KENWOOD | TS-711E 2m MULTIMODE BASE TRANSCEIVER | £300.00 |
| KENWOOD | TS-790E 2m - 70cm MULTIMODE BASE TRANSCEIVER | £799.00 |
| KENWOOD | TS-811E 70cms MULTIMODE BASE TRANSCEIVER | £300.00 |
| KENWOOD | TS-830S HF TRANSCEIVER | £325.00 |
| KENWOOD | TS-850SAT HF BUILT IN ATU EXCELLENT TRANSCEIVER | £800.00 |
| KENWOOD | TS-870S AT HF DSP-IF-100W BUILT IN ATU TRANSCEIVER | £999.00 |
| KENWOOD | TS-940SAT HF BASE STATION BUILT IN ATU (CLASSIC?) | £700.00 |
| KENWOOD | TS-950SD HF-150W DSP BASE TRANSCEIVER | £1,100.00 |
| KENWOOD | TS-950SDX HF 150W MOSFET DSP TRANSCEIVER | £1,749.00 |
| KENWOOD | TSU-8 TONE SQUELCH UNIT | £25.00 |
| KENWOOD | VFO-120 | £50.00 |
| KENWOOD | VFO-180 EXTERNAL VFO | £75.00 |
| KENWOOD | VS-1 VOICE SYTHESISER | £30.00 |
| KENWOOD | VS-2 VOICE SYTHESISER | £30.00 |
| KENWOOD | YG-455CN-1 270Hz CW CRYSTAL FILTER | £100.00 |
| KENWOOD | YK-88A-1 AM FILTER | £40.00 |
| KENWOOD | YK-88C-1 500Hz CW NARROW FILTER | £40.00 |
| KENWOOD | YK-88CN1 270Hz CW FILTER 8.83MHz IF | £40.00 |
| KENWOOD | YK-888-1 2.4KHz SSB NARROW FILTER 8.83MHz IF | £40.00 |
| KENWOOD | YK-888N 1.8K SSB FILTER (TS-440 R5000) | £40.00 |
| KENWOOD | YK-888N-1 1.8KHz SSB NARROW FILTER 8.83MHz IF | £40.00 |
| KENWOOD | PS-430 POWER SUPPLY | £120.00 |
| KENWOOD | TM-G707E MOBILE TRANSCEIVER | £220.00 |
| MCI | MCL1100 EASY READER | £75.00 |
| MEJ | MEJ-1020B INDOOR ACTIVE ANTENNA | £40.00 |
| MEJ | MEJ-1278 MULTI MODE DATA CONTROLLER | £199.00 |
| MEJ | MEJ-462B MULTI READER | £140.00 |
| MEJ | MEJ-462B MULTI-READER | £100.00 |
| MEJ | MEJ-486 SWR AND ANTENNA TUNER | £30.00 |
| MEJ | MEJ-986 ANTENNA TUNER | £195.00 |
| MEJ | MEJ-989 3KW ROLLER COASTER ATU | £250.00 |
| MEJ | MEJ-989B RECEIVER ANTENNA TUNER | £55.00 |
| MICROSET | PT-135 POWER SUPPLY | £80.00 |
| MICROWAVE MODULES | MML-144 100 2m 100W LINEAR AMPLIFIER | £129.00 |
| MICROWAVE MODULES | MML-144 50S 2m 50W LINEAR AMPLIFIER | £80.00 |
| MICROWAVE MODULES | 28/144 TRANSVERTER 28/144 | £125.00 |
| NAIGAI | NAG-144XL 2m 400W PEP LINEAR AMPLIFIER | £325.00 |
| OPTOELECTRONICS | SCOUT FREQUENCY COUNTER Inc MEMORIES | £220.00 |
| PACRATT | PIC-232 Multimode, dual port data controller | £175.00 |
| PACCOM | TNC-320 TNC | £90.00 |
| PANASONIC | DR-49 RECEIVER | £125.00 |
| QM 70 | 28/144 TRANSVERTER | £100.00 |
| SAGRA | AMP-600 2M 1KW PEP MAINS AMPLIFIER | £750.00 |
| SEM | TRANSMATCH Z-MATCH ATU INC 160m | £75.00 |
| SEM | ANTENNA TUNING BRIDGE | £30.00 |
| SHURE | SR-444 CLASSIC BASE MIC | £35.00 |
| SMC | T3-170L SWR & POWER METER | £20.00 |
| SMC | SWR-25 SWR & POWER METER | £20.00 |
| SONIMERK AMP | FT200R 2m MULTI-MODE TRANSCEIVER | £150.00 |
| SSB ELECTRONICS | UT-23 23cms TRANSVERTER | £450.00 |
| ST3 HEADPHONES | DELUXE HEADPHONES | £45.00 |
| STANDARD | AX-70E WIDE BAND RECEIVER - BASE SCANNER | £170.00 |
| SYNCRON | PS-1220VU 20 AMP POWER SUPPLY | £60.00 |
| TAGRA | 22AMP POWER SUPPLY | £70.00 |
| TIMEWAVE | DSP-599ZX TOP OF THE RANGE DSP UNIT | £250.00 |
| TIMEWAVE | DSP-9 | £125.00 |
| TOKYO HY-POWER | HL-166V 6m 160W LINEAR AMPLIFIER | £175.00 |
| TOKYO HY-POWER | HL-80V 2M and 25W AMPLIFIER | £75.00 |
| TOKYO HY-POWER | HL-37V LINEAR AMPLIFIER | £60.00 |
| TONNA | 7000E TERMINAL | £130.00 |
| TRIO | TR-2300 2M PORTABLE TRANSCEIVER | £60.00 |
| TRIO | TR-9130 2M ALL MODE TRANSCEIVER | £250.00 |
| TRIO | TS-940SAT HF TRANSCEIVER | £750.00 |
| WELZ | AC-38M 200W MOBILE MATCHING NETWORK | £50.00 |
| WELZ | SP-15M SWR & POWER METER | £20.00 |
| YAESU | FC-102 1.2KW ATU WITH 4 WAY SWITCHING UNIT | £200.00 |
| YAESU | FC-20 AUTO ANTENNA TUNER FOR 847 FT100 | £175.00 |
| YAESU | FC-757AT FULLY AUTOMATIC ATU | £150.00 |
| YAESU | FC-902 ATU 500W | £140.00 |
| YAESU | FEX-767-2M 2m MODULE for the FT-767GX | £140.00 |
| YAESU | FEX-767-6M 6m MODULE for the FT-767GX | £140.00 |
| YAESU | FEX-767-70CM 70cms MODULE for the FT-767GX | £150.00 |
| YAESU | FL-2100Z HF AMPLIFIER | £450.00 |
| YAESU | FP-107E POWER SUPPLY | £120.00 |
| YAESU | FP-700 POWER SUPPLY | £100.00 |
| YAESU | FP-757HD HEAVY DUTY POWER SUPPLY | £120.00 |
| YAESU | FRG-100 HF RECEIVER | £300.00 |
| YAESU | FRG-7 HF RECEIVER | £99.00 |
| YAESU | FRG-7700 HF RECEIVER | £220.00 |
| YAESU | FRG-9600 60-905MHz All mode Receiver | £199.00 |
| YAESU | FT-1000MKS 200W DSP HF TRANSCEIVER | £2,600.00 |
| YAESU | FT-1000MP AC HF BASE DSP TRANSCEIVER Late serial no) | £1,550.00 |
| YAESU | FT-1000MP DC BASE TRANSCEIVER | £1,200.00 |
| YAESU | FT-101 TRANSCEIVER MINT | £200.00 |
| YAESU | FT-101ZDmk111 HF TRANSCEIVER inc FM | £375.00 |
| YAESU | FT-23R HANDY TRANSCEIVER | £89.00 |
| YAESU | FT-2500M MOBILE TRANSCEIVER | £190.00 |
| YAESU | FT-290RMK1 2M ALL MODE TRANSCEIVER | £180.00 |
| YAESU | FT-290RMK1 Includes Bracket + FL-2010 LINEAR AMP | £275.00 |
| YAESU | FT-290RMK11 MOBILE 2M MULTIMODE TRANSCEIVER | £275.00 |
| YAESU | FT-3000M 2m 70W MOBILE TRANSCEIVER | £175.00 |
| YAESU | FT-411R HANDY TRANSCEIVER | £120.00 |
| YAESU | FT-470 DUAL BAND HANDIE TRANSCEIVER | £369.00 |
| YAESU | FT-690MK11 6M MULTIMODE MOBILE TRANSCEIVER | £295.00 |
| YAESU | FT-7 MINT CONDITION | £275.00 |
| YAESU | FT-726R 2 - 70 - 6m TRANSCEIVER | £575.00 |
| YAESU | FT-730R 70CM MOBILE TRANSCEIVER | £120.00 |
| YAESU | FT-736R 2m - 70cm - TRANSCEIVER | £650.00 |
| YAESU | FT-736R 2m - 70cm - 6m TRANSCEIVER | £750.00 |
| YAESU | FT-7400 70cm MOBILE TRANSCEIVER | £160.00 |
| YAESU | FT-747GX HF TRANSCEIVER | £369.00 |
| YAESU | FT-757MK1GX HF TRANSCEIVER | £375.00 |
| YAESU | FT-767GX HF BASE 100watt built-in ATU | £599.00 |
| YAESU | FT-790R 70CM MULTIMODE MOBILE TRANSCEIVER | £225.00 |
| YAESU | FT-7B HF 50W MOBILE TRANSCEIVER | £199.00 |
| YAESU | FT-80C 0-30MHz COMMERCIAL TRANSCEIVER | £375.00 |
| YAESU | FT-840 HF MOBILE TRANSCEIVER | £450.00 |
| YAESU | FT-847 HF - 2 - 6 - 70cm BASE TRANSCEIVER | £999.00 |
| YAESU | FT-900AT HF DETACHABLE FRONT BUILT IN ATU | £650.00 |
| YAESU | FT-980 HF TRANSCEIVER | £495.00 |
| YAESU | FT-ONE HF BASE TRANSCEIVER | £450.00 |
| YAESU | FTV-901 TRANSVERTER Inc 2m Mod | £165.00 |
| YAESU | MD-1 DESK MICROPHONE | £75.00 |
| YAESU | SP-5 LOUDSPEAKER Including Audio Filters | £100.00 |
| YAESU | SP-767 LOUDSPEAKER Including Audio Filters | £80.00 |
| YAESU | SP-8 LOUDSPEAKER Including Audio Filters | £100.00 |
| YAESU | SP-980 LOUDSPEAKER Including Audio Filters | £55.00 |
| YAESU | VX-5R 2 - 70 - 6 HANDIE 5W | £220.00 |
| YAESU | XF-1145N 2KHz SSB FILTER | £80.00 |
| YAESU | YO-100 SCOPE VERY RARE | £150.00 |
| YAESU | YS-60 SWR METER 1.6 - 60MHz | £30.00 |
| ZETAGI | B-132 40 - 11m LINEAR AMPLIFIER , MAINS | £80.00 |

# Members' Advertisements

RSGB Members wishing to place an advertisement in this section must use the official form incorporated on the label carrier of Radio Communication. This will prove membership and must be for the current month. No acknowledgment 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. Trade or business ads, even from members, will not be accepted. Traders who wish to use this facility must send a signed declaration that the items for sale are part of, or intended for, their own personal amateur station. The RSGB reserves the right to refuse ads, and 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. Licensed members are asked to use their callsign and QTHR, provided their address in the current edition of the RSGB Yearbook is correct. RS members will have to provide their name and address or telephone number. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition of *RadCom*.

**The closing date for copy is the first day of the month prior to publication, eg the deadline for the March issue is 1 February.**

***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.*

## EXCHANGE

**DAIWA** heavy duty rotator – suit HF triband beam for Cuscraft R7000/R8 HF vertical antenna. 01395 568422 (Exmouth).
E-mail: lufflands@compuserve.com

**EXCHANGE** my FT-101E, YC-601, YO-100, spkr spares mans, also FT-225RD for AOR 3000A or similar, full details. Graham. 01609 883 007 (Northallerton).
E-mail: graham.g4ijo@btinternet.com

**WILL** exchange JRC NRD-545 DSP rcvr, one year old, for Kenwood R-820 rcvr in good cond. 01670 827 741 (Northumberland).

## CONGRATULATIONS

**To the following whom our records show as having reached fifty or sixty years' continuous RSGB membership this month:**

| *50 years* | | *60 years* | |
|---|---|---|---|
| G3HPZ | Mr D W G Boast | G2FUU | Mr T Knight |
| G3JIE | Mr D C Youngs | | |
| G3MEA | Mr S Harle | | |
| GW3FPF | Mr P F Jones | | |
| VK6LK | Col G R K Lyon | | |

## FOR SALE

**FURTHER** reductions! Ameritron 811 linear amplifier 600W, £449. Spare set valves, £15. MFJ-962 1.5kW tuner, £129. Avair 600 power/VSWR meter, HF/144MHz, £29. Morse reader/tutor ERA, £59. Goldstar oscilloscope, dual-beam 20MHz, £99. CD World Call Book 1999, £9 - 2001, £19. All perfect, collect or carriage extra (J4 M2). 01634 379 140 (Gillingham).

**ICOM** IC-R9000 comms rcvr for sale. Full continuous 100kHz 1999.8MHz coverage with all modes, multi-functional CRT display, 1000 memory channels storing required frequencies, super-high frequency stability, multi-scan functions, scanning pause timer and VSC, additional outstanding features, wide variety of tuning steps 10Hz 100Hz 1kHz 5kHz 9kHz 10kHz 12.5kHz 20kHz and more. Too much to mention, just call 0115 956 6809 (Nottingham).
E-mail: surjitjouhal@hotmail.com

**JRC** JST-135 tcvr, bandwidth control, matching power supply, man, mic, possible rcvr intermittent, hence £200. 0118 969 3284 (Reading area).
E-mail: 010764.2735@compuserve.com

**KENWOOD** TS-430V 10W HF tcvr with TL-120 100W linear, separate PSUs for 10W and 100W operation, two CW filters, FM adaptor, fist and desk mic, all cables, operating and workshop mans, £585 ono (no split). Also FT-290 Mk1 with Mutek front end, NiCads and case, £135 ono. 01435 882 245 (East Sussex).
E-mail: terry.hart@btinternet.com

**KW-1000C** linear amplifier in perfect cond and working order. Covers WARC bands, too, c/w man, £350. Kenwood TM-742E three-band mobile fitted with 10m, 2m and 70cm modules. Extra 6m module and service man included. Pristine and boxed, £550. KW107 Supermatch ATU, exc, £135. Star SR600 amateur bands rcvr, 1960s vintage, absolutely superb, mint and boxed, £295. Simon. 01434 633 913 (Corbridge).
E-mail: simon@nomis.co.uk

**TS-780** 2m & 70cm multimode tcvr, man, mic, complete, £340. MM 1296MHz tvtr, 2W output, man, £110 + carr. G3UKV. 01952 255 416 (Telford).
E-mail: ukv@globalnet.co.uk

**UPGRADE** your computer with my supermicro Pentium 3 motherboard, Intel 667MHz CPU, 128MB memory installed. Onboard audio 2USB 5PCI expansion slots, complete, boxed, with all cables and user manual, £95. Matrox millennium G400 graphics card, 32MB memory, DVD playback, dual monitor output, £35. Dell D1025HE 17in monitor, £40. All equipment in vgc, carriage at cost or delivery by arrangement. Steve, G7JCF. 01986 798 524 (Woodbridge).
E-mail: steve@sboldvic.demon.co.uk

**1940s/50s** Embassy station, HRO rcvr, Mk33/Tx, PSUs coils, £250. Mk119, £400. Mk123, £200. Mk128, £200. PRC316, £120. MCR1, £120. Mk301 rcvr, £120. Mk328 rcvr, £120. Type 3 MkII tcvr, PSU, key, coils, £400. All above open to offer after inspection. G3JQL, QTHR. 0191 386 1116 (Durham).

**50ft** crank-up tilt-over Tennamast and 3-ele tribander, new. Yaesu G4-500 rotator all in exc cond plus extras, £500 ono ready to collect. 01706 655 287 (nr Rochdale).
E-mail: normanhiggs@cwcom.net

**ALBRECHT** 485S 10m AM FM SSB tcvr, unwanted gift, £100 plus postage. Jim, G4LWY. 01925 762 485 (Warrington).
E-mail: jimbryce@talk21.com

**ALTRON** CM35 telescopic 35ft tilt-over mast, base mount. Yaesu G-800 SDX heavy duty rotator and control unit. Hy-Gain TH4-Mk 4 Thunderbird 3 band, 3-ele Yagi beam. All in nearly new cond, £550. Mal, GW0KYY, QTHR. 01792 538 067 (Swansea).
E-mail: mal.warner@ntlworld.com

**AMERITRON** 811 amplifier, new tubes, as new, £450. Icom IC-751 HF tcvr mint, SM-6 desk mic, £350. SGC Power Clear DSP filter, mint, £150. Microset 200W VHF amp, mint, £150. Mizuho 40m QRP amp, £45. Cushcraft A3S Tribander, £190. Complete set of new A3S traps, £100. Drae 24A PSU mint, £65. Icom FL-101 filter new, £50. Yaesu 2.0kHz SSB filter, fits 990/1000 etc, £55. TS-950SDX front panel, £40. Yaesu G-1000SDX rotator used for five months, as new, £295. Service mans: TS-940S, £25; FT-726R, TS-180S, FT-757 Mk2, £20; TS-780, £5. Dual-band amplifier 35W, mint, £45. Yaesu GS-065 thrust bearing, 5 months' use, £30. Masthead antenna switches, £20. FM-1000s for conversion to 4m, no retuning needed, just reprogramming, 25W out fully-synthesised, h/mic, £45 each. Looking for Smartuner, any model, also Heil headset. 01953 884 305 (Watton). Mobile 07970 214 039

**AOR** 3000A+ in mint cond with original packing and man. Virtually unused and surplus to requirement. Inclusive of insured delivery to mainland UK address, £375. GM3WRN, QTHR. (Nairn).
E-mail: colmcrae@netscapeonline.co.uk

**BARTG** R5 switched capacitor filter, fixed 1275/1445Hz, £25. BC221 sig gen modulated, charts, PSU, US Army man, £13. 01795 477 431 (Sittingbourne).
E-mail: g3isd@ehatch.freeserve.co.uk

**BC221/T** wavemeter 125/20,000kHz, metal case, with power pack, £28. 10m M40 FM tcvr, 6W/2W, £24. All vgc, carriage extra. 0191 455 2223 (South Shields).

**CUSHCRAFT** R8 vertical aerial, too large for my QTH, part-assembled, cost new £399 - just £270 ovno, never used. 01706 645 553 (Rochdale).
E-mail: andrew.shone@btinternet.com

**DENTRON** MLA-2500B 2kW HF amp, two Eimac 8875 valves, 65W drive for 1kW DC input. Prefer buyer to collect, £450. 01702 354 757 (Southend-on-Sea).
E-mail: bernie.enn@messages.co.uk

**DISNEY** holiday home, 3 bedrooms, 2 bathrooms – one feature bathroom, fully furnished, screened sunroom, air-con, overlooking lake, private, quiet community with security and gate. Complex has amenities including three large pools, jacuzzi, clubhouse, illuminated squash, tennis courts and baseball, fitness and games rooms, fishing and golfing, location Vista-Del-Lago by Raccoon Lake Kissimmee, 4 miles from Disney, $62,000 (dollars). Graham Eckersall, G4HFG, QTHR. 0161 339 0212 daytime (Oldham).
E-mail: g4hfg@btinternet.com

**FOR** sale in my shack clearance several radio components and other bits and pieces. Bill. 01296 660 936 (Leighton Buzzard).
E-mail: williamahsmart@netscapeonline.co.uk

**FREE** / donation two-section square lattice mast, 35ft, rotator and control unit. Offers for 2m Yaesu FT-22A? 01621 868 347 (Colchester).
E-mail: g0ibn@ikersey.freeserve.co.uk

**FT-100**, little used, never /P or /M, mic, man, mobile bracket & fittings, original box, £560. GAP Titan vertical dipole, 80-10m exc cond, includes GAP quick-tilt mount, £280. *Morsum Magnificat* magazines (English) numbers 1 to 58, exc cond, offers? 01903 764 599 (Worthing).
E-mail: denzil-roden@lineone.net

**FT-101ZD** Mk3, FV-101, Shure 444 mic, FWC mans, £200 plus carriage. GW3IEQ. 01286 831 340 (Caernarfon).

**FT-290R**, BNOS 50W linear, extras, £350. Ameritron ALS-600 solid-state linear, £800. GAP Titan vertical, £200. Buyer collects. 01376 515 401 (Witham).

**G2DYM** half-size trap dipole, 54ft long, in exc cond, £70 inc p&p. 0191 389 2822 or 07980 137 617 (Durham).

**HANDBOOKS** Collins 51S1 55G1 30L1 KWM2A 62S1 Drake TR4CW R4C also AR88 AR88LF Collins speaker 312B3, £100. Fan motor for 30S1 linear, £25. Some new KWM2 spares wanted. Collins KWS-1 cash or exchange Collins gear. 01379 783 657 (nr Diss).

**HRO-M**, PSU, coil cabinet, all rack mount, full set coils, incl BS, spares, restored, suit collector, £180. Rare Eddystone All-Wave Four (1933), with all coils, man, offers over £500. Eddystone 659/670 exc cond, FWO, £160. Eddystone 640, gc, £65. Eddystone round speaker, £75. 01276 513 450 (Camberley).

**HYGAIN** TH3JR 3-element triband beam, buyer to collect £50. 01423 872 997 (Harrogate).

**IC-728** vgc, £330, boxed. Azden PCS7000 Mobile 2m good cond, £95, both gwo. 01592 757 831 (Glenrothes).
E-mail: ken@mm0awj.freeserve.co.uk

**ICOM** 736 6m & HF, internal PSU & ATU, £550. Icom 820H VHF-UHF multimode with 25A PSU, £475. Both rigs mint cond. Mobile 07788 824 808 or 0151 475 5706 (Liverpool).
E-mail: tom@g0stf.fsnet.co.uk

**ICOM** IC-22A 2m FM tcvr, 22 crystal-controlled channels, with mobile mount and mic, £50. Kenwood TM-221ES, 45W 2m FM tcvr, boxed with mic, mobile mount and man. Occasional Rx audio fault, so only £45. Amstrad PPC-640 'portable' computer, circa 1983, complete, as new with carrying-bag, power supply, mans and discs. Ideal for packet, £25. Toshiba T1000 laptop computer, circa 1984, exc working order with Toshiba carrying-bag, all mans and power-supply. Ideal for packet, £25. Silent-key sale, (G3GWU, re-advertised). Two Kenwood HF tcvr's, both as new, boxed and with mans and accessories. TS-570D, £500; TS-850S, £525. All items plus carriage at cost. Please ring 01427 752 284 (Lincolnshire).

**ICOM** IC-740 HF tcvr, all-mode fitted with marker unit IC-EX241, FM unit IC-EX242, electronic keyer unit IC-EX243, filters fitted, CW narrow FL-54, SSB FL-30, plus FL-53, also matching Icom IC-PS15 PSU, IC-HM7 mic, boxed/man, £475. Revex MS-1 station wave monitor scope SSB-CW-AM (like Trio), £125. Icom IC-8500 scanner/comms rcvr all-mode (0.1-1300 MHz), cost £1350, as new, boxed & man, £735. Yaesu FT-757GX HF tcvr, £335. Yaesu FC-757AT auto ATU, £115. Capco SP-300 ATU, £125. Yaesu FRG-7 rcvr, digital readout and FM fitted, gwo, £115. KW-HF three-way antenna switch, £12.50. Kenwood TM-732 dual-bander, man, boxed, £265. Commercial grade 70cm antenna circulator with info, £35. Rubber duck 2m/scanner/air, £10. Icom IC-AH2B boot mount for antenna, to match Icom AH2A auto ATU never used. Cost £198, not required, any offers please? 01328 710 641 (North Norfolk).
E-mail: mac@g4vdc.fsnet.co.uk

**ICOM** IC-746, mic, voice synthesiser, mint, hardly used, boxed, £815. G3UGL, QTHR. 01234 750 050 (Cranfield).
E-mail: roy.quantick@virgin.net

**KENWOOD** TL-922 amplifier vgc, original box/man etc, £990. TS-850SAT, SSB/CW filters, voice keyer, box/man, one non-smoking owner, £900. Highspec 'Suffolk' 28/2m/10W tvtr, £60. 28/4m Meon tvtr, £60. Hunter-6m amplifier 18 months' use, £795. SMC/Yaesu 545L1 crystalled 432-675, £59. TH7 tribander (refurbished), £330. Western heavy duty tower sections (base +2), £200. Tailtwister, £450. Versatower heavy duty head unit, £95. Heavy duty winch, £40. Hewlett Packard Scanjet 3300C colour scanner, £75. All vgc. 01248 750 615 (Llangefni).
E-mail: steve@rjtraining.co.uk

**KENWOOD** TL-922 linear amplifier, vgc, seldom used, £800 ovno. GM0VPG, Neil. 01463 220 125 (Inverness).
E-mail: gm0vpg@talk21.com

**KENWOOD** TM-231E 2m 5/10/50W FM mobile tcvr, mint cond, hardly used, with h/book and accessories, boxed, £155 ono, postage extra. 023 8047 2929 (Southampton).
E-mail: geoffthomas2@compuserve.com

**KENWOOD** Trio TL-922 HF linear amplifier, operating man, had little use, mint cond, prefer buyer see working, £850. 01472 840 862 (Grimsby).
E-mail: roy.g4whq@ntlworld.com

**KENWOOD** TS-140S all-band HF tcvr, 100W general coverage rcvr, man, mic & lead, gc, £350. 01606 871 413 (Northwich). E-mail: g0vok@thersgb.net

**KENWOOD** TS-440S boxed, instructions, as new, £355. Elecraft K2 fitted with SSB, 160m, auto ATU and internal battery options, £510. MFJ-259B antenna analyser, boxed and as new, £150. MFJ-986 3kW ATU, £150. BNOS 50A 12V PSU, £65. Sony ICFSW100E, £95. Heil HC-5 micro headset, £70. AKD 7003 70cm mobile, £70. Icom IQ7E 2/70 and scanner, £85. Lots more, going QRT! 01691 650 722 (Oswestry).
E-mail: m0ccn@ntlworld.com

**KENWOOD** TS-570DGE, mint cond, £675 or £700 with Inrad SSB filter fitted. LDF-450 and LDF-250 plus connectors – phone. M2 antennas, 2 x 2M7 stack, inc splitter and harness, £80. 2M9, £50. Both are for 144MHz. More flexible low-loss coax – phone. Paul, M0CVX. 01522 514 238 (Lincoln).
E-mail: bradbeerfamily@aol.com

**KENWOOD** TS-850S, £600. TS-830S, £325. R-820, £225. Drake R4B/T4xB PR, £300. Johnson Matchbox, £55. BC221, £20. Collins 30L-1, £500. All exc cond. Buyer collects or pays carriage. Offers considered. 01449 676 355 (Stowmarket, Suffolk).
E-mail: g3kcf@yahoo.co.uk

**KENWOOD** TS-850SAT, auto ATU, boxed, all mans, mic etc, together with Kenwood PS-52 HD PSU and SP-31 speaker, inclusive price, £695. No split. Kenwood TS-940SAT, auto ATU fitted, mic, man, etc, £545. Collect

or pay carriage – would exchange either for TS-950 with cash difference. G0BPM, QTHR. 0114 287 2358 (Sheffield).
E-mail: dennisg0bpm@aol.com

**KUHNE** Electronic 47GHz tvtr and 12GHz local oscillator, like new in box, best offer accepted. 01252 404 783 (Mychett).
E-mail: barry.nicolls@ntlworld.com

**LINEAR** Amp UK 2m Discovery as new, £950. Icom-821H VHF & UHF multimode, as new, boxed etc, £595. Trio TS-830S, AT-230 ATU, MC-50 desk mic, boxed, spare valves, pristine cond, £450. FT-480R, £90. Mutek TVVF 50C 6m tvtr, £85. Micowave Modules 4m tvtr, £80. Datong FL3 filter, £40. Altron 30ft free standing tilt-over tower, £150. Vine 5-ele 6m Yagi, £80. SSB Electronics MV432G 70cm masthead pre-amp with sequencer, £65. M2 12M2 2m Yagi, £75. 10 3C 3-ele 10m Yagi, £65. Cushcraft 6m vertical, £30. 40m H/P traps, £20. 01803 392 969 (Paignton).

**MARCONI** signal generator TF995A/35, 1.5-220MHz AM/FM/CW 1 microvolt-100 millivolt 50 ohms output, £25 ono, fully working. Antenna analyser 1.8MHz-UHF, MFJ-269, new unused, £250 ono with h/book. 01256 323 979 (Basingstoke).
E-mail: g8fmh@aol.com

**MIZUHO** 20m h/held HF. Mizuho 40m h/held HF with spkr mic, offers? AKD 4m transmitter, unused, from defunct packet project, £80. 01874 623 815 (Brecon). E.mail; pjt41@tesco.net

**QRT** sale. JST-135 150W complete station, Hansen power meter, SEM Z-match, dummy load, fist/desk mics, AOR rotator, 12V auxiliary supplies, selection AKD filters, also Kenwood 2m FM and amplifier. Original documents, many other items, all installed, any test £450. G3OJA, QTHR. 0161 445 1026 (Manchester).

**ROTATOR** as new Yaesu G-400RC, never used outdoors. 360-degree round dial indicator. Very similar to G-450 in current *RadCom*. Includes approx 25m control cable, max vertical weight 200kg, bargain at £195. Dave, G3ULL, QTHR. 023 9236 7102 (Gosport).
E-mail: daveg3ull@aol.com

**SHACK** clearance. Kenwood TS-530 HF tcvr, £190 ono. Kenwood TM-441E 70cm tcvr, £150 ono. AKD7003 70cm tcvr, £90 ono. Star LC-10 dot matrix printer, £30 ono. 70cm colinear ant, £25 ono. Home made CB power mic, £5 ono. Yaesu FT-290 mobile mounting bracket, £15 ono. 486PC 100MHz 8MB RAM, £100 ono. Fred, G4VVQ, QTHR. 01245 233 566 (nr Chelmsford, Essex).
E-mail: rushead@lineone.net or g4vvq@lineone.net

**SILENT** key sale. AKD 2m tcvr, £60. Lowe SRX-30 rcvr, £55. FL-3 filter Datong, £50. Morse tutor Datong D70, £25. 812B MFJ SWR/PWR meter (2m), £15. Diawa SWR/PWR meter NS-660, £40. MC-50 desk mic, Trio, £20. SP-23 speaker, Kenwood, £15. R5 antenna, Cushcraft, £90. All items in exc cond. Carriage at cost. Enquiries G0PDH. 0161 427 6003 (Stockport).

**SILENT** key sale. Ten-Tec Argosy 525 with CW filters and matching PSU, £250. Matsui MR-4009 world band rcvr, £30. Datong FL2 multimode audio filter, £40. Q-Tek Penetrator HF vertical aerial, £50. Icom U16 UHF h/held FM tcvr, £75. Carriage extra. 01892 723 703 (Tunbridge Wells).

**SILENT** key sale. Triplexer, three-band two-way switches, 3A PSU, beam aerials for 2m 6m 70cm. Slim Jim 2m whip. Gutter mount 10m whip. Mag-mount, three-band vertical, two VHF rotators, controllers, SWR/power meter, 8 aerials, £150, no split, buyer collects. 01480 812 966 (Huntingdon).

**SILENT** key. Kenwood AT-230, £125. Mult-U11 70cm tcvr, £100. Yaesu FT-208R 2m h/held, £160. FT-708R 70cm h/held, £160. KR-400 rotator (qty 2), £125 each. Cirkit MkII FDO 0.8-170MHz FET-DIP oscillator, £2. Super-Star 2000 CB, converted 10m, £40. *RadCom* 1950 to 2001, offers? 023 9258 0114 (Gosport).
E-mail: rakf@rforster.freeserve.co.uk

**SONY** TC-377 reel-to-reel tape deck with Videosonic Dolby B unit, glass ferrite 3-head machine, ample supply of tape (50 reels). much unopened Ampex matt back, £75. Buyer collects. G4IAO. 01234 713 936 (Olney, Bucks).

**STANDARD** C156A 2m h/held with CAW152B cable with filter, £50. CMA510 mobile adaptor with CMP127 speaker mic, £10. C510 not for sale. 01789 750 889 (Stratford Upon Avon).
E-mail: g3oea@thersgb.net

**TRIO** 9R-59D rcvr with extension speaker, £50. Fax 4 weather fax demodulator by ICS Electronics, £100. Trio R-1000 rcvr, £100. All with h/books. Ralph, G0UWB, evenings. 01608 685 476 (Brailes).
E-mail: ralph@moyle.worldonline.co.uk

**TRIO** TR-9000 multimode, TL-130L SWR, mic, h/book, mag-mount antenna, £100. TS-930S, SP-520, CN-520 SWR, mic h/book, £400. Wavemeter SCR211 (BC221) internal PSU, £20. Service man (photocopy) TS-830, TR-7010 instr man, HRO Hallicrafter S-38, Trio JR-310 TS-530S, Taylor 22, Telequip S32A, offers? All plus post and packing. G4VPU, John. 0191 252 2304 (Whitley Bay).
E-mail: johnina@lineone.net

**TRIO** TS-711E with external speaker, case slightly marked, £400. TS-811E, £400. Both with voice synthesisers and mans. G0PTO, QTHR. 0161 491 0721 (Stockport).

**TS-50S** and matching AT-50 auto ATU, £400, exc cond, will consider separating. 0161 980 7508 (Altricham).
E-mail: alan_gerrard@lineone.net

**WELLER** soldering station consisting of 50W TCP iron, PS-2D power supply and stand, vgc, £30. Alinco DJ-X1 h/held scanner 100kHz to 1.3GHz boxed, with man, £100. Please phone after 7pm. G6AQC, QTHR. 01865 243 634 (Oxford).
E-mail: steve.w@earth.ooc.ac.uk

**YAESU** FT-1000MP immaculate cond, boxed with man. Buyer collects. Not QTHR. 01526 861 445 (Sleaford).
E-mail: g3mul@csi.com

**YAESU** FT-101 mint £75. Kenwood DFC-230 digital VFO, mint, £35. KW107 Supermatch, mint, £75. 01252 664 694 (Farnborough).
E-mail: dougturkey@aol.com

**YAESU** FT-101ZD Mk3 tcvr with FTV-901R transverter fitted with 2m 70cm 6m modules. FV-101Z external VFO, FC-902 antenna tuner, Yaesu MD-1 desk mic, Yaesu hand mic, Yaesu external speaker, all in exc cond with mans, no splits buyer to pay carriage, £650. 0118 961 3785 (Reading).

**YAESU** FT-101ZD, MFJ Versatuner MFJ-941D, Adonis desk mic, £250. 01628 625 435 (Maidenhead).
E-mail: bert.welland@virgin.net

**YAESU** FT-847, mint with Collins SSB filter and extra CW filter, £1099. Diamond GSV-300 30A PSU, £70. MFJ-949E ATU, £70. Will split or £1200 the lot. 024 7641 5815 (Coventry).
E-mail: m5fra@cwcom.net

**YAESU** FT-920 HF rig with matching FP-1030A power supply, both mint cond, very little use, boxed, mans, £895. G4UWB, QTHR. 01332 551 945 (Derby).

**YAESU** FT-990 AC/DC with filters and Vectronics VC-300DLP antenna tuner, all vgc, £650 ono. 01582 611 805 (Luton).
E-mail: cj.billington@ntlworld.com

**YAESU** FT-990, one owner from new, Watson desk mic, £650 ono. G0BOR. 01942 874 936 (Bolton).

**YAESU** FT-One tcvr, rcvr working well. Tx needs attention, c/w full service and operating mans. Offers please. Prefer buyer inspects and collects. 01752 705 759 (S Devon).

**YAESU** G-450C rotator, unused, boxed, 25m cable, mast clamps, £195. Telescopic 12m mast, exc cond, pulley, three-way guides, tensioners, ground stakes, £75. Moseley 2-ele tribander 10-15-20 dismantled, vgc, £45. G3LFY. 01584 861 680 (Ludlow).

# WANTED

**CRYSTAL** sets and early valve radios wanted; all old equipment, valves, horn speakers, Morse keys, spark Txs. Spy sets are of interest; keen to find Hallicrafters SX42 or similar rcvr, also Meccano and Bassett Lowke crystal sets. Jim, G4ERU, QTHR. 01202 510 400 (Bournemouth).

**DISABLED** fan of old days seeks QSL cards, log books etc, also RSGB mags pre-1950, *QST* pre-1951 and 1960 to 1975, *CQ* 1945 to 1970. WHY? Mike, 8 Windsor Road, Reydon, Southwold, Suffolk IP18 6PQ.

**ALINCO** DB-599 vehicle extension cable EDC20. Ray, G4LPZ, QTHR. 01332 703 778 (Derby).

**CONNECTION** details technical information for Electroniques front end transistor coil pack type GC166T. Dennis, G4IAD. 01942 817 556 (Bolton).

**CUSHCRAFT** R7000 in good cond. 01352 771 520 (Mold, Flintshire).
E-mail: jhj@gw3tmp64.freeserve.co.uk

**CUSHCRAFT** R7000/R8 HF vertical antenna. 01395 568422 (Exmouth).
E-mail: lufflands@compuserve.com

**EPROM** programmer h/held type, Dataman S4 or similar, also Bird through elements all frequencies. 01332 774 825 (Derby).
E-mail: derbyelectronics@btinternet.com

**MARINE** satellite 'C' system Capsat Saturn or Galaxy, must be marine not land system, with antenna. 07768 492 562 (Isle of Wight).
E-mail: paul.i.martin@btinternet.com

**OUTPUT** transformer for AR88D. Heathkit SB101 for rebuild project, must be mechanically sound and unmodified. Electrical cond unimportant. G3WCE. 01692 538 794 (North Walsham).

**RACAL** HF Helical marine 45ft 9-section antenna or similar. Must be complete and gwo. G0CEP, QTHR. 01329 511 718 After 7pm (Fareham).

**SILENT** key clearout or just not needed. Wanted for research project, QSL accumulations, old call books etc, can collect. 0113 269 3892 (Leeds).
E-mail: g4uzn@qsl.net

**STRUMECH** P60 top section, 7½in, must be in good cond. 01527 541 502 (Redditch).
E-mail: g3kwkroger@aol.com

**WANTED** Drake linear amplifier L-4B any cond, working or not, price according to cond. Also urgently required circuit and/or information on Sherwood CW mods to Drake R4-C rcvr, photocopies OK, all expenses and costs paid. Frank, G3KJG, QTJR. 0113 284 2597 (Leeds).

**WANTED** for FRG-7700 h/book or copy VHF converter and memory unit, G6PVA. 0121 604 8056 (Solihull, W Mids).

**WANTED** Kenwood TS-790E fully loaded with mans etc, must be in goog cond with 2m 70cm and 23cm. 0976 544 124 (Bagshot).
E-mail: pfhutchinson@ntlworld.com

# Rallies & Events

**4/5 AUGUST 2001**

**MID-LANARK ARS** - special event station on board the *Glenlee* tall ship, moored in Glasgow harbour, at the Broomielaw quay on the Clyde. OT 9am. The callsign will be GB0TSG with operation on HF bands. GM0XFK.

**5 AUGUST 2001**

**LORN ARS Radio Rally** - Benderloch Hall (north of Connel). C. Shirley, GM0ERV, 01631 566 518 or s.mclennan@freeuk.com, or John, GM8MLH, 01838 200 304.

**5 - 10 AUGUST 2001**

**NORTH WALES RRC DXpedition to Bardsey Island** - from Bardsey lighthouse and Plas Bach. All bands from 160 - 6m. Edward, GW0DSJ, 01745 336 939. Web page www.nwrrcw.org.uk

**10 AUGUST 2001**

**COCKENZIE & PORT SETON ARC 8th Annual Radio Junk Night** - Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton. OT 6.30pm, £1. Bring your own junk and sell it yourself. C, DF, WIN. Bob, GM4UYZ, 01875 811 723 or GM4UYZ@GB7EDN or e-mail bob.gm4uyz@btinternet.com

**12 AUGUST 2001**

**FLIGHT REFUELLING ARS Hamfest 2001** - Flight Refuelling Sports Ground, Merley, Wimborne. OT 10am. TS, crafts, CBS, TI on S22. Overnight camping on Saturday. Keith, G1VHG, 01202 5777 937.

**KING'S LYNN ARC 12th Great Eastern Radio & Computer Fair** - Park High School, Queen Mary Road, King's Lynn. OT 9.45/10am, TI on S22 and SU22, B&B, CBS, C. No dogs. Derk, G0MQL, 01553 841 189, e-mail Derk.Fraklin@tesco.net or Fred, G0KZI, 01760 440 570.

**LORN ARS Village Fun Day** - Dalavich, Argyll. Callsign GS0LRA (Lorn Radio Amateurs). Shirley, GM0ERV, 01631 566 518 or s.mclennan@freeuk.com, or John, GM8MLH, 01838 200 304.

**17 AUGUST 2001**

**TORBAY ARS Annual Barbecue** - Anna, 07740 348 884.

# SILENT KEYS

WE REGRET to record the passing of the following radio amateurs:

| | | |
|---|---|---|
| EI2HT | Mr P Twomey | |
| G0BHV | Mr H Newns | 16/12/00 |
| G0FED | Mr J A Wentworth | 05/01 |
| G0GHP | Mr A V Wood | 27/12/00 |
| G0IGP | Mr F A Hacking | 18/12/00 |
| G0IVW | Mr G Crawley | 10/06/01 |
| G0NYT | Mr K W Bicknell | 08/06/01 |
| G0RKK | Mr D M Gooding | 31/05/01 |
| G1AOL | Mr A J Galpin | |
| G1SBP | Mr F Mason | 23/02/01 |
| G2DW | Dr B F Wickham | 20/04/01 |
| G3AKJ | Mr D W E Wheele | 04/06/01 |
| G3GQF | Mr W Bartle | 17/02/01 |
| G3LK | Mr P Williams | 12/06/01 |
| G3LRM | Mr S H W Tanner | 21/05/01 |
| G3MVD | Mr A Redfern | 02/06/01 |
| G3TEY | Mrs P Hargreaves | |
| G4GLL | Mr G Rodwell | 03/06/01 |
| G4JAK | Mr J Kelly | 31/04/01 |
| G4MUY | Mr D A Lane | 11/06/01 |
| G4PDA | Mrs P Caines | 20/06/01 |
| G4UJC | Mr F Williams | 18/05/01 |
| G4UUS | Mr G G P Thorburn | |
| G5KW | Major K Ellis | 28/06/01 |
| G5SD | Mr D E Campbell | 11/06/01 |
| G6EII | Mr A S Langer | 01/01 |
| G6QY | Mr W Brown | 01/06/01 |
| G8WXC | Mr I J McGeachy | 06/12/00 |
| GI2AFW | Mr H Shaw | 14/06/01 |
| GM0OTP | Mr G A Sim | 07/04/01 |
| GM3PFQ | Mr J Balfour | 20/06/01 |
| GM3ZVF | Dr J Swanston | 13/04/01 |
| GM4PVF | Mr F Rankin | 20/03/01 |
| GM4WKO | Mr J G Harris | 19/06/01 |
| GM6EOP | Mr J Mitchel | 11/00 |
| GW3KXC | Mr J H Rowntree | 19/06/01 |
| GW4GWS | Mr W Moss | 10/06/01 |
| RS176892 | Mr R A Nice | 07/05/01 |

**18/19 AUGUST 2001**

**INTERNATIONAL LIGHTHOUSE & LIGHTSHIP WEEKEND** - 142 stations at lighthouses, lightships or maritime beacons have confirmed their participations from 30 countries. The full list can be found at www.vk2ce.com/ILLW/2001.htm If you are not on the list and are joining us from a lighthouse, lightship or maritime beacon, could you let me know the callsign you will use, with QTH and QSL information. Mike, GM4SUC, QTHR or gm4suc@compuserve.com A similar event over the same weekend in the USA involves the Amateur Radio Lighthouse Society. www.ARLHS.com

**19 AUGUST 2001**

**LEEDS & DARS Outdoor Rally & Car Boot Sale** - Yarnbury Rugby Club, Brownberrie Lane, Horsforth, Leeds. CP free. J A Mortimer, M0JAM, 01943 874 650.

**25/26 AUGUST 2001**

**MID-LANARK ARS** - Summerlee Heritage Park, Coatbridge. OT 9am, special event station, callsign GB2SSF, with operation on HF and VHF bands.

**KEY**

***Rallies & Events***

**TI** - Talk-In; **CP** - Car 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; **LB** - Licensed Bar; **C** - Catering; **DF** - Disabled Facilities; **WIN** - prize draw, raffle; **LEC** - LECtures / seminars; **FAM** - FAMily attractions; **CS** - Camp Site.

## KEN ELLIS MBE, G5KW

BRITISH AMATEUR RADIO lost one of its pioneers recently with the death of Ken Ellis, G5KW. He died on 28 June at the age of 92 in Folkestone hospital, following a prolonged period of ill-health.

Photo: G4ICD

In his younger days with the Royal Signals, he held several callsigns while serving in the Middle-East. It was there in the late 1940s when, as MD5KW in the Suez Canal Zone, he carried out pioneering work at frequencies above 28MHz, the most notable of which was in the range 50 - 58MHz. This commitment to the 6-metre band stayed with him until shortly before his death.

After retiring from the Army, he stayed abroad in a civilian capacity. In 1947 he was awarded the MBE for his work with the Middle-East Forces Broadcasting Organisation and, in 1950, the King of Saudi Arabia bestowed on him 'The Royal Robes and Dagger', the second highest award in that country, for his work with the Saudi General Intelligence Department.

Ken was a Founder Member of the UK Six Metre Group, and had been involved in several 'firsts' on six metres, the earliest of which was as MD5KW with G6DH in November 1947.

In January 1983, permits were issued to a lucky few to use the six-metre band on a 'no interference to television' basis. Ken was one of these and, in May 1983 from his converted ambulance in the Scilly Islands, he made the first UK-to-Gibraltar contact with ZB2BL. Other firsts with Canada and Iceland followed shortly after.

Ken was an active member of the RSGB VHF Committee and was a prime mover towards the relaxation of restrictions on the six-metre band, allowing the use of vertical polarisation and mobile operation, to give us the flexibility we enjoy today.

He was elected Honorary Vice-President of the RSGB in 1986, and continued to be active on six metres until a year or so ago, when ill-health forced him to close down his station. He was acknowledged by all who knew him as a fine gentleman and good friend, and will be greatly missed. Our sympathy is conveyed to his wife, Rita, and family.

**26 AUGUST 2001**

**COLERAINE & DARS Annual Radio & Computer Rally** - Bohill Hotel, Cloyfin Road, Coleraine.

**MILTON KEYNES ARS Rally** - New venue: St Paul's School, Leadenhall, Milton Keynes. OT 10am. Dave, G3ZPA, 01908 501 310, or by e-mail to rally@bletchley.net. Web site www.madasafish.com/~mkars/rally.html

**TORBAY ARS Mobile Rally** - Churston Grammar School, Greenway Road, Churston, Torbay. OT 10am, £2. TI, CP, C, TS, WIN, B&B, MT (two photos needed). John, G4VUD, 01626 205 514 or e-mail rally@tars.org.uk

**27 AUGUST 2001**

**HUNTINGDONSHIRE ARS Radio Rally** - Ernulf Community School, St Neots (near Tesco on A428). OT 10am, £1.50. C, CBS on hard standing, TI on S22. Peter, M5ABN, 01480 457 347 (1800 - 2200).

**2 SEPTEMBER 2001**

**ANDOVER ARC Radio & Computer Boot Sale** - Middle Wallop Airfield, nr Andover, Hants, on the A343 between Andover & Salisbury. OT 10am, £1 per car (buyers), £5 per boot (sellers). TI on S22. Jack, G0UJW, 01264 391 383.

**TELFORD ARRG Telford Radio Rally** - RAF Cosford Museum, off jn 3 M54. OT 10am, £2. TS, FM, CBS, SIG, CP free, C, MT (two photos needed). Dave, M0VZT, 01952 222 101. Web site www.TelfordRally.org.uk or e-mail bob@somrob.u-net.com

**9 SEPTEMBER 2001**

**LINCOLN SWC Hamfest** - Lincolnshire Showground, on A15 five miles North of Lincoln. OT 10.30am, £2. Celebrating the Club's 80th Anniversary, there will be an aircraft flypast, model aircraft, boats and cars, oil engines, B&B, plants, Police, Fire and RAF displays. John, G8VGF, 01522 525 760 or 07968 050 318.

**15/16 SEPTEMBER 2001**

**TRANSMISSION 2001** - 9th annual event to raise money for British Wireless for the Blind Fund. John 01634 832 501.

**16 SEPTEMBER**

**BARRY ARS Welsh Amateur Radio Exhibition** - Memorial Hall, Barry. Brian, 029 2083 2253.

**21/22 SEPTEMBER 2001**

**LEICESTER Amateur Radio Show** – Donington International Centre, Castle Donington, Leics. Geoff, G4AFJ, 01455 823 344, fax 01455 828 273 or e-mail g4afj@argonet.co.uk

**22 SEPTEMBER 2001**

**LOWESTOFT & DARS and PYE ARS QRP Beside the Seaside** - United Reformed Church, Back Chapel Lane, Gorleston, nr Gt Yarmouth. OT 2pm, CP free, B&B, A, C, DF, WIN. David, G3OEP, 01493 662 323.

**7 OCTOBER 2001**

**GREAT LUMLEY AR & ES Rally** - Community Centre, Front Street, Great Lumley, just off the A1M. OT 10.30am, £1, accompanied under-14s free. CP free, C, SIG, B&B, TI. Nancy, 0191 274 4274 (W) or 07990 760 920, or e-mail lumley.rally@ic24.net

**MANSFIELD ARS Radio, Computer & Electronics Rally** - New Venue (under cover), Intake Leisure Club, Kirkland Avenue, Mansfield. OT 10am. David, G0RDP, 01623 631 931 or david.g0rdp@lineone.net or web site www.andange.btinternet.co.uk/rally.htm

**12 - 14 OCTOBER 2001**

**RSGB International HF and IOTA Convention HFC 2001** - Beaumont Conference Centre, Old Windsor. RSGB, 0780 904 7373.

**WACRAL 2001 Conference** - Bournemouth. G4EZU, QTHR or 01474 533 686.

**13 OCTOBER 2001**

**THE G QRP CLUB MINI-CONVENTION** - St Aidan's Hall, Sudden, Rochdale. OT 10am, £1. TI on S22, LEC, large social area, B&B, surplus - junk - components - kit traders, C (including the famous pie and peas). George, G3RJV, g3rjv@gqrp.com

**14 OCTOBER 2001**

**NORTH WAKEFIELD RC 18th Amateur Radio & Computer Rally** - Outwood Grange Secondary School, Potovens Lane, Outwood, Wakefield, W Yorkshire. Follow signs from M1 jn 41. CP free, TS, SIG, B&B, C, MT (two photos needed). 01924 824 451 or www.nwrc.mcmail.com

**21 OCTOBER 2001**

**BLACKWOOD & DARS Radio, Computer and Electronics Rally** - Newport Centre, 1 mile from jn 25A, M4. OT 10.30/10.45am, £1.50. B&B, TI, TS, SIG, LB, C, DF. Dave, GW4HBK, 01495 228 516 (eve).

**28 OCTOBER 2001**

**GALASHIELS & DARS Annual Rally** - Volunteer Hall, St Johns Street, Galashiels. OT 10.34/11am, £2 including free cash prize draw ticket, TS, B&B, C. Jim, GM7LUN, 01896 850 245 or e-mail jimk@gm7lun.freeserve.co.uk

**3/4 NOVEMBER 2001**

**NORTH WALES RRC Rally 2001** – Muriel, GW7NFY, 01745 591 704 or www.nwrrcw.org.uk

**4 NOVEMBER 2001**

**NORTH DEVON 21st RADIO RALLY** - G8XMI, 01409 241 202.

**6/7 NOVEMBER 2001**

**LOW POWER RADIO ASSOCIATION Radio Solutions 2001** - 01422 886 463 or www.lpra.org or e-mail info@lpra.org

**11 NOVEMBER 2001**

**SOUTH YORKSHIRE REPEATER GROUP Great Northern Hamfest** - Ernie, G4LUE, 01226 716 339 or 07787 546 515.

**18 NOVEMBER 2001**

**COULSDON ATS** Bazaar - Andy, G0KZT, or coulsdon_ats@hotmail.com

**MIDLAND AMATEUR RADIO SOCIETY 12th Radio & Computer Rally** - New venue. Peter, G6DRN, 0121 443 1189.

**WEST MANCHESTER RC Red Rose Rally** - Don, G3BSA, phone/fax 01942 871 620 or e-mail don@g3bsa.freeserve.co.uk

**24 NOVEMBER 2001**

**ROCHDALE & DARS Traditional Radio Rally** - John, G7OAI, 01706 376 204 (eve), or e-mail radars@mbc.co.uk Please note that this is a *Saturday*!

**24/25 NOVEMBER 2001**

**LONDON AMATEUR RADIO & COMPUTER SHOW** - Pickett's Lock. 01923 893 929, www.radiosport.co.uk

**25 NOVEMBER 2001**

**BISHOP AUCKLAND RAC Rally** - Mark, G0GFG, 01388 745 353 or Brian, G7OCK, 01388 762 678.

**1 DECEMBER 2001**

**RSGB ANNUAL GENERAL MEETING** - GM1GEQ, QTHR.

**8 DECEMBER 2001**

**WORCESTER Radio, Electronics & Computer Rally** - John, G8MGK, 01527 545 823 or 07762 203 355. Web site www.qsl.net/gb2tcr

**20 JANUARY 2002**

**OLDHAM ARC Rally** - Steve, 01706 848 092 or m5aeg@btinternet.com

**3 FEBRUARY 2002**

**SOUTH ESSEX ARS Rally** - Brian, G7IIO, 01268 756 331 or www.southessex.ars.btinternet.co.uk

**10 FEBRUARY 2002**

**HARWELL ARS Radio and Computer Rally** - Ann, G8NVI, 01235 816 379 or annstevens@compuserve.com

**13/14 APRIL 2002**

**RSGB Spring Radio & Computer Show** (incorporating **RSGB National VHF Convention**) - Jan, 0870 904 7377.

**19 MAY 2002**

**MIDLAND ARS Drayton Manor Radio & Computer Rally** - Peter, G6DRN, 0121 443 1189 (eve).

## GB calls

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.

**4 Aug** GB0GDL: Glasson Dock Light. Nr Lancaster. LH27 (G3UCA)
GB0TSG: Tall Ship *Glenlee*. Glasgow. LHV27 (GM0XFK)
GB0WSS: W Sussex Scouts. Ardingly, W Sussex. LH2P (G4LKW)
GB2MMI: MMI is Roman Numerals for 2001. East Riding, Yorkshire. LHV27P (G3RGC)
GB2TSR: Torbay Steam Rally. Nr Brixham, Devon. LH2S (G0CDB)

**5 Aug** GB2SL: Spurn Lightship. Kingston Upon Hull. LH2P (G4VHM)
GB60ATC: Air Training Corps. Oadby, Leicester. LH2 (G0RMM)

**12 Aug** GB2PK: Porthcurno Radio Week. Penzance, Cornwall. TLH2 (G3NRD)

**13 Aug** GB4YOU: Youlbury Scout and Guide Radio. Oxford. TLH27P (G0RJX)
GB4YOU: Youlbury Scout and Guide Radio. Oxford. TLH27P (G0REL)

**16 Aug** GB0DCW: Dawlish Carnival Week. Dawlish, Devon. LH2 (G3LHJ)

**17 Aug** GB0SLH: Souter Lighthouse. Whitburn, Tyne & Wear. (M0BWI)
GB2HRC: Horndean & District Radio Club. Cosham, Hants. TLHV27 (G4PRG)

**18 Aug** GB0BMB: Beaulieu Millennium Beacon. Beaulieu, Hants. LH2P (G0LKG)
GB0LCS: Lairg Crofters Show. Highland Region, Scotland. L2 (GM4VVX)
GB0PSV: Portland Steam & Vintage Show. Southwell, Dorset. LH27PS (G4ZIY)
GB0REL: Rathlin East Light. Rathlin Island, IO 65 UG. TLHV2 (GI0PGC)
GB1PSV: Portland Steam & Vintage Show. Southwell, Dorset. 27PS (G1OCN)
GB2BL: Bamburgh Light. Bamburgh, Northumberland. LH2 (M0BMJ)
GB2ELH: Eshaness Lighthouse. Eshaness, Shetland Islands. LH (MM5PSL)
GB2FL: Flamborough Lighthouse. Bridlington, E Yorks. LH (G3YDL)
GB2LBN: Lighthouse Barns Ness. Dunbar. LH2 (GM4UYZ)
GB2LDH: Lighthouse Dunnet Head. Caithness, Scotland. LHV27 (GM3WKZ)
GB2LNP: Lighthouse Nash Point. Marcross, S Glamorgan. LH (MW0CNA)
GB2LZL: Lizard Lighthouse. Nr Helston, Cornwall. LH (G0XAO)
GB2LZL: Lizard Lighthouse. The Lizard, Cornwall. LH (G3PLE)
GB2LZL: Lizard Lighthouse. Nr Helston, Cornwall. LH (M0BMX)
GB2MSL: Museum of Scottish Lighthouses. Fraserburgh. (GM4HWS)
GB2NCL: North Carr Lightship. Dundee. LH2 (GM3NHQ)
GB2RFS: Ruthin Flower Show. Ruthin, Denbighshire. LH2 (GW4WSU)
GB2RL: Roker Lighthouse. Roker, Sunderland. TLHV27 (M0AYI)
GB2RRL: Rubha Reigh Lighthouse. Ross-Shire, Gairloch. LH (GM4CHX)
GB2SCA: Scarborough Lighthouse. Scarborough, N Yorks. LH2 (G4SSH)
GB4WWF: Wakefield Waterways Festival. Wakefield. LH2 (M0BFO)
GB8SL: Shoreham Lighthouse. Shoreham By Sea, W Sussex. LH (G4LKW)

**19 Aug** GB60VLY: RAF Valley. Anglesey. (M0CBN)

**24 Aug** GB0CCF: Cawood Craft Festival. Selby, N Yorks. LV27 (M5ALY)
GB2FOS: Festival of Sea. Waterlooville, Hants. TLH27 (G3LIK)

**25 Aug** GB2TER: Traction Engine Rally. Leeds. LH27P (G3YDL)

**26 Aug** GB2NJA: Clubs c/s Suffix. Brixham, Devon. LH27 (G3LHJ)
GB4RFC: Rosliston Forestry Centre. Swadlincote, Derbyshire. (G4CRT)

# Regional and Club News

## Club NEWS

### Scotland West and Western Isles Region

No club details submitted.

### Scotland East and Highlands Region

**COCKENZIE & PORT SETON ARC**

10, Junk night; 18/19, Lighthouse weekend at Barns Ness. Bob, GM4UYZ, 01875 811 723.

**ORKNEY ARC**

17 - 19, Active as GB5RO from Hoy High lighthouse on the island of Graemsay. Bob, gm4dzx@qsl.net

### North West Region

**CHESTER & DRS**

4, Barbecue and reunion. Bob, G4CMI, 01244 378 699.

**ISLE OF MAN ARS**

14, Talk by Mr H Parkin, from the Astronomical Society. David, dave@md0bxx.iofm.net

**MID-CHESHIRE ARS**

1, Activity night & Committee meeting; 8, 15, Antenna farm maintenance - verticals; 22, 29, trap dipole. Niall, G0VOK, 01606 871 413.

**THORNTON CLEVELEYS ARS**

13, Talk - subject to be announced; 27, No meeting. Jack, G4BFH, e-mail: jack@jduddington.fsnet.co.uk

### North East Region

**BISHOP AUCKLAND RAC**

2, 9, 16, 23, 30, club meetings at Stanley Village Hall, 8.00pm, all welcome. Mark, G0GFG, 01388 745353.

**GOOLE RES**

3, Social evening at the *Barnes Wallis Inn*; 10, On air night; 17, 2001 Construction Competition at the *Barnes Wallis Inn*; 24, Social evening and raffle at the *Barnes Wallis Inn*; 31, Contest preparation night. Richard, G0GLZ, 07867 862 169.

**GREAT LUMLEY AR & ES**

1, Night on the air - conducting a net on VHF and HF; 22, Committee meeting. Nancy Bone, lumley.rally@ic24.net

**GRIMSBY ARS**

6, Construction night with Adrian, G1BRB; 16, Morse practice night with G4EBK, G3RSD and G4CFO. Brian, G4DXB, 01472 231 383.

**HORNSEA ARS**

1, Foxhunt; 8, Musical quiz with G4YTV; 15, Activity night; 22, 'Reflections of Friedrichshafen', by G7MFO; 29, A visit - to be confirmed. Andy, G0VRM, 07050 287 279.

**MEXBOROUGH & DARS**

11, Open Day. Tom, G0KSK, 01709 586 329.

**NORTH WAKEFIELD RC**

16, Barbecue; 18/19, International Lighthouses On the Air weekend - special event station GB2FL from Flamborough Lighthouse; 25, Foxhunt; 25 - 27, Harewood Steam Rally - special event station GB2TER. Jim, G3YDL, 01924 824 451.

### Midlands Region

**BROMSGROVE ARS**

14, 4th DF hunt - the final challenge, a bottle of wine for the winner; 28, Discussion on the year's improvements, changes etc. Angus, G8DEC, 01257 875 573.

**COVENTRY ARS**

3, Night on the air, Novice class, Morse practice; 10, HF Portable in SV - M0CAR; 17, 2m DF hunt; 24, Night on the air, Novice class, Morse practice. John, G8SEQ, 024 7627 3190.

**DERBY & DARS**

1, Junk Sale; 8, Committee meeting; 15, Illustrated talk by Dave Palmer, G1DHQ on 'Designing a Web Site'; 22, 'The RSGB Amateur Radio Observation Service', by Barry Scarisbrick, G4ACK; 29, Farewell to No 119 - a cheese & wine evening to leave the clubroom in style. Martin, G3SZJ, 01332 556 875.

**GLOUCESTER AR & ES**

6, 13, Nights on the air; 20, DF equipment checking; 25, Walking DF hunt, followed by cream tea; 27, VHF/P from escarpment site. Tony, 01452 618 930 office hours only.

**HEREFORD ARS**

17, 'Making More Miles at VHF', by David. Mike, G0WZY, 01981 251 743.

**KIDDERMINSTER & DARS**

7, SSB FD planning evening & technical topics. Phil, G4SPZ, 01299 403 025.

**LEICESTER RS AND COMPUTER CLUB**

13, Activities on HF, VHF and with computers; 20, Barbecue - weather permitting; 27, Activities on HF, VHF and on computers. Stan, G3HYH, 0116 224 2598.

**LINCOLN SHORT WAVE CLUB**

1, G5FZ on-air; 8, Committee meeting; 15, 'Trawler Sparks', by Harry Hutson; 22, Hamfest discussion. John, G1TSL, 01522 793751.

**LOUGHBOROUGH & DARC**

7, On the air from Stanford Hall; 14, 5th DF of the year - 2m start point TBA; 21, Talk on 'Early Airborne Radar' ; 27, Night on the air. Try PSK31, HF or VHF. Chris, G1ETZ, 01509 504 319.

**MID-WARWICKSHIRE ARS**

4, Club Field Day & Picnic - GX3UDN on air; 28, Foxhunt - 145MHz ARDF. Bernard, M1AUK, 01926 420 913.

**RAF WADDINGTON ARC**

2, RAE class; 9, 'Antenna Matching', by Bob, G3VCA; 16, 23, 30, RAE class. Bob, G3VCA, 01522 528 708.

**SALOP ARS**

9, 'Old Radios', by Ben Nock, G4BXD; 23, Final foxhunt; 30, Final Preparation for Telford Rally. Diane, M5DSJ, 01743 341 654.

**TELFORD & DARS**

1, Committee meeting, on the air & revenue review; 8, 'Operation Raleigh', by G4AAL; 15, Telford Rally preparation. Mike, G3JKX, 01952 299 677.

### North Wales Region

**DRAGON ARC**

6, Discussion on autumn activities; 20, Talk and demonstration of PSK31 by GW0ETF. Stewart, GW0ETF, 01248 362 229.

**NORTH WALES RRC**

1, Club net; 2, Bardsey Island final preparation evening; 8, Club net; 9, Club night on the air, to enable members without HF equipment to work Bardsey Island; 15, Club net; 16, Great Orme Lighthouse preparation; 18/19, Great Orme Lighthouse on-air weekend; 22, Club net; 23, Novice course. Ted, GW0DSJ, 01745 336 939.

### South Wales Region

**BARRY ARS**

7, On-the-air night - GW4BRS warms up the ether; 14, 'Morse Night' - practice and training; 21, Lecture night & construction projects; 24 - 29, Annual trip to Flatholm Island, GB5FI. Depart from Barry Island at 10.30am on 24th. Return from Flatholm at 2.20pm on 29th; 28, Pie & Pint' social natter night. Ken, GW1FKY, 01656 656 909.

### Northern Ireland Region

**COLERAINE & DARS**

26, Radio Rally 2001. Peter, MI0CIB.

### London & Central Region

**BRACKNELL ARC**

8, Foxhunt. Details e-mail: Baugh@compuserve.com

**COULSDON ATS**

13, Barbecue at the home of Prue, G4RWW. Steve, G7SYO, 01737 354 271.

**CRAY VALLEY RS**

2, 'Weather Satellites', by Ray, G0FDU. To be confirmed. Bob, BRS32525, 020 8265 7735 after 8pm & weekends.

**CRYSTAL PALACE & DRS**

17, Summer barbecue - to be confirmed. Bob, G3OOU, 01737

## THE REGIONS AND DISTRICTS

**Scotland West & Western Isles Region**
District 1 – Central, City of Glasgow
District 2 – Lanarkshire, Renfrewshire
District 3 – Ayrshire, Dumfries & Galloway
District 4 – Dumbartonshire, Argyll & Bute, Western Islands

**Scotland East & Highlands**
District 5 – Highlands and the Orkney and Shetland Islands
District 6 – Moray, Aberdeenshire
District 7 – Perth & Kinross, Angus
District 8 – Fife, Lothian, Borders

**North West Region**
District 9 – Cumbria
District 10 – Lancashire, Isle of Man
District 11 – Greater Manchester
District 12 – Cheshire, Merseyside

**North East Region**
District 13 – Northumberland, Tyne and Wear, Cleveland, County Durham
District 14 – North Yorkshire, East Yorkshire
District 15 – West Yorkshire
District 16 – South Yorkshire, NE Lincs

**Midlands Region**
District 17 – Shropshire, Staffordshire, West Midlands
District 18 – Derbyshire, Lincolnshire, Nottinghamshire, Rutland
District 19 – Bedfordshire, Leicestershire, Northamptonshire
District 20 – Gloucestershire, Herefordshire, Warwickshire, Worcestershire

**North Wales Region**
District 21 – Wrexham, Flintshire
District 22 – Conwy, Denbighshire
District 23 – Gwynedd, Ynys Môn (Anglesey)
District 24 – Powys

**South Wales Region**
District 25 – Pembrokeshire
District 26 – Ceredigion
District 27 – Carmarthenshire
District 28 – Vale of Glamorgan, Cardiff, Newport

**Northern Ireland Region**
District 29 – North Belfast, Co Antrim
District 30 – South Belfast, Co Down
District 31 – Co Armagh, Co Fermanagh
District 32 – Co Londonderry, Co Tyrone

**London & Central Region**
District 33 – London Postal Districts
District 34 – South Buckinghamshire and former county of Berkshire
District 35 – Hertfordshire, North Buckinghamshire
District 36 – Surrey

**South & South East Region**
District 37 – Oxfordshire
District 38 – Wiltshire
District 39 – East Sussex, West Sussex
District 40 – Hampshire, Isle of Wight

**South West and Channel Islands Region**
District 41 – Cornwall & Channel Islands
District 42 – Devon
District 43 – Somerset & Bristol
District 44 – Dorset

**East & East Anglia Region**
District 45 – Cambridgeshire
District 46 – Norfolk, Suffolk
District 47 – Essex
District 48 – Kent

**The RSGB Regional Representation Scheme is designed to allow changes to the RSGB Districts as required in order to support the membership most effectively, Several changes have been made to District boundaries since the above table was last published. The current list of RSGB Regional Managers can be found on page 74.**

552 170 or Victor, 020 8653 2946.

**DORKING & DISTRICT RS**
4, Nick, G7DND, is arranging an afternoon visit followed by private evening on HMS Belfast. John, G3AEZ, 01306 631 236.

**ECHELFORD ARS**
9, 'Engineering Aspects of Satellite Broadcasting', by David Sparks, Head of Engineering - Sky TV; 19, Echelford ARDF National Qualifier; 23, 'Surrey Raynet', by Nigel, G1XBV - West Surrey Controller. Robin, G3TDR, 01784 456 513.

**EDGWARE & DARS**
9, Summer break - no meeting; 23, SSB Field Day briefing. David, G5HY, 01923 655 284 (days) or 020 8954 9180 (eves).

**MAIDENHEAD & DARC**
2, Test gear evening with Roger, G3VCT; 21, Barbecue at Cookham. John, G3TWG, 01628 525 275.

**RADIO SOCIETY OF HARROW**
4, GB2DHH operating day from the Mosquito Museum, London Colney. Jim, G0AOT, 01895 476 933 or 020 7278 6421.

**READING & DARC**
9, Construction Contest at 8pm. Pete, G8FRC, 0118 969 5697.

SOUTHGATE ARC
9, Kit check for DF hunt; 27, Grand foxhunt and barbecue. Mike, M0ASA, 020 8366 0698.

**SURREY RADIO CONTACT CLUB**
6, Barbecue at QTH of Peter, G3ZPB. Ray, G4FFY, 020 8644 7589.

**WELWYN-HATFIELD ARC**
20, On-air evening, planned at the moment for the Attimore public house. E-mail: dean@g3wgc.freeserve.co.uk

## South & South East Region

**CRAWLEY ARC**
22, Foxhunt and barbecue. Derek G3GRO, 01293 520 424.

**FARNBOROUGH & DARS**
8, 'Low Frequency Experiments', by Derek, G3HEJ; 22, 'Underwater SSB', by Peter, G4MBZ. Norman, G0VYR, 01483 835 320.

**HARWELL ARS**
12, Informal operating evening at the club room. John, G6LNU, 01235 223 250.

**HASTINGS ELECTRONICS & RC**
15, 'Space Travel', by John Betlake. R C Gornall, G7DME, 01424 444 466.

**HORNDEAN & DARC**
18/19, special event station GB2HRC from Fort Nelson; 28, 'D68C Comoros DXpedition', by Mike, G3SED. Stuart, G0FYX, 023 9247 2846.

**OXFORD & DARS**
9, 'Amateur Radio Observation Service' by Barry Scarisbrick, G4ACK. Dave, G3BLS, 01865 247 311.

**QRZ AR GROUP OF SUSSEX**
10, Summer barbecue; 11/12, Meteor shower display and special event station at Hertsmonceux Castle; 24, Club project evening. Stuart, M0CHW, 01435 863 020.

**SOUTHDOWN ARS**
6, 'Raynet, The Local Scene', by Dick Jeffries; 25/26, Lighthouse on the air. Glynn, M0CHO, 01323 765 731.

**TROWBRIDGE & DARC**
1, Club members' 10-minute talks. Ian, G0GRI, 01225 864 698 evenings and weekends.

**WATERSIDE (New Forest) ARS**
18/19, Special event station, GB0BMB, for National Lighthouse Weekend at Lepe, Hants. A Horton, G0LKG, 023 8084 4316.

**WORTHING & DARC**
1, Construction - hints and tips by G8MSQ; 8, Discussion evening; 15, 'Electronic Polarography', by G3GZT; 29, Discussion evening. Roy, G4GPX, 01903 753 893.

## South West & Channel Islands Region

**APPLEDORE & DARC**
19/20, Club Field Day, discus-

| Region | RSGB Regional Manager |
|---|---|
| Scotland West & the Islands Region | John Martindale, GM4VPA |
| Scotland East & the Highlands Region | Tommy Menzies, GM1GEQ |
| North West Region | Kath Wilson, M1CNY |
| North East Region | Geoff Darby, G7GJU (temp) |
| Midlands Region | Vacant |
| North Wales Region | Liz Cabban, GW0ETU |
| South Wales Region | Simon Lloyd Hughes, GW0NVN |
| Northern Ireland Region | Jeff Smith, MI0AEX |
| London & Central Region | Roger Piper, G3MEH |
| South & South East Region | Ivan Rosevear, G3GKC |
| South West & Channel Islands Region | Richard Atterbury, G4NQI |
| East & East Anglia Region | Malcolm Salmon, G3XVV |

RSGB Regional Managers (as of 12 July).

sion and set up station. Brian, M0BRB, 01237 473 251.

**CORNISH RAC**

2, PSK31, a talk and demonstration; 13, Computer Section - members' favourite programs. Robin, G0MYR, 01209 820 118.

**POLDHU ARC**

14, Kite flying and radio-controlled flying demonstration. Keith, G0WYS, 01326 574 441.

**POOLE RS**

3, Operating evening in the shack; 10, Preparation for Hamfest; 12, Hamfest Rally; 17, Construction (shack). Phil, G0KKL, 01202 700 903.

**SOUTH BRISTOL ARC**

1, 70cm challenge; 8, Summer darts match with Fred, G7LPP; 15, On-the-air evening; 22, 'Weather Satellites', by Ken, G8AGT; 29, Display of 'Old Domestic Radios', with Sam, M1DCS. Len, G4RZY, 01275 834 282.

**THORNBURY & S GLOS ARC**

1, Operating night; 8, Practical night - bring your projects/failing gear/mistakes; 15, Foxhunt (car); 22, Video night; 29, 'Time Warp Receiver Construction', by Mike Maiden. John, 01454 850 798.

**TORBAY ARS**

26, Mobile Rally. John, G4VUD, 01626 205 514.

**WEST SOMERSET ARC**

7, Barbecue. Alan, M0AOJ, 01643 707 207.

**YEOVIL ARC**

2, Committee meeting and station on the air; 9, Foxhunt; 16, Operation from a DX location with G3KSK; 23, 'Test Equipment 4', by G7LNJ; 30, Committee meeting and station on the air. Derek, M1WOB, 01935 414 452.

## East & East Anglia Region

**CHELMSFORD ARS**

7, '*UIView*' by Roger Barker. David Bradley, M0BQC, 01245 602 838.

**COLCHESTER RA**

2, Let's talk amateur radio; 16, Summer venue - Meet at The Grange; 30, table-top sale/auction. Kevin, M0BCK, 01206 561 117.

**FELIXSTOWE & DARS**

6, 'Now you've got it, what are you going to do with it?' Paul, G4YQC, 01394 273 507.

**HARWICH AMATEUR RADIO INTEREST GROUP**

8, Video evening. Eugene, G4FTP, 01206 826 633.

**HUNTINGDONSHIRE ARS**

27, Huntingdonshire Amateur Radio Rally at Ernulf Community School, St Neots, Cambridgeshire. Doors open at 10am. Peter, M5ABN, 01480 457 347.

**IPSWICH RADIO CLUB**

1, 15, 29, On the air at Otley. Keith, G7CIY, 01394 420 226.

**LEISTON ARC**

7, Wine and cheese. Lisa, 2E1HBF, 01728 833 202.

**NORTH KENT R&E COMMUNICATIONS CLUB**

7, RSGB videos; 21, Station on the air and 'bits and pieces'. Dave Collings, 01322 330 830.

# REGIONAL AND CLUB NEWS IN BRIEF

## TARS WINS TWO FIELD DAY TROPHIES

Rob, G3XFD; Colin, G4FCN; John, G0CDB; Laurie, M1ARW; Jeff, G4ELZ and Derrick, G3LHJ.

AT A RECENT meeting of the Torbay Amateur Radio Society (TARS) when Rob Mannion, G3XFD, of *PW* visited to give a talk, the RSGB gave permission for Rob to present TARS with two RSGB contest trophies. They were the Reading QRP Shield for winners of the HF NFD Low Power section and the G5BY Trophy for winners of the Mix and Match section in VHF NFD. Derrick Weber, G3LHJ, of TARS proudly points out that, "I am sure there are not too many clubs that have achieved that in one year".

The callsign G5BY means a lot to the club, as its holder, Mr H L O'Heffernan, used to live at Start Point near Torbay. He built a very elaborate VHF station at a disused golf club house which he purchased to use as his shack. In May 1948 a group of TARS members paid a visit to G5BY. The photo below was taken by Derrick's father, G3GDW, though then an SWL, and includes a 17-year old Derrick kneeling in the front row. Other callsigns that Derrick recognises are G3AUS, G2GK, G3FHI, G3AVF, G5SY, G3CQC, G3CQR and G2GM. G5BY himself is in the back row standing near the open door.

Members of TARS visit G5BY in May 1948 (see text).

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.

**Club News is a service for clubs and societies affiliated to the RSGB. The announcements are intended to notify non-members and potential members of your club of specific events, therefore 'informal', 'committee meeting', 'natter night' and 'ragchew evening' etc will only be included if space permits. Basic, unchanged details about RSGB-affiliated clubs are published annually in the *RSGB Yearbook*.**

# VHF/UHF

**NORMAN FITCH, G3FPK**
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THIS HAS BEEN a very busy and rewarding month for DXers, with Sporadic E (Es) on 144MHz, as well as on 70MHz and 50MHz, some over-3000km QSOs on 2m tropo and some trans-Atlantic openings on 50MHz, one to the west of North America.

All times are in UTC, ODX indicates best DX and QTHR signifies that the operator's address is in the current *RSGB Yearbook.* An asterisk (*) after a callsign denotes a CW contact, (SN), (FK) etc refers to the postcode area and (IO93), for example, is the Maidenhead grid.

## PUBLICATION

THE MAY ISSUE of *Six News*, the quarterly journal of the UK Six Metre group, comprises 64 pages. The technical articles are 'A Poor Man's 50MHz Kilowatt Amplifier' by Goran Grubisic, 9A6C, and a long one on '50MHz $F_2$ Propagation Mechanisms' by Jim Kennedy, K6MIO/KH6. All the latest operating news is covered in the Clive Davies, G4FVP, 'What's on Six' and 'Late News' columns. This edition includes a report on this year's Six Metre Convention, the unadopted AGM minutes, '50 years of 50MHz' by Ken Willis, G8VR, contest information and the operating tables. Chris Deacon, G4IFX, edits *Six News* and the UKSMG has a fine website - see the list.

## PROPAGATION

THE DAILY SOLAR data for the 30-day period up to 19 June shows little change from last month's data. The 2.8GHz solar flux varied from 133 to 221 units, averaging 164.2, just 1.4% up. There were 42 new sunspot regions recorded - 31 last time - and the sunspot areas in millionths of the Sun's visible disc varied between 300 and 2550.

The SESC sunspot number peaked at 289 on 17 June with a minimum of 93 on 31 May to give an average of 184.5, nearly 32% up on last month.

The geomagnetic data reveal a quieter period with the middle latitude A-index only exceeding 10 on seven days with a peak value of 25 on 18 June. The three-hourly K-indices only reached five on five occasions out of 232 recordings. These data can be found on the SEC website - see the list.

## CONTEST NOTES

AS SOME READERS may know, there are evening Nordic Activity Contests on the VHF / UHF bands that provide, at least in theory, opportunities for stations on the eastern side of Britain to work into Scandinavia. But Andy Cook, G4PIQ, for one, was disappointed at working so few LA, OZ and SM stations. The problem is that the Scandinavians mainly beam towards Germany, as the QSO rate is usually high. Andy suggests, "Therefore I would like to propose a trial where UK stations calling CQ look to Scandinavia at a fixed time and the Scandinavians look our way." He suggests 2000 for 10min or so and hopes the word will get around. He will try to operate on 144.292MHz from JO01MU with a 4 x 15-ele Yagi array. Stewart Cooper, GM4AFF (DD), supports Andy's proposal now that his 2m array is back up again, as does John Quarmby, G3XDY (IP), who has worked SM7MW a couple of times on 70cm in average conditions.

Andrew Hutley, G6SPS (JO01IT), who operates M1CRO and G0VHF, agrees with Andy's idea and would like to try on 1296.240MHz on the 23cm nights. On 12 June he heard OZ1FF* on 432.154MHz working G3XDY*. He hopes to operate portable from a coastal site - probably JO01OU - on 70cm and 23cm on the appropriate nights from 1800.

**LOCATOR SQUARES TABLE**

Starting date: 1 1 1979

| Call | 50 | 70 | 144 | 430 | 1296MHz | Total |
|---|---|---|---|---|---|---|
| G3XDY | - | 33 | 246 | 170 | 120 | 569 |
| GJ4ICD | 780 | 1 | 267 | 121 | 79 | 1248 |
| G4RGK | 409 | - | 345 | 233 | 78 | 1065 |
| G3IMV | 672 | 20 | 616 | 125 | 53 | 1486 |
| G8TOK | 334 | 31 | 134 | 56 | 29 | 584 |
| G6TTL | 220 | - | 133 | 90 | 27 | 470 |
| G3FIJ | 236 | 29 | 105 | 50 | 23 | 443 |
| G0EVT | 416 | 14 | 292 | 77 | 16 | 815 |
| G4FUJ | 68 | 18 | 23 | 5 | 5 | 119 |
| G0FIG | 460 | - | 385 | 94 | - | 939 |
| G0JHC | 797 | 25 | 48 | 4 | - | 874 |
| G4TIF | 477 | 28 | 254 | 112 | - | 851 |
| G0FYD | 538 | 1 | 276 | 20 | - | 835 |
| GW7SMV | 533 | - | 191 | - | - | 724 |
| G4YTL | - | 51 | 511 | 101 | - | 663 |
| GW6VZW | 488 | - | 146 | 6 | - | 640 |
| GU7DHI | 415 | - | 85 | 14 | - | 514 |
| G7CLY | 244 | - | 248 | 16 | - | 508 |
| MM5AJN | 316 | - | 76 | 32 | - | 424 |
| G1UGH | 270 | - | 130 | 16 | - | 416 |
| MU5MUF | 338 | 13 | 32 | - | - | 383 |
| G4OBK | 312 | - | 57 | - | - | 369 |
| G4ZHI | 39 | - | 238 | 32 | - | 309 |
| G0ISW | 190 | - | 79 | 22 | - | 291 |
| G1EFL | 221 | - | 67 | 2 | - | 290 |
| G3FPK | 30 | - | 246 | - | - | 276 |
| G4DEZ | 214 | - | 36 | 7 | - | 257 |
| GW3EJR | 252 | - | - | - | - | 252 |
| GM1ZVJ | 235 | - | - | - | - | 235 |
| G4APJ | 158 | - | 44 | 20 | - | 222 |
| G8GNI | 139 | 15 | 46 | 18 | - | 218 |
| M1DUD | 164 | - | 30 | - | - | 194 |
| GM4VVX | 62 | - | 70 | - | - | 132 |
| G4OUT | - | 23 | 107 | - | - | 130 |
| M1DRK | 113 | - | - | - | - | 113 |
| EA7IT | - | - | 102 | - | - | 102 |
| MM0BQI | 44 | - | 18 | 1 | - | 63 |
| M0CNP | - | 1 | 31 | 12 | - | 44 |

No satellite, repeater or packet radio QSOs. If no updates received for a year entries will be deleted. Band of the month is 1296MHz. Next deadline is 14 August.

**Gabriel Sampol Duran, EA6VQ, one of Spain's keenest VHF DXers. He is active on both terrestrial modes and EME.**

## BAHAMAS ACTIVITY

EMIL POCOCK, W3EP, spent a few days on vacation on San Salvador Island (FL24) in the Bahamas. The largely undeveloped island is about 12 miles long and seven miles wide with a population of 800 and is popular with scuba divers. Emil stayed at the Bahamian Field station on the north-eastern corner of the island with a group of biology students. In the 25 May to 1 June period he was QRV on 6m with 100W and a 4-ele Yagi at 23ft AGL overlooking the Atlantic Ocean. He made 750 QSOs with stations in 150 grids and 42 states as well as contacts with VE1, 3, 5, YV, YS, HR, HP and KP2 stations. ODX were to Washington and Oregon. He missed the European opening as he was snorkelling! The 1/2 June opening was most intense with all US call areas, save W6 and W7, on simultaneously. He was also QRV on 2m with 100W and a 7-ele Yagi at 25ft but there

was no Es and skeds with EA8FF were unsuccessful, although he did make it on tropo to N4IS in Florida.

## METEOR SCATTER

THE PERSEIDS SHOWER is one of the major MS events of the year and the OH5IY software suggests the peak to be around 1100 on 12 August. Ilkka's latest software can be downloaded from his website - see the list.

Stefan Heck, LA0BY, plans to operate from JP40SF in the 11 - 13 August period and says he has found, "An exceptionally good QTH at 900m ASL with a flat horizon from about 30 - 270º." He may start a day earlier and during the maximum he will use random SSB. A few skeds may be arranged with stations over 1800km away or in Eastern Europe and he will use 144.155MHz for both sked and random operation. Check his website for the latest information - see the list.

## MOONBOUNCE

HOWARD LING, G4CCH (IO93), was QRV on 23cm in the May sked weekend completing 23 QSOs, but with no new 'initials'. W4OP, in his new North Carolina QTH, heard Howard at RST56/79. On the 26th conditions were very strange with heavy, slow QSB for most of the day. From 1117 he completed with HB9BBD on CW and SSB, F6ETI* (same station as F8COZ), ZS6AST*, JA6AHB*, F1ANH*, HB9BCD*, F2TU, HA5SHF*, W7SZ*, SM6CKU*, LW5DX*, W7QX*, IK2MMB*, W7GBI* and G3LTF*. Conditions were good next day until about 1930 when the heavy QSB set in again. He completed with G3LQR*, HB9BBD, G4DZU*, K9BCT*, W7BBM*, PA3DZL*, HB9BCD* and W7QX*. Gotaways were DK0ZAB and SM3AKW.

The next sked weekend is on 11/12 August, which coincides with the Perseids meteor shower. London latitude stations will have about 27.6 hours of Moon time and the declination varies from +8.15º to +16.74º, while the signal degradation, referred to perigee, ranges from -1.34dB to -0.92dB. The 144 / 432MHz sky temperature range is 357/27K to 424/29K.

## BAND REPORTS

### 50MHz

Ted Collins, G4UPS (EX), reports that at least two new Russian stations are QRV. On 11 June he worked RU4CE (LO31WX), Toly Saldin, ul Shevchenko 223-56, 413800 Balakovo, Russia and RW0IW/3 (LN09AV), Yuri, Box 302, 685007 Magadan, Russia. FG5BG's QSL address is Georges Santtalikan, 44 Rue Amadec Fengarol, F-97130 Capesterre b/c, Guadeloupe, French West Indies. SU9ZZ - home call OM3TZZ - can be reached at Jaroslav Jamrich, Milosa uhra 11, 91708 Trnava, Slovakia. Ted heard the 9A1CAL beacon on 50.000MHz at 1149 on the 17th.

Every day in June saw single-hop Es to somewhere or other in Europe, plus occasional openings to North Africa and double-hop events to the Eastern Mediterranean and Middle East. For the first 19 days in June, Ted's report occupies over four pages. The best QSOs were on the 8th at 1041 SU9ZZ* (KM50), on the 9th at 1801 SU1SK (KM50), on the 11th at 1333 RU4CE (LO31) and at 1457 RW0IW/3* (LN09). On the 14th at 1046 5B4AGC* (KM64) then 5B4/G1JJE (KM65), on the 17th at 1553 OD5/OK1MU* (KM73) and on the 19th at 0929 SV9CVY (KM25). To the west on the 10th from 1716 he worked K4QI* (FM06) and AA4ZZ* (EM96).

John Hunter, G3IMV (MK), found the bands "pretty uninteresting" whenever he felt like checking, his last new country - number 152 - being A45XR on 25 May. Phil Catterall, G4OBK (IO94), is only QRV on 6m at present. He lists notable QSOs as 4Z5AO on 25 May and K1SG (FN42) on the 31st when the West Coast stations others were working were inaudible in Yorkshire. In June on the 5th, N4IS (EL96) was ODX with K2RTH (EL95), EH6FB/P on the 9th, K4QI on the 10th and OJ0VR on the 14th.

Robin Burrows-Ellis, M1DUD (IP), running just 2.5W to a 3-ele Yagi was delighted to work 5B4FL (KM64) at 0950 on 13 May. In the 23 - 25 May period, using just 250mW, he worked into I, OE, S5 and YU. He took part in the RSGB 50MHz Trophy and UKSMG contests, but both were disappointing with only 20 QSOs made in each.

After spending four months at sea as MU5MUF/MM, Mike Johnson came home in March, bought an IC-706 and, using his GU6AJE call from IN89RL, has been working lots of DX. From 1737 on 25 May he contacted CX2LI and CX9DX (GF15), LW3EX*, LU1DZK on CW and SSB, LU3DZK and LU6DLB (GF05), all over 10,000km. On the evening of the 29th, PY5CC (GG54) and on the 30th LU9APM (GF05), CX1CCC and CX4AAJ (GF15) were worked.

In the big opening to North America on the 31st from 1129 he worked 10 Ws and two VE3s in FN02, 03, 23, 24, 32, 34, 41, 43 and 44 and later HV0A (JN61) for a new country. On 10 June from 1742 Mike contacted W4MYA (FM07) and KN4SM (FM16). He lists hordes of Europeans contacted from mid-May through 17 June bringing his DXCC score to 67 countries.

In the period 22 - 30 May Jamie Ashford, GW7SMV (NP), lists lots of fine DX worked including LU9AEA, LU6DRV and LW9DHZ (GF05), CX9DX, CX1CCC, LU3HR and LU9HUP (FF76), LU8MB (FF57) and PP5BC (GG52). To the south 9J2BO (KH44) and ZS6PJS (KG46) were contacted.

Between 1202 and 1452 on the 31st, he completed with 20 Ws, five VE3s and VY2RU (FN86), two in FM field, the rest in FN. He was QRV in the two contests but also found conditions poor, although he did manage to work 5B/G1JJE on 3 June. On the 10th he caught the North American opening working another eight stations in EM86 and 96, FM04-07 and heard K7RAT* at 1700 at S3.

The best list of DX on 31 May was from Dave Butler, G4ASR (HR), who, from 1204 to 1433 made 21 CW and 11 SSB QSOs with stations in the W1 - 5, W8, W9, VE1 and VE3 call areas. ODX was N5WS* (EL09) at 7850km. Other contacts over 5000km were with K9HMB (EN52), W9ZR (EN80), W4MYA (FM07), K8MFO (EN90), WA8RJF and W8AC (EN91) and K8TQ (EM89).

David Whitaker, BRS25429, reports that the West Coast stations were working into Northern Europe on 10 June and that GW4VEQ (LL) worked K7RAT* (CN75). Other stations reported QRV on the UKSMG's Announcement Page included VE7DXG (CN88), VE7XR, VE7AGG (CN89), VE7SL, VE7XF, W7OF, NN7J, K7RWT and KB7WW (CN85).

### 70MHz

Brian Wilde, G3VWH (SY), worked S57OPM (JN65TX) at 1236 on 23 May during a 5min Es opening. The beacon S55ZMB on 70.030MHz was around S4 for about an hour before fading out at 1307: no other stations were heard, though. Bryn Llewellyn, G4DEZ, should have a 4m beam up by now to put JO03 on the band. Derek, G8TOK (BR), has heard the beacon a few times. Conditions were good on 14 May so he called on 70.200MHz but failed to raise any S5s. However, within 5min he had reports on the Cluster from DL9USA (JO71) and SP6ASD (JO81). From the Cluster, Derek noted that ZC4DW (KM65) is seeking contacts with S5. From the 4m website - see the list - he found out that ZC4DW is G0DEZ who will be in Cyprus for three years.

### 144MHz

Graham Daubney, F/G8MBI (JN04), heard no Es at all during May and there were days when no Band 1 TV signals were heard, so little chance of any Es on 2m. Yet there was such propagation between certain European countries and these events are recorded on PE2KP's website - see the July list.

John Palfrey, EA7IT, has been monitoring for Es for weeks and was rewarded on 15 June with a patchy opening from 1107 during which he worked 11 stations in PA, ON and F, the only one in England being G4FUF. He deduces that the reflective patch would have been over JN05, pretty well overhead at F/G8MBI!

On 21 May EA7GTF (IM87),

81

# CONTEST

**TIM KIRBY, G4VXE**
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*E-mail:tim@ukgateway.net*

AS MOST OF YOU will know, HF NFD didn't really happen this year, owing to the foot and mouth disease restrictions. One or two groups from the UK were active, including a well-known one that operates from a nursery in Chertsey, Surrey, where the risk of infecting livestock with the disease is presumably somewhat less than zero! The groups that were active intend to enter the 'Foreign Stations' section of the DARC Field Day. Excellent! I'm sure all the continental stations really appreciated the activity from the UK.

But what happens next year? Entries in NFD have been slowly declining. A real shame, because it is one of the most enduring events in the calendar. However, nothing can stay the same for ever (despite what some of us wish, from time to time) and perhaps now is as good a time as any to review the rules and the steps that we can take to a) make the event as appealing as possible to a wide audience and b) retain some of NFD's unique flavour.

Chris Burbanks, G3SJJ, has already started the debate - including some interesting submissions to the uk-contest Internet reflector. He notes that whilst entries to CW NFD have been declining, those to SSB FD (in September) have been rising steadily, with over 200 operators listed in the entries in 2000. Chris continues, "Unfortunately those of us, myself included, who were brought up on NFD and also realise the value of CW to the hobby, will not really enjoy reading these statistics. So what do we do?

"Nothing - is one school of thought I am aware of. Why change things? My group is perfectly happy the way things are. We have all our statistics, we know what bands to go on, and when. Changing things will spoil our fun.

"A more inclusive approach would be to try to combine the two events. This would have the benefit of directly or indirectly exposing SSB operators to the joys of CW, whilst ensuring the future of a Field Day event."

Until very recently, I think I would have probably subscribed to the former opinion along the lines of, "if it ain't broke, don't fix it". Well, I'm not sure if it's broken yet, but perhaps it's falling into disrepair. The long and short of it is that we need to get more groups out. And perhaps mixing and matching the CW and SSB operators might give each group some fun.

Sorting out the rules is a whole other issue. But one thing I liked about NFD was the fact that it wasn't a DX contest. I liked the fact that the leader in the Restricted section could push the Open section leader really hard. Do we want 'just another DX contest', or something with a different twist?

Actually, I don't like multi-mode contests. I don't think contesters should have to apologise for their use of the bands. But, I do think that the 'non-combatants' should have somewhere to go and have 'normal' QSOs. And suggesting they go to the WARC bands does not, in my view, have the mark of a reasoned approach. IARU Contest Guidelines suggest *not* running multi-mode events, although there is an inconsistency in that the excellent IARU HF Championship is multi-mode. Other multi-mode contests such as the RSGB's IOTA event and the European HF Championship are prospering.

What do you think? The HF Contests Committee would welcome your feedback. Write to the chairman, Justin Snow, G4TSH (QTHR), and let him know your constructive ideas. Better still, come on the uk-contest reflector on the Internet and share your thoughts - they are all very welcome. To subscribe to the reflector, send a plain text e-mail to majordomo@contesting.com with the body of the text reading 'subscribe uk-contest'

See you there!

## VHF CLAIMED SCORES

PETE LINDSAY, G4CLA, has just completed work on a new part of the VHF Contests Committee's web site allowing contest participants to post their claimed scores directly after the events. This allows an immediate comparison to be made - and perhaps in some way helps make up for the time that it sometimes takes - for all sorts of reasons - to get the results published. Thanks, Pete, for your work and I suggest all VHF Contests enthusiasts take a look at http://www.blacksheep.org/vhfcc/claim/index.html

## THE FINAL FRONTIER

ONCE AGAIN, we've lots of results to include, so we'll get straight on with them. Although there hasn't been so much space for 'editorial' comment recently, both I and the contest committees are always keen to learn your thoughts about events, so even if I don't directly invite comment on a subject, please don't be shy.


**Bob, G4UJS, seen operating during *CQ* WPX SSB, 2001**

## 1296/2320MHz Cumulative Contests, 2000

IT WAS A very closely-fought contest in the Single Operator sections on 23cm and 13cm this year. On 23cm, G3XDY, G4BRK and GD4GNH each managed to win one or more of the sessions. This created a very close finish with G3XDY eventually emerging triumphant. On 13cm, G4BRK, G3MEH and G3XDY engaged in an interesting tussle. Neil, G4BRK, managed to win two of the sessions and was placed a very close second in a third session. In the end, this was the deciding factor.

As usual on these bands the standard of logging was very high with few points being lost.

Congratulations to John Quarmby, G3XDY, for winning the 23cm Single Operator section and to the South Birmingham Radio Society, G8OHM/P, for winning the 23cm 'All Others' section. On 13cm, congratulations to Neil Whiting, G4BRK, for winning the Single Operator section and to the Villa Contest Group, G6SPS/P, for winning the All Others section. Frank Laanen, PE1EWR, receives the Overseas entrant certificate for both 23cm and 13cm. Finally, Martin Broadway, G4GFI, wins the 25W Single Antenna certificate for his entry on 23cm.

*Ian Pawson, G0FCT*

## 144MHz CW, November 2000

ANYONE WHO was active for last year's event with miserable weather and conditions might have been forgiven for thinking that the 2000 event could not possibly be any worse. Unfortunately - it could, and poor conditions combined with a number of stations having damaged antenna systems following the storms earlier in the year led to a quiet event in the UK. GM4VVX in the north of Scotland was active for much of the event and heard just three stations, with only meteor bursts to confirm that there was activity elsewhere. Likewise, GW4HBK asked if 16 QSOs in 17 hours represented some sort of a record!

For people a little closer to the centres of activity however, there was some good DX available, and this is one of the high points of this contest every year - the opportunity to work some really good DX into Europe, where activity is excellent. To show this, half of the QSOs of GM4WLL/P were over 500km in distance, and 30% of G4OUT's were over 300km.

Congratulations to all the certificate winners and all logs will now be forwarded to ARI for inclusion in the European Marconi Contest.
*Andy Cook, G4PIQ*

### 144MHz CW, November 2000

#### 24 Hour Single Operator

| Pos | Callsign | Pts | QSOs | Loc | Pwr | Ant | Best DX | km |
|---|---|---|---|---|---|---|---|---|
| 1* | G4ZTR | 34821 | 89 | 01KW | 400 | 2 x 9Y | DH1NHI | 786 |
| 2* | G4OUT | 9103 | 35 | 92AT | 40 | 12Y | LX2DX | 651 |
| 3 | GW4HBK | 3197 | 16 | 81KP | 60 | 9Y | OT0M | 476 |
| 4 | GM4VVX | 397 | 3 | 78TA | 400 | 9Y | GM4CXM | 230 |

#### 24 Hour Multi Operator

| Pos | Callsign | Pts | QSOs | Loc | Pwr | Ant | Best DX | km |
|---|---|---|---|---|---|---|---|---|
| 1* | G0NFA | 6664 | 23 | 91NE | 100 | 9Y | F6HJO/P | 718 |

#### 6 Hour Multi Operator

| Pos | Callsign | Pts | QSOs | Loc | Pwr | Ant | Best DX | km |
|---|---|---|---|---|---|---|---|---|
| 1* | G0FBB | 18253 | 53 | 01EI | 400 | 2 x 17Y | OL3Y | 877 |

#### 6 Hour Single Operator

| Pos | Callsign | Pts | QSOs | Loc | Pwr | Ant | Best DX | km |
|---|---|---|---|---|---|---|---|---|
| 1* | GM4AFF | 10938 | 21 | 86ST | 400 | 4 x 9Y | PE1OGF | 789 |
| 2* | GM4WLL/P | 9609 | 25 | 85NR | 200 | 8/8Y | DL0KM | 786 |
| 3* | G3FIJ | 6425 | 25 | 01KV | 10 | 10Y | DK8ZB/P | 632 |
| 4 | M5ECW | 5551 | 26 | 91WJ | 25 | 9Y | GM4WLL/P | 543 |
| 5 | G0DVJ | 5328 | 20 | 01MX | 50 | 5Y | DK8ZB/P | 624 |
| 6 | G4XPE | 2849 | 12 | 92GU | 25 | 10Y | ON7RY | 474 |
| 7 | G3JIZ | 2600 | 20 | 01AJ | 25 | HB9CV | ON4CGP | 330 |
| 8 | G1WAC | 2222 | 7 | 92BJ | 25 | 18Y | F6ETI/P | 504 |

*Certificate Winners

## 144 MHz UK Cumulatives, 2000

ALTHOUGH THERE wasn't much in the way of propagation enhancement, this contest attracted a healthy crop of entries once again, with a generally high standard of logs submitted. Some entrants were a little unsure of the format, and their logs were rescored by the adjudicator. Peter, G8FBG, ran Andy, G4PIQ, very close in the Single Operator fixed category and the A1 Contest Group won the Multi Operator section from nearer the M4.

This format is obviously popular with contesters who don't have the geographical advantage of an east coast location but what can be done to make the scoring system more attractive to entrants from GM and GI I wonder? Congratulations to the certificate winners and see you in the next one.
*Steve Redfern, G4AEQ*

### 144MHz UK Cumulatives, 2000

#### Multioperator Open

| | Call | Loc. | Pwr | Ant. | 14.8.00 QSOs | 14.8.00 Norm | 29.8.00 QSOs | 29.8.00 Norm | 13.9.00 QSOs | 13.9.00 Norm | 28.9.00 QSOs | 28.9.00 Norm | 20.10.00 QSOs | 20.10.00 Norm | Total Norm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G4ZAP* | IO81SG | 400 | 2x12,17Y | 82 | 816 | 75 | 1000 | 0 | 0 | 64 | 1000 | 73 | 1000 | 3000 |
| 2 | G1WAC* | IO92BJ | 400 | 18Y | 90 | 1000 | 27 | 199 | 26 | 1000 | 31 | 289 | 0 | 0 | 2289 |

#### Single Operator Fixed

| | Call | Loc. | Pwr | Ant. | 14.8.00 QSOs | 14.8.00 Norm | 29.8.00 QSOs | 29.8.00 Norm | 13.9.00 QSOs | 13.9.00 Norm | 28.9.00 QSOs | 28.9.00 Norm | 20.10.00 QSOs | 20.10.00 Norm | Total Norm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | G4PIQ* | JO01MU | 400 | 4x15Y | 142 | 1000 | 99 | 979 | 101 | 1000 | 80 | 1000 | 0 | 0 | 3000 |
| 2 | G8FBG* | IO91SG | 400 | 2x10Y | 0 | 0 | 95 | 1000 | 89 | 905 | 69 | 902 | 64 | 1000 | 2905 |
| 3 | G0HAS | IO81VH | 350 | 2x13,17Y | 68 | 482 | 71 | 693 | 84 | 896 | 65 | 838 | 52 | 693 | 2427 |
| 4 | G8ZRE | IO83NE | 80 | 8XY | 46 | 315 | 39 | 294 | 41 | 333 | 0 | 0 | 30 | 352 | 1000 |
| 5 | G0GCI | JO01ED | 150 | 9Y | 58 | 266 | 46 | 297 | 46 | 268 | 35 | 245 | 0 | 0 | 831 |
| 6 | G0GJV | IO91OK | 100 | 9Y | 28 | 72 | 35 | 167 | 25 | 109 | 31 | 191 | 33 | 286 | 644 |
| 7 | G8HGN | JO01FO | 50 | 2x15Y | 45 | 75 | 41 | 189 | 42 | 154 | 23 | 108 | 40 | 300 | 643 |
| 8 | M0COP | IO92BK | 100 | 8Y | 40 | 213 | 0 | 0 | 31 | 171 | 24 | 133 | 21 | 190 | 574 |
| 9 | G1KHX | IO81MI | 50 | 9Y | 41 | 173 | 35 | 174 | 27 | 124 | 22 | 122 | 21 | 145 | 492 |
| 10 | G0PHZ | IO81RL | 100 | 9Y | 20 | 40 | 22 | 75 | 31 | 132 | 23 | 120 | 21 | 134 | 386 |
| 11 | G1TWS | JO01HO | 25 | 11Y | 25 | 44 | 25 | 94 | 28 | 112 | 23 | 120 | 15 | 96 | 328 |
| 12 | G4XPE | IO92GU | 25 | 10Y | 26 | 110 | 16 | 58 | 10 | 25 | 16 | 78 | 18 | 125 | 313 |
| 13 | 2E1GUA* | JO01FS | 10 | 13Y | 18 | 33 | 21 | 40 | 0 | 0 | 0 | 0 | 15 | 115 | 228 |
| 14 | GW5NF | IO81KQ | 50 | 9Y | 0 | 0 | 25 | 85 | 29 | 131 | 0 | 0 | 0 | 0 | 216 |
| 15 | MW0AXA* | IO81FM | 10 | 9Y | 10 | 17 | 18 | 61 | 21 | 79 | 19 | 74 | 13 | 41 | 214 |
| 16 | PA0GHB | JO11WH | 90 | 15Y | 21 | 48 | 23 | 76 | 19 | 54 | 20 | 63 | 13 | 33 | 193 |
| 17 | PE1EWR | JO11SL | 80 | 10Y | 0 | 0 | 24 | 76 | 19 | 52 | 15 | 60 | 0 | 0 | 188 |
| 18 | G3YJR | IO93FJ | 60 | 9Y | 27 | 98 | 8 | 20 | 14 | 34 | 0 | 0 | 9 | 38 | 170 |
| 19 | GW4HBK | IO81KP | 60 | 9Y | 18 | 43 | 18 | 53 | 12 | 27 | 14 | 46 | 15 | 67 | 166 |
| 20 | G7NBE | IO92GS | 40 | 9Y | 17 | 34 | 15 | 51 | 11 | 28 | 15 | 59 | 3 | 5 | 144 |
| 21 | G0NFO | IO82VJ | 10 | 5ZL | 11 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 |

#### Single Operator Open

| | Call | Loc. | Pwr | Ant. | 14.8.00 QSOs | 14.8.00 Norm | 29.8.00 QSOs | 29.8.00 Norm | 13.9.00 QSOs | 13.9.00 Norm | 28.9.00 QSOs | 28.9.00 Norm | 20.10.00 QSOs | 20.10.00 Norm | Total Norm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | M0AFC/P* | IO84SA | 25 | 13Y | 82 | 1000 | 79 | 1000 | 76 | 1000 | 0 | 0 | 0 | 0 | 3000 |
| 2 | GW8ASA/P* | IO81FP | 50 | 5Y | 76 | 606 | 73 | 720 | 82 | 857 | 63 | 1000 | 58 | 1000 | 2857 |
| 3 | GW5NF/P | IO81LS/KR | 25 | 7ZL | 0 | 0 | 0 | 0 | 0 | 0 | 52 | 708 | 59 | 988 | 1696 |
| 4 | M0BAO/P | IO80LV | 80 | 8Y | 62 | 654 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 654 |
| 5 | G8ZRE/P | JO01AL | 25 | HB9CV | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 339 | 0 | 0 | 339 |
| 6 | MW0COP/P | IO72WU | 20 | 5Y | 0 | 0 | 7 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |

*Certificate Winner

### 1296/2320MHz Cumulative Contests, 2000

#### 1296MHz Single Operator Fixed Station

| Pos | Callsign | Locator | QSO | Norm | Score 12/10 | Score 27/10 | Score 6/11 | Score 21/11 | Score 6/12 | Power | Ant | Equipment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1* | G3XDY | JO02OB | 68 | 2891 | 3765 | 3514 | 2339 | 2311 | 0 | 250 | 8x23 Yagi | IC756+tvtr+4x2C39 |
| 2* | G4BRK | IO91DP | 74 | 2827 | 3115 | 0 | 1521 | 3310 | 3234 | 40 | 67 Yagi | FT290+DB6NT+PA |
| 3 | GD4GNH | IO74QD | 36 | 2574 | 3079 | 3942 | 0 | 2503 | 2106 | 150 | 8x23 Yagi | FT736+PA |
| 4 | G7LRQ | IO91TQ | 111 | 2122 | 2551 | 2855 | 1162 | 2331 | 2244 | 50 | 4x55 Yagi | FT736+PA |
| 5 | G1OGY | JO01GR | 63 | 2046 | 2414 | 0 | 1895 | 1530 | 1923 | 50 | 2x23 Yagi | FT290+tvtr |
| 6 | G3MEH | IO91QS | 84 | 1870 | 2423 | 1388 | 965 | 2118 | 1897 | 50 | 4x35 Yagi | IC275+DB6NT+PA |
| 7 | M0GHZ | IO81VK | 43 | 1795 | 2231 | 2133 | 1547 | 0 | 0 | 200 | 55 Yagi | tvtr+2C39PA |
| 8* | G4GFI | IO91VH | 42 | 877 | 1568 | 0 | 526 | 681 | 762 | 20 | 28 Loop | FT101+MM144,1296 |
| 9 | G1EHF | IO91LH | 29 | 872 | 873 | 0 | 1013 | 0 | 671 | 15 | 23 Yagi | tvtr+PA |
| 10* | PE1EWR | JO11SL | 8 | 593 | 372 | 0 | 0 | 488 | 1122 | 10 | 2x25Loop | TS790E |
| 11 | G3UYM | IO91UW | 27 | 568 | 733 | 784 | 302 | 578 | 473 | 1 | 23 Yagi | G3WDGtrvt |
| 12 | G3TCU | IO91QE | 17 | 330 | 0 | 533 | 275 | 213 | 250 | 18 | 21 Yagi | IC726+tvtr |

#### 1296MHz All Others

| Pos | Callsign | Locator | QSO | Norm | Score 12/10 | Score 27/10 | Score 6/11 | Score 21/11 | Score 6/12 | Power | Ant | Equipment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1* | G8OHM/P | IO82QL | 109 | 3000 | 5125 | 4133 | 2603 | 3860 | 2676 | 150 | 8x23 Yagi | IC970H+PA |
| 2* | G6SPS/P | JO01IT | 74 | 2410 | 3548 | 2548 | 0 | 2769 | 2952 | 150 | 35 Yagi | TS711+2x2C39PA |

#### 2320MHz Single Operator Fixed Station

| Pos | Callsign | Locator | QSO | Norm | Score 12/10 | Score 27/10 | Score 6/11 | Score 21/11 | Score 6/12 | Power | Ant | Equipment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1* | G4BRK | IO91DP | 24 | 2986 | 1425 | 0 | 502 | 764 | 382 | 30 | 0.9m dish | FT290+DB6NT+PA |
| 2* | G3MEH | IO91QS | 25 | 2813 | 1258 | 704 | 351 | 649 | 987 | 10 | 67 Yagi | IC275+DB6NT+DL2AM |
| 3 | G3XDY | JO02OB | 17 | 2688 | 869 | 757 | 458 | 602 | 0 | 50 | 44 Loop | FT736+tvtr+K9EKPA |
| 4 | M0GHZ | IO81VK | 14 | 2165 | 506 | 613 | 509 | 0 | 0 | 30 | 44 Loop | tvtr+PA |
| 5* | PE1EWR | JO11SL | 2 | 462 | 0 | 0 | 0 | 199 | 199 | 7 | 25 Yagi | IC202+DB6NT+PA |
| 6 | GD4GNH | IO74QD | 1 | 167 | 238 | 0 | 0 | 0 | 0 | 15 | 84 Loop | FT225+tvtr |

#### 2320MHz All Others

| Pos | Callsign | Locator | QSO | Norm | Score 12/10 | Score 27/10 | Score 6/11 | Score 21/11 | Score 6/12 | Power | Ant | Equipment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1* | G6SPS/P | JO01IT | 24 | 3000 | 1412 | 708 | 0 | 673 | 1174 | 40 | 25 Yagi | FT290+tvtr+PA |

*Certificate Winner

## CONTEST CALENDAR

### HF Contests

| Date | Time | Mode | Contest |
|---|---|---|---|
| *4 Aug* | *1000-2200* | *CW/SSB* | *European HF Championship* |
| 5 Aug | 0700-0900 | CW | RSGB RoPoCo 2 |
| *5 Aug* | *0000-2400* | *CW/SSB* | *YO DX Contest* |
| *11/12 Aug* | *0000-2400* | *CW* | *WAE DX CW* |
| *18 Aug* | *0000-0800* | *RTTY* | *SARTG WW RTTY* |
| *18 Aug* | *1600-2400* | *RTTY* | *SARTG WW RTTY* |
| *18/19 Aug* | *1200-1200* | *ALL* | *SEAnet* |
| *19 Aug* | *0800-1600* | *RTTY* | *SARTG WW RTTY* |
| *25/26 Aug* | *1200-1200* | *CW* | *TOEC WW Grid* |

### VHF Contests

| Date | Time | Mode | Contest |
|---|---|---|---|
| *4/5 Aug* | *1400-1400* | *ALL* | *Concours d'ete 144MHz (F)* |
| *5 Aug* | *0930-1200* | *ALL* | *DARC 144MHz Field Day (DL)* |
| *5 Aug* | *0730-0900* | *ALL* | *DARC 432MHz Field Day (DL)* |
| *7 Aug* | *1700-2100* | *ALL* | *Nordic Activity Contest 144MHz* |
| 7 Aug | 1900-2200 | ALL | RSGB 144MHz Activity |
| *12 Aug* | *0400-1100* | *ALL* | *F8TD Trophy 1296MHz (F)* |
| 12 Aug | 0900-1500 | ALL | RSGB 70MHz Trophy |
| 13 Aug | 1900-2130 | ALL | RSGB 144MHz Cumulative #1 |
| *14 Aug* | *1700-2100* | *ALL* | *Nordic Activity Contest 432MHz* |
| *19 Aug* | *0400-1100* | *ALL* | *F8TD Trophy 1296MHz up (F)* |
| 19 Aug | 1700-2100 | ALL | RSGB 432MHz |
| *21 Aug* | *1700-2100* | *ALL* | *Nordic Activity Contest 1296MHz up* |
| *28 Aug* | *1700-2100* | *ALL* | *Nordic Activity contest 50MHz* |
| 28 Aug | 1900-2130 | ALL | RSGB 144MHz Cumulative number 2 |

### Microwave Contests

| Date | Time | Mode | Contest |
|---|---|---|---|
| 12 Aug | 0900-2100 | ALL | RSGB All Bands Microwave |
| 26 Aug | 0900-2100 | ALL | RSGB 10GHz Cumulative number 4 |

**The full rules of RSGB HF and VHF/UHF contests were published in the RSGB Contesting Guide in October 2000 *RadCom*. Brief rules for non-RSGB contests, which are listed in italics above, can often be found in the 'HF' and 'VHF/UHF' columns. The HF and VHF Contest Committees both have web sites from which comprehensive details are available. These are www.g4tsh.demon.co.uk/HFCC/index.htm and www.blacksheep.org/vhfcc**

## 144MHz AFS Contest, 2000

FOR THE FIRST TIME, this contest was open to portable stations, and four stations braved the December weather to venture out. Conditions and activity were on a par with last year's event. Congratulations to Andy, G4PIQ, who wins the Single Operator fixed section after a leave of absence for the past couple of years, with Dave, G7RAU, taking second spot for the second year running. The Northern Lights win the Multi Operator section again this year, although by a much reduced margin, the Flight Refuelling ARS taking second spot. John, G4ZTR, wins the certificate for the highest placed station using 25W and a single antenna.

The Martlesham DX & CG again wins the AFS contest, but this time the Chesham & DARS moves up into second place. Next year the overall AFS scores will be normalised in such a way that will give higher scores to those groups who have more stations in their team. Each member of the team will be awarded up to 1000 points, so the more members in the team the higher the score.

*Pete Lindsay, G4CLA (G4CLA@rsgb.org.uk)*

### 144MHz AFS Contest, 2000

#### Affiliated Societies Section

| Pos | Group | Call | Score | Call | Score | Call | Score | Call | Score | Call | Score | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1* | Martlesham DX & CG | G4PIQ | 103918 | G4MRS | 37826 | G0RRC | 12389 | | | | | 154133 |
| 2* | Chesham & DARS | G3MEH | 47486 | G0XDI | 36434 | G0ODQ | 15087 | G3MDG | 8052 | G0VFW | 7004 | 114063 |
| 3 | Bentley RC | G7RAU | 73242 | G0NFA | 14304 | M0BTZ | 12801 | | | | | 100347 |
| 4 | Douglas Valley RC | G4HGI | 33119 | M1AIX | 15631 | G1SWH | 15325 | G8ZRE | 14556 | G3BPK | 8430 | 87061 |
| 5 | Harwell ARS A | G3NNG | 24994 | G8CUL | 20595 | G4HLX | 10996 | G0AOZ | 8442 | M0BRE | 4687 | 69714 |
| 6 | Colchester RA | G4ZTR | 25828 | G1OGY | 22019 | G3FIJ | 5515 | 2E1GUA | 5048 | G7MHK | 1317 | 59727 |
| 7 | Flight Refuelling ARS | G4RFR | 58093 | | | | | | | | | 58093 |
| 8 | De Montfort UARS | G8VHI | 43015 | G3ORY | 9792 | | | | | | | 52807 |
| 9 | Clifton ARS | G7ULL | 24845 | G0UJK | 22493 | G4FAA | 1446 | | | | | 48784 |
| 10 | Reigate ATS | G8FBG | 24902 | G8JXV | 15392 | G3TRC | 3807 | | | | | 44101 |
| 11 | Harwich ARIG | G0DVJ | 14670 | G7MOT | 13189 | M0CGE | 6693 | G7HOW | 1028 | | | 35580 |
| 12 | Wythall CG A | G4TVR | 9221 | G1WAC | 6847 | M0COP | 6686 | G6ZDQ | 5750 | M0COK | 3780 | 32284 |
| 13 | West Kent ARS | G0GCI | 26070 | | | | | | | | | 26070 |
| 14 | Mid-Sussex ARS | G0APZ | 8419 | G3JMB | 4928 | G1ZMS | 4579 | | | | | 17926 |
| 15 | Leicester RS | G3LRS | 13845 | | | | | | | | | 13845 |
| 16 | Wythall CG B | M5UGC | 3027 | G8MYK | 2747 | G0EYO | 2673 | G4VPD | 2202 | G0ICJ | 1516 | 12165 |
| 17 | Sutton & Cheam RS | G3OLX | 7937 | | | | | | | | | 7937 |
| 18 | Harwell ARS B | G3PIA | 2975 | G0KOC | 1778 | G0VFE | 129 | | | | | 4882 |
| 19 | Sandwell ARC | G1SAN | 3972 | | | | | | | | | 3972 |
| 20 | Wythall CG C | M0AEJ | 1177 | G1KEA | 632 | G1DUO | 352 | | | | | 2161 |

#### Single Operator Fixed

| Pos | Group | Zone | Call | Loc. | QSOs | Score | Best DX | Dist | Power | Ant |
|---|---|---|---|---|---|---|---|---|---|---|
| 1* | Martlesham DX & CG | C | G4PIQ | JO01MU | 369 | 103918 | DG9RCI | 776 | 400 | 4x15,2x9 |
| 2* | Bentley RC | | G7RAU | IO90IR | 235 | 73242 | DK1FG | 897 | 400 | 2x9 |
| 3 | Chesham & DARS | | G3MEH | IO91QS | 222 | 47486 | DK1FG | 865 | 400 | 2x10 |
| 4 | Martlesham DX & CG | C | G4MRS | JO02PB | 132 | 37826 | DG2NBN | 745 | 400 | 15 |
| 5 | Chesham & DARS | | G0XDI | IO91RP | 169 | 36434 | DK1FG | 857 | 400 | 9 |
| 6 | Douglas Valley RC | A | G4HGI | IO83PL | 172 | 33119 | ON4YZ | 612 | 400 | 17 |
| 7 | | C | G8HGN | JO01FO | 119 | 30063 | DG2NBN | 788 | 50 | 2x15 |
| 8 | West Kent ARS | C | G0GCI | JO01ED | 137 | 26070 | DL2OM | 507 | 150 | 9 |
| 9* | Colchester RA | | G4ZTR | JO01KW | 130 | 25828 | F5OAU/P | 582 | 25 | 17 |
| 10 | Harwell ARS A | D | G3NNG | IO91ED | 172 | 24994 | DJ2VJ | 658 | 200 | 17 |
| 11 | Reigate ATS | C | G8FBG | IO91SG | 142 | 24902 | GM4CXM | 579 | 400 | 2x10 |
| 12 | Clifton ARS | | G0UJK | JO01AK | 138 | 22493 | DB8WJ | 555 | | |
| 13 | Colchester RA | | G1OGY | JO01GR | 138 | 22019 | GM4CXM | 568 | 200 | 13 |
| 14 | | | G4IVH | IO92WN | 79 | 18897 | DL2OM | 574 | 25 | 17 |
| 15 | | | PE1EWR | JO11SL | 56 | 16773 | EI3GE | 677 | 80 | 10 |
| 16 | Douglas Valley RC | A | M1AIX | IO83QM | 79 | 15631 | DC8EI | 669 | 400 | 2x12 |
| 17 | Reigate ATS | C | G8JXV | IO91WE | 98 | 15392 | DL2OM | 542 | 100 | 9 |
| 18 | Douglas Valley RC | A | G1SWH | IO83QO | 102 | 15325 | 2E1HSR | 417 | 400 | 19 |
| 19 | Chesham & DARS | | G0ODQ | IO91NQ | 130 | 15087 | GM0GMD | 539 | 120 | 11 |
| 20 | Harwich ARIG | C | G0DVJ | JO01MX | 77 | 14670 | DL2OM | 479 | 50 | 5 |
| 21 | Douglas Valley RC | A | G8ZRE | IO83NE | 83 | 14556 | G4CQR/P | 345 | 80 | 8XY |
| 22 | Bentley RC | | G0NFA | IO91NE | 98 | 14304 | DL2OM | 594 | 100 | 9 |
| 23 | Harwich ARIG | C | G7MOT | JO01MW | 66 | 13189 | DK2ML | 561 | 100 | 17 |
| 24 | Bentley RC | | M0BTZ | IO91LC | 91 | 12801 | DK5DQ | 581 | 150 | 11 |
| 25 | Martlesham DX & CG | C | G0RRC | JO02MB | 67 | 12389 | DF2VJ | 514 | 35 | 35 |
| 26 | Harwell ARS A | D | G4HLX | IO91FP | 92 | 10996 | ON1DLL | 500 | 100 | 9 |
| 27 | Wythall CG A | | G4TVR | IO92BI | 73 | 9221 | ON4ZN | 459 | 50 | 13 |
| 28 | Harwell ARS A | D | G0AOZ | IO91GQ | 84 | 8442 | F6CBH | 367 | 120 | 16 |
| 29 | Mid-Sussex ARS | | G0APZ | IO90WW | 65 | 8419 | DK5DQ | 519 | 23 | 7 |
| 30 | Chesham & DARS | | G3MDG | IO91RR | 67 | 8052 | DG8YHH | 546 | 45 | 13 |
| 31 | Chesham & DARS | | G0VFW | IO91RR | 56 | 7004 | DL2OM | 578 | 45 | 13 |
| 32 | Wythall CG A | | G1WAC | IO92BJ | 67 | 6847 | DF2VJ | 705 | 25 | 18 |
| 33 | Wythall CG A | B | M0COP | IO92BK | 68 | 6686 | GM0GMD | 438 | 100 | 8 |
| 34 | | | G1TWS | JO01HO | 49 | 6127 | GD0EMG | 451 | 25 | 11 |
| 35 | Wythall CG A | | G6ZDQ | IO92BJ | 66 | 5750 | GD0EMG | 267 | 50 | 9 |
| 36 | Colchester RA | | G3FIJ | JO01KV | 48 | 5515 | GI6ATZ | 533 | 50 | 10 |
| 37 | Colchester RA | | 2E1GUA | JO01FS | 52 | 5048 | DK5DQ | 476 | 10 | 13 |

#### Single Operator Fixed, cont

| Pos | Group | Zone | Call | Loc. | QSOs | Score | Best DX | Dist | Power | Ant |
|---|---|---|---|---|---|---|---|---|---|---|
| 38 | Mid-Sussex ARS | | G3JMB | IO91WA | 56 | 4928 | GD0EMG | 462 | 20 | 7 |
| 39 | | | G4XPE | IO92GU | 33 | 4777 | GI6ATZ | 343 | 25 | 20 |
| 40 | Harwell ARS A | D | M0BRE | IO91IO | 56 | 4687 | ON1ARQ | 362 | 25 | 8 |
| 41 | | | G0GJV | IO91OK | 43 | 4115 | GD0EMG | 396 | 200 | 9 |
| 42 | Reigate ATS | C | G3TRC | IO91WF | 39 | 3807 | GD0EMG | 444 | 15 | 9 |
| 43 | Wythall CG A | | M0COK | IO92AJ | 47 | 3780 | GD0EMG | 263 | 50 | 7 |
| 44 | | | G8GSQ | IO91JI | 33 | 3725 | GD0EMG | 386 | 20 | 4 |
| 45 | Wythall CG B | | M5UGC | IO92BK | 37 | 3027 | GD0EMG | 264 | 50 | 6/6 |
| 46 | Harwell ARS B | D | G3PIA | IO91IN | 37 | 2975 | GD0EMG | 365 | 20 | 17 |
| 47 | Wythall CG B | | G8MYK | IO92BJ | 35 | 2747 | GD0EMG | 267 | | |
| 48 | Wythall CG B | | G0EYO | IO92BJ | 30 | 2673 | GD0EMG | 267 | 50 | |
| 49 | Wythall CG B | | G4VPD | IO92BJ | 17 | 2202 | GD0EMG | 267 | | |
| 50 | Harwell ARS B | D | G0KOC | IO91IT | 19 | 1778 | GD0EMG | 343 | 25 | 9 |
| 51 | Wythall CG B | | G0ICJ | IO92BJ | 27 | 1516 | GD0EMG | 267 | 25 | 7 |
| 52 | | | G0IKG | JO01IV | 25 | 1479 | G7RAZ | 251 | 80 | 9 |
| 53 | Clifton ARS | | G4FAA | JO01BK | 16 | 1446 | GD0EMG | 439 | 50 | VERT |
| 54 | Colchester RA | | G7MHK | JO01JP | 18 | 1317 | G4ZAP | 229 | 50 | Vert |
| 55 | Wythall CG C | | M0AEJ | IO92BK | 22 | 1177 | G4CQR/P | 238 | 25 | |
| 56 | Harwich ARIG | C | G7HOW | JO01NW | 13 | 1028 | G4RFR | 250 | 50 | 9 |
| 57 | Wythall CG C | | G1KEA | IO92CK | 9 | 632 | GD0EMG | 267 | | 8 |
| 58 | Wythall CG C | | G1DUO | IO92BH | 5 | 352 | G4RFR | 172 | 50 | |
| 59 | Harwell ARS B | D | G0VFE | IO91IJ | 4 | 129 | G3NNG | 37 | 20 | 7 |

#### Single Operator Open

| Pos | Group | Zone | Call | Loc. | QSOs | Score | Best DX | Dist | Power | Ant |
|---|---|---|---|---|---|---|---|---|---|---|
| 1* | | | G4CQR/P | JO00CR | 165 | 41437 | DK1FG | 794 | 250 | 10 |
| 2* | | | GW8ASA/P | IO81FP | 117 | 25618 | DM1CG | 714 | 50 | 5 |
| 3 | | | G4BVY/P | IO82TF | 57 | 6003 | F1CDX | 394 | 50 | 9 |
| 4 | | | G0WJR/P | IO81QJ | 25 | 3227 | GD0EMG | 334 | 35 | HB9CV |

#### Multi Operator

| Pos | Group | Zone | Call | Loc. | QSOs | Score | Best DX | Dist | Power | Ant |
|---|---|---|---|---|---|---|---|---|---|---|
| 1* | Northern Lights | | GD0EMG | IO74QD | 215 | 76946 | F6GYJ | 1042 | 400 | 8x9 |
| 2* | Flight Refuelling ARS | | G4RFR | IO90AS | 225 | 58093 | DL2OM | 670 | 400 | 2x14 |
| 3 | A1CG | D | G4ZAP | IO81SG | 215 | 48882 | DL2OM | 705 | 400 | |
| | 2x12+17 | | | | | | | | | |
| 4 | De Montfort UARS | | G8VHI | IO92FM | 211 | 43015 | F5LRL | 784 | 150 | 2x14 |
| 5 | Clifton ARS | | G7ULL | JO01AK | 162 | 24845 | DF2VJ | 542 | 180 | 11 |
| 6 | Harwell ARS A | D | G8CUL | IO91JO | 141 | 20595 | DK3BU | 604 | 150 | 14 |
| 7 | Leicester RS | | G3LRS | IO92KP | 96 | 13845 | PA1WM | 482 | 200 | 17 |
| 8 | | | G0DRM | IO83SB | 98 | 13329 | F6FLB | 376 | 80 | 9 |
| 9 | De Montfort UARS | | G3ORY | IO92JK | 76 | 9792 | DK5DQ | 598 | 80 | 15 |
| 10 | Douglas Valley RC | A | G3BPK | IO83QN | 40 | 8430 | G4CQR/P | 370 | 100 | 17 |
| 11 | Sutton & Cheam RS | | G3OLX | IO91VH | 91 | 7937 | DC8EI | 464 | 25 | 13 |
| 12 | Harwich ARIG | C | M0CGE | JO01PW | 45 | 6693 | GD0EMG | 465 | 80 | 9 |
| 13 | Mid-Sussex ARS | | G1ZMS | IO90WX | 39 | 4579 | GD0EMG | 465 | 10 | 8 |
| 14 | Sandwell ARC | | G1SAN | IO92AL | 83 | 3972 | EI3GE | 284 | 50 | 8XY |

## RoPoCo 1, 2001

FRASER ROBERTSON, G4BJM, repeated his success in RoPoCo2 2000, to head the table once again. However, on this occasion, he submitted a perfect log, and thus also wins the Verulam Silver Jubilee Trophy. G3RSD, once again heads the pack of pursuing 100-watt stations, although this time has to share that distinction with G4OGB, both of whom also submitted perfect logs. Clearly high accuracy is a prerequisite for success in this contest, a very satisfying conclusion for an event predicated on such a basis. It is notable that two of the top five, and four of the top 10 entrants, used only 100 watts.

Once again, many contestants commented how much they enjoyed this contest, despite poor conditions prevailing at this unfriendly hour. Even more comments about the timing were made this time, including: "Please move this contest to a later time. It's too early for my old grey cells. It's the time for the postmen to sort the codes, not me!" by G3KNU.

Many entrants noted the very high incidence of one postcode, which despite the date of the contest was not an April fool. In fact this was due to a station misunderstanding the rules and sending his own postcode for every contact!

Only seven paper-based logs were received on this occasion, a very welcome trend. This contest is now checked automatically for errors and those seven logs were keyed in manually.

Seven perfect logs were submitted, a significant increase over the four from the previous event. Individual UBN reports are once again available on request from gw3njw@arrl.net

*Clive Whelan, GW3NJW*

### RoPoCo 1, 2001

| Pos | Call | Equipment Code | Final Score | Pos | Call | Equipment Code | Final Score |
|---|---|---|---|---|---|---|---|
| 1* | G4BJM | 4C1 | 610 | 24 | G3HEJ | 3W13 | 410 |
| 2 | G3WUX | 4C14 | 570 | 24 | G3VYI | 4G14 | 410 |
| 3 | G0CKP | 4C16 | 560 | 24* | G4TSH | 4G12 | 410 |
| 4 | G4BWP | | 550 | 27 | G3MA | 3C1 | 400 |
| 5* | G3RSD | 3C1 | 540 | 27 | GW3WWN | 3C12 | 400 |
| 5* | G4OGB | 3C13 | 540 | 29 | G3YEC | 4C1 | 390 |
| 7 | G0IVZ | | 530 | 29 | G4BLI | 3C13 | 390 |
| 8 | GW3NJW | 3C12 | 520 | 31 | G3LHJ | 3W1 | 380 |
| 9 | GM3POI | 4G1 | 510 | 31 | G4XPE | 3C11 | 380 |
| 10 | G3TJE | 3Q13 | 490 | 33 | G3VQO | 3W1 | 350 |
| 10 | G4RCG | 4C16 | 490 | 34 | G4RLS/P | 3C12 | 340 |
| 12 | G0JQN | 4C12 | 460 | 35 | G0DHZ | 3C1 | 320 |
| 13 | G3JIZ | 3W1 | 460 | 36 | G0IBN | 3C13 | 310 |
| 13 | G3LIK | 3C13 | 460 | 36 | GW3SB | 3C11 | 310 |
| 15 | G2HLU | 4C12 | 450 | 38 | G3HKO | 1C17 | 290 |
| 15 | G3GLL | 3C12 | 450 | 38 | G3ZDD | 4W1 | 290 |
| 15 | G3JJG | 4C11 | 450 | 40 | G4IIY | 3C13 | 260 |
| 15 | G3LET | 4W19 | 450 | 41 | G3ZGC | 3W13 | 230 |
| 19 | G3KKP | 3C11 | 440 | 42 | G3GMM | 3C11 | 210 |
| 20 | G0WHO | 3C13 | 430 | 43* | G3GMS | 3G12 | 180 |
| 20 | G2AFV | 4C14 | 430 | 43* | G4CZB | 3G1 | 180 |
| 20 | G4EBK | 3C13 | 430 | 45 | G0LZA | 2G1 | 140 |
| 23 | G3KNU | 4C1 | 420 | 45* | G0RDO | 3C1 | 140 |

** Indicates a perfect log*

made 10 QSOs to the I1 - 4 regions and S5 from 1633, putting the reflection area over JN21. From 1121 on 15 June CT1DNF (IN50), worked Germans in JN47, 57 and 58 indicating a reflection region over IN95/JN05 - see the EA7IT report above. On 16th there was a path between G4HGI (IO83) and EA7 (IM67/77) around 1620.

M1DUD was QRV in the Belgian sub-regional and RSGB 2m May contests but reports marginal conditions with heavy QSB and few UK stations on. ODX was DL1NBM/P (JN49) at 604km with GD0EMG (IO74) at 461km.GW7SMV laments the lack of any Es to South Wales by 19 June. Jamie lists May QSOs with PD2DB (JO22), MU/DL3QQ/P (IN89) and F1BCS (JN18) on the 24th, F9IE (IN86) on the 25th, EA1ADP (IN53), EA1CRK (IN73) and F4ARU (IN94) on the 26th. On 4 June he contacted DG6PY/P (JO30) and PD2DB again and on the 19th F6FHP (IN94) and EA1OS (IN53).

. . . Which leads on to the extended tropo lift to the Canary Islands on 26 May, in which GW7SMV worked EA8BPX and EA8BTV (IL18), the latter with just 25W. As G4ASR points out, this path opens up every year but more often in July / early-August. In 10 years or so, this is the earliest that David has heard it. He suggests looking for openings to the north Spanish coast - EA1 - and then calling for EA8 stations around 144.300MHz. At 1950 he worked EB1DNA/P (IN53), followed by F4ARU. He then called CQ DX EA8 on 144.295MHz and from 2008 contacted EB8BTV on CW and SSB at 2861km and EA8BPX at 2847km. Signal strengths varied between S1 and S3 in Herefordshire and they were audible in parts of the UK till at least 2330. Dave Edwards, G7RAU (IO90), heard EA8BTV very weakly. Roy Nielson, GM0EFT (DD), believes that one of the EA8s was heard by GM4JJJ (IO86GB), a QRB of around 3250km. GM4AFF (IO87TH), couldn't hear EA8BTV but thinks it came pretty close.

Paul Higginson, GW8IZR, on Anglesey suggests that it would have been very easy to work the EA8s from North Wales early on in the evening with quite low power, as the signals were "huge". But by the time the rest of the UK was hearing them they were a good bit weaker. When he worked them they were taking it in turns to contact callers. They peaked at S9-plus for about 10min.

Derek Gilbert, G0NFA (GU), forwarded EA8BTV's report and Fernando confirms QSOs with G0CUZ, G4ASR*, GW5NF, G4ALY, GW8IZR, G4KWQ, GW4VEQ, GW8JLY, GW7SMV, G4LOH* (IO94QA at 3134km and ODX), MW1TYO, M0BKL*, GW6TCO* and G0PBP. Derek has included Fernando's report in his 6 June newsletter *QUA* which you'll find on his website - see the list.

## SIGN OFF

THERE WERE NO activity reports on the higher bands this time so if you have any news, please pass it along. The copy deadline for October is **14 August** and for November it is quite early, **11 September**: it gets even earlier for the three subsequent issues. Almost all reports now come in via e-mail with just the odd snail mail and fax letters. My CompuServe ID is g3fpk and the telephone answering/fax machine is on 020 8763 9457. ♦

## WWW.

| | |
|---|---|
| UK Six Metre Group | **http://www.uksmg.org** |
| G0CAS - *SunMag* | **http://www.g0cas.demon.co.uk/main.htm** |
| SEC data | **gopher://solar.sec.noaa.gov/** |
| OH5IY | **http://www.saunalahti.fi/oh5iy** |
| LA0BY | http://www.qsl.net/la0by/dxped.htm |
| Four Metres | **http://www.70mhz.org** |
| *QUA* (G0NFA) | **http://members.aol.com/vushf/quanews.html** |

# HF HF HF HF

**DON FIELD, G3XTT**
*105 Shiplake Bottom, Peppard Common, Henley on Thames, RG9 5HJ.*
*e-mail: hf.radcom@rsgb.org.uk*

THE 3B6RF TEAM reports that it made 64,207 QSOs in 8.5 days, but all of these QSOs came with a big price tag. The 3B6RF operation time was expected to be 15 days, but had to be cut back due to problems with transport, which also led to additional expenditure. Preliminary estimates have put its travel expenses at approximately $48,000 over cost, just to get to Agalega and back. The team is counting on the generosity of the ham community with QSL donations and possibly some additional donations from DX associations. These figures bring home the cost involved in putting on a major DXpedition. Indeed, any DXpedition to a 'Top 100' entity that can be mounted for less than $1/QSO is probably doing very well indeed. It is worth remembering this when sending your QSL cards.

## DX NEWS

A TEAM OF operators from the Barry Amateur Radio Society will be going to **Flatholm Island** from 24 to 29 August. It will operate all bands and modes as GB5FI. With Anglesey due to be dropped as a valid island for IOTA, this will be a good opportunity to get a valid counter for EU-124. On the historical front, it was from this island on 10 May 1897 that Marconi made the first ever 'wireless transmission and reception' across water. Then on 18 May 1897 he made what was, in a sense, the first DX QSO, working from GW to G. It might also be described as the first ever IOTA expedition! QSL GB5FI via GW0ANA, callbook or bureau.

Volkmar 'Fred', DF2SS, plans to be active from the **Faeroe Islands** (OY) until 8 August. He will be on all bands, SSB, CW and RTTY.

Claudio, I1SNW will sign ID9/I1SNW from the **Eolie Islands** (EU-017) between 13 and 27 August.

Norwegian operators Trond, LA9VDA; Arne, LA3IKA; Bjorn, LA5UKA; and Paul, LA6YEA, will operate from **Market Reef** from 5 to 8 August, signing home call/OJ0, all bands and modes. QSL all stations via their home calls except LA6YVA, which should go via LA9VDA.

F5CWU, F5MOO and F5AOV are planning activity from **Benin** (TY) from 9 to 31 August. They hope to be on all bands and modes, with quad antennas for the high bands and verticals on the low bands.

**Israel** is now issuing the new 4Z8 prefix to foreigners residing and working there for more than one year. The change took effect in April. Currently Mark, WC1X, is active as 4Z8BB and Günter, OE1GZA, as 4Z8GZ. QSL 4Z8BB via WC1X and 4Z8GZ via DH2GZ.

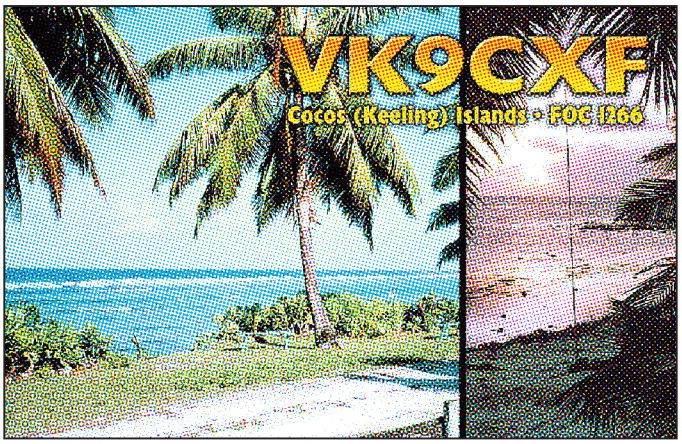
Seiji, JQ1SUO, will be portable /4 from **Oki Island** (AS-041) 11-14 August, CW and SSB on 10 to 40 metres.

Take, JI3DST, expects to be active from **Tokara Island** as JI3DST/6 (AS-049) from 28 July to 5 August, from 10 to 40m, SSB only. QSL via his home call.

HL0C/4 will be on from South Korea's **Wi Island** from 2 to 8 August. Wi is part of the Chollabukto Province Group. The HL0C club members will be active on SSB, CW and RTTY on 80-15m.

John, KX7YT, is back in **Bangladesh** until 5 August. He should be active as S21YV on 15 and 20 SSB and PSK31. The best time to find him will be from 1400 to 1800 daily. John also plans to be back there again from 8 to 20 September. QSL via KX7XY.

Mark, KM6HB, says that he will again be operating from the **South Cook Islands** from 7 to 17 August. He will sign ZK1AHB on from 10 to 40m, all modes including PSK31 and RTTY. Specifically, he will be on Rarotonga (OC-013) on 7/8th, Mangaia (OC-159) 9-11th, Autituki (OC-083) 11-16th and back on Rarotonga on 17th. QSL via his home call.



QSL from the G3SXW, G3MXJ and G3TXF trip earlier this year.

Robert, EA4DX, is heading off for another of his annual Pacific DXpeditions, this time to the **Solomon Islands** and **Temotu**. He will be active from Honiara from 11-14 August, and again from 29-30 August on the return trip. He will be on Temotu from 15 to 28 August. His station will consist of a Kenwood TS-50, 1kW amplifier, 20-10m Yagi and a vertical for 40 and 80m. Operation will be SSB only. At this time I have no details of the callsigns to be used.

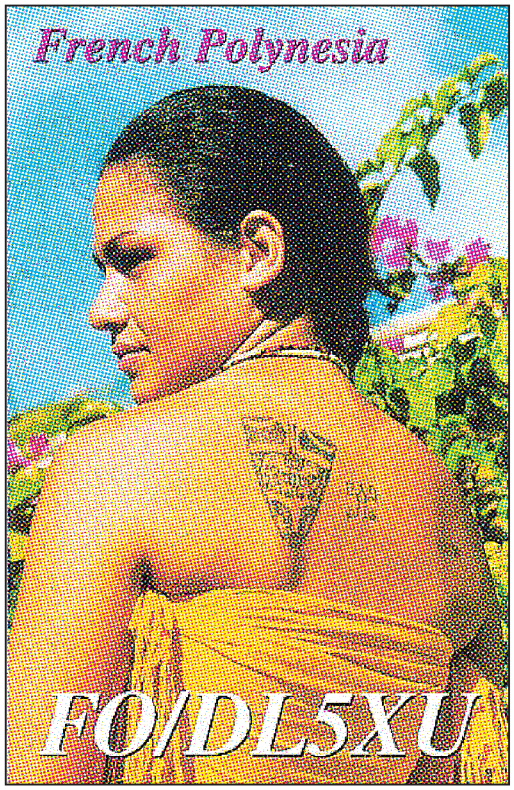
VK8PW/8 is operating from the Trust Territory of Arnhem Land, **North Australia**, until 31 August. He may get on from OC-229 for a few days, too. The operation will just be on 10-20m SSB.

Pete, NN9K; Peg, KB9LIE; and Paul, K9OT, were due to be active from **St Pierre & Miquelon** (NA-032) from 26 July to 1 August, including the IOTA contest. QSL via home calls, except contest call FP/K9WM goes to NN9K.

Richard, KL7AK; Jim, K9PPY; Larry, KF6XC, and Bob WL7QC will be active from around 9 to 14 August as KL7AK from **Sitkinak Island** (Trinity Islands, NA-053). Their main station will have an amplifier and a beam for 10, 15 and 20 on a 30-foot mast and their main operating frequency will be 14,260 kHz (±QRM, CW upon request, pile-up permitting). QSL via N6AWD.

Bruce, KD6WW, expects to be active from **Shumagin Group** (NA-087), Alaska between 17 and 20 August.

The Low Land DXpedition Team (LLDXT) will undertake its sixth Caribbean Tour, as follows: **Carriacou, Grenada** (NA-147) from 2 to 15 August; **Bequia, St Vincent** (NA-025) from 16 to 27 August. The team members will be Bouke, PA0ZH; Ronald, PA3EWP; Rob, PA5ET; and Dennis, PA7FM. Callsigns will be J3/homecall and J8/homecall. The team will use two FT-1000MPs with amplifiers and will be active around the clock on 10-160m, CW, SSB, RTTY and PSK31. Titanex has sponsored a V160E vertical to give the group a good low-band signal. As in past years, the LLDXT will have a tour website, which will be updated daily with the latest information, online logs, tour diary, digital photos and digital pile-up recordings. All QSLs will be managed once again by PA5ET (see 'QTH Corner').




**Not a Gauguin, but equally prized in some quarters: a QSL card from the German DXpedition in February to French Polynesia and the Marquesas Islands.**

## INTERNATIONAL LIGHTHOUSE/ LIGHTSHIP WEEKEND

THIS YEAR'S EVENT takes place on 18/19 August and a large number of stations will be taking part (details of some of these appear below). Further details and an up-to-date list of participating stations can be found on the web page.

The **Nieuwpoort Lighthouse** (BEL-004) will be activated for the first time during the event. The team has been granted the special callsign OS4LHN. Activity will be on all bands (80-10m) mainly SSB and CW. QSL goes to ON4ADN, either direct or through the UBA bureau. There will be a multicolour QSL. All replies to direct QSLs will be posted in Nieuwpoort and will bear the special 'Nieuwpoort Lighthouse' postmark, which can be considered a real collector's item. QSL Manager Geert, ON4ADN, states that he only needs reply postage, no envelope and, of course, your address.

Ten operators from the North Wales Radio Rally Club will be active (on all bands) as GW0NWR/P from **Bardsey Island** (EU-124) on 5-10 August. They will be operating from Bardsey Lighthouse for the first three days, then will move to Plas Bach, a farmhouse in the middle of the island. QSL via GW0NWR (bureau) or direct to GW0DSJ.

Maurice, ON4BAM (M0CIL), will be active from the **Faeroe Islands** (EU-018) between 6 and 8 August. Then from 9 to 23-August he'll be operating as TF#/ON4BAM/M from all call areas of **Iceland** (EU-121) except TF0, central Iceland. Maurice will try to activate lighthouses along the way. QSL via ON4BAM either through the bureau or direct.

DF9MV, DL1GEO, DL9CHR and DE0MST will operate from the lighthouse on **Porer Island** (EU-110) from 12 to 17 August.

## AWARDS

THE WLH (World Lighthouse Award) has been developed by F5OGG, F5SKJ, F6DGT, F-17511 and W9DC, and provides a world-wide award for confirming contacts by amateur radio with approved lighthouses effective from 1 July 1997. See the web page or drop me a line for further details.

## CONTESTS

THE SARTG WW RTTY Contest takes place over the third full weekend of August (18/19), in three separate periods: 0000-0800 and 1600-2400 Saturday, and 0800-1600 Sunday. Use RTTY on 80, 40, 20, 15 and 10m. There are single- and multi-band single-op categories, as well as multi-op and SWL. Exchange RST plus serial number. Multipliers are DXCC countries, plus the call areas of Australia, Canada, Japan and USA, all of which count once per band. As usual, I can provide further details on request.

The Worked All Europe contests take place as follows: CW 11/12 August, SSB 8/9 September. This is an interesting contest, both because it takes place over the summer period when propagation can be a challenge, and because the format allows the exchange of so-called QTCs, which are details of previous QSOs. So WAE is a little different from the 'rubber stamp' format of many contests. Why not give it a try?

Ray, HS0/G3NOM, has sent me details of this year's SEAnet (South-East Asia) Contest. The note states that "The format of the contest will remain the same as last year, in accordance with the wishes of the contestants. The contest will, therefore, be a single 24-hour contest incorporating CW/SSB/digital modes". The contest runs from 1200 on 18 August, on 160, 80, 40, 20, 15 and 10m. Work stations in the SEAnet region, exchanging RS(T) plus serial number. There are various single- and multi-band categories. For full scoring details, list of SEAnet countries etc, drop me a line, e-mail either me or Ray (g3nom@rast.or.th), or check the SEAnet Web site. Entries should be received not later than 31 October. Results will be announced at the SEAnet 2001 Convention, Pan Pacific Sutera Hotel in Kota Kinabalu, Sabah, on 10 November, and will be published on the SEAnet and RAST web sites. The only UK score in the 2000 contest was G3VAO, who placed 2nd, single-op SSB. Perhaps this year we can look forward to more UK participants?

The results of the Oceania DX Contest 2000 have now been published, and the full report can be found on the web site. In the Phone contest, G3GLL scored 1898, single-op all-band, and RS178500 2541 in the SWL category (leading European SWL). In the CW event, G3GLL scored 637 points (SOAB) and G3JJZ 175 (SOAB).

In the EUCW/FISTS QRS Party last April, UK scores included G8NT (10868), G4KXG (5115), G4FAI (2208), G0GSY (2208), M0BYN (954), G4LHI (774), G4NCU (279), M0CMQ (80), G0TBD (28) and G3VQO

**COUNTRIES WORKED, 2001**

| CALL | CW | SSB | RTTY | MIX |
|---|---|---|---|---|
| G4DUW | 175 | 208 | 0 | 251 |
| G0NXX | 235 | 0 | 0 | 235 |
| G4OBK | 200 | 101 | 66 | 235 |
| M0BIB | | | | 231 |
| M0CTQ | | | | 231 |
| M0BZQ | | | | 204 |
| G3IGW | 200 | 0 | 0 | 200 |
| G3SXW | 200 | 0 | 0 | 200 |
| G0TSM | 150 | 107 | 14 | 191 |
| G0VHI | 0 | 190 | 0 | 190 |
| G3LHJ | 151 | 46 | 46 | 169 |
| G3YVH | 126 | 67 | 1 | 161 |
| MU0FAL | 124 | 125 | 0 | 153 |
| M0LLW | 0 | 149 | 0 | 149 |
| G0CAS | | | | 142 |
| G3JFS | 82 | 77 | 91 | 142 |
| MM0BQI | 31 | 97 | 89 | 130 |
| ZC4DW | 96 | 65 | 78 | 119 |
| G0ARF | 0 | 0 | 109 | 109 |
| M0CAL | 0 | 108 | 0 | 108 |
| GM4ELV | | | | 107 |
| G3TXF | 105 | 0 | 0 | 105 |
| G3MDH | 0 | 103 | 0 | 103 |
| GM4FAM | | | | 102 |
| GM4OBK | 89 | 10 | 0 | 95 |
| M0CNP | | | | 84 |
| G4FVK | 39 | 76 | 0 | 83 |
| M5AEF | 15 | 66 | 0 | 68 |
| GW4SKA | 0 | 0 | 66 | 66 |
| G4DDL | 42 | 34 | 18 | 58 |
| G4YWY/M | 0 | 54 | 0 | 54 |
| G4MUW | 0 | 51 | 0 | 51 |
| GI0NQC | 0 | 15 | 41 | 49 |
| G3WP | 46 | 0 | 0 | 46 |
| M0ASJ | | | | 21 |

## QTH CORNER

| | |
|---|---|
| GW0DSJ | Edward Shipton, 34 Argoed, Kinmal Bay, Rhyl, Conwy LL18 5LN, Wales. |
| HK5MQZ/0M | Jairo Vargas, HK5MQZ, PO Box 10862, Cali, Colombia. |
| HL0C/4 | CPO Box 4397 Seoul, Korea 100-643. |
| PA5ET | Rob Snieder, Van Leeuwenstraat 137, 2273 VS Voorburg, The Netherlands. |
| T5X | Baldur Drobnica, DJ6SI, Zedernweg 6, D-50127 Bergheim, Germany. |
| T5W | Thomas Lind, DL1QW, Saturnstr 1, D-44579 Castrop-Rauxel, Germany. |
| 8R1RPN, 8R1K | Olli Rissanen, OH0XX, #599, 1313 So Military Trail, Deerfield Beach, FL 33442, USA. |

(9). G8NT was the oldest contestant, at 91 and, despite living in sheltered accommodation, was runner-up. As the official write-up says, "Just goes to prove you don't need large antenna arrays to enjoy contesting." G4KXG was voted "Most Readable Morse Heard" during the Party.

## DXCC FIELD-CHECKING

FRED, G4BWP, REPORTS that Ian Capon, G0KRL, has joined the UK team of card checkers. Ian will be checking DXCC applications from English callsigns with an M or 2E prefix. Jim Kellaway, G3RTE, will continue to check applications from English calls prefixed with a G. Due to changes in the relative values of the UK pound and the US dollar, it has been necessary to increase the award checking fees in the UK. Each $10 charge is now translated to £7.50. Where applicants wish to pay by credit card rather than sterling to the checkpoint there is a surcharge of two First Class postage stamps to cover the cost of forwarding their application. Full information on the UK DXCC field-checking process can be found at the web site given at the end of this column, or by following the links from the RSGB HF Committee web pages.

## TABLES

A WARM WELCOME this month to Bob, G0ARF, who comes in with a great RTTY-only score. Bob started the year with an astonishing 315 countries worked all-time on RTTY (from the 'current' list), and his DX this year includes some rare ones such as A5, BV9, D6, FH, HC8, J2, J5, JW, JY, KH0, KH2, PY0F, T32, T5, TT, YK, ZK1/N, ZK1/S, 3B6, 3C and 3D2/C. All this has been achieved with less than 100 watts output.

### WWW

| | |
|---|---|
| DXCC Field Checking | www.g3wkl.freeserve.co.uk/awards/DXCC_checking.htm |
| Lighthouse weekend | www.vk2ce.com/lilw |
| LLDXT | www.qsl.net/lldxt/ |
| N Wales Radio Rally Club | www.nwrrcw.org.uk |
| Oceania DX Contest | www.nzart.org.nz/nzart/update/contests/2000_Oceania_Home_Page.htm |
| SEAnet Contest | www.seanet2001.com |
| RAST | www.qsl.net/RAST |
| TY Expedition | http://perso.wanadoo.fr/f5cwu |
| WAE Contest | www.darc.de/referate/dx/fedcw.htm |
| World Lighthouse Award | http://wlh.free.fr or http://wlh.online.fr |
| 4Z8 callsigns | http://hamradio.larc.org/cept/4Z8CallSign.htm |

## 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 **October** issue (including table updates) by **17 August.** ♦

# HF F-Layer **Propagation Predictions** for **August 2001**

| | 3.5MHz | 7.0MHz | 10.1MHz | 14.0MHz | 18.1MHz | 21.0MHz | 24.9MHz |
|---|---|---|---|---|---|---|---|
| Time | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 | 000011111220 |
| (UTC) | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 | 246802468020 |
| *** Europe | | | | | | | |
| Moscow | 8.....667 | 972.....4878 | 9999888899999 | 899999999998 | 368999899975 | .47887778853 | ..34433343.. |
| *** Asia | | | | | | | |
| Yakutsk | ..... | ..... | .....222 | 33222.234565 | ..445453.... | ...4652..... | ..... |
| Tokyo | ..... | .....2.. | .....12.. | .....12.. | .....11.. | ..... | ..... |
| Singapore | .....1. | .....377. | .....28883 | .....178983 | .....58886. | .....47873. | .....23676.. |
| Hyderabad | ..... | ..... | ..... | .....111 | .....2343. | .....1233.. | ...1121221.. |
| Tel Aviv | 81.....788 | 98.....7999 | 897...179999 | 938766789985 | 4.3437847697 | .....8824374 | .....66...4. |
| *** Oceania | | | | | | | |
| Wellington | ..... | .....6... | .....4689... | ...6788885.. | ...5..5..4.. | ...5.....5.. | ...5.....5.. |
| Perth | ..... | .....121. | .....22.1 | .....1..1 | .....1....2 | .....1..... | ..1123..... |
| Sydney | ..... | .....13.. | .....33.. | .....111.. | .....1221.2. | ....111...1. | ..1232..... |
| Honolulu | ..... | ..... | ..63..... | ..6763..... | ...665..... | ....6..... | ..... |
| W. Samoa | ..... | ..... | ..... | ..56654..... | ...6666..... | ...5665..... | ..... |
| *** Africa | | | | | | | |
| Mauritius | ..... | 4.....2665 | 2.....5775 | .....17772 | .....3775. | .....3752. | .....252.. |
| Johannesburg | 99.....999 | 99.....9999 | 99.....9999 | .99....99999 | ..999999999. | ..999999999. | ..99999999.. |
| Ibadan | ..... | ..... | 11.....1 | 2.2.....222 | 1.621136662 | ..741235661. | ..421112531. |
| Nairobi | ..... | 2.....111 | 53.....1345 | 76.....15667 | 6641..157777 | 226332367787 | ..6566677863 |
| Canary Isles | 78.....787 | 888.....3998 | 8684...37888 | 988765679879 | 537877788487 | 3.4888888875 | ...65565874. |
| *** S. America | | | | | | | |
| Buenos Aires | 54..... | 998.....38 | 989.....78 | 878.....388 | 757.....888 | 3.6.2...2877 | .....475. |
| Rio de Janeiro | 11.....1 | 775.....67 | 877.....578 | 767.....777 | 76832...2998 | 5.6.42.26987 | ..3.64557975 |
| Lima | 1..... | 663.....5 | 666.....26 | 4253.....46 | 5.67.....277 | ...6....1575 | ...4.3..465. |
| Caracas | ..... | .....1 | 333.....12 | 5364.....45 | ..364...1366 | ...353223562 | ...34443684. |
| *** N. America | | | | | | | |
| Guatemala | ..... | 211.....1 | 323.....3 | 2.22.....3 | .....11 | ..... | .....2.. |
| New Orleans | ..... | 341.....1 | 666.....4 | 637.....46 | 546..8778887 | .....6888886 | .....5778875 |
| Washington | 21..... | 762.....7 | 8885.....68 | 967565..5788 | 5...68778898 | .....8..8986 | .....6..7775 |
| Quebec | 65.....6 | 882.....78 | 643.....167 | ...422.24665 | 2..566668875 | ...355446753 | ....4444664. |
| Anchorage | ..... | ..... | 6..... | 6.766.667787 | 7.776.789998 | .....78887 | .....77877 |
| Vancouver | ..... | ..... | ..... | ..1..... | ..1....35562 | .....232. | .....332. |
| San Francisco | ..... | .1..... | ..... | ..... | .....121 | .....11. | .....1. |

Key: Each number in the table represents the expected *circuit reliability*, eg '1' represents reliability between 1 and 19% of days, '2' between 20 and 29% 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 the signal is expected to be strong.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at www.g4fkh.demon.co.uk. The page is updated monthly. The provisional mean sunspot number for June 2001 issued by the Sunspot Data Centre, Brussels, was 134. The maximum daily sunspot number was 191 on 16 June and the minimum was 58 on 1 June. The predicted smoothed sunspot numbers for August, September and October are respectively: (SIDC classical method – Waldmeier's standard) 95, 94, 93 (combined method) 99, 96, 94.

# SWL

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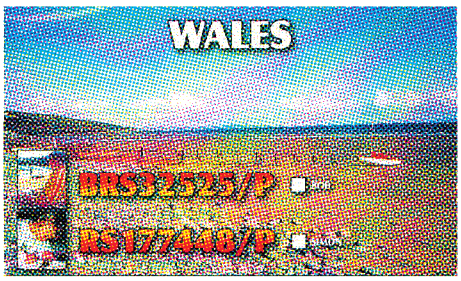
AUGUST IS traditionally the month for holidays. It marks the month where the autumn DX season is just around the corner and where VHF conditions *should* provide lots of nice tropospheric conditions, but invariably doesn't! This August I am off to Pembrokeshire in West Wales and, like last year, my son Simon, RS177448, and I will pack our portable Sony radio to use in the hotel and on the beach. I shall be looking to add to the 108 DXCC entities heard last year so I can submit an SWL DXCC claim from GW, while Simon will no doubt concentrate on adding to his IOTA score. I have been pleasantly surprised by our QSL returns from our 2000 /P SWL operation as we already have 19 DXCC entities confirmed. I am sure that the 'DXy'-looking QSL card might have had something to do with the successful QSL return. The card we had produced is featured this month. I will be particularly interested to know - by e-mail, preferably - if there are any radio meetings planned in the area during August or amateurs in or near our base in Tenby.




## INTERNATIONAL LIGHTHOUSE/ LIGHTSHIP WEEKEND

THIS VERY POPULAR event takes place on **18/19 August**. Participation seems to grow every year.

A list of stations that have confirmed their participation, as well as rules and other information on the weekend can be found on the Internet. Anyone requiring further information can e-mail Mike, GM4SUC, at GM4SUC@compuserve.com

## SUMMER DX NEWS

DAVID WHITAKER, BRS25429, provided news that the Italian newsletter *425 DX News* shows tables every month of all time achievements of SWLs. He has entered his figures, but sadly is the only British SWL in the list of 20 participants. There is a good spread of European SWLs, from DL, I, HB, ON, OM, LY, UA, F, OH and SP. Why not visit the site and submit your scores?

David reported that, "HF has been abandoned here until September!" So it's all VHF - always hoping for a new country or two. He has some 'easy' ones yet to be heard on 50MHz: 3A, JW and OX. Before he abandoned HF, his best catches on the HF bands were 3B6RF, heard on seven bands SSB. He also heard ZK1NDS, North Cook Islands, on 15 and 20 metres. David heard the 3B6 DXpedition on 80m SSB. That's one I needed, but I never heard them using their very strange transmit frequency of 3650kHz. Signals were apparently strong enough to get through the QRN. The 3B6 was David's 247th DXCC entity in 2001.

On VHF it had been 99% six metres. Sporadic E started on exactly the same day in May as in 2000, but has been nothing like as intense as in May 2000. Only on one day - 23 May - could it have been called 'intense'. However, by early June, David had heard 45 DXCC entities. Best DX had been ZS6PJS in KG46, Z22JE in KH52 and PP5JD in GG52. Best 'Euro' callsign was UR5TW in KN39.

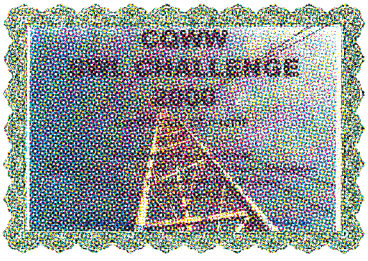
Robert Small, BRS8841, had been disappointed with the HF bands, but remarked that "the bands will throw up one or two nice surprises to keep us happy". Robert did not hear the 3B6 on 7 or 3.5MHz, but he had heard some South Americans on 3.5MHz. Conditions had been poor during the day on 14MHz where the only DX of note was RU0B (AS-057), TA0/IT9WDY (AS-154), 5R8GV, VU2MTT (AS-096), 7Z1AC, OA4DKC and J49HW/P (EU-187). There had, however, been a few decent openings on 18MHz, with the best DX being 6Y5WJ, ZK1NFK, WH6LU, XU7ABC, 3V8SM, JD1AMA and 5R8GY.

## e-QSLs

I HAVE BEEN meaning to include this offering from SWL Stephen Meynell for a few months, but space always wins! However, it sees the light of day this month.

Stephen has been playing with eqsl.cc and other e-mail QSLs and considers that they work because they provide a quick turn-around. He has tried sending e-mails 'blind' by posting them off to the station via qsl.net but this had not been very successful. I am sure readers are aware that qsl.net provides a short e-mail address eg G3XXX@qsl.net. Not every amateur uses qsl.net and Stephen feels that until there is a widely-used qsl interchange on the Internet, it will be a little hit or miss.

Electronic QSLs can be obtained free of charge at WWDX.com and posted off. Eqsl.cc provides a glorified log book that people can post QSLs to. The log book can be kept up by uploading QSO details using, for example, VQLOG which is only $16 and can be downloaded free in trial form. Stephen points to one snag with eqsl.cc in that incoming QSLs print out larger than the usual postcard size. He feels that the use of a computer-based logging program to use eqsl.cc is a must as this will print out QSL labels. All Stephen's confirmed eqsls relate to sending SWL reports to stations using PSK signals. He says there is a message there as e-mail QSLs will only appeal to 'techie' types already using computers. He finds that QSL returns to other stations heard is poor by comparison, but adds that broadcast stations always seem to QSL an e-mail QSL.




**Bob's CQWW SWL Challenge certificate.**

## 28MHz SWL CONTEST

THE RESULTS OF Franck Parisot's 28MHz contest are now available. I must say that the event seems to have been handled quite well by Franck who secured some good prizes from sponsors: full details are on Franck's website. Indeed, Simon and I received a copy of *The Complete Shortwave Listener's Handbook* for winning the multi-operator category. If the event takes place later this year and details are received in time, I will try to find space for the rules.

## COAST WIRELESS STATIONS CENTENARY

UNFORTUNATELY, details about special event station GB100HD were received too late to include before the event on 30 June / 1 July. However, any SWL who heard the station, and others celebrating the Centenary, should be aware that there was a special certificate available for hearing a minimum of four participating stations. The certificate costs a voluntary contribution to the RNLI of at least £4. Further details are available from Martin Snow, GW3PRL, at martinsnow@talk21.com ♦

**WWW.**

**International Lighthouse / Lightship Weekend**
**www.vk2ce.com/illw/index/html**
**425 DX News**
**www.425dxnews.org**
**Franck Parisot's SWL site**
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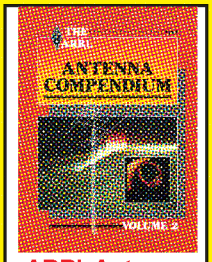


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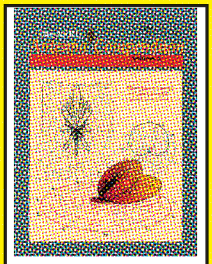

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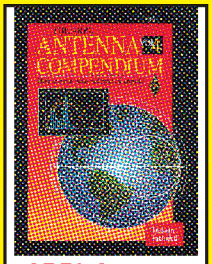


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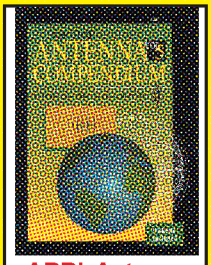

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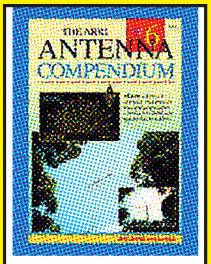


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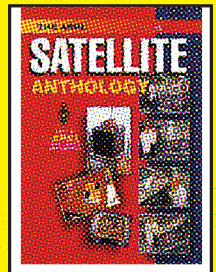


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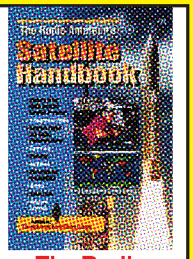


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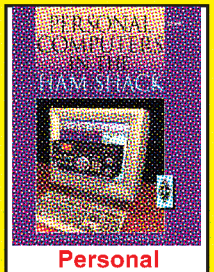


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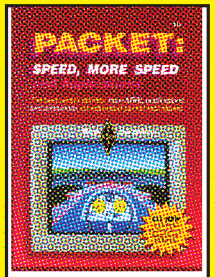


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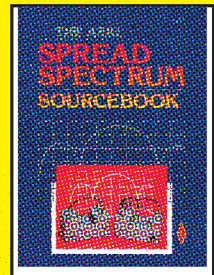


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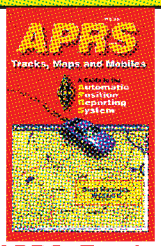


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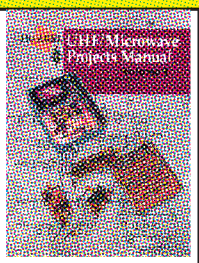


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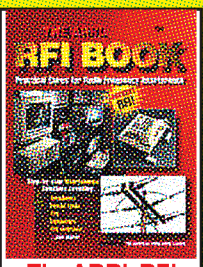


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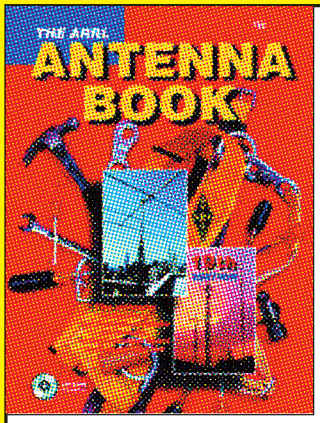


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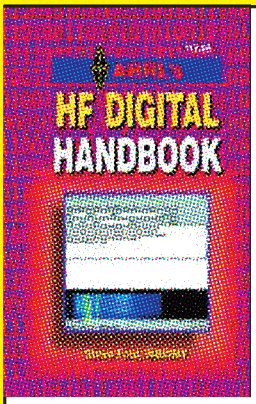


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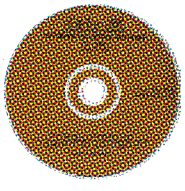

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# REPEATERS

**MARK LEWIS, GW7KDU**
*14 Hornbeam Close, St Mellons, Cardiff CF3 0JA. E-mail: rmc-wales@net.ntl.com*

THE 'LATEST Cleared Repeaters' table (right) that shows the progress of applications may not be entirely clear to all readers, so here is a brief explanation of the process.

When a group decides to build and operate a repeater, having found a site and put together the hardware, an application will be completed for the repeater. This lists the technical specification of the repeater plus other information such as site location and closedown operators. Once complete the application is sent to RSGB HQ where it is sent on to the appropriate Repeater Management Committee (RMC) Zone Manager for processing.

The Zone Manager checks that the technical specification of the proposed repeater is within requirements and that all required paperwork has been completed correctly. If anything is missing (eg a copy of the keeper's Validation Document) the Zone Manager will contact the keeper to obtain the necessary information. When everything is complete the application is sent to the RMC's Proposals Manager.

The Proposals Manager prepares the application for submission to the Radiocommunications Agency (RA). Part of this process involves the completion of a site clearance form (SCF) that is a summary of the technical specification and location of the repeater. The SCF is sent to the proposed keeper for him / her to sign as confirmation of the repeater specification. Once this is signed the keeper sends it to the RMC Chairman. In parallel the Proposals Manager sends the application to the RMC Chairman. When the SCF is received from the keeper the RMC Chairman forwards the application to the RA. Once at the RA there are several stages that the application passes through before, hopefully, the repeater is authorised. These are:

- Radio Investigation Service (RIS)
- Primary User (when we are the secondary users)
- NFAP (National Frequency Assignment Panel)

Once the final stage has been passed notification is sent to RSGB HQ, which in turn informs the keeper. It is then down to the keeper to apply for a Notice of Variation (issued on request) that permits the repeater to come on air. For more detailed information the RA website has a document entitled *Guide to Repeater Licensing* that gives complete details of the process.

## LATEST CLEARED REPEATERS

*Only one voice repeater has been cleared recently by the RA:*

| Callsign | Type | Channel | Keeper |
|---|---|---|---|
| GB3CQ | New 2m, Corby Northants | RV49 | G1DIW |

*Outstanding voice repeater proposals submitted for licensing are:*

| Callsign | Type | Process Stage | Proposed Keeper |
|---|---|---|---|
| GB3CK | Site change 2m, Charing, Kent | NFAP | G6ZAA |
| GB3WF | Site change 70cm Otley, W Yorks | Primary User | G0NIG |
| GB3FJ | New 70cm, Spilsby, Lincs | Primary User | G8LXI |
| GB3MC | Re-site 23cm, Blackrod, Lancs | Primary User | G8NSS |
| GB3MT | Re-site 70cm, Blackrod, Lancs | Primary User | G8NSS |
| GB3UK | Re-site 6m, Blackrod, Lancs | Primary User | G8NSS |
| GB3LR | Frequency Change | RMC Proposals Manager | G7PUV |

## REGIONAL NEWS

### Northern England

The South Lakeland Repeater Group wishes to advise all interested parties that due to the increasingly high costs of their current site they hope to relocate GB3LD to the current location of GB3LF, the 70cm Lakeland Fell repeater close to the M6 at Lancaster. If it isn't possible to house both repeaters together, GB3LF may benefit from relocation nearer to the Lake District at Kendal. Both Groups are intending to merge to prevent the loss of the underused 70cm facility, with the Committee of this group being better able to maintain both repeaters on behalf of the membership and licensed users.

GB3PZ - the first wide-spaced 70cm, and Internet linking, repeater came on air in February this year and was immediately troubled by interference on the input frequency from unknown sources. After much detective work by those involved with the repeater the source of the problem was found to be a trunked MPT1327 system. This has since been 'adjusted' and lo and behold the problems have gone away.

### Scotland

Colin, GM8LBC, reports that the Central Scotland FM Group has set up a task group to look into getting the Group's flagship repeater, GB3CS, repaired.

Interest has been expressed in a 70cm repeater for the Dumbarton area, possibly using the old GB3PG kit and RB9 assignment.

Site acquisition difficulties are believed to be delaying a submission for a re-siting of the GB3FF 2m repeater in East Central Scotland.

Better service for Aberdeen on 70cm has been promised once the re-sited GB3AB repeater becomes operational from a site in the Mastrick area of Aberdeen.

Proposals to extend 70cm repeater coverage to Fife may still be forthcoming if recent discussions with the RMC result in an application coming forward. This would be a welcome addition to the 70cm band often thought to be under threat.

### Wales

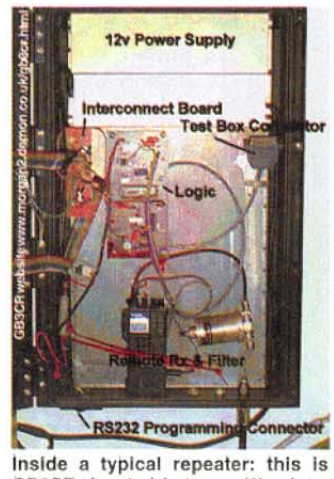
The GB3AE 6m repeater near Tenby has returned to service after a short absence. The keeper, Dave Howells, GW0WBQ, reports that the receiver performance has been greatly improved thanks to help from Evan, GW4AKZ.

GB3UO has been re-sited from England into Wales (near Wrexham) and has returned to service using a 7.6MHz split (Rx: 438.425MHz, Tx: 430.825MHz). The repeater currently has some difficulties with coverage and the Maelor Repeater Group are investigating ways of improving the situation.

GB3SG (Near Pontypool) has been taken off air until further notice. According to the keeper Mike Voss, GW8ERA, this is for a rebuild of the repeater's enclosure and the installation of new cavities.

### Midlands

The Mansfield repeaters in Nottinghamshire have to vacate their site because the mast is to be removed. The local authority that owns the mast has no further use for it, according to Andy Fisher, G6CUK, the Vice-Chairman of the Mansfield Repeater Group. Repeaters affected are GB3MD and GB3MX, though Andy does state that he hopes that GB3MX may continue from the site on a temporary antenna. A new site has been found 3km distant, and it is hoped that GB3MX can be relocated.




Inside a typical repeater: this is GB3CR, located between Wrexham and Mold in North Wales. Operating on RB6, 'CR is supported by the UKFM Group (Western).

## TELEVISION REPEATERS

THE RMC has received and accepted a full application for a 3cm ATV repeater to be co-sited with the existing GB3YT 23cm unit located near Queensbury, West Yorkshire. The 23cm ATV repeater GB3TT in Chesterfield has been permanently closed down. ♦

## WWW.

RA: www.radio.gov.uk/topics/amateur/document/guide.htm
GB3PZ: www.gb3pz.org.uk/
RMCWEB: www.coldal.org.uk/rmc
GB3CL: www.g3crc.co.uk/

Regular Feature

# EMC

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THE MATTER of unscreened cable communication networks using HF radio frequencies continues to occupy a great deal of the RSGB EMC Committee's time. Robin Page-Jones, G3JWI, has been assessing RF leakage from such cables. He has also been representing the RSGB in tests on VDSL (Very high-speed Digital Subscriber Line) at the BT research site, Adastral Park in Suffolk. VDSL would use frequencies up to 10MHz or higher and the EMC aspects are of great interest to radio amateurs, both for emissions and immunity.

## HOME NETWORKS

THE THIRD Home Networks European Congress was held in London on 25 - 27 April. This covered various aspects of data transmission around the home using phone-line networking, power-line networking and 2.45GHz radio transmission. Various services and applications were also covered including the 'Internet fridge'! In my professional capacity, I gave a presentation that was sponsored by the RA. It was titled 'EMC and Interference Issues Related to Wired Networking Systems Used in the Home'.

## MEASURING LOOPS

ANOTHER EMC project that I have been doing in my professional capacity is further development of the set of high sensitivity LF/MF/HF EMC-measuring loop antennas shown in 'EMC' Dec 1999 p76.


**Prototype set of high-sensitivity remotely-tuned EMC measuring antennas, 100kHz - 30MHz, developed by the University of Hertfordshire.**

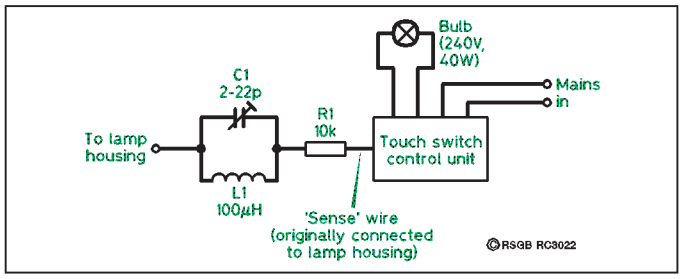



**Fig 1. Improving RF immunity of a Touch Lamp to prevent RF triggering.**

These were developed by the University of Hertfordshire under a contract awarded by the RA. They needed to be manually tuned for each frequency at which measurements were made. The latest 'Mark 3' version can be remotely controlled via an optical fibre data link. This development was also funded by the RA with industrial design support from Schaffner EMC Systems Ltd. The prototype set of loop antennas were exhibited on 22 June at the CISPR meeting at Bristol (see photograph below). CISPR is the international committee that sets EMC standards.

## TOUCH LAMPS

TOUCH LAMPS WERE last mentioned in 'EMC' in April 1995. These are brass-effect table lamps with a touch-sensitive switch. Touching the body of the lamp steps from off to dim, medium, bright then off again. The touch switch works by driving an RF signal to the body of the lamp. When someone touches the lamp, it detects the increased RF load due to body capacitance.

Unfortunately, touching the lamp is not the only way to make it switch on and off! They can be quite susceptible to RF and some members have had reports from neighbours of touch lamps flashing on and off in response to amateur radio transmissions. One member sent us his own touch lamp to see if we could find a solution.

This is a known problem which has also been reported by ARRL. It is mentioned in the ARRL book *Radio Frequency Interference - How to Find and Fix It* and also on their web site.

If you have one of these lamps and want to modify it, you will need to drill out four rivets that hold the base plate on. Make sure it is unplugged from the mains before opening it! Inside is a small plastic box which contains the switching circuit. One of the wires coming out of the box is the sense wire and connects directly to the body of the lamp. Cut the sense wire about 2.5cm from the box. Do not cut any other wires and do not open the plastic box.. The sense wire is not an earth wire and is isolated from the mains via two 1nF 400V Class 'Y' capacitors in series inside the box.

To improve the RF immunity, it is necessary to introduce a high impedance of the order of tens of kilohms in series with the sense wire in the amateur bands of interest, without affecting the normal operation of the lamp. I first tried a series resistor, and found that 22kΩ or more causes unreliable operation, so the recommended maximum is 10kΩ, although some models may require lower values. This only gave a small improvement in immunity however - about 3dB on 3.5MHz. A ferrite ring on the mains cable may also help, but the problem is that the mains plug is moulded on and many turns are required (10 - 12). I found that, for a substantial improvement, a tuned trap is required for the band or bands of interest.

For the 3.5MHz band, I used the arrangement shown in **Fig 1** with a 10kΩ resistor, R1, and a parallel resonant LC tuned circuit. L1 is 100µH and C1 is a 2 - 22pF trimmer capacitor. It is important that the choke has a self-resonant frequency (SRF) well above 3.8MHz, preferably at least 7MHz. Check the specification for the choke you use or check its SRF with a grid dip oscillator or FET dip oscillator.

Using a dip oscillator, adjust C1 with an insulated trimming tool until the resonance is around 3.65MHz. If possible, this should be done with the tuned trap connected into the touch lamp. If the resonance occurs with C1 at minimum capacitance, reduce L1 to 47µH. When you have finished, insulate the new components and rivet the base plate back on.

I found that this trap gave about 10dB improvement on the 3.5MHz band, ie it took ten times as much power to make the lamp switch. If you have an immunity problem on more than one band, you may need a trap for each band.

## TOUCH LAMP EMISSIONS

THERE IS ALSO the question of emissions of interference into the mains. Touch lamps have an oscillator running continuously at typically 190 - 210kHz, even when the lamp is switched off. The sample tested operated at 201kHz. Its sawtooth waveform is rich in harmonics with a broad 9th harmonic centred on 1809kHz and the 18th at 3618kHz.

I tested it against BS EN 55014-1:1997. In the UK, dimmer switches, portable tools and household appliances have been required to meet this standard and its predecessor, BS800, since 1978. The touch lamp passed when switched off, except when the 'artificial hand' specified in the standard

was touching the body of the lamp. When the lamp was on dim, however, the conducted emissions using pre-compliance test equipment were as shown in **Fig 2**.

This plot used a peak detector, but the limit line shown is the Quasi-Peak (QP) limit. It is normal practice to sweep the whole 150kHz - 30MHz range using peak then check any suspect frequencies using QP. A QP sweep from 150 - 165kHz showed that the QP limit was exceeded by something like 10dB.

It would also be interesting to see whether touch lamps will be able to pass the new generic immunity standard which requires testing with a modulated carrier.

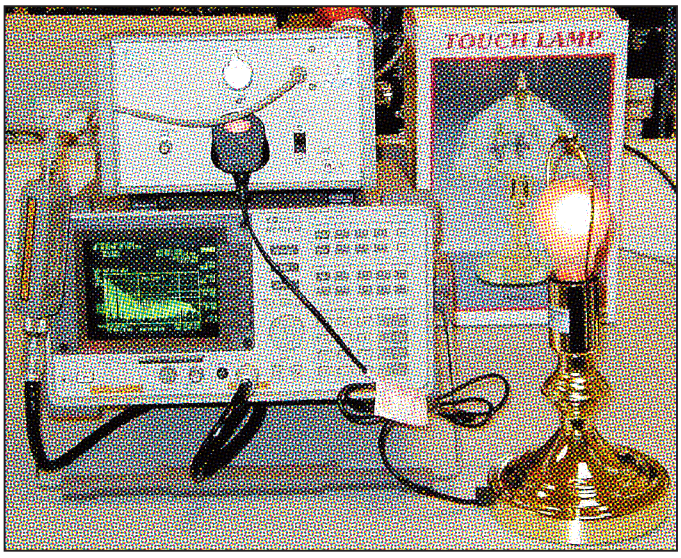
Various brands of touch lamps are on sale in UK DIY chains. The RSGB EMC Committee is testing RF emissions from some models currently on sale and will notify the appropriate authorities if any appear to be non-compliant.

## COMPUTER PSUs

STEVE, G3OAG, recently built up a new PC for his shack using a 400MHz Pentium board, sound card and case/PSU bought from one his club members, for a very reasonable price. The case was marked 'CODEGEN 250X'. It all worked fine but, while tuning around the HF bands, Steve noticed S7 to S8 unstable 'sproggies' wandering across the bands, about 80kHz apart together with a large band of noise at 80m and 160m. With the PC switched off using the front panel switch, the HF sproggies disappeared, but 'mush' on 80m and 160m remained.

All PCs made in the last few years use an 'ATX' type main board, case and power supply unit (PSU). Switching an ATX PSU off via the front panel switch or by closing down Windows doesn't actually turn it off, it just puts it into a standby mode with the switch-mode PSU still running.

Steve found out that unplugging the mains from the PSU or fitting an in-line mains filter got rid of the 'mush' so he decided to replace the PSU, which did not have a 'really off' mains switch on the back. He fitted a new 300W PSU and all is now well.




**Performing EMC Committee tests on a Touch Lamp.**

Removing the lid from the old PSU, Steve found that the PCB had printed legends for the usual input choke and capacitors, and surge/spike suppressor components but the chokes were replaced with wire links, the mains filter capacitors were not fitted and nor were the surge suppressors. In fact there was no input filtering and it appeared that the unit had been manufactured like this and has not been modified.

Steve's first PSU was second hand and of uncertain origin, but if anyone finds new computers being sold in the UK where the PSUs have no mains input filtering, then these cannot comply with EN 55022 Class 'B' conducted emission limits. If the computer is CE marked then the CE mark is almost certainly not valid and if it is not CE marked, then it cannot legally be placed on the market in the EU.

I have received a report from another source that some companies that assemble computers in the UK do not even bother to CE mark them nowadays.

Even on computer PSUs that *do* have mains filtering, I have found that many types fail EN 55022 Class 'B' in the 150 - 200kHz region due to inadequate mains filtering.

## 70cm CONTEST

ANDREW, G6SPS, is active on the 50, 144, 432MHz amateur bands as well as the 1.3, 2.4 and 10GHz bands. Following the items on TV distribution amplifiers in December 2000 and Feb 2001 'EMC', Andrew e-mailed some details of his experiences with TV distribution amplifiers. During the 70cm Cumulative contest he received a visit from the chairman of the local parish council who had been trying to watch the last episode of 'Inspector Morse' - until Andrew beamed in his direction. Andrew was using 35W to an 8-element antenna at that time. Andrew knew the neighbour and went into his house to offer some explanation and to investigate.

In a corner of the room was a TV distribution amplifier. Andrew undertook to do some research and in the meantime agreed not to beam towards the house.

Andrew tested his own TV distribution amplifier, which was a UHF-only type, using a spectrum analyser with tracking generator. He found that the gain was about 20dB but the bandwidth extended from above 860MHz down to about 380MHz, well below the lower end of the UHF TV band. This showed that, although a UHF-only amplifier has good rejection of the 144MHz amateur band and lower frequencies, it needs an extra filter to reject 432MHz.

Andrew made a 432MHz in-line notch filter with surplus components and mounted it in a small metal box with standard Belling-Lee-type coaxial connectors. He checked and adjusted it using his spectrum analyser and achieved 25dB rejection at 432MHz with only 1 - 2dB loss across the UHF TV band. Although this is not as good as the AKD HPF6, it was adequate to solve the problem in this case.

For those who do not have access to RF test equipment for checking and tuning a 432MHz notch filter, the only real option for rejecting the 430 - 440 MHz band is to use an AKD HPF6 (available from RSGB One-Stop Shop as Filter 6).

This is a UHF TV high-pass filter with a very sharp cut-off. It rejects 440MHz and below, while passing the UHF TV bands at 470MHz and above. Although it also provides excellent rejection of 144MHz and below, it is only really necessary if you operate on the 430 - 440MHz amateur band or plan to do so in the future. ♦

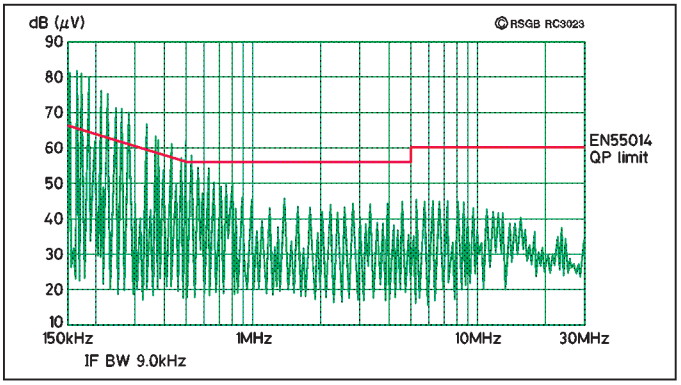



**Fig 2. Conducted emissions from the Touch Lamp tested.**

WWW.

**ARRL information on touch lamps**

www.arrl.org/tis/info/touchlamp.html

# IARU

Region 1 Executive Committee meeting, Oman, 2001. Front row left to right: ZS6AKV, G3GVV, PA0LOU, A41JT, 6W1KI, VE3CDM. Second Row: F6DRV, ZL2AMJ, K1ZZ, LA2RR, SP5FM, DK9HU.

**TIM HUGHES, G3GVV**
*10 Farm Lane, Tonbridge TN10 3DG.*

AT THE Executive Committee meeting of IARU Region 1, held in Oman from 21 to 24 April 2001, a major agenda item was the IARU 7MHz Strategy. At long last, 'realignment' of the 7MHz band allocation is on the International Telecommunication Union Agenda for the World Radio Conference to be held in 2003: we finally face the long-awaited opportunity to improve the condition of the amateur services in the 7MHz band.

The principal objective for the IARU must be to obtain the best possible result at 7MHz for amateurs in all parts of the world. This requires a united front, to speak with one voice as we have done in the past and which led amongst other achievements to success at WARCs where frequency allocations were on the agenda. Remember how we obtained allocations at 10, 18 and 24 MHz? This was because of a world-wide joint effort.

What exactly is the IARU objective? There is no question as to what we are trying to achieve. Our objective is ultimately an allocation around 7MHz of no less than 300kHz, amateur exclusive, on a world-wide basis.

In the process of achieving this objective, the guiding principles to be followed are:

1. Access is more important than exclusivity. That is, sharing may be necessary on an interim basis during a period of transition.
2. Even during an interim period, amateurs should not accept less than is presently available to them, in particular there should be no reduction in the present exclusive allocations.
3. It is desirable to harmonise the allocation among the three Regions, to the greatest extent possible.
4. Because of differences in propagation characteristics and patterns of usage, the solution to the 7MHz problem should be treated as a separate matter, and not coupled with allocations to the Amateur Service at any other frequency.

The IARU Administrative Council has come to the conclusion that the critical element in our strategy is to achieve the maximum possible support of the regional telecommunications organisations, CEPT, CITEL, APT, ATU, the Arab League, and the former Soviet countries. To accomplish this will require the active participation and close cooperation of the regional IARU organisations and the member societies.

Region 1's External Relations Committee (ERC) already has been very active in promoting the needs of the Amateur Services, particularly at the CEPT. ERC chairman and EC member Wojciech Nietyksza, SP5FM, as well as EC member Ole Garpestad, LA2RR, attended several CEPT Working Group - Frequency Management (WG-FM) meetings, PT40 meetings (PT40 = Project Team 40, which deals with issues related to HF matters), as well as meetings of CEPT Civ/mil (Civil / Military meeting).

In Region 2, joint efforts have been taken by the IARU. An information paper submitted by IARU Region 2 has been on the Agenda of the meeting of the Permanent Consultative Committee III: Radiocommunications, which meeting was held from 5 - 9 March 2001, in Panama City. This paper, originating from CITEL (an agency of the Organization of American States with headquarters in Washington DC), after giving the rationale and background for the requirements of the Amateur Services, ends thus: "Though broadcasting in the band 7000 - 7100kHz has been reduced substantially, congestion in the Amateur Service is a significant problem and a return to the previous allocation of 300kHz world-wide, in the vicinity of 7MHz is strongly indicated. Requirement, Amateur Service: A realignment that secures an exclusive world-wide allocation of at least 300kHz for the Amateur Service. The Amateur Service preferred band is 7000 - 7300kHz. Recommendation: that PCC.III reaffirm to the PCC.III Working Group for WRC 2003 preparation, its support for the consideration of this matter at the next competent WRC and the spectrum requirements as above."

The IARU International Secretariat (IS) has prepared a 24-page booklet, *Amateur Service Spectrum Requirements at 7MHz*, and this is being circulated to all member societies. The objective of this booklet is to provide member societies with sufficient background and information concerning the 7MHz issue to be able to have positive discussions with their national authorities dealing with frequency allocations. Positive discussions indicate that we will obtain the maximum support for our needs from these administrations at the next WRC, as well as in their preparations for WRC 2003 which in many countries have already started.

The foregoing, written by IARU Region 1 Chairman PA0LOU has been sent to all member societies in the Region. ♦

# DATA DATA DATA DATA

## A REPLACEMENT FOR THE 56002EVM?

### PROVISIONAL INFORMATION FROM THE HANDS WEB SITE (see below)

THE DSP24 IS A PROGRAMMABLE system using the Motorola DSP56311 clocked at 150MHz with a CS4218 Codec and Atmel AT29LV020 flash ROM. This is the latest addition to the 24-bit processors by Motorola, code-compatible with the popular 560xx series and including many additional features.

Fabricated on a four-layer 90 x 55mm PCB, for evaluation or stand-alone applications, a companion mother board, DSP24-MB, is available which supplies the regulated voltage lines and has an on-board audio power amplifier. Aimed primarily at radio amateur experimenters and one-off manufacturers, the board is small enough to be used inside existing equipment as a plug-in processor.

The AT29LV020 256kB 3-Volt flash is programmable in-circuit, with no need to buy expensive EEPROM programmers. For software development, a simple Command Converter is required, which connects to the parallel port of a PC. The Motorola Development Suite (C Compiler, Linker, Assembler, Debugger), is available at no cost on its web site and provides full debugging facilities through the OnCE Port. Once programming is complete, the code is simply loaded into the flash and the board will self-load the software each time power is applied.

All I/O port lines are made available for expansion. LEDs are provided on-board for debugging. The CS4218 Codec provides the connection to analogue line-level audio signals, using any of eight sample rates from 8kHz to 48kHz; the gain is programmable.

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- On-Chip Emulation (OnCE) module

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*E-mail: data.radcom@rsgb.org.uk*

OVER THE last few years, the well-known Motorola DSP56002EVM development kit formed the heart of much amateur DSP experimentation - I certainly learnt the basics of DSP programming by using one! It was with some horror that we heard it had been discontinued by Motorola; now that all spare stocks have been snapped up, that's it!

However, help is at hand. Hands Electronics, well known for its other amateur radio kits, is producing a DSP module using a more modern, improved chip from the same supplier that is backwards-compatible with the 56002. Almost certainly, original EVM software will need to be modified to run on the new board, but changes will, hopefully, be mainly to input/output and housekeeping routines that can be globally copied from one programme to another. See the box for more details.

## DATA TRANSCEIVERS

A VERY NICE-looking reasonably-priced radio transceiver module, the T7F, for 433MHz data operation, is produced as a kit by Holger Eckardt, DF2FW. This is a fully-synthesised FSK / FM transceiver on a single 145 x 75 x 22mm PCB, designed for 9600-baud operation for up to 10 RF channels stored in non-volatile memory, or with RS-232 remote control, the whole band can be covered continuously. The RF output is a few watts. Voice operation is not included but, by addition of a microphone, output amplifiers and squelch, it is possible. A kit of the extra hardware needed for voice operation is available. An English translation of the full manual is available from the web site listed below.

A lot of information on this module is available on the web; search for 'T7F transceiver'.

## FUNDAMENTALS

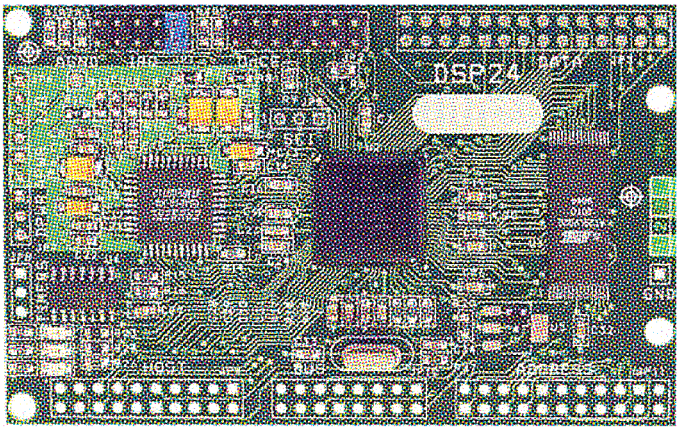
FIRSTLY, a correction to Fig 2 in the June column. Peter, G3PLX, pointed out that when demodulating differential PSK (DPSK) there is no need for the feedback path as shown from the clock recovery block into the delay line. In fact, there is no point at which such a connection could possibly be made. What I had intended to show was that the delay line also involves a flip-flop to save the previous data state in order that the change in phase can be determined, and I was trying to combine two functions in the diagram, just adding confusion! If an analogue or DSP delay line is employed there is, in fact, no need for clock recovery at all to recover the raw data stream, although a regenerated clock is still needed to recover the timing information needed for the 0/1 decisions.

Clock regeneration is probably the most important part of a PSK demodulator, as the accurate timing needed for optimum demodulation of noisy signals is derived directly from this. The clock not only has to be locked to the right frequency as the data bits, it has to be synchronous with the transitions, so that maximum use can be made of the full symbol period for making the vital 1/0 decision. Any clock jitter here degrades demodulation as the precise changeover point cannot be found.

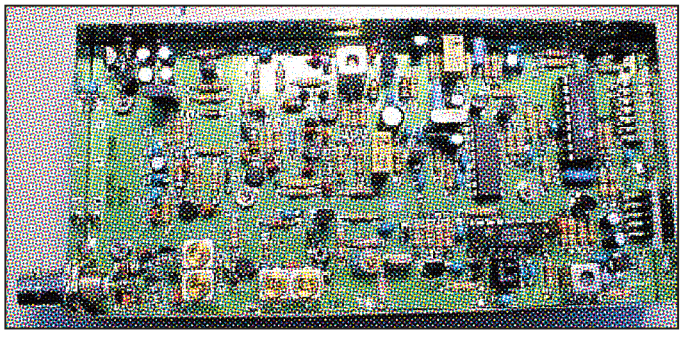
One method is to use a technique similar to that used for carrier recovery described last time - a non-linear operation such as a pulse generator triggered from transitions or zero crossings, followed by a narrow bandwidth Phase Locked Loop to extract just the clock signal from the jittery pulse output. Other techniques that can be used are to examine the amplitude of filtered or band-limited PSK. The waveform will have a maximum at the middle of the symbol period, and knowledge of the time at which the maximum occurs allows a loop to be locked. A simpler technique is just to look for any phase transition, assume this is at the correct point, and synchronise a locally-generated clock from there. Periodical comparisons can be made to keep the clock locked. Other more complex schemes are possible, including those that combine clock recovery with carrier regeneration, such as the Costas loop, mentioned last time.

Next time we will look at the techniques needed to restrict the bandwidth of data communications signals without significantly compromising their signalling efficiency. ♦

WWW.
**Hands Electronics**
www.rf-kits.demon.co.uk
**T7F manual**
www.la3f.no/prosjekt/t7f/t7f_e.html



The DSP24 kit available from Hands Electronics.


The T7F data transceiver module from DF2FW.

# HAYDON COMMUNICATIONS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## Q-TEK PENETRATOR

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# the last Word

## The £81 Licence

I read with incredulity page 9 of the July *RadCom* where under 'Board Highlights' there was a reference to the RA Economics Department statement regarding radio amateurs' willingness to pay £81 for their licence! Quickly checking to see that it wasn't 1 April I felt compelled to make the following comments:

1. Who are "the radio amateurs" referred to? I for one wasn't asked my view.

2. This seems a good way to kill amateur radio stone dead. With the hobby struggling to attract newcomers - I refrain from stating the obvious.

3. I refer to a further statement by the board "the views of the Board and RA are converging". This implies the board might view the above as acceptable.

Sir, I for one strongly oppose any attempt to raise the licence fee to such a figure or anywhere near. I assure you I am not alone in my area in this view and this area must be clarified as a matter of urgency. Please pass this communication to 'the powers that be' who are supposed to represent us.

**D W Last, G6LEU / M5ABC**

[*We passed on Mr Last's letter, and those from a number of other members with similar comments. A clarification from the RSGB President can be found in 'RSGB Matters' on pages 8 / 9 this month* - Ed.]

## A Cautionary Tale

Warning to all amateurs thinking of taking a hand-held or the like on an international flight. On a trip from Birmingham to Orlando for the Orlando hamfest in February my TH-79A was checked in at the X-ray after I was told that it could not be taken in the aircraft in case I used the radio whilst in the air, which could affect the aircraft navigation.

That was the last time I saw my radio. On my return I put in a claim to the airline which had been searching for the radio, only to be told that under the Warsaw Convention dated 1922 and amended 1961 all claims would be paid out by weight (per kilo).

Since my radio weighs approx 1lb it is worth just over £7. The system used is called SDR (Special Drawing Right) which varies daily. Brittania suggested I claim from my travel insurance, which I did, but the claim was rejected as the insurance company said that it was not covered under the policy.

At the end of the day if you are going abroad go with a good airline and good insurance policy. And if anyone if offered a cheap TH-79A there is a chance it has been stolen!

**B G Cockfield, G0KRK**

## Hands-Free Mobile *More* Dangerous?

Now here is something for all mobile operators to think about. In *The New England Journal of Medicine*, vol 336, page 453, there is a report about the use of mobile telephones. Briefly the argument runs as follows: using *hands-free* 'phones *increases* the risk of an accident. Why? Because the driver is involved in a *two-way* conversation. This is not the same as talking to a passenger or listening to the radio. The passenger and the radio can be ignored at moments of danger. The medical research team correlated information from some 26,000 cellular calls and about 700 drivers involved in non-serious accidents. The correlated results showed the following ratios: using a mobile 'phone was approximately four times as hazardous as not using it. Hands-free 'phone operation was six times more hazardous. I commend reading this article, it makes interesting reading.

Hands-free mobile radio operation is not dissimilar to mobile 'phone operation. The amount of brain-processing power required to operate is probably the same in both instances. My own thoughts are that mobile radio operation is best done by the passenger and not by the driver!

**Paul Bradfield, G1GSN**

## Still Going Strong

I am writing this as a tribute to Dick Leeves, G2LV, who is 97 years young. In June I attended Crystal Palace & District Radio Club to give a talk on PicATUne, to find that Dick had travelled that day from South Molton in Devon, by bus, just to hear the talk. He said he was determined to build the PicATUne and wanted as much information as he could get his hands on. He went away afterwards with a tape recording, clear in the knowledge that he was going to see this project through.

I take my hat off to this man, who is still full of dedication and enthusiasm for the hobby. He has been licensed for over 80 years and has seen it all.

Perhaps we could reflect on this and take a leaf out of his book, we need more like him.

**Paul Berkeley, M0CJX**

## Radio vs Computer Shows

We wish to respond to the letter ('Radio, not Computer, Shows, Please', The Last Word, June 2001) and to explain to Mr Brown and other readers why radio shows throughout the UK now rely on computer dealers in ever-increasing numbers to fill the spaces available. We at Radiosport have been promoting exhibitions for over 11 years and originally adopted a policy to establish an annual show primarily for the amateur radio enthusiast and we think that we have gained a reputation in promoting well-organised and well-attended events.

In the early days we enjoyed the support of over 10 amateur radio and accessory dealers from all over the UK and computer dealers were few, but one now only has to compare the amount of radio dealers on the scene in 1990 to present day to understand the decline in their attendance.

We are fortunate in having the support of the leaders in the industry, such as Yaesu, Kenwood, Icom, W&S and Nevada, and many others. We are also supported by the leading organisations such as the RSGB, the Radiocommunications Agency and most radio publications. Our advertising is extensive, but we cannot demand support from companies that no longer exist. So the alternatives are few; either fill the space with closely-allied industries like computers, or just disappear. These days it is difficult to find enough amateur radio dealers to fill an exhibition hall as large as Alexandra Palace, but with the help of our ever-supportive radio dealers, together with rather more computer dealers, we promoted a successful event that has been acclaimed by the majority of those who attended.

**Radiosport Ltd**

. . . Pete Brown, M5AHJ, asked for rally organisers to keep radio rallies and computer fairs separate. I can heartily recommend the Rochdale and South Normanton QRP mini-conventions as being excellent examples of rallies for the *radio* enthusiast. I've visited both of these and must praise them highly for their friendly, radio-enthusiastic atmosphere.

Personally, I don't mind the inclusion [of computer dealers] too much; I went to this year's Elvaston Castle rally specifically to get some RAM and a hard drive for my elderly PC and found both, at good prices, within 10 minutes of entering the rally.

**Ian Brothwell, G4EAN / 9H3YI**

## Tempus Fugit

The insurance advertisement on page 20 of the May 2001 *RadCom* provides a vivid comparison of old and new. I suspect that many members do, or soon will, recognise the Kenwood TS-2000 on the left. I wonder how many also recognise the CO-PA 25 watt transmitter for 1.7 - 3.5Mc (*sic*), using two beam tetrodes and described in detail in the second edition of the *RSGB Amateur Radio Handbook*, twelfth printing of February 1946? Incidentally the latter was priced at four shillings (20p) and not a transistor or IC in sight!

73 from sunny Weggis, Switzerland.

**Richard May, G3KTF / HB9DNH**

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**CRICCIETH, NORTH WALES.** Bed and Breakfast. Seaview all rooms. Pennyfarthing 01766-522744, e-mail: pennyfarthing@psilink.co.uk

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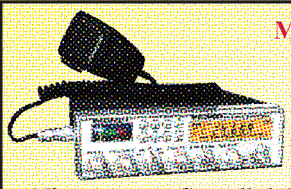

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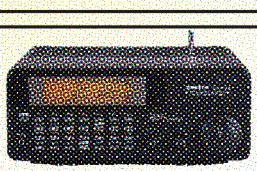

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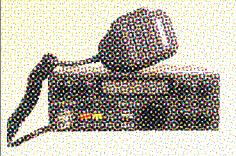

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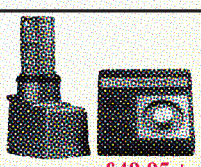

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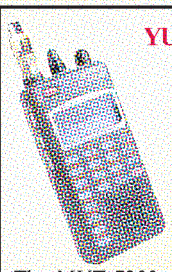

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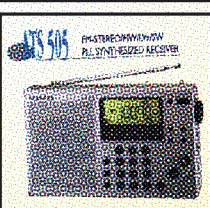

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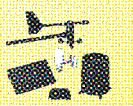

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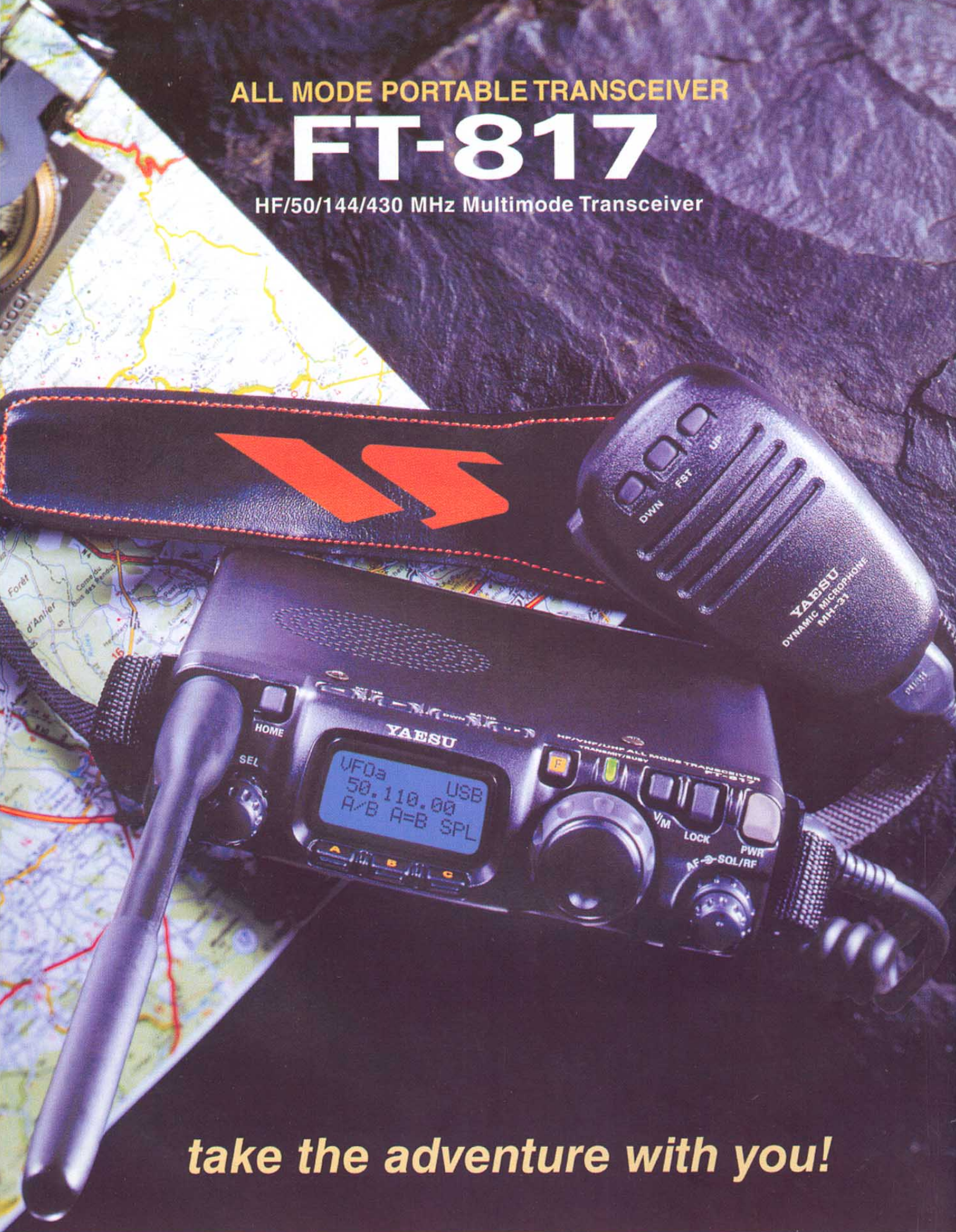


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