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RadCom

The Radio Society of Great Britain Members' Magazine

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PORTABLE MULTI-BAND INVERTED-V

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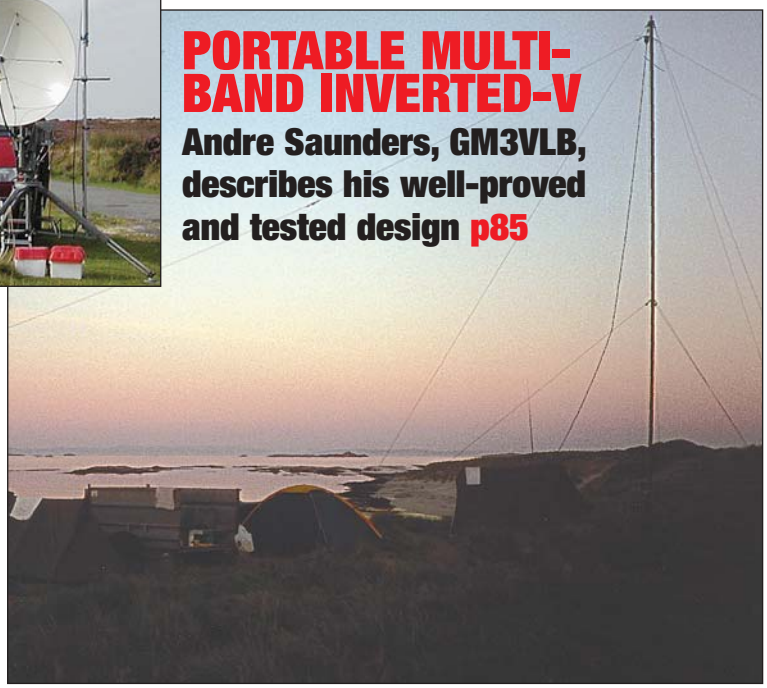

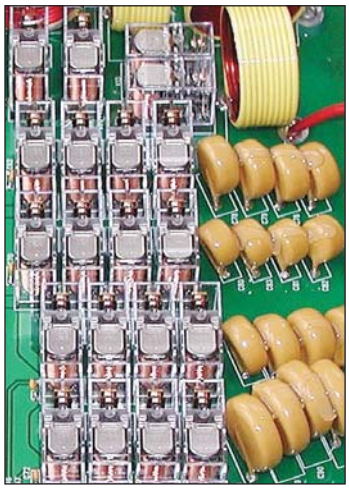

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One of our strengths at Waters & Stanton is in the fact our staff have many years experience - over 330 years altogether! - not only in amateur radio, but also in general communications & electronics. This knowledge is shared on a daily basis with our customers providing helpful professional advice.

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Icom HF Transceivers

ICOM IC-756 PRO MkIII

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

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

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

IC-756 PRO MkII £1499 C
Last few of this model at knock-down price. If you don't want the latest model - then save £600!!

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

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

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

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

Going HF Mobile?

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

Kenwood HF Transceivers

KENWOOD TS-2000

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

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

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

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

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

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

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

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

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

Yaesu HF Transceivers

YAESU FT-1000 MKV

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

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

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

FT-897D £759 C
160m - 70cm self-contained portable. 100W and up to 20W from optional internal batts.

FT-857D £699 C
160m - 70cm mobile with up to 100W output. Lovely tuning control from remote head unit - and great price!

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

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

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

FT-817DSP £589 C

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

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

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Icom
VHF/UHF Mobile/Base

ICOM IC-E208

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

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

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

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

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

Kenwood
VHF/UHF Mobile/Base

KENWOOD TMD-700E

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

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

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

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

Yaesu
VHF/UHF Mobile/Base

YAESU FT-7800E

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

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

FT-8800E £289 C
*2m/70cmDualband FM Mobile transceiver * 50W 2m, 35W 70cm * Wideband receiver

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

Watson
On-Glass Antenna

WSM-270 £29.95 B

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

Icom
VHF/UHF Handhelds

ICOM IC-E90

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

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

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

Kenwood
VHF/UHF Handhelds

KENWOOD TH-F7E

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

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

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

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

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

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

Yaesu
VHF/UHF Handhelds

YAESU VX-7R

Totally waterproof! Wide Frequency coverage from 500kHz to 900MHz AM/FM. Dazzling 132x64 dot matrix display providing easy-to-read frequencies and information plus pictorial graphics. **£279 C**

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

VX-110 £99 C
2mhandheld transceiver with 8-key keypad NiCd & charger

VX-150 £94 C
2m handheld transceiver with 16-key keypad NiCd & charger

Alinco
VHF/UHF Handhelds

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

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

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

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

Linear Amp UK
HF Linear Amplifiers

RANGER 811H

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

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

Ameritron
HF Linear Amplifiers

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

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

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

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

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

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

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

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

SGC
HF Linear Amplifiers

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

Yaesu
HF Linear Amplifiers

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

Tokyo Hy-Power
HF Linear Amplifiers

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

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

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

NEW STOCK & OFFERS

W&S European Locator Map

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

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

YAESU FT-60E

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

The FT-60E is a new dual-band FM handheld transceiver from Yaesu. It provides versatile 2-way comms with unmatched monitoring. This is a rugged design that is happy in all weathers. And its wide receiver range makes it an ideal companion for the traveller.

MFJ-935 "Magic Circle" Loop Tuner

NEW

This is the most amazing antenna we have seen in years. For optimum results take a wire around 1/5th wave long, bend into square loop (14ft on 20m = 3.5ft square) and attach to MFJ-935. Result: Ultra low indoor noise and VK, ZL & W all on SSB! That's what we achieved in one day's operation! 20m loop works on 15m as well. Available around March. Great for QRP and portable as well. **£179.95 B**

Watson
Mobile Antenna's

ANTENNAS

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

BASES

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

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

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

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NEW STOCK & OFFERS

MANSON SDC-2010

NEW

£9.95 A

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

POCKET MORSE READER

MFJ-461
Reads CW
Just hold near receiver speaker

£84.95 B

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

SG-2020ADSP QRP 20W HF Radio

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

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

£589.95 B

Antenna Accessories

Dipole Bits

Kevlar	Strong 400lb strain line 200ft	£22.95	A
FW-PVC	50m clear PVC 2mm nt wire	£39.95	A
Flexweave	50m multi-strand 2mm wire	£29.95	A
HDCW	50m hard drawn 16g copper	£14.95	A
Insul-8	Black ribbed insulator	£0.99	A
WDC-50	SO-239 dipole centre insulator	£6.49	A
Egg-m	Medium ceramic egg insulator	£2.15	A
Egg-s	Small ceramic egg insulator	£1.75	A
WS-2580	25pcs 3" ladder line spacers	£4.99	A

Diamond 50 Ohm Balunas

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

Antenna Traps (pairs)

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

German Made High Quality Baluns

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

Remote 4:1 1.5kW Balun

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

Patch Leads

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

SGC External Auto ATU's

SGC SG-231

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

£349.95 C

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

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

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

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

Icom External Auto ATU's

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

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

Alinco External Auto ATU's

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

MFJ Internal Auto ATU's

MFJ-993

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

£249.95 C

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

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

SGC Internal Auto ATU's

MAC-200 £359.95 C
1.8 - 60MHz 200W PEP. Wire, coax and balanced feeder. Features auto antenna switching.

SG-237PCB £299.95 C
1.8 - 60MHz 100W PEP. Same as SG-237 but without housing for building into your own housing.

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

Yaesu Internal Auto ATU's

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

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

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

Icom Internal Auto ATU's

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

Kenwood Internal Auto ATU's

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

Cushcraft HF Antennas

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

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

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

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

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

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

MA5V
£239.95 C

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

Diamond HF Antennas

DIAMOND CP6

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

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

£239.95 C

Radio Works HF Antennas

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

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

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

CWS-80 £109.95 C

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

G5RV Plus £59.95 C

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

Hustler Base Antennas

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

5-BTV £199.95 C
80 - 10m 6-band vert. 7.64m tall 1kW. Can be used at ground level with earth stake. Ideal small gardens

4-BTV £169.95 C
40 - 10m 6-band vert. 6.52m tall 1kW. Can be used at ground level with earth stake. Ideal small gardens

Butternut Antennas

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

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

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

Buddipole Products

HF Portable at its Best

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

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

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

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

Super Antennas

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

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

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

High Sierra Mobile Whips

HS-1800/PRO
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The ultimate mobile whip. Electrically tuneable 80m - 6m 1kW PEP Includes switch box and 12V cable. Massive 2" coil. Made in USA. Superb!!

SIDEKICK As used by Peter Waters G3OJV/M
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Get mobile on all bands from 80m to 6m in minutes. This compact screwdriver antenna comes with cables and control box. Designed to go on our 3-way magnetic mount (£39.95 extra) it is an amazing performer and only 1.37m maximum!

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

RSGB matters

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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.

GENERAL MANAGER AND COMPANY SECRETARY:
Peter Kirby, FCMI, MISM, G0TWW

HONORARY TREASURER:
Position vacant

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P Brooks, G4NZQ
Details of the Society's volunteer officers can be found in the RSGB Yearbook 2005

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Website: www.rsgb.org
WebPlus: Members-only web site **www.rsgb.org/membersonly** Use your callsign in lower case as the user name, and your membership number (see RadCom address label) as the password.

CONSULTATIONS COME THICK AND FAST

Following on from the Spectrum Framework Review and the Annual Plan, the RSGB has learned that Ofcom plans to enter into a further consultation. The next consultation is aimed at the amateur radio community and will be entitled 'The Future of Amateur Radio Licensing'. The document is expected to be published towards the end of February and will lay out a number of proposals for consultation on the future shape of amateur radio licensing. Talks between Ofcom and the RSGB on the future direction of amateur radio in the UK continue with meetings scheduled to take place throughout February.

HISTORICAL AUTHOR / EDITOR REQUIRED

The RSGB is seeking to appoint an individual to write a history book of the RSGB and amateur radio in the UK. The Society first published a history of the Society in the book *World at their Fingertips* by John Clarricoats, G6CL, in 1967. Although this book has been reprinted twice, approaching 40 years has passed since then which is as yet unrecorded. So the Society would like to commission a history of this exciting period of amateur radio history. A record of the period exists in the pages of *RadCom* and in the RSGB archives, which will be made available to the author who is appointed to the post. The remuneration for the project is limited to royalties from the published book although some additional expenses may be provided for research and associated costs. We are interested in applications from all, but in particular from those who can demonstrate that they have time and commitment to undertake the necessary research.

Other authors / editors: the RSGB has a small number of additional books for which it is currently seeking authors and editors. If you have an interest in writing or editing an amateur radio book, the RSGB would be interested to hear from you. Professional writing experience is not required but a thorough understanding of amateur radio is.

RSGB books are currently produced totally electronically so all applicants will need to have access to e-mail and be prepared to supply the manuscript in a Microsoft Word document or similar. If you would like to apply for any of these posts please e-mail (only) the RSGB Commercial Manager at mark.allgar@rsgb.org.uk with a short (one A4 page maximum) description of your amateur radio interests and experience along with any relevant writing experience you may have.

A TOWERING PRESENCE

The RSGB will be present at the Northern Amateur Radio Societies Association (NARSA) rally (www.g1gyc.demon.co.uk/narsa) at the Norbreck Hotel in Blackpool on 20 March. RSGB President Jeff Smith, MI0AEX; General Manager Peter Kirby, G0TWW, and Region 3 (North West England) Manager, Kath Wilson, M1CNY, along with Deputy Regional Managers, will be present at the show, ready to 'meet and greet' as many members as possible. There is also an RSGB 'open forum' in the RSGB Room at 2.00pm.

SCIENCE WEEK

national science week
11 - 20 march 2005

The BA's Science Week takes place between 11 and 20 March. This is a great opportunity to put on special event stations to showcase amateur radio to the general public. At the time of going to press, we had been informed of around 20 groups or individuals doing just this at Scouts and Guides headquarters, libraries and schools in Northampton, Bournemouth, Upper Stratton nr Swindon, West Auckland Co Durham, Gateshead, Newton Stewart Wigtownshire, Beaconsfield, Exeter, Manchester, Derby, Sheffield, Livingston West Lothian, Ryde IoW, Worthing, Macclesfield, Burton upon Trent, Dover, York and Wrexham. Further information at www.rsgb.org/scienceweek

NEW JOHN DUNNINGTON TROPHY

Limited to 100 watts and single element antennas like dipoles, loops or verticals? No chance to win anything in a contest? Why not enter this year's RSGB Commonwealth Contest and try for the new John Dunnington Trophy? It's a trophy for stations set up just like yours, so you're only competing against other UK stations using 100 watts and single element antennas. The Commonwealth Contest is on 12/13 March, starting at 1000UTC Saturday for 24 hours, 80 - 10m, CW. The full rules are on the RSGB HF Contests Committee website at www.rsgbhfcc.org Thanks go to John, G3LZQ, for donating this trophy.

QSL BUREAU NEWS

Several RSGB QSL Bureau Sub-Managers have reported that they are holding cards for individuals who have not supplied them with envelopes. Everyone who wishes to collect QSL cards from the QSL Bureau should ensure that they lodge self-addressed stamped envelopes with their Sub-Manager. In particular, Chris Langdon, G0VNH, the sub-manager for the G0MAA - G0MZZ series of callsigns, says that now he has hardly any envelopes for his callsign holders, and Eddie Murphy, G0VVT, the sub-manager for the G6AAA - G6ZZZ callsigns, now has an estimated 6000 -7000 unclaimed cards. On 20 March, Eddie will be at the Norbreck Rally in Blackpool with the unclaimed cards and he asks for amateurs with G6 three-letter calls who wish to collect their cards either to drop by and pick them up, or to send him some SASEs.

For a reminder of how to send to, and receive cards from, the RSGB QSL Bureau, please see page 17 of the current *RSGB Yearbook*. The results of last year's survey of RSGB members' opinion on the working of the QSL Bureau are published in this issue of *RadCom* - see pages 20 / 21.

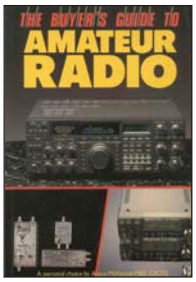
NEW ADVANCED EXAM SYLLABUS PUBLISHED

Ofcom has published the new Advanced Radio Communications Examination syllabus for exams to be taken after 1 March 2005 on its website (at www.ofcom.org.uk/licensing_numbering/radio-comms/licensing/classes/amateur/technical/syllabus.pdf). The new syllabus reflects the reduction in the number of questions from 68 to 62 to shift the emphasis more back towards operating practices than theory, and also includes a formula sheet which candidates may take into the examination with them. The changes were outlined in the article 'Too advanced?' by Steve Hartley, G0FUW, in the January 2005 *RadCom*.

FORMER COUNCIL MEMBER G3OSS SK

Angus McKenzie, MBE, FAES, FIEE, MBAA, G3OSS, died on 14 January. He was 71. Angus studied electronic engineering and acoustics, but failing sight forced him to leave his course before completion. He went blind in 1959. He ran a recording studio and later became an audio and radio consultant. Angus was awarded the MBE in 1979 for his work in the audio field and his charity work for the blind.

G3OSS was issued in 1960 and Angus was active on all bands from HF to 2.3GHz. In 1970 he transmitted stereo on 144MHz and colour TV with 16-bit digital PCM stereo in 1983. In 1984 he was one of the first UK 50MHz permit-holders. Angus wrote many articles on hi-fi, classical music and amateur radio, and authored *The Buyer's Guide to Amateur Radio* for the RSGB in 1986. He became a member of the RSGB Council in 1986.



Angus McKenzie's 1986 RSGB book.

RADCOM 'ANTENNA SPECIAL'

Readers will notice that this issue of *RadCom* is something of an 'antenna special'. All radio amateurs and SWLs need to use an antenna of some sort and antenna experimentation is an area of amateur radio in which almost all amateurs take part in one way or another. We are therefore pleased to bring reviews of several HF and VHF antennas, of both traditional and innovative design, and for those lucky enough to have enough space for an HF or VHF beam as well as those forced by circumstances to operate portable. There are also articles on home-made HF and VHF antennas, as well as all the regular operating and technical features. This is the third in our occasional series of 'specials', the first being computers in amateur radio in April 2004 and the second a DXpedition special in July 2004.

CONGRATULATIONS!

Congratulations go to the following RSGB members who successfully upgraded to the Full licence by taking the Advanced exam on 13 December 2004:

David Allen, 2E0AXS; Jeremy Barley, 2E0AWH; Anthony Froom, 2E0HAM; Vincent Frostick, 2E0VJF; James Grass, 2E0PZY; Cyril Hale, 2E0ORR; James Hill, 2E0ZZY; Andy Hubbard, 2W0FAT; David Hulin, 2M0XPG; Frank Jackson, 2E0JSZ; Richard Lacy, 2W0XMI; John Lewis, 2E0BIA; Clive Lewis, 2E0CGL; Anthony Roberts, 2E0GNP; Eric Taylor, 2E0EGT; Mark Vaughan, M3VAU; Patrick Xavier, 2E0XAP.

Congratulations also to the following members who successfully upgraded to the Intermediate licence by taking the exam on 25 January:

Henry Burnett, M3HDB; Eric Foster, M3HCA; Dale Haigh, M3OMD; Jack Hutson; Alexandra Matthews, M3WOM; Sophy White, M3TTM.

NEW REGIONAL MANAGER IN SOUTH WALES

Gareth Price, GW3MPP, has taken over from Ray Ricketts, GW7AGG, as Regional Manager for Region 7, South Wales. Ray is thanked for his service as Regional Manager over several years. Gareth's position was ratified by the RSGB Board at its meeting in January.

STARS ON THE ROAD TO DAMASCUS

The popular *RadCom* 'PIC-a-STAR' project by Peter Rhodes, G3XJP, has found international acceptance. The final year electrical engineering students in the Faculty of Electrical Engineering at Damascus University are building PIC-a-STARs for their graduation projects. Mentored by Omar, YK1AO, it would be difficult to conceive a more direct link between amateur radio and education. Besides the blend of theory and hands-on practice, each student has all the mutual support associated with a club project as well as the personal goal of a licence and an HF transceiver to use with it.

So listen out for Sumou, YK1BD; Sanabel, YK1BE; Muhammad, YK1BF; Yousuf, YK1BG; Farah, YK1BI; Ranya, YK1BJ; Ammar, YK1BK - and not least YK1AO himself, who is Dr Omar Shabsigh, Professor of Telecommunications at Damascus University and also President of the Syria Amateur Radio Society, TIR. Because he is also building a STAR for his own use.

WANTED

RSGB DEPUTY REGIONAL MANAGERS

District 71 (Pembrokeshire)
District 76 (Monmouthshire with Newport)

Region 7 has two vacancies for Deputy Regional Managers (DRM). Members living within these areas who would like develop the all important link between the Society and the members relating to new initiatives happening in amateur radio please contact the Regional Manager for South Wales (Region 7), Gareth Price, GW3MPP
Tel: 01633 880 081 E-mail gcpricegw3mpp@btinternet.com

District 122 (Norfolk & Suffolk)
District 123 (Essex)
District 124 (Kent)

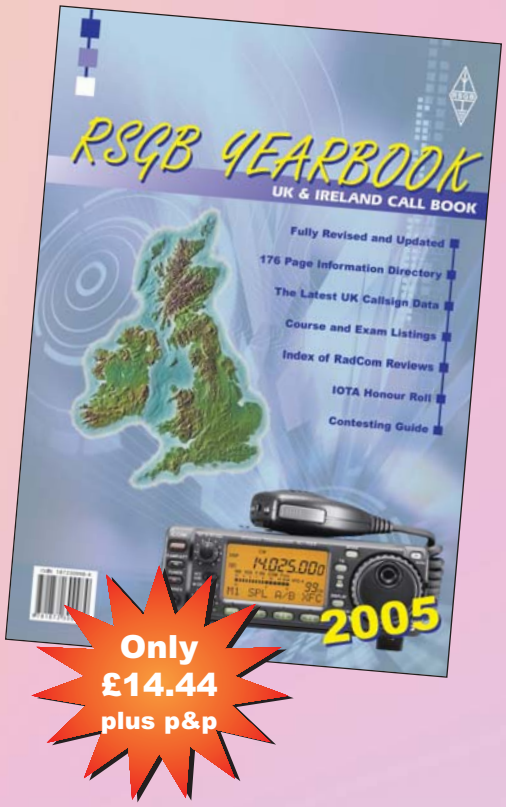
Region 12 requires three volunteers to become part of the local RSGB Management Team to cover the above Districts. If you would like to be considered for one of these important posts within the regional structure and make a worthwhile contribution to promoting amateur radio by coordinating lively activity across the East and East Anglia, then the Regional Manager is waiting to hear from you. You will be fully supported by the Regional Manager and the Regional Team at Headquarters in providing the resources, training and information necessary to confidently and successfully undertake this satisfying and enjoyable role. For more information contact the Regional Manager, Phillip Brooks, G4NZQ
Tel: 01603 250 639 E-mail: g4nzq@rsgb.org.uk

RSGB Yearbook 2005
UK & Ireland Call Book

Edited by Steve White, G3ZVW

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

Bigger than ever the 2005 RSGB Yearbook has had every page reviewed and updated from the 2004 edition. The contents reflect the current state of the hobby, with pages devoted to contesting, awards, satellites and propagation. New for this edition are the 'Contesting Guide', your complete guide to RSGB contests from HF to microwave. You will also find features on Top Band Direction Finding and Mills Weekend. The section devoted to licensing now contains a huge list of all the Foundation, Intermediate and Advanced amateur radio courses available, plus a list of Examination Centres. IOTA receives extensive coverage, with a feature on IOTA's 40th Anniversary, information on the awards scheme, the Honour Roll and Annual Listing. Additionally there is the callsign listing for the Irish Republic, for short wave listeners and short contest callsigns, plus surname and postcode listings. As you would expect there is also much, much more included.
All-in-all it adds up to a reference book that no radio amateur should be without. Everything you need at your fingertips, with 476 A4 pages this book is excellent value.
£16.99 plus p&p Non Members price



RadCom 2004 CD-ROM

The RSGB has produced an in easy to use format, single year archives of the RSGB's monthly 100-page magazine RadCom (short for Radio Communication). Over a thousand pages of amateur radio information are crammed into each compact disk. These pages are easily accessed by using Adobe's Acrobat software, it is possible for anyone with a suitable PC, Mac or Unix-based computer to see the magazine pages exactly as they appear on the printed page (a Windows version is supplied on each CD). With each CD, you can:

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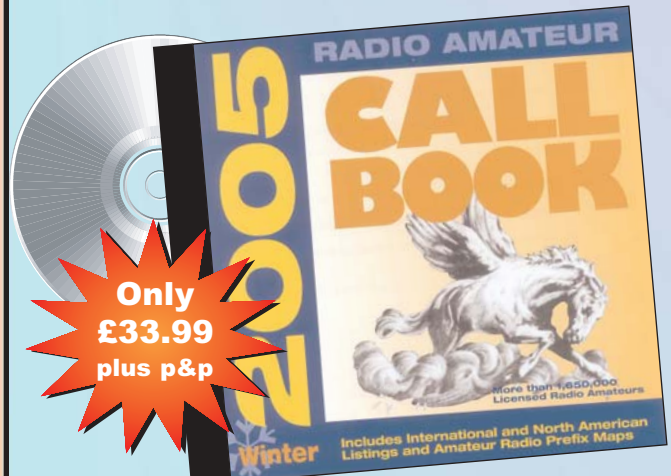

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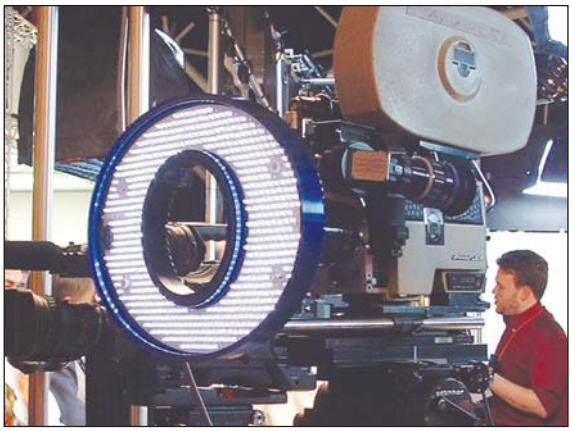
p44 – SAQ radio station.



p68 – ATV: a large LED light.

Space cadets?

Amateur radio puts Air Cadets in contact with space

On 2 February, ATC cadets at Stalham in Norfolk made contact with American astronaut Leroy Chiao, operating as NA1SS, from the International Space Station. The contact was set up by Terry Owen, G4PSH, the Radio Officer of 1132 Stalham Squadron, using the callsign GB2ATC and back-up was provided by the RSGB's GB4FUN demonstration vehicle with help from AMSAT-UK's Howard Long, G6LVB.

At 1252UTC the Space Station came over the horizon, and within a couple of minutes Leroy's voice was heard on 145.800MHz FM: "GB2ATC, this is NA1SS, reading you loud and clear." The ATC cadets then took it in turns to ask their questions over the next 10 minutes. Asked whether the tsunami was visible from space, Leroy answered that it wasn't until the following day that they saw the damage wreaked by the tidal waves. "We were able to get striking photographs of the damage," he said. The ATC cadets also learned about the astronaut's favourite television programmes, which apparently include *Spooks* and *The Office!*

The amateur radio contact was covered by the *Eastern Daily Press*, and the BBC TV news programme *Look East*, which carried an interview with GB4FUN Project Coordinator, Carlos Eavis, G0AKI, providing some more good publicity for amateur radio.

PHOTO: HOWARD LONG, G6LVB

Two of the 1132 Stalham Squadron ATC cadets with Terry Owen, G4PSH, operating GB2ATC.

Global Amateur Radio Emergency Comms conference set for Finland

The IARU has announced that the first Global Amateur Radio Emergency Communications conference (GAREC), will take place in Tampere, Finland, on 13 and 14 June 2005 (www.iaru.org/emergency/garec.html). In recent years, the importance of providing assistance in emergency situations by the Amateur Radio Service has increased and it has become a major argument in the defence of the amateur bands and the protection of this valuable resource against potential interference by new technologies.

In some countries, amateurs' emergency role is well established, but in many other amateurs can perform this important public service only in an improvised manner if and when a disaster occurs. This seriously affects the efficiency of what amateurs can contribute, and it is therefore essential to review existing mechanisms and allow all national societies to benefit from existing experiences. The purpose of GAREC-2005 is to allow such an exchange. Dr Pekka Tarjanne, the former Secretary-General of the ITU, has kindly accepted the patronage of GAREC-2005.

The organisers and the Finnish amateur radio society SRAL are inviting all interested parties to attend the conference. Details of the agenda will be published as they develop. The organisers would welcome presentations on the situation and experiences in different countries. For further information please contact the Chairman of the Finnish GAREC-2005 Organising Committee, Seppo Sisatto, OH1VR, Ojakatu 3 A 18, FI-33100 Tampere, Finland; e-mail: seppo.sisatto@uta.fi

Andorran society celebrates silver anniversary

URA, the Andorran national amateur radio society, celebrates its 25th anniversary during March. Two special prefixes, C38 and C39, will be used during the month and special event station C37URA will be on the air. A certificate is available for making at least five contacts on at least three bands; C37URA counts as a 'wildcard' for credit for one of the three bands. To apply, send a list of contacts with 5 IRCs, 5 or $5 by 30 September to PO Box 1.150. AD553 Andorra la Vella, Andorra. QSL requests may be sent with the application and the confirming cards will be sent with the certificates.

PLT in *New Scientist*

An article in the 15 January issue of *New Scientist* magazine entitled 'Internet noise threatens emergency radio' points out that in emergency situations such as the recent tsunami disaster in Asia, amateur radio can still provide vital communications when landlines, mobile phones and the Internet are all out of commission. The article, by Barry Fox, went on to say that interference from PLT, if implemented, could spell the end for HF emergency communications. Former RSGB President Hilary Claytonsmith, G4JKS, was quoted as saying "A few extra decibels of interference from future networks and I would not have been able to hear the news from amateurs in Sri Lanka, India and the Andaman Islands."

UK aid to tsunami

Two British radio amateurs flew to Sri Lanka on 10 January in a bid to help in the aftermath of the tsunami disaster. Travelling at their own expense, Malcolm Harwood, M0XAT, and John Baker, G0MTQ, carried amateur radio equipment to assist with the tsunami relief effort, as well as urgently-needed medical supplies.

Members of Malcolm's local radio club, the Workington Amateur Radio and IT Club in Cumbria, supported the effort in a big way. Club members and well-wishers from the Isle of Man and Ireland donated VHF and HF transceivers and other equipment.

On 15 January, Steve Richards, G4HPE, contacted Victor Goonetillike, 4S7VK, President of the Radio Society of Sri Lanka (RSSL), and Asantha, 4S7AK, via the 'USA' *Echolink* conference. Victor said that he had met Malcolm and John, who had been taken by members of the RSSL to the east coast to distribute medical aid. Victor specifically asked for his thanks to be passed on to UK amateurs for the support he has received from them.

Back home, John's and Malcolm's efforts were reported in the Cumbrian newspapers and showed yet again the importance of amateur radio at times of natural disaster.

Nevada wins business excellence award

Nevada has been presented with the prestigious 'Business of the Year' award at the New Business Excellence ceremony in the Guildhall, Portsmouth. Nevada won the award in recognition of outstanding performance, excellent service and the achievement of a strong and growing market share in DAB digital radio. In 2002 Nevada saw an opportunity to distribute the first DAB digital radios. They established over 500 independent dealers and opened accounts with high street retailers such as John Lewis and Dixons. Nevada Managing Director, Mike Devereux, G3SED, said, "We are thrilled to win this award against tough competition. It's real recognition for the enthusiasm and talent of the Nevada team."

Derek Beaves from sponsors George Gales & Co presents Mike Devereux, G3SED (right) with the Business of the Year award.

SOTA Beams Challenge

The winners of the 2004 SOTA Beams Challenge have just been announced. The challenge is for 'Summits on the Air' activators under 18, the winner being the activator who makes contacts from the most summits. The 2004 winner was 14-year old Bobbie Brown, M3DNC, who activated 24 summits, and amazingly she only started in August!

The runner-up was James, M3OZE, with 20 activations. The SOTA Beams Challenge will run again in 2005. Summits on the Air is a popular award scheme that encourages portable operating from hilltops across the UK. It started in 2002 and already has over 600 participants.

Left: Bobbie Brown, M3DNC, winner of the 2004 SOTA Beams Challenge.

A cross-stitch in time...

After passing the Foundation examination and joining the RSGB last April, Irvine, M3TFR, and his son Henry, M3SIB, started studying for the Intermediate exam. Irvine's wife Lynn, who is a keen cross-stitcher, thought they might appreciate a little help with their revision and began work on a

panel shown here. The finished item is approximately two feet square. Irvine and Henry are studying for the Intermediate exam at the South Normanton and District ARC, where the cross-stitch panel was much admired by members.

World's smallest satellite station?

Pedro, EB4DKA, recently demonstrated how small an amateur satellite station can be when he had a QSO with ON5NY via Oscar 50. Pedro used an ordinary Alinco DJ-C5 credit-card size handheld with the DJ-C5's own antenna. He was running just 300mW of FM and the complete station weighed only 85g! The uplink for Oscar 50 is 145.850MHz (CTCSS 67Hz) and the downlink is on 436.795MHz (±10kHz Doppler shift). At AMSAT-UK's Space Colloquium from Friday 29 to Sunday 31 July at the University of Surrey, Guildford, there will be special sessions for beginners to satellite operation.

Pedro, EB4DKA, working through Oscar 50 using an Alinco DJ-C5 handheld.

RSGB members Vic, G4DUM, and Roy, G4UNL, who are resident in the Philippines, recently attended the Philippine Amateur Radio Association convention in Cebu. Left to right: Vic, G4DUM/DU7; Vic's wife Jeanne; Roy, G4UNL/DU9; Marie, G4WWZ/DU9; wife of WB9HQD; Richard, WB9HQD/DU7.

NEWS BRIEFS

- Isidoro Ruiz-Ramos, EA4DO, has been awarded a Doctorate by the Universidad Complutense in Madrid for his thesis *100 years of amateur radio* in Spain. The thesis was based on 15 years of research and interviews with amateur radio pioneers. He is grateful to the many amateurs, including those in the UK, who have helped him with this project.
- The Elvaston Castle National Radio Rally has a new website at www.elvastonrally.co.uk It will be continually updated and include a downloadable rally programme, which will be available during the week prior to the event. The site includes a booking enquiry page to enable prospective traders to request booking forms on-line.
- A giant antenna loading coil used on the Rugby 16kHz transmitter has been donated to the Wroughton Science Museum (www.sciencemuseum.org.uk/wroughton/) near Swindon. The copper coil, 11m high and 8m long, was donated by BT which ran the Rugby station. It is due to go on display at Wroughton in the spring.
- JARL, the Japan Amateur Radio League, is organising the 6th IARU Region 3 ARDF championships. They will be held at Gozu Spa, Agano City in Niigata prefecture between 19 and 24 September. Full details are available at www.jarl.or.jp/2005r3ardf Please note that the closing date for letters of intent for participants is 1 March.
- With the assistance of members of the St Dunstan's net Don Ward, G0MDO, has written a computer logging program for the visually impaired. It is based on the Windows version of Don's *Easilog* program. It is available free from G0MDO QTHR or by e-mailing: don@glenfieldho.freeserve.co.uk
- The Dayton Hamvention is to remain at the Hara Arena in Dayton, Ohio, until at least 2007. Over the years there have been persistent rumours that it would leave Dayton. The 2005 Hamvention is scheduled for 20 to 22 May.
- The voice of standard time and frequency station WWV, Ft Collins, Colorado, has passed away. American newsreader Marty Edwards, who doubled as the voice of WWV, died on 10 December.

Club and regional news

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.

1 Scotland South & Western Isles

COCKENZIE & PORT SETON ARC
18, 'Natural Radio Transmitters', David, GM4WLL. Bob, GM4UYZ, 01875 811723.
LOTHIANS RS
14, Caledonian Brewery visit.
28, Junk sale, raffle. Toby, MM0TSS, 07739 742367, tobysigouin@onetel.net.uk
PAISLEY (YMCA) ARC
2, RSGB Regional Manager Gordon Hunter, GM3ULP.
16, 'What is PLT and why is it likely to cause problems?'.
30, 'Can you repair a modern rig yourself?' Jim, GM3UWX.
WIGTOWNSHIRE ARC
17, Propagation, pt 2. Ellis GM0HPK 01776 820413.

2 Scotland North & Northern Isles

ABERDEEN ARS
3, Junk sale.
10, Tesla coil talk & demo, Martin, GM8AGM.
17, 'Setting up an event station', Graham, GM4OBD.
31, On air, Morse class. Robert, 2M1HRS, 01224 896142.

3 North West

CHESTER & DARS
1, Inter-club quiz. Chris, MW3TWI, 01244 683629 or Bruce, 01244 343825.
STOCKPORT RS
1, 'Chasing the birds' introduction to satellite working, Sean, M3FVH.
15, Digital photography, David, M1ANT & Christine, M1SIM. David, M1ANT, 0161 456 7832.
THORNTON CLEVELEYS ARS
7, Discussion on club stand for NARSA.
14, Final preparations for NARSA.
21, On air. 28, No meeting. Jack, G4BFH, jack.duddington@btinternet.com
WIRRAL & DARC
2, D&W at the *Hoylake Lights*, Hoylake.
9, HF radar, John Howarth.
16, D&W at the *Bridge Inn*, Port Sunlight.
23, DXCluster, G3UVR. 30, D&W at the *Egremont Ferry*, Wallasey. Tom, G4BKF, 07050 291850.

4 North East

GREAT LUMLEY AR & ES
2, 9, On air.
16, Talk TBA.
20, Coach to Norbreck Rally, Blackpool.
23, 30, On air. Nancy, 0191 477 0036, 07990 760920, nancybone2001 @yahoo.co.uk
HALIFAX & DARS
15, Railways communications, John, G0BXO. Tom, M0TKA, 01484 715079.
KEIGHLEY ARS
10, On air.
17, Quiz with Halifax ARS. 24, On air.
31, HF digital demo, Bill, G0ESA & Josh, M0DIT. Kath, G0OSA, 01535 656155.
SHEFFIELD ARC
7, Operating evening.
14, Science Week.
16, Advanced exam.
21, Video.
28, No meeting. Nick, G4FAL, 0114 255 5500 (office hours), g4fal@riverauto.co.uk

5 West Midlands

GLOUCESTER AR & ES
7, Story of the National Company Inc.
14, On air HF, workshop.
21, HRO demonstration. 28, /P from escarpment site. Tony, 01452 618930 (daytime).
MID-WARWICKSHIRE ARS
8, AGM.
22, 'Architectural Model Building', Peter Lee. Bernard, M1AUK, 01926 420913.
ST LEONARDS ARS
3, Chat and shack.
10, 80m 'homebrew' transmitter, Alan, M1LIP (TBC).
17, AGM.
24, Shack night.
31, Fish & chip supper. Derek, G0EYX, 01785 604904; g0eyx.derek@ntlworld.com
STRATFORD UPON AVON DRS
14, Test equipment evening, John, G0JUQ.
28, BH. Terry, G3MXH, 01789 294387.
TELFORD & DARS
2, Open evening, HF on air.
9, Major construction competition.
16, Operating portable 2005.
23, Workshop practices (postponed from Dec).
30, AGM. Mike, G3JKX, 01952 299677, mjstreetg3jkx@aol.com

6 North Wales

WREXHAM & DARS
19, Wrexham Science Festival's 'Scientriffic' event (see www.qsl.net/gb2wsf) Mark, MW1MDH, markmdh@btopenworld.com

7 South Wales

No club details received.

8 Northern Ireland

BANGOR & DARS
2, First Aid, Eddie, MI0ALS. Mike, GI4XSF, 028 4277 2383.

9 London & Thames Valley

COULSDON ATS
14, Echolink. Steve, G7SYO, 01737 354271.
CRAY VALLEY RS
17, Rodrigues 3B9C DXpedition, Nigel, G4KIU, (TBC).
21, AGM. Richard, G7GLW, 07831 715797, rcains@btinternet.com
CRYSTAL PALACE R & EC
4, The G3FZL Memorial Lecture: 'My Adventures on Topband', Martin, G4FKK. 5, Spring sale. Bob, G3OOU, 01737 552170 or Victor, G1PKS, 020 8653 2946.
HODDESDON RC
1, SSTV with your computer, John, G4VMR. 15, Video, Adrian, M0ABY.
29, Discussion on digital modes. Don, G3JNJ, 020 8292 3678.
NEWBURY & DARS
23, Interference. Kevin, G6FOP, 01635 826397, g5xv@ntlworld.com
READING & DARC
10, Annual junk sale.
24, Alignment evening. Pete, G8FRC, 01189 695697.
SHEFFORD & DARS
3, AGM.
10, Antennas for contests, Fred, G4BWP.
17, CW radar, Ralf Stamper.
20, Club dinner.
24, Working DX, Ken, G4YRF.
31, Junk sale. David, G8UOD, 01234 742757.
SILVERTHORN RC
4, Informal evening.
11, Surplus equipment auction.
18, On air, in Portakabin.
25, No meeting. Les, G0CIB, 07980 275081.
SURREY RADIO CONTACT CLUB
7, Surplus sale. Ray, G4FFY, 020 8644 7589.
SUTTON & CHEAM RS
17, 'Pings, bursts & suchlike', Nick, G7DND. John, G0BWV, 020 8644 9945, info@scrs.org.uk
WIMBLEDON & DARS
18, PicATUne construction, on air.
25, No meeting. Jim, M0CON, 020 8874 7456.

10 South & South East

ANDOVER RAC
1, Show and tell: bring favourite QSL cards.
15, Applying meters to applications, G8ALR. Terry, G8ALR, 01980 629346.
BASINGSTOKE ARC
11, Science Week.
13, Scout Radio 'O' Fleet.
20, 'Foxhunt' RCD + RCD. Frank, M0AEU, barc@2lo.info
CRAWLEY ARC
23, Travels in Afghanistan, Mike, G0KAD. John, G3VLH, 01342 714402.
FARNBOROUGH & DRS
9, Magnetic loops, John, G3KND. Alan, M5AMN, 01252 682447.
HARWELL ARS
8, Beagle 2, Sarah Deakin. Angus, G0UGO, 01235 522858.
HASTINGS E & RC
16, 'Filters', by bhi. Gordon, 01424 431909, gordon@gsweet.fsnet.co.uk, www.g4cus.freeserve.co.uk
HORNDEAN & DARC
22, 'The Basingstoke Canal', Tony Harmsworth. Stuart, G0FYX, 023 9247 2846.
HORSHAM ARC
3, Junk sale. David, G4JHI, 01403 252202.
MID-SUSSEX ARS
4, Round table or in-house contests.
11, Construction evening.
18, Radio night.
25, No meeting. Alan, G8YKV, 01273 844511.
SOUTHDOWN ARS
7, Rodrigues Island 3B9C DXpedition, Nigel, G4KIU. John, G3DQY, 01424 424319, vaughdqy@aol.com
SWINDON & DARC
3, RSGB Today film.
10, 'Digital Photography Techniques', Den, M0ACM. Mike, M5CBS, 01793 826465.
TROWBRIDGE & DARC
2, 'Resilience & Amateur Radio Emergency Communications', Tracey Quinn, M1ZZY, GOSW Resilience Team. Ian, G0GRI, 01225 864 698 evenings/weekends.
WORTHING & DARC
2, Electricity to your home, John Narborough.
9, Radio communications and analysis at Arnhem, G4BLJ.
16, Pt 2 of the Burma story, G4MRH.
23, Setting up your station.
30, Ambulance A10. Roy, G4GPX, 01903 753893.

11 South West & Channel Islands

APPLEDORE & DARC
3, AGM. Brian, M0BRB, brian.jewell@ic24.net
FLIGHT REFUELLING ARS
13, Informal.
20, Amateur radio software demo. Tony, G3PFM, 01202 622262.

NORTH BRISTOL ARC
11, Building and operating the Elecraft K2, Jan, G0BBL.
25, No meeting. Dick, G0XAY, 01454 218362, Jon, 0117 941 4602.
PLYMOUTH RC
1, TBA. Frank, G7LUL, frank@foxonezero.fsnet.co.uk
POLDHU ARC
8, Inter-club quiz. Keith, G0WYS, 01326 574441.
POOLE RADIO SOCIETY
11, 10-minute talks by members. Phil, G0KKL, 01202 700903.
SOUTH BRISTOL ARC
2, Computer & software clinic.
9, 'Using Multimeters'.
16, Book night: buy, sell, exchange.
23, Quiz.
30, On air. Len, G4RZY, 01275 834282.
SOUTH DORSET RS
8, Historic wireless. Carol, 2E1RBH, 01305 820400, carolonfraggle@tiscali.co.uk
TAUNTON & DARC
4, Weather forecasting, Dixie Dean, G4MFD. William, G3WNI, 01823 666234, g3wni@btinternet.com
THORNBURY & SOUTH GLOUCESTERSHIRE ARC
2, Deregulation discussion.
9, Video.
16, On air.
23, Concorde Communications. Stan, G0RYM, stang@talkgas.net

12 East & East Anglia

BARKING R & ES
24, RSGB Regional Manager Phillip Brooks, G4NZQ.
BRAINTREE & DARS
7, RSGB Regional Manager Phillip Brooks, G4NZQ.
21, Rig clinic. John, M5AJB, 01787 460947.
BREDHURST RATS
3, Quiz.
10, Preparation for rally and Advanced course.
13, Rainham radio rally.
17, Natter night.
19, 20, Field event BARTG Spring RTTY Contest.
24, Natter night. Pauline, 2E1HRY.
CAMBRIDGE & DARC
11, AROS, EMC.
18, Rally preparation.
25, No meeting. Ian, G4AKD, 01954 782974.
CHELMSFORD ARS
1, Talk on RSGB QSL Bureau, Marc Litchman, G0TOC.
20, Stevenage Radio & Electronics Show. Martyn, G1EFL, 01245 469008.
COLCHESTER RADIO AMATEURS
10, Future devices, Jonathan, G0DVJ.
24, Constructor's club, Morse practice, on air. James, M0ZZO, 01255 242748.
EAST KENT RS
7, Used equipment sale.
21, 'DXpedition to Cambodia', Oliver, M0TAO. Paul, G3VJF, 01227 365384, g3vjf@paulnic.com
FELIXSTOWE & DARS
21, DIY antennas, Pete, G8BLS. Paul, G4YQC, paul.whiting@bt.com
HARWICH ARIG
9, Danbury Repeater Group. Tony, G4EYE, 01255 886065.
HAVERING & DRC
2, Informal.
9, Quiz, M3KNL.
16, 2005 contest programme.
23, RSGB Regional Manager Phillip Brooks, G4NZQ.
30, Informal. Oliver, G3TPJ, 01708 746677.

13 East Midlands

DERBY & DARS
1, Junk sale.
15, Video.
22, AGM. Martin, G3SZJ, 01332 556875.
EAGLE RADIO GROUP
8, History of Louth's 70cm repeater GB0LC and its future role, Roger, G4IPE. Terry, G0SWS, 07979 733640.
LEICESTER RS & CC
7, Club paint-up.
14, Video, on air.
21, Talk, club president John, G3LMR.
28, Easter Monday social. Tom, G1IUT, 0116 286 3949, tomchristmas@ukonline.co.uk
LOUGHBOROUGH & DARC
1, On air, 2m contest.
8, 'New Zealand, a "history", Val Williams.
15, Annual (medieval) dinner.
22, Visit to Birmingham University Cyclotron.
29, Vintage wireless night. Chris, G1ETZ, 01509 504319.
MELTON MOWBRAY ARS
18, E-Enigma and Pic-a-STAR transceiver, Ron, G4ASE. Phil, G4LWB, phil@croxtonkerr.fsnet.co.uk
SOUTH NORMANTON, ALFRETON & DARC
7, Basic electronics pt 2, Russell Bradley.
14, Rally organisation.
18, 19, SNADARC rally.
21, Junk sale.
28, Easter Monday on air night. Mike, M0RMJ, 01949 876523, mike.jeffs@ntlworld.com, www.qsl.net/snadarc

REGIONAL MANAGERS OUT & ABOUT

The former RSGB Regional 12 Manager Malcolm Salmon, G3XVV, retired at the end of 2004, having given many years of outstanding service to the Society; he'll be greatly missed. Fortunately Phillip Brooks, G4NZQ, previously the Deputy Regional Manager with responsibility for Norfolk and Suffolk, agreed to take over the post. Region 12 comprises Cambridgeshire, Norfolk, Suffolk, Essex and Kent, so Phillip will be doing a lot of travelling in his new role. This month he will be accompanied by Deputy Regional Manager for Essex, Trevor Hawkins, M5AKA, in visits to the Braintree & District ARS on 7 March, the Havering Radio Club on 23 March, and the Barking Radio and Electronics Society on 24 March, in order to show the new RSGB video and answer questions from members.

Phillip Brooks, G4NZQ (left), takes over the Region 12 reins from Malcolm Salmon, G3XVV, at the Chelmsford Amateur Radio Society Christmas social evening.

Phillip can be contacted on 01603 250639, or by e-mail: phillip.brooks@btinternet.com

PHOTO BY BOB WHELAN, G3PJT

Recreation of the G2NM shack at the Amberley Working Museum Amateur Radio Club. The museum, which is on the outskirts of Amberley in West Sussex, is open from March to November and annually attracts around 60,000 visitors.

NOT *QUITE* TO PLAN!

Kev Hudson, G0TOG, secretary of the Manchester Wireless Society, G5MS (www.g5ms.com), sent in this story, which just shows that radio amateurs can make the best of a bad job! "At 6.30pm on 21 December, the night of our Christmas party, I had a phone call from the chairman, Bernard, M0GSD, to say they could not get access to the building to lay out the Christmas party hats and crackers. Also, the party goers had started to arrive earlier than expected. After chasing around Manchester to all the key holders for the building one was found to be ill in hospital, the second was out and could not be contacted, the third was on holiday in Cornwall and the last one didn't have a set of keys anyway. So as not to let anyone down we had our party in the club car park and despite being very cold we all had a great evening partying. There are a few more pictures (provided by M0SSO) on the club website."

Party in the park - car park, that is. Left, Brenda Preston, wife of club chairman Bernard, M0GSD, provided the catering.

RALPH TAYLOR, GW2HCJ

In 2003, three active RSGB members in North Wales - Ralph Taylor, GW2HCJ; Nau Ellis, GW2HFR, and Pat Allely, GW3KJW - were presented with certificates for 50 years membership of the RSGB. Sadly, Ralph died last year. The photograph shows Ralph (right) with Nau and Pat at a meeting of the Porthmadog radio club, where they received their certificates.

L to r: Nau Ellis, GW2HFR; Pat Allely, GW3KJW, and Ralph Taylor, GW2HCJ, at the Porthmadog club.

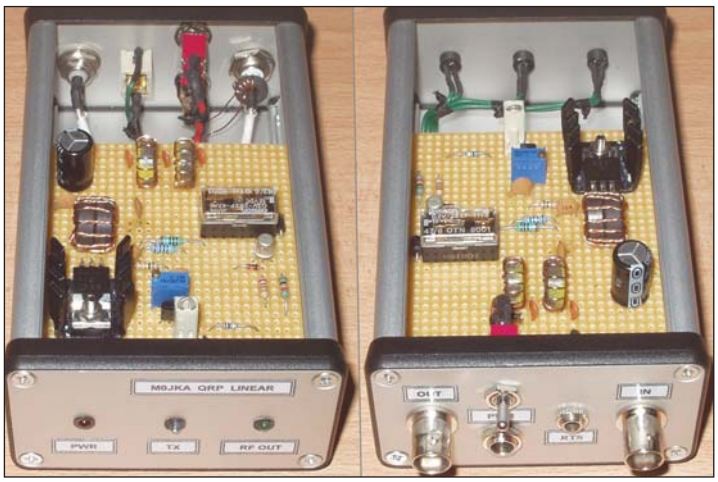
Ralph had been interested in amateur radio for almost the whole of his life and was the doyen of the Porthmadog club. He will be missed for his company and vast knowledge of things radio and electrical. His attendance at Raynet exercises will also be much missed. As well as amateur radio, Ralph had a lifetime interest in photography and was an avid reader of books on almost any subject. He was a volunteer for Talking Books for the Blind for over 50 years.

HAVERING & DRC CONSTRUCTOR'S CUP

The Havering & DRC held its 2004 Constructor's Cup competition on 15 December. The evening was well attended, but sadly there were only a few entries to the competition. Club members voted the winning entry to be a QRP linear designed and built by Chris, M0JKA. It was designed to be operated in conjunction with Chris's homebrew 14MHz 1W QRP PSK31 transceiver, taking the final power up to 5W. A single stage MRF510 MOSFET was used. The linear is well built and housed in an attractive case and hopefully will inspire future constructors at the club.

The Havering Amateur Radio Club will be offering a Foundation course over a weekend soon. Anybody who knows anyone in the Havering / Essex / East London area who might want to learn about amateur radio and take out a Foundation licence is invited to e-mail g4hrc@hotmail.com or contact the Assistant Secretary, 2E0EBV, on 07956 594514.

The M0JKA QRP linear.



RSGB AT SOUTH DORSET RS

The January meeting of the South Dorset Radio Society was an RSGB evening, with Regional Manager Barry Scarisbrick, G4ACK, accompanied by new Deputy Regional Manager Peter Clifford, M0PTR, and the retiring Deputy Regional Manager Phil Mayer, G0KKL. Barry showed the two RSGB DVDs, *What is Amateur Radio?* and *RSGB Today*, followed by a discussion.

Club secretary Carol, 2E1RBH, wished Phil a happy retirement and welcomed Peter to his new role. She pointed out that thanks to the Foundation licence scheme, the club now has licensed amateurs as young as 7 or 8 and said she would like to see more articles in *RadCom* for the younger age group. Although only a small number of young Foundation licensees are RSGB members in their own right, many are the sons and daughters of members and they do also read *RadCom*. Articles specifically written for young licensees (perhaps a small item to build, in simple, understandable language) would be welcomed by the editor: please write c/o RSGB HQ or e-mail: radcom@rsgb.org.uk

CLUB NEWS IN BRIEF

♦ After 18 years as Hon Treasurer of the Southport & DARC, Hearly Charlesworth, G4FMQ, took well-deserved retirement at the club's recent AGM and handed over the cash box to Stuart Cartlidge, G0MJG. Hearly was presented with RSGB book tokens as a small gift of thanks for his years of service to the club. Also at the AGM, Mark Haworth, G4EID, took over as the club's Hon Secretary from Don Atkins, M1BUL.

♦ The Nunsfield House Amateur Radio Group has a new look club website. It contains plenty of information about the club and its activities and includes links to other sites of interest. A lot of hard work has been done by webmaster Kevin Davison, M0BJT, to ensure that it is fully functional and the links work correctly. The site can be found at www.nharg.org.uk

♦ A new radio club has been formed in the Wigan / Leigh area of Lancashire, called the South Lancashire Radio Club. The club meets every Tuesday at 7.30pm in the Bickershaw Colliery Recreation Club, Bolton House Road, Bickershaw, Wigan WN2 4AB. Further information can be found on the website www.slrc.tk or by e-mail from info@slrc.tk

♦ The Crystal Palace Radio & Electronics Club (www.members.aol.com/rfcburns) spring radio and electronics sale takes place between 10.30am and 1.00pm on Saturday 5 March at St John's Hall, Sylvan Road, London SE19. Bookings, and further information, from Bob, tel: 01737 552170 or e-mail: rfcburns@aol.com

♦ The Sandwell Amateur Radio Club, G1SAN, in the West Midlands has a new website: www.sandwellarc.co.uk

YOUNGEST MEMBER AT SOUTH NORMANTON

Ben Didcott, M3FAQ, has become the youngest licensee at the South Normanton, Alfreton & DARC, having passed the Foundation exam at the age of eight. He is seen here with his father Carlo, 2E0FAQ, who is now studying for his Full licence. Ben took over his father's original Foundation callsign. Carlo and Ben live in Selston, Derbyshire.

Wigtownshire ARC president, Richard Hopkins, MM1BHO (left), presents Frank Claytonsmith, GM3JKS, with the Milne trophy. Frank, GM3JKS, won the Milne Trophy using the Wigtownshire ARC's contest callsign GM3W.

THE G5RV LEGACY

Louis Varney, G5RV, was elected President of the Mid Sussex Amateur Radio Society in 1969 and continued to occupy the post until his death in 2000. Over those 31 years, Louis's input was invaluable to MSARS: his technical knowledge and expertise were of a very high standard and his counsel and guidance were always measured and much appreciated by the club. Louis contributed a great deal to the world of amateur radio in general but, perhaps, his legacy is best exemplified by his invention of the ever-popular G5RV antenna which is in use in many parts of the world.

Portrait of Louis Varney, G5RV, was commissioned by the committee of the Mid Sussex Amateur Radio Society after Louis's death. It was painted in oils by the well known local Sussex artist Ken Farmer and now hangs in pride of place in the club's radio room at Cyprus Hall, Burgess Hill.

The Mid Sussex club was very pleased and gratified to receive a letter from Mrs Nelida Varney, in which she suggested that she would be very happy for the club to take on the G5RV callsign as a living memorial to Louis. The Mid Sussex Amateur Radio Society now holds this very illustrious callsign, which will be used only sparingly and on special occasions. Members of the club now look forward to making contacts around the world as G5RV.

Crystal radios: some lead for GB4FUN's fuel tank

Jim Roberts, RS183873, has, over a period of time, donated over £100 to GB4FUN and the RCF. He raised the money in a most interesting way...

Lead sulfide, or galena, is a naturally-occurring inclusion in the limestone quarried near Jim's home. We asked Jim for more information. He said, "I have always been interested in crystal radios but recently two things dawned on me. One, there appeared to be no easy method of getting hold of the galena crystals in quantity, and secondly that I was literally sitting on a pile of them. I did some lateral thinking and decided I might be able to do some good with the idea and GB4FUN came to mind. A quiet place was then found where I could lie down; so much thinking in one day had done me in!

"I went up the mountain to see a man who was very helpful and I returned with some 50kg of lead. I will not give the exact location away as the manager of the quarry did not want people trying to find it on their own, as it would be very dangerous and they would be trespassing.

"Within a short time I was sitting in our back yard with my ball and chain on in a suit with an arrow pattern, smashing up rocks. If you would like some galena please send me an empty plastic 35mm film canister with some packing in it and £2 in coins along with a stout self-addressed envelope and two first-class stamps for postage. The £2 covers the cost of the galena with the rest going towards the GB4FUN fund. This has raised a total of £114 and has proved that there is an interest in crystal radios out there.

"The lead has been mined in the area since Roman times and has a high content of silver in it. Those who have reported back and who have experience of crystals seem to have found that they performed well. Of course I cannot guarantee the quality but I try to pick out the best pieces to send. The quarry manager was very surprised to find out that his limestone quarry has such an interesting by-product and I have built his son a crystal set as a thank you.

"I am not going into the construction of the radio but I am happy to help if anyone is in difficulty. Several clubs have purchased a quantity of the crystals to use them for construction projects. By the way, leave the cat alone – make your own whiskers, now there's another art in its own right. My own receivers quite easily pick up continental stations using a long wire. A bit of filtering is required some nights as there are so many stations being received."

Thanks to Jim for this interesting account and for his continuing contributions to the fund. For those who'd like some galena, his address is: J D Roberts, The Flat, 49A High Street, Pateley Bridge, N Yorkshire HG3 5JZ. ♦

Gerald David, OBE.

GERALD DAVID, OBE, CHAIRMAN OF RCF TRUSTEES

It was with sadness that we learned that Gerald David died suddenly on 10 January. Gerald David, OBE, FREng, FIEE, was the Chairman of the Trustees of the Radio Communications Foundation (RCF). Born on 7 August 1933, Gerald David was Chairman and majority shareholder in Aerial Facilities Limited, designers and manufacturers of RF hardware including combiners, filters and low-noise amplifiers. As a young man Gerald was deeply involved with amateur radio and shared this activity with various Swansea amateurs, which is where he consolidated his love for radio frequency engineering. His career commenced at Standard Telephones and Cables and after four years at sea he returned to work at Airmec in High Wycombe, followed by Air Tech at Haddenham and then his own company. He was active in the Royal Academy of Engineering and IEE and was Chairman of the ETSI committee on Radio Site Engineering.

Supporters of the Radio Communications Foundation

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

RCF 'Big Hitters'
S Hartley, G0FUW
P C Funnell, G8AFI
S J Brown, GD4ELI
J Roberts, RS183873

M McSherry, 2E0MAX
R Issatt, 2E1BGV
G Gedeck, DL2SDK
A Cronin, EI8EM
R Cramet, F8CB
G H Flood, G0APY
D H K Moore, G0DHM
G A Gulliford, G0DVP
E C Wilson, G0ECW
J A Voss, G0FMG
C R Burrows, G0GFI
M E Birch, G0KDZ
F H Jones, G0KKY
E Caligari, G0MRM
W F Tam-Grange, G0TGT
Mrs E Daly, G0TXF
M W Dawson, G0VYC
R V Jordan, G3EHG
J A Barson, G3FJN
J Hilton, G3JMZ
R G Heslop, G3KMQ
D J Goacher, G3LLZ
Harwell ARS, G3PIA
I D Spencer, G3ULO
D A R Poulter, G3WHK
G L Childs, G3XEW
J M Sonley, G3XZV
Post Office Research ARC, G4BPO
R C Fisk, G4CPV
Mrs A M Edwards, G4GBI
S Fletcher, G4GXL
G Robinson, G4IZB
D J Plater, G4MZY
N G A Rollason, G4NRR
S L Frost, G4VNM
J M Strutt, G4XTS
M H Chace, G6DHU
N S L Shearer, G6DWS
A Lewis, G6FIT
J Wainwright, G6PBW
R J Leddington, G6SKU
D A Horder, G7HDR
G M Fisher, G7PHZ
S Furminger, G7TYH
P C Thompson, G8DDY
P J J Lyall, G8FRH
K R Chittenden, G8VAF
P A Hocking, G8ZDS
C G Bristow, GI3PSQ
J Burrell, GI7GWB
G K Olesen, GM3MQO
J Cairns, GW3ITT
T G Tonello, IV3TTG
J R Redding, KA8Q
N R Male, M0NRM
S J Neale, M0STN
J Partington, M0YOT
Dr E H N Oakley, M1BWR
P N Bristow, M1DMC
J P Haughey, M1EVN
Dr T B Littler, MI0TBL
K E Dancer, MW0CCK
M L Heron, MW1KDP
R F Tetro, N2GQL
R van den Bussche, ON6WR
J Klerck, PA0IJ
R Brys, RS172165
R Forster, RS192091
P Rodley, RS194174
A W Williams, RS93666
A G Sparks, RS94922
L E Slade, VE1LS
W C Rothwell, VE3FGW
B Ajeti, YU8AB
J Bautista, ZB2EO
A G Kennedy, ZL1BYP
F T Van Vloten, ZR5CG

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

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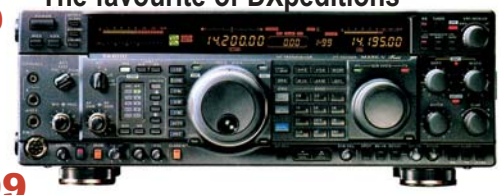

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£2099

The Ultimate Mobile!

FT-857D

With Yaesu's reputation for innovative design technology you will not be surprised that they have produced one of the hottest mobile radios ever seen. With 100W from 1.8MHz to 60MHz, 50W on 2m and 20W on 70cm, this really does represent a formidable transceiver. The large tuning dial is a delight to use and all the necessary controls are just in the right place. It's a rugged design with wideband receive (inc. AM airband). There is so much inside this little gem including DSP for noise reduction and bandwidth control, CW message memory and trainer, Easy data mode setup, compatible with ATAS-120 mobile antenna, Spectrum scope, ARTS etc. And all this is one tiny box with detachable head unit.

£699

Can run off Internal Battery

FT-897 Here is something really special that has been designed to be a radio to all men (and women!). It is great for base, portable or mobile use. 160m to 70cm with the ability to be self contained when used with the optional internal battery pack. Built into a rugged die cast case with carrying handle, this is ideal for the one-man Dxpedition or holiday use. You can enjoy 100W out on HF, 50W on 2m and 20W on 70cms. With internal battery, up to 20W output is possible. The built-in DSP filtering is similar to Yaesu's other base radios and really makes reception so much easier and better. There are all the usual features you would expect including CW keyer, VOX, CTCSS, ARTS etc. A great package!

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Nothing else Like It!

FT-817ND

If there was a ham radio award for innovation, then the FT-817 would run away with the prize. This HF to 70cms radio can provide up to 5W output and will produce 2.5W with the supplied internal Ni-MH pack. Peter Waters, G3OJV, has used this radio extensively for his Scottish portable trips and it is always on his desk in the office!! It's a great QRP package that can give a good account of itself as a low power mobile package that can easily be powered from the cigar lighter socket. But don't let the size deceive you. This radio can perform well on a large external antenna - is receiver is superb. One of the best buys in ham radio history.

£489

UK'S LOWEST PRICES

RSGB 2004 Annual General Meeting

RSGB 2004 AGM held in London, Saturday 5 December 2004

The following is a report of the 78th Annual General Meeting of the RSGB. This report is not the formal minutes of the meeting. The formal minutes will be included in the Society's Annual Report which will be published in the November 2005 edition of *RadCom*.

After an absence of four years the Society returned to central London for this year's AGM. The decision to come back to London was made following the disappointing numbers attending the 2003 AGM which was held in Telford. However, the return to London did not bring the membership out in great numbers and again, with only 68 members signing in, the attendance was disappointing.

Opening the meeting the Society President Jeff Smith, MI0AEX, welcomed everyone and outlined the Agenda for the meeting and for the day's events, which included this year for the first time the Radio Communications Foundation Grand Draw.

The first item for discussion was the confirmation of the minutes of the 77th AGM held in Telford, in December 2003. No questions were raised and the motion to accept the Board's recommendation to accept the minutes was proposed by Roy Clarke, G8AYD, and seconded by Richard Constantine, G3UGF. The motion was carried unanimously.

Item number two on the agenda was the adoption of the Society's accounts for the financial year ending 30 June 2004. The President called on the General Manager, Peter Kirby, G0TWW, to read the Auditor's report. On completion the General Manager highlighted the key areas of the accounts and invited questions from the audience.

AGM stalwart Harry Bellfield, G3SBV, asked if a member of the Society made a donation to the Radio Communications Foundation whether the Society could claim the tax back from the Inland Revenue. The General Manager advised that the Society claims back the tax on donations when members complete the 'Gift Aid' box on their subscription form. Although not part of the question, Peter Kirby went on the tell the meeting that the GB4FUN project is completely independent of RSGB funding; the programme is funded solely on donations and sponsorship. The RCF, which sponsors the programme, is extremely grateful for the generosity of the RSGB membership. Donations received run at an average of £2500 per month.

No AGM would be the same without at least one further question from G3SBV and this year was no exception. His second question was to ask how many people took advantage of the 90th anniversary 'guinea' offer. The meeting was told that 1572 people took advantage of the offer, with 555 renewing their subscription on completion of their 'guinea' year. Of this 555, 471 are full corporate members, 60 are concessionary members and 24 are family members. The Board took the view that, as the break-even figure for the offer was to retain around 280 corporate members, in attracting 471 to continue their membership it was a great success.

John Pink, G8MM, asked what was the differentiation between the RCF and the RSGB. The President in reply told the meeting that although set up by the RSGB, the RCF was a fully independent Educational Trust whose aims were to further the education of the general public in the science and practise of radio communications and electrical engineering. The RCF does this through a number of projects which are amateur radio based, including GB4FUN and the Arkwright Trust bursary scheme. The RCF receives its funding from donations and sponsorship and is financially independent of the RSGB. The RCF is managed by a number of independent trustees.

There were no further questions. The President advised the meeting that there was no formal requirement to adopt the accounts and moved on to item three on the agenda, which was the Board and Regional Council election results.

This year there had been four vacancies to the Board and six vacancies to the Regional Council. Four candidates stood for the Board and four candidates stood for the Regional Council. For the third year running no election was necessary and all candidates were elected unopposed.

The fourth item of business was to call for scrutineers for the 2005 elections should one take place. From the floor, three members volunteered: Ian Brothwell, G4EAN; Alan Betts, G0HIQ, and Harry Bellfield, G3SBV. The President thanked the members for their commitment and made a plea to the membership to consider standing for these important posts as they become vacant. He hoped that there would be an election in 2005.

The last agenda item was to vote on the resolution to re-appoint the Society's auditors KPMG LLP and to authorise the Board to fix their remuneration. The resolution was proposed by the President Jeff Smith, MI0AEX, and seconded by Mr M J Andrews, G8NRP.

PRESENTATIONS AND PRIZE DRAW

Following the AGM came the annual Board awards and trophy presentations. The two leading Board awards this year went to John Gould, G3WKL, and Roger Brown, G3LQP. John was awarded the Founders' Trophy for his outstanding contribution to the work of the Society in a number of areas [see *RadCom* February 2005, front cover] and Roger was awarded the 'Calcutta Key' for his drive, enthusiasm and leadership of 'Project Albania' [see *RadCom* March 2004 p20 - Ed.]

In a break with tradition the Board made Hans Berg, DJ6TJ, a Life Vice-President for his long and outstanding contribution to the work of the IARU Region 1 and for his guidance and support of the RSGB in IARU matters [see *RadCom* February 2005, p5 - *Ed*]. Hans is the first overseas amateur to be honoured in such a way by the RSGB.

Following the trophy ceremony came the Radio Communications Foundation Prize Draw. The General Manager told the audience that the draw had raised £9400 for the charity which was absolutely brilliant and very generous of the amateur community in the UK. The first ticket out of the barrel belonged to Mr D Palmer, G7VRP.

PRESIDENT'S ANNUAL ADDRESS

Following the draw the President gave his annual address. The President spoke of the threats to our hobby, of the mixed relationship with the new regulator Ofcom, which through a number of consultation exercises seems to be considering the deregulation of amateur radio, and of the continued threat from power line systems, though these threats are counterbalanced with a lot of positives -

the continued success of the Foundation licence, the Society's work in spectrum matters, the establishment of a Morse proficiency testing programme (this is using the code for fun, and more and more amateurs now have an interest in the code now that it is no longer a compulsory test), the Regional scheme, which brings members closer to the work of the Society, and the GB4FUN project, which in the last year has visited 66 schools right across the UK, from the Isle of Lewis in the north to Truro in the south.

The President told of the Society's determination to defend the right of our members to enjoy the hobby. (The full transcript of the President's address can be found on the 'members only' section of the Society's website www.rsgb.org/membersonly).

The afternoon session began with the launch and showing of the Society's new film *RSGB Today*. This film is designed to give an insight to members and non-members of the work of the Society in the 21st century. The film was extremely well received by the audience and the General Manager advised that it would shortly be available to clubs and affiliated organisations through the Regional Managers.

OPEN FORUM

The 'open forum' began with the Board members presenting their Portfolio reports.

Angus Annan, MM1CCR, briefed the meeting on the current position regarding PLT and spoke of the Society's recent decision to engage a PR consultant to assist and advise in the defence of the amateur radio bands from power line systems.

Spectrum Chairman Colin Thomas, G3PSM, spoke of a successful year which saw the introduction of the new 7MHz enhancement and of a successful first meeting of the Spectrum Forum. David Hicks, G6IFA, told of the renewed atmosphere of goodwill and cooperation of Raynet groups across the UK and of the signing of the Memorandum of Understanding between the Society and RAEN (the Network).

Ed Taylor, G3SQX, the outgoing Director with responsibility for Amateur Radio Development, briefed the meeting on the Radio Communications Examination scheme and the changes to the syllabus of the Advanced examination. He also announced the launch of a new international examination in 2005.

Richard Constantine, G3UGF, gave a *PowerPoint* presentation on the work that the RSGB is undertaking in the areas of Education and Training and the two Regional Directors, Liz Cabban, GW0ETU, and Kath Wilson, M1CNY, spoke of the continued success of the Regional scheme.

As the afternoon drew to a close, Harry Bellfield, G3SBV, from the floor thanked the President, Board and all those who work tirelessly on behalf of the Society and its members. He spoke of taking for granted the work and organisation of events such as the AGM and wished to give a vote of thanks. This was echoed by the audience. The President thanked G3SBV for his kind remarks. On closing he said that despite the low numbers it had been an informative and enjoyable day, and he hoped that the members present had enjoyed the day as much as he had. He ended the meeting with the words "Safe Home". ♦

RADIO SOCIETY OF GREAT BRITAIN

Unaudited Income & Expenditure Account
For the six months ended 31 December 2004

	31-Dec-04	31-Dec-04	31-Dec-03	31-Dec-03
Income				
Subscriptions	446,234		434,539	
RadCom Advertising	83,956	530,190	86,797	521,336
Books and Products for Resale		166,716		174,618
Other Services		95,019		93,843
Total Income		**791,925**		**789,797**
Contribution from Subscriptions, *RadCom*, Publication and Services				
Subscriptions net of *RadCom* Publication Costs	327,047		320,287	
Amateur Radio Costs, net of Income	(30,620)		(50,767)	
GB4FUN	(17,103)	279,324	(16,422)	253,098
Books and Products for Resale		83,619		89,088
Other Services net of expenses		1,959		2,044
Total Contribution from Activities		364,902		344,230
Less Non Activity Specific Overheads				
Commercial Costs	(61,280)		(65,014)	
Administration	(184,033)		(185,038)	
Despatch	(25,872)		(24,452)	
Personnel Costs	(7,161)		(12,702)	
Office Costs	(57,618)		(54,761)	
Landlord Costs	(24,469)	(360,433)	(23,962)	(365,929)
Net Surplus / (Deficit) from Activities		**4,469**		**(21,699)**
Interest Income		9,142		6,529
Building and office refurbishment		-		(25,819)
Net Surplus/(Deficit) for the Half Year		**13,611**		**(40,989)**

Commentary on the Income & Expenditure Account for the six months ended 31 December 2004

The Society reports a surplus in the unaudited Income & Expenditure Account for the six months to 31 December 2004 of £13,611 after interest. This compares with the prior year deficit of £40,989 after interest and refurbishment of £25,819.

Subscriptions showed an increase compared with the prior half year due to the full effect of last year's increase in subscription rates. Advertising income is lower than at the same period last year but there are indications that this will improve over the next six months. The sales of books have also been lower than for the corresponding period last year although new titles are planned for the next six months that should improve the position.

The Radio Communications Examinations continue to be very popular with a great deal of interest continuing to be shown, not just in this country but abroad too. The number of candidates taking the Foundation examination is about 25% lower than last year but this was expected as more people turned their attentions to the Intermediate and Advanced examinations. Numbers of candidates taking these two examinations are increasing and it is anticipated that this trend will continue for the foreseeable future.

GB4FUN continues to be very active but unfortunately its success means that it is difficult to keep up with the increasing number of requests for school visits. GB4FUN has recently been awarded a grant from the Radio Communications Foundation to assist in funding its running costs.

Signed: Jeff Smith, BA, MIOAEX, President — **Peter Kirby, G0TWW, Company Secretary**

Ed Taylor, G3SQX

Amateur Radio Development Committee, c/o RSGB HQ.

E-mail: ed@g3sqx.net

RSGB QSL Bureau – survey results and decisions

Readers will remember the article in last June's *RadCom*, which solicited members' thoughts on the functions of the RSGB QSL Bureau. The Board considered the results of this survey, and asked for analysis and presentation of its deliberations to be made public when available.

There has not been any sort of poll as to members' views about the Bureau for decades. It was clearly time to find out what amateurs thought, particularly as the QSL Bureau is one of the main reasons that many belong to the Society. In a nutshell, most members who responded thought that the Bureau was working reasonably well, but there were also one or two surprises.

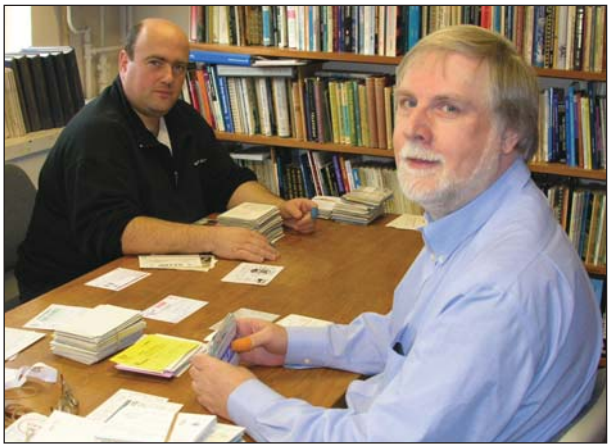
REPLIES TO QSL OPINION

Several hundred responses were received: 18% by post and the rest by e-mail. Members were asked to reply to the questions asked, with the same numbering as used in the article. Naturally most did not: a certain amount of reading between the lines was needed to deduce opinions from general comment!

The number of replies is not huge, but is the level normally expected from similar surveys in *RadCom*. Of course, those who troubled to reply were probably those who had something to say, and day-to-day anecdotal evidence seems to produce similar results.

There was overwhelming praise for the people who run the Bureau, and particularly for sub-managers. The next most common comment was that the costs do not appear to be over-extravagant. Nobody wanted to spend too much, but at around £1.50 per member, the service was seen as good value for money.

It was interesting to note remarks about whether a QSL should be sent or not. Quite a few members thought that "the last courtesy of a QSO is the QSL", and sent a card for every contact. On the other hand, many amateurs got hot under the collar about this practice, saying that 100% QSLing was pointless and wasteful, and this group also seemed keenest on the growing practice of using various electronic QSLing methods. In general, the latter were younger amateurs, contesters and DXers, and the former were older amateurs (inasmuch as this can be gleaned from callsigns and other general comments).



New 'QSL Supremos' Marc Litchman, GOTOC (left), and John Short, G1DJI, sorting cards at RSGB HQ. Their first 'QSL' column will be in *RadCom* next month.

Some correspondents thought that the propositions in the survey were firm proposals. This could never have been the case, because several were mutually contradictory. Those who threatened to resign if charges were made for the Bureau may renew their subscriptions without trepidation!

THE 'YES / NO' QUESTIONS

There were some straightforward 'yes / no' questions, and also some where more general comments could be made. The 'yes / no' questions were answered by most respondents. In all these results, the percentages are based on those who actually answered the question under consideration.

Restrict Bureau usage to RSGB members only?

A big majority in favour, 87%. This is to be expected ("get rid of freeloaders"). Most respondents said that non-members should absolutely not be allowed to send cards to the Bureau for distribution. However, things are more ambiguous when considering whether non-members should be allowed to send envelopes to sub-managers. It was pointed out that there was an opportunity to attract more members if membership information was sent out with cards from sub-managers.

Restrict numbers of cards that members can send and receive?

Very divided – exactly 50% said "yes" to this suggestion. For many, the suggested levels (500 cards per year incoming and outgoing) were more than adequate. For some, the levels were pitifully small. Analysis of further comments suggests a concern that although most members were "playing the game," a few might be using the Bureau excessively. What this exactly means, and the precise point at which it occurs, is different for different people.

Limit Bureau usage to 'home' callsign?

Again very divided – 49% were in favour, and this figure can only really be analysed by referring to the additional comments that most respondents made. There was largely no objection to G9XXX using the Bureau for holiday QSOs as GM9XXX or F/G9XXX. A big majority were happy with GB stations using the Bureau – in fact, there was generally much opposition to restricting this type of usage in any way ("should be encouraged" was a common comment). However, the practice of DXpeditioners and contesters "dumping" thousands of cards on the Bureau after an operation was thought to be unfair, and this seemed to be a majority complaint.

No 'free' Bureau usage – everyone pays?

Definitely not a popular option – 89% were against. Many pointed out that most aspects of amateur radio are a minority interest, but the idea of *mutuality* applies – we join together to pay for everything of general concern. "One of the benefits of membership" was the usual comment.

Ban UK-UK cards?

Unpopular, but not as much as one might expect – 77% against. Since QSOs made by newcomers are mostly going to be with other UK amateurs to start with, this was seen as a very bad idea if we wanted to encourage people into the hobby. In any case, several RSGB awards require UK cards (particularly VHF/UHF and IOTA), so there is not much logic in banning them from the Bureau. It was suggested that those who were in favour of restrictions were perhaps HF DXers, who overlooked the intrinsic pleasure of receiving and collecting QSLs for their own sake, rather than considering them a means to international awards.

OTHER POINTS FROM THE SURVEY

Answers to some questions were not necessarily so clear-cut. Here are the distilled responses to other

possibilities suggested by the article.

Labels to restrict numbers of cards sent or received

Since there was no great groundswell to implement such a restriction on numbers, most respondents did not address the question. Some commented that this could be expensive and troublesome to implement.

Machine sorting

General opinion was to avoid such machines. Members' experiences were frequently not good, and little would be saved given the large variation in shape and size of QSL cards.

More foreign card pre-sorting

Members having familiarity with such matters thought that this was impractical. One correspondent said he thought it was a miracle that the international QSL system worked at all, and it was unrealistic to expect any more cooperation!

Electronic QSLs

Those who responded thought that it was important to distinguish between 'QSLs for awards' and 'QSLs for fun'. The former might well be replaced, at least in part, by some form of secure electronic methodology. The latter would probably exist in cardboard form for many years to come.

ACTIONS

On the whole, it was felt that the Bureau is working well. The complaints of slow service are not generally caused by the RSGB Bureau, although there is no reason for complacency. By its nature, the QSL bureau is bound to be considerably slower than sending a QSL card direct.

Many responses in the survey show that some members do not know how the Bureau functions and how it should be used. The clear instructions in the *RSGB Yearbook*, which are also sent to new members, are not always followed. In any event, these instructions have not been updated for some time; useful additions might include examples of several types of QSL card, completed and ready to send, and an explanation of *Guidelines for Fair Use*, described later.

Should RSGB members only use the Bureau?

First, the Board considered enforcement of the policy that only members can send cards to HQ for distribution. This will be tightened up: non-members will not be allowed to slip through the net, and they will be invited (if their addresses are known) to join the RSGB; otherwise their cards will be destroyed. Members will not be restricted as to callsign, so those who run a GB station or operate on holiday won't normally be affected by this policy.

The position with envelopes sent to sub-managers is different. These volunteers have plenty of work to do without checking for lapsed memberships etc every time they send out cards. There is also the argument that says you only have to charge for the Severn Bridge in one direction. However, there is an opportunity to include RSGB membership information occasionally with QSLs sent out. Members would have to tolerate this as well, since the information would be sent to everyone.

A montage of a few of the QSLs going through the RSGB Bureau in mid-January.

Restriction on numbers

The Board decided not to introduce additional charges (on top of RSGB membership) for reasonable Bureau use. The question of what is "reasonable" will be interpreted pretty generously, but numbers of cards sent will be monitored more effectively in future.

Guidelines for Fair Use will be drawn up and publicised, so that normal usage is unhindered, but very heavy usage is discouraged.

Those who want to send large numbers of QSLs abroad must in future send properly sorted cards directly to overseas bureaus, not to the RSGB. Many DXpeditioners, who will be the main ones affected by this policy, already do this; it has the benefit not only of decreasing the load on the RSGB Bureau, but also speeding up delivery of outgoing QSLs to overseas recipients.

Members who *receive* very large numbers of QSL cards via the Bureau would not be penalised, but they could be invited to make individual arrangements. This system is already in use, and usually involves a 'special sub-manager', perhaps located at RSGB HQ.

100% QSLing

The RSGB has never really had a policy on this question. However, there is undoubtedly a great deal of unwanted cardboard flowing through the QSL bureaus of the world. The Board decided that it would not be too controversial to suggest that the sending of a QSL card as an automatic "thanks for the QSO" is no longer reasonable.

It is recognised that receiving and collecting QSLs is a part of the hobby for many amateurs, and there is no thought to discourage this in any way, particularly for special event and DX stations. But the practice of sending cards to those who don't want them is wasteful of resources, particularly when it involves the time of hard-pressed volunteers. The policy will be elaborated in the *Guidelines for Fair Use*.

Electronic QSLs and QSO verification

Amateurs who collect QSLs to win awards are likely candidates for the ARRL's Logbook of The World (LoTW) system. It is not intended to replace cards, and is not likely to do so for anyone who wants a colourful collection. However, it has been designed in such a way that it can incorporate IOTA information, and so be used for the RSGB's premier HF award scheme.

The Board decided that RSGB awards will, as far as possible, accept submissions from the LoTW database. This will not happen immediately, since it requires new IOTA software and the finalisation of links to the ARRL. Physical QSL cards are still needed for the moment, and will be acceptable for the foreseeable future.

Organisation

Members currently have no central point of contact at RSGB HQ for issues related to the QSL Bureau. The Board decided that this was undesirable, particularly as it is a reversal of the situation of some years ago. In addition, articles in *RadCom* about the Bureau no longer appear, so members cannot easily keep up to date with developments.

Two volunteers who regularly come into HQ to help with Bureau matters have volunteered to take on the role of 'QSL Supremos'. They are Marc Litchman, G0TOC, and John Short, G1DJI – many thanks! They will be reinstating the *RadCom* 'QSL' column, and will be able to answer questions about the Bureau and how to use it.

CONCLUSION

Thank you to everyone who replied to the survey. There were some very good suggestions for improvement, and ideas are still being considered. Some clubs took a whole meeting to develop their responses, which was very helpful. ♦

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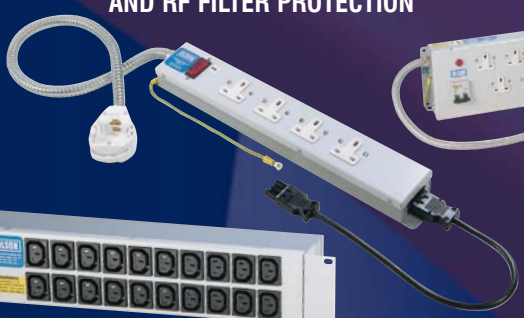

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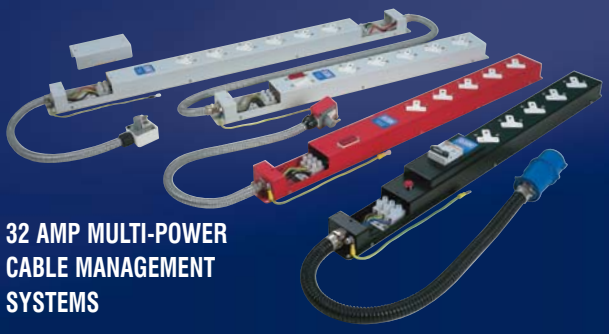

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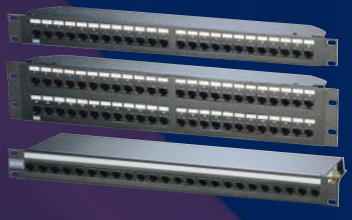

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Butternut HF2V HF vertical antenna

Although the Butternut HF2V vertical has been around for many years, it has never been reviewed in *RadCom*. Peter Hart puts this right with this review, carried out over a period of 10 months.

Now owned by Bencher Inc, the Butternut multiband HF vertical antennas are popular and long established designs which have acquired a good reputation for performance. The two-band HF2V and six-band HF6V-X antennas have been available now for over 20 years. The nine-band HF9V-X is by comparison a relative newcomer.

In 1990 I installed the HF6V-X at my home QTH (see my review in March 1991 *RadCom* pp66 – 68) and used it consistently for 14 years. This antenna covers all bands from 80 to 10m with the optional 12m and 17m extension which I had also fitted. On bands 14MHz and upwards I used it primarily as the back-up antenna to my beam but on 80, 40 and 30m it was my only antenna. All credit to the HF6V-X, it performed very competitively on these bands giving me over 300 DXCC countries on 40m and over 250 countries on both 80 and 30m during this period. I fitted one set of guys above the loading coils and reliability overall was generally good. During the 14 years I had one mechanical failure when the tubing snapped above the guying point during a particularly severe gale, I needed to replace capacitors on three occasions and the fibreglass insulators required periodic cleaning. However, eventually the insulators were wearing more and more, and the tubing components were becoming quite corroded so early last year I decided to replace the antenna. Not really requiring coverage of the higher bands for this antenna, I decided to install the longer HF2V where coverage is limited to the lower bands.

The HF2V is essentially a base loaded quarter-wave vertical antenna covering the 80m and 40m bands. Additional resonators are available to extend coverage to the 160m and 30m bands.

DESCRIPTION

The HF2V comprises a single vertical radiator 32ft in length with a feedpoint at the base. Eight 4ft lengths of tubing are used tapering from 1.25in at the base to 3/8in at the top. Each tubing length slides inside the adjacent piece and is secured with a bolt and nut. A resonator assembly 4ft up from the base comprising two inductors and one door-knob capacitor brings the antenna into resonance on the 80m and 40m bands. A shunt inductor across the feedpoint improves the VSWR at resonance on 80m and also provides a DC path to ground which eliminates any static charge build-up in stormy conditions. The antenna is rated at 2kW PEP and can be used in either a ground mounted or an elevated mounting position. A 2ft mounting post is provided which can be fixed into the ground or used for mast attachment.

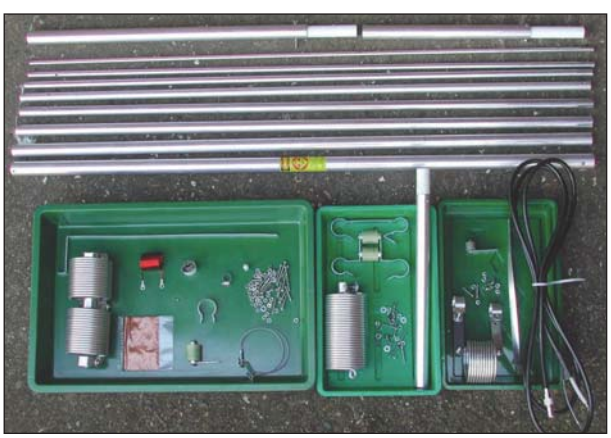
For use on 160m an additional resonator is available (TBR-160-S) which comprises an inductor and shunt capacitor and is mounted at the base feedpoint of the antenna. This introduces extra series inductance for resonating on 160m and a capacitive bypass for the higher bands. On 160m the power rating is reduced to 1kW PEP / 500W CW.

A 30m resonator is also available (30MRK) and both this and the 160m resonator can be fitted at the same time to cover four bands. The 30m resonator comprises a further inductor-capacitor combination which shunts the 40m inductor and provides a resonance on both bands. The power rating on 30m is limited to 300W. The antenna is somewhat longer than a quarter wavelength on this band and the feed impedance rather higher than 50Ω. A matching transformer comprising an 11ft length of RG-11/U 75Ω coaxial cable is provided. This is connected in series between the antenna feed terminals and the main 50Ω transmission line and has a minimal effect on the lower bands.

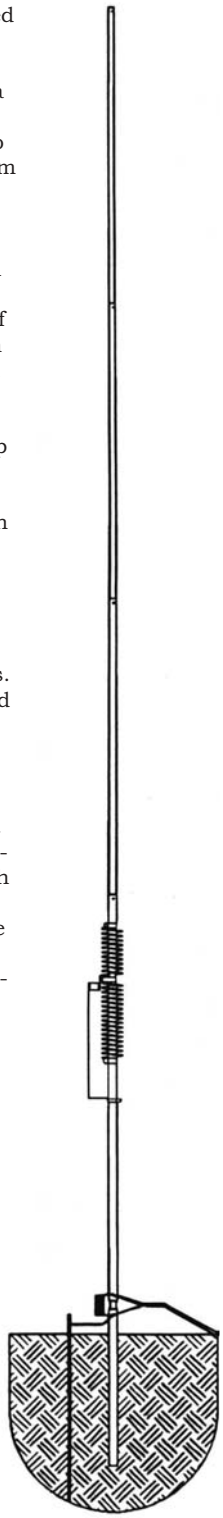
An essential part of any quarter-wave resonant vertical antenna system is a ground or radial system. On 80m and even more so on 160m the physical length of the antenna is considerably less than one quarter-wavelength. The radiation resistance will be very low on these bands and the efficiency of the antenna highly influenced by the quality of the ground or radials. For mounting in an elevated position several quarter-wave resonant radials should be used. For ground mounting a network of wires on the ground or slightly buried should be used, as many as can be arranged. Time and effort spent on laying down an effective radial system will be amply repaid by improved results on 160m and 80m, probably not so critical for 40m and 30m.

The HF2V has an unguyed wind survival rating of 60MPH (96KPH). It tends to bend rather alarmingly in high winds and I have fitted one set of four guys about 10ft up from the base. Guying much higher than this is not recommended and can result in bowing of the antenna and failure. From experience of the HF6V-X, wear of the fibreglass insulators will occur over time and reducing movement here by guying will lengthen the life of the antenna.

The bandwidth on 160m and 80m is very narrow and it is not possible to cover both CW and SSB sectors of 80m without retuning. The overall efficiency and bandwidth on these



The full kit of parts, including 30m (right tray) and 160m (centre tray).



Right: Line drawing of the Butternut HF2V (without added 160m or 30m resonators).

Left: Close-up of the 40m (top) and 80m loading coils.

Right: The 160m adaptor fitted.

Far right: The 30m resonator fitted.

bands can be improved by attaching top loading wires about three quarters of the way up the antenna and sloping down towards the ground. These cannot be used with the 30m resonator and should be limited in length to 12ft for satisfactory 40m operation. Longer wires can be used, eg 25ft, for improved 160m and 80m performance but 40m operation is sacrificed. I did not fit top loading wires on my antenna. Butternut provides a top loading wire kit (TLK) if required.

ASSEMBLY AND INSTALLATION

The HF2V antenna is supplied compactly packed in a box just over 4ft long and about 5in square with a shipping weight of 13lb (5.9kg). All tubing parts, straps and clamps are made from aluminium and all mounting hardware, bolts, nuts and washers are stainless steel or plated. Assembly is straightforward and accurately described in the instruction booklet. A small packet of anti-seize / anti-oxide compound ('Butter-It's-Not!') is provided for lightly lubricating tubing joins and clamps and some waterproof sealing tape for the feeder cable connections. A few spare bolts, nuts and washers were provided and overall unpacking, checking and assembly took under an hour.

I ground mounted the antenna and provided one set of guys. 12 radials were used deployed around the antenna and varying in length from about 15ft to about 80ft. 16SWG hard-drawn copper wire was used for the radials and these were buried just below the ground.

Tuning of the antenna is accomplished using a VSWR indicator in the 50Ω feedline and is fully described in the instructions. In general, the lowest frequency band is adjusted first and then progressively each higher band in turn. Some slight interaction occurs but tuning rapidly converges to the optimum condition. Tuning involves sliding clamps up or down to compress or expand the appropriate inductor and achieve the lowest VSWR at the desired frequency. The tuning point is quite critical and you must decide on a centre frequency on 160m and 80m.

The shunt inductor across the feedpoint lowers the VSWR on 80m and is adjusted to give the lowest compromise VSWR on the 80m and 40m bands. A low loss radial / ground system will result in a higher VSWR at the feedpoint and narrower bandwidth but this is more than compensated by the greater efficiency of the overall antenna system.

PRACTICAL RESULTS

With the antenna connected through a short length of 50Ω cable measurements were made of the input VSWR and summarised in the following tables for the various combinations of HF2V and its various band extensions. Where the 30m resonator was fitted the feedline matching transformer was also fitted. On 40m, the tuning point was optimised and centred within the band edges 7.0 to 7.2MHz.

The measured results for the HF2V alone and no band extensions are shown in **Table 1**.

The measured results with the 30m resonator added are shown in **Table 2**. Adding the 30m band extension makes little difference to the 80 and 40m bands.

Fitting the 160m resonator results in a significant lowering of the bandwidth on 80m and tuning is extremely critical. The setting of the shunt feedpoint inductor is very much a compromise and is only needed with good ground systems. Results are shown in **Table 3**.

Table 4 shows the measurements with both the 30m and 160m resonators added. Again the shunt inductor was very much a compromise.

I have used the HF2V now for around 10 months. The performance on 30m and 40m is most competitive and similar to my experience with the HF6V-X. On 80m, comparisons with a low dipole were quite interesting. The dipole was some 1 to 2 S-points better for distances up to 2000 – 3000 miles but at greater distances the vertical was noticeably superior. This is a typical characteristic of a vertical antenna. Although the bandwidth on 80m is low, the extra 6ft in antenna length compared with the HF6V-X yields a significant increase in bandwidth over the shorter antenna.

On 160m, the bandwidth is very sharp and performance very dependent on the ground / radial system. With my set-up the antenna did not perform as well as longer wire antennas which I have used but this is perhaps only to be expected considering its small size. However, I made plenty of European QSOs, USA and further afield – including JT1CO in Mongolia on the first call. I am sure that the top loading wires would help considerably on this band. The antenna has survived a number of storms and gales without any problems.

Table 1: HF2V

	80	40
Min VSWR	1.2	1.2
Bandwidth 2:1 VSWR	70kHz	400kHz
Bandwidth 3:1 VSWR	150kHz	920kHz
VSWR at band edges	-	1.5

Table 2: HF2V + 30m

	80	40	30
Min VSWR	1.35	1.2	1.55
Bandwidth 2:1 VSWR	70kHz	360kHz	430kHz
Bandwidth 3:1 VSWR	150kHz	770kHz	1.1MHz
VSWR at band edges	-	1.6	1.55

Table 3: HF2V + 160m

	160	80	40
Min VSWR	1.25	1.2	1.1
Bandwidth 2:1 VSWR	11kHz	47kHz	400kHz
Bandwidth 3:1 VSWR	22kHz	96kHz	870kHz
VSWR at band edges	-	-	1.5

Table 4: HF2V + 160m and 30m

	160	80	40	30
Min VSWR	1.2	1.3	1.5	1.5
Bandwidth 2:1 VSWR	11kHz	43kHz	280kHz	500kHz
Bandwidth 3:1 VSWR	22kHz	93kHz	620kHz	1.3MHz
VSWR at band edges	-	-	1.7	1.55

CONCLUSIONS

The HF2V is an effective and reliable DX antenna for the 80m and 40m bands with a long established track record. With the 30m and 160m additions it is the only multiband vertical antenna currently available which covers these four bands. Priced at around £230 the HF2V is relatively good value although the additional band resonators and other accessories are a little more pricey. Bencher / Butternut products are available in the UK from Waters and Stanton PLC. ♦

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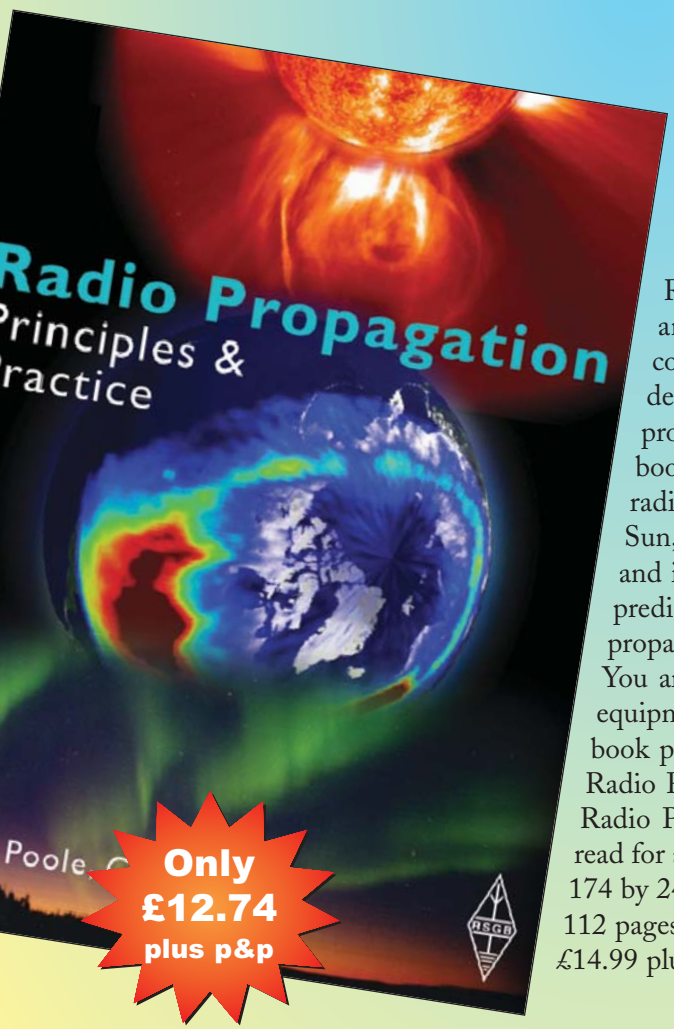

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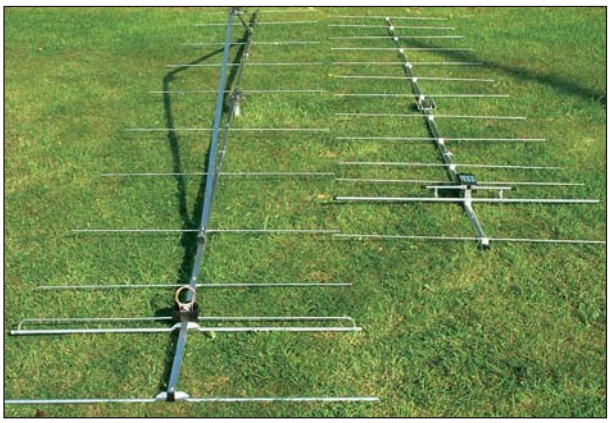
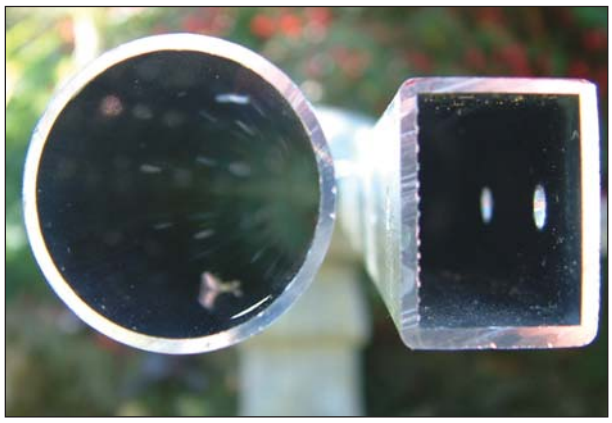


Left: With the mast clamps at the same distance from the camera it is clear that the Vargarda 11EL2 is somewhat longer than the Cushcraft 13B2.



Right: Shape and relative size of the booms: Cushcraft circular; Vargarda rectangular.

American or European? Steve White compares two 144MHz beams.

Cushcraft 13B2 and Vårgårda 11EL2 2m beams

Swedish manufacturer Vårgårda Radio [pronounced "Vor-gorda" but known outside Scandinavia simply as Vargarda – *Ed*] has been in business since 1958. They produce a range of towers, commercial antennas, plus antennas and phasing harnesses for the 6m, 4m, 2m and 70cm amateur bands. Until now they have not been very well known in the UK, but now they have a new distributor that may change. American manufacturer Cushcraft has been in business a similar number of years but, by contrast, is very well known amongst the amateur community here. They produce commercial and professional antennas from HF to microwave. The subject of this review is a comparable antenna from each of them (see **Table 1**).

PACKAGING

The Cushcraft 13B2 arrived in a strong cardboard box. Opening it revealed the three sections of tubing which go together to make the boom, the elements, the matching network, a bag of fittings, nuts and bolts, an instruction booklet, a leaflet on installing antennas and a warranty registration card.

The Vargarda 11EL2 arrived in an equally strong cardboard box. Inside, all the components were contained in a sealed polythene bag. Once again there were three sections for the boom, the elements, the matching network, a bag of fittings, nuts and bolts, and an instruction leaflet in English and Swedish.

CONSTRUCTION

Apart from the stainless steel nuts and bolts, the Cushcraft is all-aluminium in construction. Even the mast-to-boom bracket is aluminium. It employs solid 3/16in diameter parasitic elements and a 1/2in tubular driven element. 50Ω co-ax is connected to the driven element via an SO239 socket, a half-wave coaxial balun (see photo below) and an adjustable match. Thoughtfully, Cushcraft supplies a sachet of silicone sealant to smear on the thread of the coaxial plug to prevent moisture getting into it. All elements are electrically connected to the boom, each parasitic element being reinforced at the centre to compensate for the inevitable weakening that takes place when it is drilled for the mounting screw.

The Vargarda is also all-aluminium in construction. In the main it too employs solid (5mm diameter) elements, the exceptions being the driven element and reflector which are 12mm tubing. 50Ω co-ax is connected to the driven element – a folded dipole – via screw-down terminals and a half-wave coaxial balun. The folded dipole is interesting in construction, being part tubular and part rod. A rod is folded into the tube a little way in from the end and welded in place. All elements are electrically connected to the boom, each being held in place by a small bracket. The directors are not drilled. Each has a punch mark half way along instead. When assembling it is a matter of making sure the mark is at the centre of the boom.

The biggest difference between the beams at this stage is that the Cushcraft's boom is circular and unsupported, whilst the Vargarda's boom is rectangular and supported. The photo above shows the shape and relative sizes of the booms.

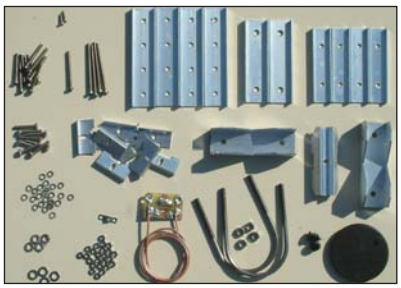
ASSEMBLY

Instruction booklets from Cushcraft are comprehensive, well printed and easy to follow. This made assembling the 172 components contained in the box straightforward, although it is clear that Cushcraft produce standardised packages of nuts and washers because several were left over at the end. The tools required for assembly were a ruler, a flat-bladed screwdriver and spanners. The boom came in three sections, the outer two parts sliding into the middle one. Unfortunately the holes to screw them together didn't all line up perfectly, so I had to drill one of them out. Having done that, assembly went smoothly.

The photocopied instruction sheet for the Vargarda was less comprehensive, but adequate. The boom sections were colour coded, to identify which ends should be joined together and precisely where

Left: Cushcraft employs a half-wave balun made from coaxial cable, plus a ferrite tube to prevent RF flowing back down the braid of the feeder.

Right: The Vargarda balun is compact, consisting of a half wave of miniature low-loss coax.



Left: Small components of the Cushcraft 13B2.

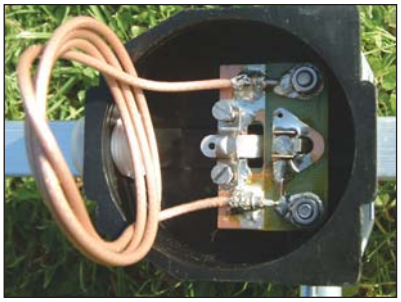
Right: Small components of the Vargarda 11EL2.

to place the elements. In all there were 130 components in the box – and every single one was needed. The tools required for assembly were a flat-bladed screwdriver, spanners and a drill to make the correct size hole for the co-ax cable to be terminated in the 'I-box', as Vargarda call it. Detail of the I-box, prior to connection of the co-ax can be seen in the photo below. Once the main co-ax was connected the miniature co-ax was folded across the top and the cover clipped into place.

Having assembled the beams I placed them on the ground next to one another, with the mast clamps at the same distance from the camera. From the photo opposite, above left, you can see that the Cushcraft is somewhat shorter, because the reflector of the Vargarda is much closer to the camera. However, the situation is nothing like the same at the end farthest away. The difference in the inter-element spacing of the two antennas also becomes apparent when they are seen together in this way.

TUNING

Having assembled the Cushcraft 13B2 I expected that it would need tuning. When I first applied RF I was so surprised how little reflected power there was that I felt the need to check that I was actually putting 25 watts into it. Having confirmed that I was, I checked the response across the band. The beam was resonant around 146MHz (146MHz being the centre of the band in the USA), so I lengthened the matching section by 0.75in and re-tried. This resulted in a slight reduction of reflected power at all the points across the band on which I measured, so I lengthened the match by another 0.75in. This time the reflected power rose a little, so I reverted to the previous setting and called it a day.



By contrast, the Vargarda 11EL2 is pre-tuned, so you connect the feeder and that's it! There was more reflected power, but this still only amounted to an SWR of 1.13:1 and the response was flat across the band. I did not feel inclined to try squeezing or stretching the folded dipole because the antenna was on loan, but careful adjustment of the spacing can be beneficial in this respect. **Table 2** gives the figures for the two antennas.

MOUNTING

There is a significant difference in the way that the two beams are mounted. This is brought about by the fact that the Cushcraft does not incorporate diagonal bracing. This means that the weight needs to be balanced, to prevent it from wanting to tip up or down. The net result is that although the Cushcraft is 4ft (1.2m) shorter than the Vargarda, the turning radius is only 1ft 4in (0.4m) less. However, it also means that the Cushcraft can be mounted vertically, making it suitable for FM working.

Table 1: Comparative figures for the antennas under review
(reviewer's figures in italics)

	Cushcraft 13B2	Vargarda 11EL2
Number of elements	13	11
Boom length	15ft (4.57m)	19ft (5.8m)
Turning radius	8.9ft (2.7m)	*10ft 2in (3.1m)*
Electrical length	2.2 wavelengths	2.8 wavelengths
Forward gain	13.6dBd	13.0dBd
Frequency range	144-148MHz	Not quoted
3dB beamwidth, (E-plane)	36°	32°
3dB beamwidth, (H-plane)	38°	36°
Front-to-Back ratio	26dB	24dB
Longest element	39.75in (101cm)	39.37in (100cm)
Boom type	Circular, unsupported	18x24mm, supported
Mast size	1.5-2in (38-51mm)	1.5-2.5in (38-65mm)
Power rating	2kW	1kW
Side lobe attenuation (E-plane)	>60dB	Not quoted
SWR	1.2:1	<1.3:1
Typical 2:1 bandwidth	>4MHz	Not quoted
Weight	6.7lb (3.1kg)	9.9lb (4.5kg)
Wind area	1.8ft² (0.167m²)	1.77ft² (0.165m²)
Feed impedance	50Ω	50Ω
Connection	SO239	Terminals
Shipping weight	9lb (4.1kg)	*11lb (5kg)*
UK price	£169 (W&S)	£115 (importer)

Table 2: Reflected power (watts) for 25W forward power
(measured with URM-120 wattmeter)

Frequency MHz	Cushcraft 13B2	Vargarda 11EL2
144.0	0.1	1.5
144.5	0.1	1.6
145.0	0.05	1.4
145.5	0	1.4
146.0	0	1.4

ON-AIR PERFORMANCE

The antennas were tested at 20ft above ground, one after the other, against a reference antenna. There was little difference between the two, although the Cushcraft seemed to have the edge as regards forward gain. In each case the radiation patterns were clean, with deep nulls either side of the main lobe and no significant lobes elsewhere.

Because the Cushcraft can be mounted vertically I also tested it in the vertical plane. At a distance of 160 miles, GB3VT at Stoke on Trent was clearly copied (it is inaudible on a collinear at this location, even though the collinear is higher above ground). In the vertical plane the null each side of the main lobe was extremely deep.

CONCLUSIONS

The Cushcraft 13B2 is already the antenna of choice for many 2m enthusiasts who want to work DX but who cannot install a really long Yagi. They are known for lasting a long time because they don't corrode in the weather or fall apart when the wind blows, but the Vargarda 11EL2 is also clearly a very good quality product and built to last. The bracing means that it is more rigid than the Cushcraft 13B2, it doesn't need tuning, is significantly less expensive and its performance is much the same, but it is longer, heavier and cannot be mounted vertically.

For FM use the Cushcraft is clearly the only choice, but for SSB and CW use the Vargarda represents excellent value for money.

Cushcraft antennas are available from a number of UK sources, including Waters & Stanton (tel: 01702 206835). Vargarda antennas are available from the UK importer, Steve Burrows, M5BXB (tel: 01992 623335, e-mail: steve@m5bxb.com). ♦

WEB SEARCH

Steve Burrows, M5BXB:	www.m5bxb.com
Vargarda Radio:	www.vargardaradio.se
Cushcraft:	www.cushcraft.com

Bob Whelan, G3PJT

36 Green End, Comberton, Cambridge CB3 7DY.

Optibeam OB10-3W 10-element Yagi for 20-17-15 metres

The Optibeam OB10-3W is a 10-element Yagi covering the three bands 20, 17 and 15 metres which was released at Friedrichshafen in 2004. Bob Whelan has been trying it out . . .

The Optibeam OB10-3W has three elements each on 20 and 17 metres and 4 elements on 15, with no traps. The boom length is 5.86m and the beam is fed via a balun (with 5kW rating!) and a single feedline. The elements are isolated from the boom. The claimed performance is: 20m 5.3dBd, 17m 5.3dBd, 15m 6.5dBd gain and at 20metres high 12.9dBi, 12.9dBi and 14.2dBi respectively (Optibeam figures).

There was a review of the Optibeam OB9-5 antenna in *RadCom* [1] which covered many of the mechanical aspects of the Optibeam design approach, so these will not be repeated here. It is well worth reading for more details.

WHY AN ANTENNA THAT DOESN'T COVER 10m?

Unfortunately the levels of solar activity are not expected to support much propagation on 12 and 10 metres for some years. Thus the importance of 20, 17 and 15 metres will *increase* as DX contacts become concentrated on these three bands. 17 m is already carrying a lot of DX contacts and is becoming congested at times. I had already designed and built a highly effective beam for these bands [2] but it was quite large and showing signs of corrosion and metal fatigue. It was time it was replaced.

In March 2004 I had the good fortune to meet Tom, DF2BO, during my RSGB Commonwealth Contest operation as V26DX from Antigua. V26DX is equipped with the Optibeam OB12-6, a most impressive beam – but a bit too big for my garden! Talking to Tom about antennas he showed me the EZNEC plots for a new beam he would release at Friedrichshafen in 2004, the OB10-3W. I decided that this would fit in well with my style of operating and agreed to take one of the first models.

The Optibeam OB10-3W up in the air at G3PJT.

MECHANICS

The antenna is packed in a 2.5m box which just fits into a normal car with the back seat lowered – which is how it came home from Friedrichshafen. On unpacking it was clear that high quality materials have been used. All the components were very clearly marked and grouped. There is really no need to even have a tape measure as all positions on the boom and elements are marked. The taper sections of the elements fit together unambiguously using the Optibeam locknut and capscrew arrangement. The three boom sections are joined with internal fishplates with captive nuts. This results in a very strong and well aligned joint. The drilling is so good that not a single hole had to be 'eased'. Allen keys and a tube spanner are supplied to cover all screws and locknuts – a nice touch and one which saved time looking for the right tools or even worse using the wrong sized ones. A few spare screws and nuts were included too – a sign that Optibeam know what happens when assembling antennas! I used an automotive thread grease to guard against corrosion as the air quality is still quite corrosive in the UK. However, as the OB10-3W does not have traps this results in far fewer joints per element than a trapped beam. Fewer joints mean fewer corrosion possibilities.

ASSEMBLY

I always assemble my home antennas by myself so I know what my physical limitations are in terms of antenna size and weight. I have a tilt-over tower and I assemble antennas on the tower stub mast in the tilted over state.

The approach I followed with the OB10-3W was as follows:

- Assemble all the half-elements undercover in the garage.
- Assemble all the element-to-boom plates on the three boom sections.
- Fix the mast-to-boom fitting on the centre boom section (this is the only time a tape measure is needed).
- Fit the centre section of all the elements into their respective clamps.
- Fit the phase line tubes on to the centre section including the balun. These are slightly sprung when fully tight.
- Paint all the exposed aluminium with matt light colour outdoor paint (this reduces corrosion and environmental impact – see later).
- Fix the boom centre section to the stub mast and align with rotator etc. Attach the feedline.
- Assemble the elements on to the centre section.
- Partially raise the tower and fit on one end of the boom and then the respective elements for that boom section.
- Raise the tower to vertical and rotate the antenna by 180 degrees.
- Luff the tower over again and fit the third boom section.
- Tighten the truss to support the boom.

In this way one person can easily handle the 33kg of the OB10-3W since all the parts which have to be lifted are within the physical ability of a normal person.

The enormous benefit of the square boom now becomes apparent. It ensures that the boom is at right angles to the stub mast and that the elements are all also at right angles. It is almost impossible to achieve the same degree of alignment with a conventional round-section boom. Total assembly time is about two or three days though I have heard that a team of two assembled a similar Optibeam in an afternoon.

ENVIRONMENTAL ISSUES

The fact that the elements are all in the same plane reduces the apparent visible size of the antenna. This is a direct result of superior element and boom alignment and the absence of

traps. Although Optibeam have used dullish finish alloy, a coat of light colour matt paint (green, grey or blue) further reduces the visual impact of this antenna by reducing glint when the sunlight shines on it. I think it looks smaller than it really is and doesn't catch the eye. Good news for your neighbours and you too.

PERFORMANCE

It is almost impossible for the amateur to make quantitative assessments of HF antennas – even the professionals struggle. So what follows will have to be some views from a reasonably experienced HF operator.

The first impression was that the antenna seemed to be 'quiet'. That is, it does not seem to pick up noise. I believe this indicates a good clean azimuthal pattern with good balance on the feed point. The front-to-back ratio seems to be around 20dB on most signals, bearing in mind the various angles of arrival of HF signals and the inevitable QSB. The beam width is as predicted by *EZNEC*.

Table 1: SWR measurements at 20m over ground

	Lower band edge	Mid-band edge	Upper band edge
21MHz	1.3	1.05	1.3
18.1MHz	1	1	1.05
14MHz	1	1.2	1.4

It does seem that the performance on 17m especially is much better than I expected. I based this view on its 'pile-up cracking ability'. Also I have had some good longer chats with DX stations on 15m – a sure sign that you are a good signal. There is of course a 'new antenna effect' in this assessment.

I made a few SWR measurements and these are shown in **Table 1**. These are very good and show that Optibeam must have really mastered the *EZNEC* design software they use. The SWR figures are very flat and should not cause a problem with any transmitter. Further, they should allow any output filters to work correctly.

CONCLUSION

The Optibeam OB10-3W represents a first class antenna for the coming low sunspot years. An excellent standard of design and construction means that it should last a lifetime. Its low environmental impact represents a further added advantage.

The Optibeam range of antennas, including the OB10-3W, is available in the UK from Vine Antenna Products, Taranaki, Four Crosses, Powys SY22 6RJ; tel: 01691 831111; e-mail: info@vinecom.co.uk The list price is €1299 (approximately £900), but please check with Ron Stone, GW3YDX, at Vine as fluctuations in the exchange rate can affect the UK price. ♦

REFERENCES

[1] 'The Optibeam OB9-5 Multiband Yagi Reviewed' by Peter Emmerton, G4IOV / 3W2EA, *RadCom* August 2003, page 31.
[2] *CDXC Digest* (the members' newsletter of CDXC, the UK DX Foundation), September 2002, page 33.

WEB SEARCH

Optibeam:	www.optibeam.de
Vine Antenna Products:	www.vinecom.co.uk

MOONRAKER

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MRW-250 Telescopic TX 2 Metre & 70 cms RX 25-1800 Mhz Length 14-41cm BNC fitting **£16.95**
MRW-200 Flexi TX 2 Metre & 70cms RX 25-1800 Mhz Length 21cm SMA fitting **£19.95**
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George Brown, M5ACN

Technical Editor, *RadCom*, c/o RSGB HQ.

The 'Buddipole' multi-band HF / VHF aerial

Here is a really portable aerial that can be carried with ease as part of a back-pack, on a bicycle, or used as an aerial at home, if space is restricted. It is probably one of the sturdiest of portable aerials available today.

The erected Buddipole, with optional mast and tripod. Notice the very small amount of element droop at full extension.

Portable operating is rapidly increasing in popularity, thanks to the emergence of diminutive transceivers such as the FT-817, FT-857, FT-897, IC-703, IC-706 and TS-480. There is quite a selection of portable aerials available, but the Buddipole must rank supreme. It is the brainchild of Budd Drummond, W3FF, and his son, Chris, W6HFP. As supplied, it is effectively a mono-band dipole which, after tuning, will operate at up to 250W PEP on any single amateur band between 40m and 2m. The aerial is off-centre fed, with different loading coils and whip extensions used on either side of the centre T-piece in order to produce a 50Ω feed impedance.

CONSTRUCTION

If you look at the photographs, you will see that the aerial is solidly made, and 'droops' surprisingly little, considering its length. The feedpoint is a T-piece, into which the fixed 55cm sections of the dipole are screwed. It also provides two small sockets, into which the feeder plugs. The T-piece has a half-inch thread in its base to accommodate a mast (see later).

Into the fixed sections of the dipole screw the loading coils, each of 12cm length and 42mm diameter. Do I hear grunts of disapproval here? Well, the photograph will demonstrate, I hope, that these loading coils are precision-made, and each has two marked points on it for positioning the taps. The tap connections themselves are by far the best I have ever seen in a context such as this. Each can be positioned, at one-third turn intervals, from one end of the coil to the other, and make a sound electrical and mechanical contact, without deforming either the turn or the contact itself, which also provides a socket into which a plug fits, to make the electrical connection to the precise turn you want.

The other end of each coil is threaded to accept a six-section telescopic whip – again, this is a substantial item, measuring 33cm collapsed and 165cm fully extended. The combination of the two tapping points and the lengths of the whips forms the tuning mechanism, and I have found that only the two marked points (or no tap at all, depending on the band) need to be used.

A 4m-length of 50Ω coaxial feeder is supplied, terminated in a BNC line plug at the transceiver end, and with a W2DU-type ferrite choke balun and two plugs to fit the dipole T-piece, at the other.

The Buddipole kit, as supplied, comprises the T-piece, the two fixed-length sections, coils and whips, the feeder, four tap connectors and a nylon pouch inside which all the bits have their own compartments, and a 10cm-wide rigid plastic tube into which the pouch fits for storage and transport. The packed size is 10 x 68cm, and it weighs 1.6kg. All the main Buddipole pieces have a silky-black finish.

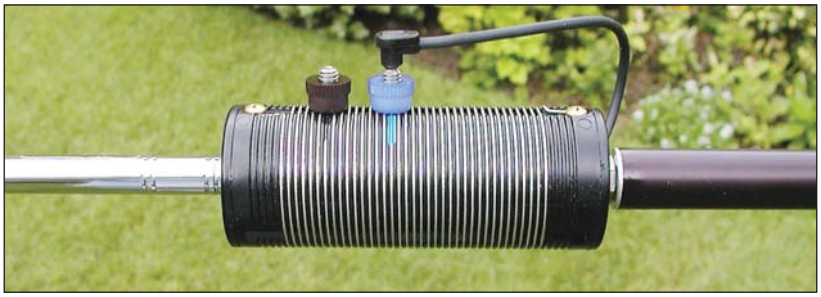
EXTRAS

If you want to be able to erect your Buddipole with equipment matching the same high level of construction, you will need the Buddipole mast and tripod. The mast is of the four-section telescopic variety, 61cm collapsed, and 2.45m extended, weighing 600g. The matching tripod has telescoping legs, 56cm collapsed, and 100cm extended. It weighs 1.5kg.

Non-essential extras include an adaptor for using a decorator's pole with the existing T-piece, a rotating-arm kit to enable the Buddipole to be configured as a V-beam or a vertical dipole, and sets of extra tap connectors - you'll eventually lose one or more in the grass or heather on the moor-top.

SETTING-UP

For first-time use, you will probably have the Buddipole erected within about 10 minutes. With practice, aim at around five. Putting a small drop of light oil on each thread



Above: One loading coil, fitted between the fixed section on the right, and the whip on the left. Both tap positions are clearly shown.

Below: The dismantled Buddipole. The kit comprises everything except the tripod and mast. Everything shown (including the mast but excluding the tripod) will fit into the pouch which, in turn, fits into the cylindrical tube.

before first use makes a tremendous difference to the ease of assembly.

The instructions tell you exactly how to set up the dipole on any of the bands between 40m and 2m. My own tests involved the HF bands between 40m and 10m. If you have an aerial analyser, such as the MFJ-249, -259, -269 or similar, setting-up will be trivial. I chose to start on 20m, so I followed the instructions as to which taps to use and the lengths of the whips.

Using the analyser, I found it necessary only to change the whip lengths slightly to achieve minimum VSWR (about 1.1:1 – 1.2:1). If you do not have access to an aerial analyser, simply use your transceiver, in the normal way, to indicate relative VSWR. Be aware that, due to the proximity of trees, hedges, houses, etc, the VSWR will not be the same when the mast is collapsed and when it is fully extended. Make all your measurements when it is fully extended, and make the adjustments when it is collapsed *and with the transmitter off*! That's all there is to it, really. Make notes of your settings for each band, so that you can return to them quickly when required.

The quality of the engineering can be judged by the fact that you can return to a setting and find that the VSWR is exactly the same as it was before; no last-minute tweaking is necessary! On all the HF bands, you may expect a VSWR no worse than 1.5:1. Most HF transceivers will be quite happy with this but, if you have any doubts, put an ATU in circuit. That way, you can be assured that 100% of the full output power from your transceiver is being radiated. This is very important if you are running on batteries from a remote location!

PERFORMANCE

I was interested in the Buddipole for home as well as portable use; it is a shortened dipole, fed off-centre by virtue of its inductive loading and whip lengths, and I was testing it (mounted on its own tripod and mast) in comparison with an existing end-fed wire the length of my (short) garden. On receive, on all bands, signals from the Buddipole always equalled or bettered those from the wire by one or two S-points and, what is equally significant, the noise level was less, resulting in much clearer signals.

In my first two operating sessions on 20m, totalling about four hours over two days when propagation was below average, over 100 stations in 34 countries were worked. Stations from Morocco, Turkey, Israel, mid-western USA and central Canada were worked with no difficulty during mid-afternoon.

Because of its compromise between size and performance, the Buddipole performs better as the operating frequency increases (the dipole becomes closer to a full half-wavelength in size, and the electrical height of the aerial above ground increases).

COMMENTS

The Buddipole is not intended to be a permanent aerial. At home, I erect it when I need it, and revert to the end-fed wire if the weather is foul! Changing to the Buddipole after a session on the wire aerial is like a breath of fresh air, despite the fact that its elevation angle is predicted to be rather large because of its proximity to the ground.

Although I like the black finish of the tripod and mast, I wonder how long it will be before it is scraped off by incessant sliding of one surface over another? This will not affect the performance, fortunately. If you try to erect the tripod before fitting the mast into it, you will be reminded of the times you see people struggling with deck-chairs for the first time. It can be done with practice, and will save undue scratching of the lower mast section.

I found the 4m of feeder awkwardly short, but I have been informed that current models have 8m of feeder. If your transceiver has an SO-239 or N-type socket, you will need to fabricate an adaptor, with a BNC line socket on one end, and a plug to suit your transceiver on the other.

There is an active Buddipole User Group (BUG) for Internet users, where such things as modifications for 80m use can be found.

The Buddipole is not cheap, but its performance and construction reflect this. Yes, you get what you pay for and, in this case, you could not do better.

ACKNOWLEDGEMENT

My thanks to Budd Drummond, W3FF, the inventor of the Buddipole, and his son, Chris, W6HFP, for providing extra information about the aerial and its operation.

My Buddipole was supplied by Waters and Stanton PLC, 22 Main Road, Hockley, Essex SS5 4QS, tel: 01702 206 835. The current price of the Buddipole Kit is £199.95 plus postage. Waters and Stanton also carry the full range of optional extras, and the 'Buddistick' vertical aerial. ♦

WEB SEARCH

Buddipole User Group	http://groups.yahoo.com/group/Buddipole
Buddipole home page	www.qsl.net/w3ff

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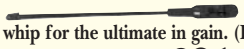

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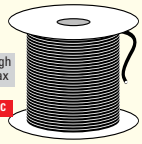

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E-mail: g4hcl@rsgb.org.uk

WiNRADiO WR-G313i PC-controlled receiver

There is currently a growing number of software-based radios around with 'black box' receivers and transceivers using a PC for a virtual front panel control. Chris Lorek reviews the latest offering from the Australian firm of Rosetta Labs: the WiNRADiO WR-G313i.

The WiNRADiO WR-G313i is a PC plug-in multimode receiver on a PCI card, covering 9kHz to 30MHz with an option of frequency extension to 180MHz. It's described as a high-performance HF receiver intended for government, military, security, surveillance, broadcast monitoring, industrial and demanding consumer applications.

Unlike its cousin the G303, the G313i has its own on-board Digital Signal Processor, which fully performs the final stage IF filtering and audio demodulation and doesn't rely on the PC sound card for processing. This of course means that you can use the sound card with appropriate software for other applications, like data and SSTV decoding, further DSP processing such as noise reduction, and so-on. Also, if you really want you can of course use multiple G313i receivers in a single PC enclosure.

The receiver card simply plugs into any available PCI slot inside your PC, and on the rear is a small SMA antenna socket, together with a 3.5mm audio output socket to feed either amplified speakers or of course your sound card input. The package includes the receiver card, Windows-based software, a start-up antenna consisting of a terminated coax lead connected to a length of insulated wire, and a user's manual.

The G313i is a plug-in PCI card with an SMA antenna socket and audio output socket provided

CIRCUITRY

Up to the demodulator stage, the radio uses a normal dual-conversion superheterodyne approach, with an analogue front-end stage followed by a mixer down to a first IF of 45MHz with a synthesiser-derived mixer injection signal. See **Fig 1**. At the first IF two four-pole 15kHz wide crystal filters are used together with a variable gain amplifier, followed by an analogue mixer down to the second IF of 16kHz nominal (12 – 22kHz variable). Here, the signal is further amplified and AGC (Automatic Gain Control) and S-meter signal levels are derived, before the signal is passed to a 16-bit A/D (Analogue to Digital) converter sampling at 64kHz. From henceforth the DSP (Digital Signal Processor) circuitry steps in to perform the final signal filtering and demodulation, before being passed to a D/A converter to provide the final analogue audio output.

Fig 1: Block diagram of the WiNRADiO WR-G313i.

MODES & BANDWIDTHS

The receiver offers modes of CW, LSB, USB, AM, Synchronous AM, Double Sideband (DSB), Independent Sideband (ISB), and narrowband FM, each with a continuously variable IF bandwidth of between 1Hz and 15kHz in 1Hz increments. As well as this there's a variable bandwidth IF notch filter and a switchable noise blanker with a fully variable threshold setting. There's a 'real time' 20kHz spectrum display with a 16Hz resolution, and a calibrated analogue-style S-meter display shows the received signal level in S-units, dBm level, or µV, down to the noise floor of around -140dBm. As well as a built-in audio recorder you can also record the 20kHz wide IF spectrum, which lets you then experiment with various playback receive modes and filter widths etc. Together with the real-time analyser the receiver can also display a wide-band spectrum analysis by fast sweeping the receiver across the required range. This also provides peak finding, averaging, display storage and retrieval, as well as a display of minimum and maximum sweeps as well as a differential display (ie one sweep minus another) which is useful to see if any new signals have appeared.

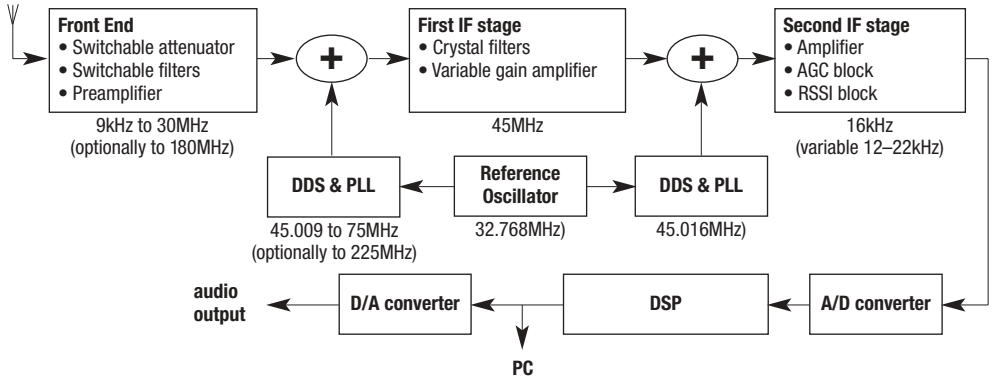
Another feature is a test and measurement facility, performing measurements on the received signal including frequency accuracy, amplitude modulation depth, frequency deviation, THD (total harmonic distortion) and SINAD. A real-time audio spectrum analyzer with a 5Hz resolution can also be displayed. You can also explore block diagrams of the demodulator for each mode, and look at the real-time signals at various stages using two spectrum analysers and a vector voltmeter.

OPTIONAL PLUG-INS

DRM (Digital Radio Mondiale) is a non-proprietary digital system for HF plus medium and long-wave broadcasts, which has the potential of providing almost FM-quality audio. This can be added as a further purchase to the G313i as an XRS (Extensible Radio Specification) plug-in which, after you've installed it, is accessible very simply as another mode from the top bar menu.

Another optional plug-in is the Advanced Digital Suite, which adds a number of digital processing facilities, including a fax module (for WEFAX and HF fax) with a scheduler, a NAVTEX decoder again with a scheduler, Packet radio decoder, ACARS decoder with a code database, CTCSS and DTMF decoders

FIG 1 © RADCOM 427



with alarms, a signal classifier, an audio scope with waterfall display, a signal conditioner with user-defined filters, and an advanced audio recorder with pitch shift and speed control. Again after you've installed the suite, the various modes are accessible from the top bar menu. Finally, if you'd like to control your WiNRADiO from another location, your office for example, the optional WR-G313-CSO client / server lets you do this across all types of computer networks supporting the TCP/IP protocol, including the Internet. With this in use, you can listen to your receiver literally anywhere in the world.

ON THE AIR

As soon as the card is fitted and you power-up the PC, it's automatically recognised by Windows and you simply load the driver software which comes on the supplied CD. Then it's just a case of attaching an antenna (I used an SMA to BNC adapter plus a further BNC to SO-239 adapter here) and an amplified audio source (I used a pair of amplified PC speakers) and tuning in!

At first sight the very comprehensive virtual front panel did look rather intimidating. I believe the controls and operating facilities are well in excess of even the most comprehensive 'top flight' amateur-class and even professional-class receivers, but I very soon got the hang of using it with the PC mouse. The main tuning dial is controlled by the left / right PC mouse buttons, or I could use the small up / down buttons below the main frequency display. I could enter a frequency directly by using the PC keyboard, and four switchable VFOs can be used to store your last-used frequencies. I found, unlike most amateur transceivers, these did not also store the receive mode and bandwidth etc, but for this there are plenty of memory channels available – up to 1000 in each memory file in fact.

Plenty of pre-set IF filter bandwidths were available, and I could also manually enter any bandwidth I wanted and vary this (as with most functions) by using the appropriate small on-screen up / down buttons, or more rapidly by a tiny slider between the buttons. Likewise with the IF shift, but here I could also tune the receiver to another frequency by simply dragging the entire filter passband over a peak of a visible signal on the spectrum display, and 'drag' the filter edge to vary it as needed to reduce adjacent interference. The notch filter I found very useful, especially when a heterodyne appeared right in the middle of the signals I was tuned to. Overall I found the filter and notch slopes to be very steep indeed, a classic 'brick wall' response! I did, however, often find strong adjacent signals induced some 'raspiness' to the on-channel received signals and often there was also audible 'clicking' on fast-rising signals such as strong SSB or CW, probably due to a delay in AGC attack time. But even so, overall the receiver gave a very good account of itself, with certainly at least as good on-air performance of a similarly-priced hardware offering, but with the G313i having vastly more operating features.

LABORATORY RESULTS

Measurement methods:

Sensitivity: Input signal level in µV pd to give 12dB SINAD, measured on SSB 2.4kHz bandwidth.

Blocking: Increase in level of interfering unmodulated signal, above 12dB SINAD ref level to cause 6dB degradation in 12dB on-channel signal.

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

Selectivity: Single signal bandwidth, measured in kHz.

Intermodulation Rejection: Increase over 12dB SINAD level of two interfering signals giving identical 12dB SINAD on-channel third order intermodulation product.

SENSITIVITY

MHz	Signal Level
1.8	0.44µV
3.5	0.38µV
7.0	0.35µV
10.1	0.35µV
14.0	0.35µV
18.9	0.35µV
21.0	0.35µV
24.5	0.35µV
28.0	0.39µV

BLOCKING AND IMAGE REJECTION

MHz	+100kHz	+1MHz	+10MHz	1st Image (+90MHz)
1.8	90.5dB	91.0dB	100.1dB	81.6dB
3.5	93.7dB	94.9dB	102.1dB	80.8dB
7.0	97.8dB	101.7dB	103.9dB	79.4dB
10.1	99.2dB	103.8dB	102.0dB	64.4dB
14.0	98.1dB	102.0dB	103.9dB	64.5dB
18.9	95.7dB	102.4dB	101.4dB	66.0dB
21.0	94.8dB	102.2dB	101.6dB	66.2dB
24.5	93.2dB	101.8dB	102.2dB	66.5dB
28.0	92.3dB	102.4dB	101.0dB	65.9dBa

SELECTIVITY

	CW 600Hz	SSB 2.4kHz	AM 6kHz
-3dB	0.61kHz	2.43kHz	6.02kHz
-6dB	0.62kHz	2.43kHz	6.03kHz
-10dB	0.64kHz	2.45kHz	6.04kHz
-20dB	0.66kHz	2.47kHz	6.06kHz
-40dB	2.19kHz	4.02kHz	7.56kHz
-60dB	5.73kHz	7.47kHz	10.63kHz

INTERMODULATION REJECTION

5kHz spaced signals:	68.8dB
10kHz spaced signals:	73.5dB
20kHz spaced signals:	blocking limited
40kHz spaced signals:	82.1dB

SPURIOUS REJECTION

(Measured with receiver tuned to above 7.3MHz)

11.25MHz:	61.5dB
15.0MHz:	82.1dB

Above: The main receiver panel display, showing the selected signal frequency and IF bandwidth.

LAB TESTS

My measured results are given in the accompanying table. Of note is the very good IF DSP filtering down to several tens of dB, below this synthesiser phase noise came into effect to widen it somewhat. Likewise close-in blocking and intermodulation was affected by phase noise, but this was arguably no worse than many other receivers. Within the 15 / 20kHz first IF bandwidth filtering the lack of narrower 'up front' IF crystal filtering was evident. At greater frequency separations the blocking performance was excellent, in fact pushing the limits of the cavity-tuned signal generators I use. There were only a couple of spurious receive responses, at 11.25MHz and 15MHz, which appeared no matter what frequency the receiver was tuned to.

CONCLUSIONS

After using and testing the receiver, my overall thoughts were "I'm impressed". The WR-G313i has a technical performance matching that of conventional receivers in its price class, but with the operational versatility of professional receivers costing £5000 or more. I'm sure it will have many happy and very well satisfied owners.

Of note is that the operating software is constantly being updated and is freely available from the WiNRADiO website, giving a considerable degree of 'future-proofing' to a purchased receiver – in fact I downloaded an update to improve the operation even more during the review period.

The G313i costs £716.69 inc VAT and shipping. The 180MHz option is a further £170. Our thanks go to Radixon Ltd, tel: 0870 4460449, e-mail: info@radixon.co.uk, for the loan of the review equipment. ♦

WR-G313i

High Performance HF Receiver

- **9 kHz-30 MHz frequency range**
  (optionally extendable to 180 MHz)
- **Software-defined DSP demodulation**
- **Excellent sensitivity**
- **High dynamic range**
- **Continuously adjustable IF bandwidth**
- **Excellent suppression of internal spurii**
- **Real-time spetrum analyzer**
- **Graphical IF shift and notch filter**
- **Noise blanker**
- **Audio and IF recording and playback**
- **Test and measurement facilities**

The WiNRADiO WR-G313i receiver is a software-defined high-performance HF receiver (9 kHz to 30 MHz, optionally extendable to 180 MHz) on a PCI card. The front-end is a DDS-based double-conversion superhet, the last IF stage is implemented in software resident in the on-board DSP.

This receiver is intended for government, military, security, industrial, surveillance, broadcast monitoring, and demanding consumer applications.

The receiver is extremely sensitive, making it possible to comfortably read CW signals well under -130 dBm input levels, yet featuring a respectable 95 dB dynamic range making the receiver resistant to strong signal overload.

What the experts say:

"As with the G303i, the G313's lack of receiver spurious responses was quite astonishing given the inside of a PC is hardly a hospitable electrical environment."

"The measured sensitivity was remarkably consistent over most of the frequency range at -119dBm for 10dB S+N/N."

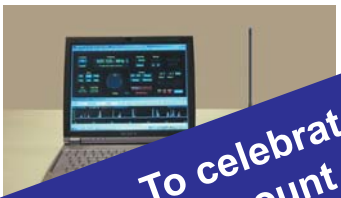
"There is also an integrated recorder, allowing instant recording and playback of the received signal. In addition the receiver can also record an entire 20kHz wide IF spectrum, making close analysis of the characteristics of the received signal possible. Even more delightful is the ability to 're-receive' the same signal with different IF filter bandwidths, notch filter, noise blanking or demodulator settings. In practice this proved to be an extremely useful feature which permitted good recovery of very weak or interference-degraded signals."

"As with the G303i, it is a pleasure to be able to say that the G313i and its software display an outstanding combination of performance, functionality and value for money".

"Overall rating: 5 stars."

Source: WRTH 2005

To celebrate the G313i receiver's 5-star rating by WRTH 2005, 10% discount now offered to RadCom readers till end of March 2005. Call UK (0870) 446 0449 for orders or order online at www.winradio.co.uk/order quoting promotional code WRDM50217.



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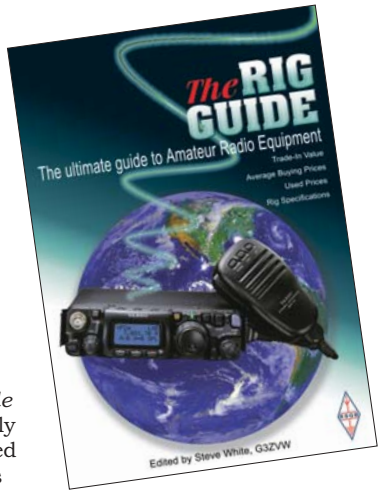
Book review



RSGB RIG GUIDE
Edited by Steve White, G3ZVW

The new edition of the *RSGB Rig Guide* has been completely revised and updated with all the models that have been introduced since the previous edition. All the new, second hand and trade-ins prices have been updated. Colour pages have also been introduced.

The *RSGB Rig Guide* is divided into three sections. The first is basically devoted to buying and selling, and will:

- assist you with choosing equipment that is right for you
- help you to not pay too much for it
- give you tips on how to look after it
- tell you how to maximise its value when selling it on.

In addition there is a Glossary, for newcomers and those unfamiliar with some of the technical terms and abbreviations used throughout the book.

The second section contains an extensive list of transceivers, receivers and linear amplifiers from 11 different manufacturers. Naturally all the current models from Alinco, Icom, Kenwood and Yaesu are featured, but so are a great many discontinued models from the last 10 – 20 years. Well over 300 items of equipment are featured, each of them having a description of the facilities offered, a photo, plus technical information such as output power and frequency range. Against each item of equipment you will find three boxes for prices:

- New: For current models, not the RRP but the price you are actually likely to pay.
- Second hand: The typical second hand price of standard equipment from a retailer.
- Trade-in: If a retailer is likely to accept it, a cash trade-in price.

There's space in these boxes for you to update the prices yourself.

The final section is devoted to equipment reviews and contains a list of every RadCom equipment review from 1990 to 2004, plus reprints of some popular models of equipment.

The *RSGB Rig Guide* is a mine of information about current and recent models of commercial amateur radio equipment. If you are considering buying or selling something it is a book that could easily pay for itself, and in many cases it could pay for itself many times over.

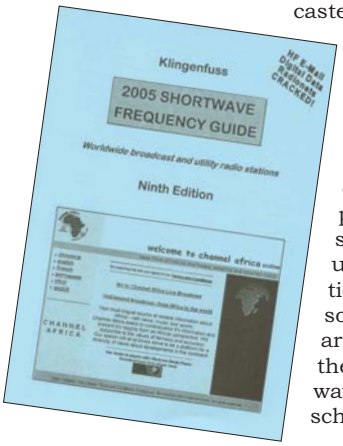
RSGB RIG GUIDE
Edited by Steve White, G3ZVW
RSGB 2005, 80 pages, A4, paperback
ISBN: 1-905-086-02-4
Price: £3.99, available from RSGB Shop, tel: 0870 904 7373, www.rsgb.org/shop

2005 SHORTWAVE FREQUENCY GUIDE
Compiled by Joerg Klingenfuss
Reviewed by RSGB HQ Staff

The *Shortwave Frequency Guide* is really two books in one. The first major section is a 160-page frequency list of 'utility' stations. 'Utility' in this context includes everything other than amateur, broadcast, military, unidentifiable 'number' stations and mobile stations such as aircraft or ships. Listed are the frequency, callsign (where known), name of station, country (using the three-letter ITU code), type(s) of modulation used, and the corresponding return frequency or, in the case of digital signals, details on the type of data transmission or teleprinter system used.

Since, in the UK at least, it is not legal to listen to utility stations, we will move swiftly on to the next major section of the book; a frequency list of broadcast stations. Here, for each frequency, the station using it, transmitter location, ITU country code, transmission start and end times, language, and world target area is given, along with remarks such as days of the week if the broadcast is not daily.

This section is followed by a list of broadcast stations in alphabetical order of country. For each country, the station names are given, followed by language of transmissions, start and end times, target area and frequency. Both international broadcasters and transmissions on short-wave intended for domestic audiences (mainly in the 'tropical' bands around 3.2 and 4.7MHz) are listed. Given the multiplicity of transmissions and frequencies used by some international broadcasters, some of these listings are fairly lengthy. That the whole world's short-wave broadcast stations' schedules can be summarised in under 90 pages is a tribute to the book's logical and uncluttered layout. Many international broadcasters use relay stations to provide a more reliable service in difficult target areas, and this information is clearly given. For example, Radio New Zealand's transmission between 1500 and 1530UTC on 9875kHz emanates not from the other side of the world but from Rampisham in Dorset!



It is likely that there will be a resurgence of interest in HF broadcast listening as more Digital Radio Mondiale (DRM) broadcasts come on stream, with their promise of near-FM quality reception. The *Shortwave Frequency Guide* covers DRM well, with information on receivers and an up to date listing of those DRM broadcasts already available.

For those who use their general-coverage receivers to study HF propagation, the *Shortwave Frequency Guide* will be a Godsend, reducing enormously the time and effort involved in identifying stations which, by the fact that by and large they use the same frequency at the same times each day, can be used as propagation 'beacons'. Other than listing the language of the transmission, no programme details are given and therefore this book will appeal mainly to DX listeners rather than short-wave programme listeners.

Much is made of how up to date the listings are and the fact that they are compiled by extensive monitoring by the publisher himself and by a small team of trusted collaborators. For those who want to tune in to specific stations, listen to broadcasts in a particular language, or simply wish to explore the short-wave bands in more detail, the *Shortwave Frequency Guide* is a must.

Other publications available from the Klingenfuss stable include the *2005/2006 Guide to Utility Radio Stations* and the *2005 Super Frequency List* on CD. Further details direct from the publisher.

2005 SHORTWAVE FREQUENCY GUIDE
Compiled by Joerg Klingenfuss
Joerg Klingenfuss Publications, 2004
508 pages, 170 x 239mm, paperback
ISBN 3-924509-06-9
£24.00 (€35.00), available direct from Klingenfuss Publications, Hagenloher Str 14, D-72070 Tuebingen, Germany;
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Variable Compression
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Gain 2.15/6.2/8.4dB
Power 200W (50W 6m)
Type 1/2, 2x5/8, 4x5/8
Length 2.5m

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Bands: 80/40/30/20/15/10
Height (Adj): 26 ft (7.9 m)
Weight: 12 lbs (5.4 kg)
Impedance: Nom 50 ohms
VSWR: 1.5:1 or less

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Butternut HF-9V 80-6m	£349.95
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5 Bands - 80-10m
Height 7.64m - Weight 7.7kg
SWR 1.15:1 - Power 1kW

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HF40FX 40m Mobile	£39.95
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SG-7900 2&70 Mobile	£31.95
CR-627 6&2&70 Mobile	£33.95
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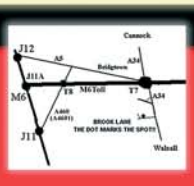

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1KW Auto ATU - 1.8-54MHz - 1-8 secs Tune - Approx SWR Rating of 10:1

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

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

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

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One-Board-Filter

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

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

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

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

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

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ATX Walk--about PL-259

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Microwave Mod MML/432/50 70cms Amp £129.00
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Palstar PS-30N PSU £79.00
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Standard C-156E 2m Handheld Transceiver £125.00
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Tentec Paragon HF BaseInc. Speaker £700.00
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Timewave PK-12 Packet £99.00
Trio PS-430 Kenwood PSU 22A £100.00
Trio R-1000 HF Reciever £170.00
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Yaesu DSV2 Voice recorder £139.00
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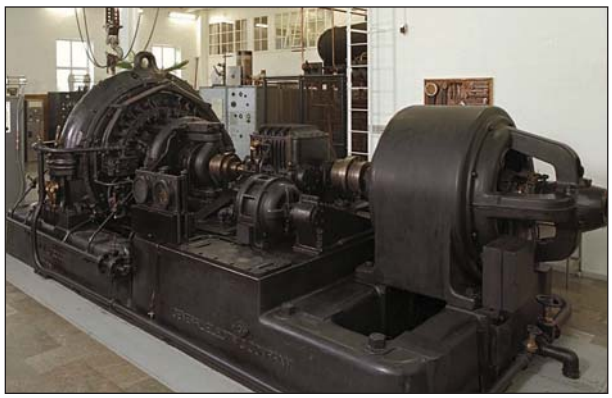
The 2200m-long multiple tuned antenna is an eye-catcher from the Swedish west coast railway and the E6 motorway.



The Alexanderson 50-ton 200kW alternator still goes on the air once a year.

PHOTOS: BENGT A LUNDBERG, SWEDISH NATIONAL HERITAGE BOARD

UNESCO World Heritage Site: SAQ radio station

Carl Henrik Walde describes how SAQ in Grimeton, Sweden, the only remaining pre-electronic transmitter for trans-Atlantic work, came to achieve World Heritage status last year.

On 2 July 2004, UNESCO decided to put SAQ, Varberg Radio in Grimeton, on the Word Heritage list. The World Heritage Committee declared that: "The Varberg Radio Station at Grimeton in southern Sweden (built in 1922 – 24) is an exceptionally well preserved monument to early wireless transatlantic communication. It consists of the transmitter equipment, including the aerial system of six 127m high steel towers. Though no longer in regular use, the equipment has been maintained in operating condition. The 109.9-ha site comprises buildings housing the original Alexanderson transmitter, including the towers with their antennae, short-wave transmitters with their antennae, and a residential area with staff housing. The architect Carl Åkerblad designed the main buildings in the neoclassical style and the structural engineer Henrik Kreüger was responsible for the antenna towers, the tallest built structures in Sweden at that time. The site is an outstanding example of the development of telecommunications and is the only surviving example of a major transmitting station based on pre-electronic technology."

SAQ IS BORN

Ernst Fredrik Werner Alexanderson (1878 – 1975) was born in Sweden, graduated at the Royal Institute of Technology (KTH) in Stockholm and emigrated to the United States in 1901. Employed by General Electric, Schenectady, New York, he remained there for the rest of his long and creative life. Alexanderson laid the foundation for communications between Sweden and America, increasingly needed after the WWI. He worked with television and he explored the possibilities of using the transistor for control applications. He was awarded decorations, medals, honorary doctorates and, at the age of 94, his 344th patent. He was inducted posthumously into the US National Inventors Hall of Fame in 1983.

Just after the turn of the century, Alexanderson began to design HF alternators based on the idea of Reginald A Fessenden, who used one for his first broadcasting experiments on Christmas Eve 1906, when speech, singing and music bewildered the radio officers of ships along the US east coast. The design of the 200kW alternators for VLF were ready in 1918. Including the very impressive multiple tuned antenna, they were manufactured by General Electric and sold by the Radio Corporation of America around the world. Six 127m-high towers with 46m-long booms carried 12 2200m-long wires that fed six vertical antenna elements from the top of each tower. The network included 18 transmitters in continental USA, Hawaii, Wales, Poland and Sweden.

The first message from Grimeton Radio (SAQ) on the Swedish west coast was sent to RCA's 'Radio Central' at Rocky Point, Long Island, in October 1924. The wavelength was about 18,000 metres, later changed to a frequency of 17.2kHz (17,442 metres). Two alternators with an output power of 200kW could be used one at a time or in parallel. The rotating disc of the motor-generator was 1.6 metres in diameter and the air gap 1mm. At 2100RPM, the rotor peripheral velocity was 180m/s.

On 2 July 1925 the station was inaugurated by King Gustaf V, who sent a telegram to US President Calvin Coolidge praising the new link to America. He also praised the democratic shelter under which millions of Swedes had found new homes.

GRIMETON IN DANGER, BUT SAVED

SAQ was still in service after the end of WWII but the alternator and its

MAP: WILLY LINDSTRÖM

VISIT SAQ!

Visiting Sweden this summer? If so, you might be interested to visit the SAQ station. A visitor's centre close to the station building will be open on 2 July, exactly 80 years after the inauguration of SAQ. The SAQ website at www.alexander.n.se will tell you how and when you may visit the station. There you will be guided by the station crew or members of the supporting non-profit Alexander Society.

The new visitor's centre, apart from being the SAQ reception area, will also contain activities to stimulate young people to show an interest in natural science and technology. NRS, the Nordic Radio Society foundation, will sponsor an international Nordic longwave tutorial and seminar in late June / early July. SAQ goes on the air once a year on Alexander Day in late June or early July, this year on Sunday 3 July 2005. The cooling water fountains, the clicking relays, the liquid variable resistors and the rumbling 50-ton alternator recall the atmosphere of the 1920s and pay tribute to Ernst Alexanderson, the complete chief engineer.

PHOTO: BENGT A LUNDBERG

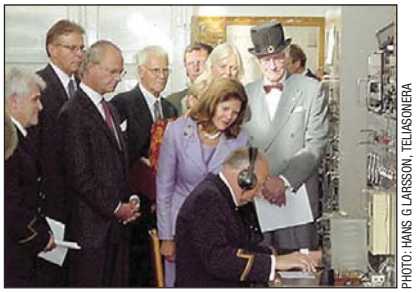


PHOTO: HANS G LARSSON, TELIASONERA

Above: Author Carl Henrik Walde, SM5BF, keys a message for the royal couple, King Carl Gustaf (third from left) and Queen Silvia.

Above left: The well-maintained SAQ station building, built in neo-classical style.

antenna system stood little chance of long-term survival because HF radio had taken over intercontinental communications. However, the Royal Swedish Navy needed the SAQ VLF alternator and its efficient antenna system for communicating with submerged submarines.

Naval interest declined and, in 1995, Swedish Telecom's radio services decided to close SAQ, which was still very well maintained and in perfect working order. As people prepared to tune in to the final transmission, a 'resistance movement' was started. We succeeded in postponing the closing date by a few months. Thus, what was thought would be the last transmission by the one and only remaining Alexanderson alternator was heard in September 1995 at the IEE 'Hundred Years of Radio' conference in London, as well as in the United States. Many radio amateurs and professionals were present at the conference and, with the signal being received by BBC Monitoring relayed to the auditorium, they copied the message 'live'.

Luckily, interest in preserving the station and maintaining it in working order was increasing, and after a short while the situation was totally reversed. The Swedish National Heritage Board, the County of Halland, the town of Varberg and Swedish Telecom's radio services gave generous support, backed up by pressure from radio enthusiasts, engineers, radio officers and radio amateurs. Living in the outskirts of Stockholm, I became a sort of SAQ ambassador to the capital of Stockholm.

World Heritage status first came to mind when Grimeton Radio was listed as a national industrial monument in October 1996. SAQ then became protected by Swedish law ensuring that the station buildings, the alternator and the multiple tuned antennas will forever be kept in working order. A year later, SAQ was honoured as the foremost Swedish industrial monument and was put on the current list of the most important sites in Sweden.

ROYAL SUPPORT

On the first day of the new millennium, Grimeton Radio sent the following message from the king of Sweden, HM Carl XVI Gustaf, which was keyed by Lars, SM6NM, who is a professional operator:

"75 years ago the first wireless messages were sent from the radio station at Grimeton in Sweden to the United States of America. The new link was supplied with the ultimate in modern radio technology at that time, invented by the Swedish-American Ernst F W Alexanderson, USA.

"In that first message from Grimeton 75 years ago, my great grandfather King Gustaf V expressed the hope that better communications would strengthen the relations between peoples and nations. Today the only existing Alexanderson transmitter is again sending a message around the world.

"Today the unique radio transmitter at Grimeton meets a new millennium. My message today is, however, the same as that sent by King Gustaf V 75 years ago. With modern technology and means of communication, the possibilities of deepened understanding, peace, democracy and free exchange of opinions between the peoples of the world will increase.

"Finally, I wish a Happy New Year to all of you around the world, who are listening to this transmission!"

The message was received by about a hundred listeners in Europe and in the United States, Minnesota being the most distant.

On 5 September 2001, King Carl Gustaf and Queen Silvia visited Grimeton and sent a short radiogram from SAQ to the people of the world, keyed by SM5BF, the author of this article (who is not a professional operator). To be sitting there next to the royal couple was great. The message read:

"on july 2 1925 my great grandfather inaugurated grimeton radio and on jan 1 2000 saq transmitted my millennium message stop today on our royal tour we send our best wishes from saq = carl gustaf rex silvia regina".

THE WORLD HERITAGE

After eight years of work, our ultimate goal of putting SAQ on the UNESCO World Heritage List was achieved on 2 July 2004, exactly 79 years after the station's inauguration. Thanks are due to numerous people all over Sweden, including the Swedish government, the Swedish National Heritage Board, the county of Halland, the town of Varberg and Swedish Telecom's radio services for their intense efforts. The World Heritage declaration is a major achievement for radio enthusiasts and for a nation like Sweden which is among the foremost countries in IT and radio communications.

The celebrations started only a few hours after the UNESCO decision by the Halland county governor, Mrs Karin Starrin, speaking to the crowd from a balcony on the main square in Varberg. Two days later, on 'Alexander Day' 2004, 1600 people visited the station to see and hear SAQ transmitting the news. The return channels were amateur radio to SA6Q, e-mail and fax: things change with time.

Swedish Telecom has generously donated SAQ to the newly-formed World Heritage Foundation of Grimeton, adding a very substantial amount of money for operation and maintenance. Thanks are also due to the Royal Swedish Navy, which earlier put in a lot of money. The station is in almost mint condition and the antenna towers have recently been completely repainted at a cost of around €1m each.

ACKNOWLEDGEMENTS

I am indebted to books, journals and proceedings and to my friends everywhere for support in writing this article and earlier conference papers on SAQ. Special thanks go to my paper co-author Hans Bergfast of the County Administrative Board of Halland and to Karl-Gustav Strid, SM6FJB, for their expertise in preparing the World Heritage application. I would also like to mention the support from Gunnar Brodin, whom I first met at the Royal Institute of Technology in the 1950s. He became a professor there, becoming interested in Alexanderson and his work and ending his career as Earl Marshal of Sweden. During the 2002 royal visit, he amazed the royal couple, who had not been told in advance, by coming out of the wings, wearing his doctor's hat and playing the role of Ernst Alexanderson: quite appropriate for our foremost Alexanderson expert! ♦

WEB SEARCH

SAQ and Alexander:	www.alexander.n.se
UNESCO World Heritage:	http://whc.unesco.org
Swedish National Heritage Board:	www.raa.se

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Steve Hartley, G0FUW

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

E-mail: newcomers.radcom@rsgb.org.uk

Newcomers' news

A round-up of news by and from newcomers to amateur radio, compiled by Steve Hartley.

It is always good to start off with some good news and John, M0MXN, sent a brief report to say that all eight of the Intermediate trainees at the Norfolk Amateur Radio Club passed their exams in December. Well done all!

John also asked me to restate the position of newcomers' access to amateur satellites. This followed some confusion during the Intermediate training course. The current situation is as follows:

- Foundation licence holders have no access to amateur satellites. They can contact other amateurs who are 'Mobile' in space, onboard the International Space Station, for example, but no 'repeater' style operation is permitted.
- Intermediate licence holders have full access to satellites operating in the bands covered in the BR68/I schedule. That is why it is covered in the Syllabus and the textbook.
- Full licence holders have full access to satellites operating in the bands covered in the BR68 schedule.

PHOTO: IAN CARTER, G0GRI

Robin Room, M0RCR, demonstrating HF radio to Foundation student Richard Eamer in Bath. Richard also passed the Intermediate exam in January.

OLIVER'S PROGRESS

I have been asked to congratulate Oliver Staines, now M0WAS, at the grand old age of 14. Granddad, Alan Smith, G0WAS, and father, Stephen Staines, G7WAS, are both proud of Oliver and say that eight months of home study was worth it.

Oliver would like to say thank you to Shefford ADARS for its Foundation course and Alan Ralph, G8XLH, and Tracy Ralph, M5ATR, of Peterborough & DARC for arranging the practical assessment and exam arrangements for the Intermediate and Advanced exams.

Sounds like another good example of teamwork but I guess Oliver did the hard bit. Well done young man.

BEGINNERS' LUCK?

In the February column Gavin Andrews, M0ETA, gave us an account of how he took the fast track to his Full licence, completing all three levels of assessment and exams in one weekend. Gavin followed up with news of his first few days on air.

Using a half-size G5RV and a second hand Yaesu FT-890AT, his first 'solo' contact on HF SSB was with a station in Alicante, Spain on 40m. Not bad, but his next e-mail reported that his second HF contact was with Ian, VK3MO, in Melbourne, Australia. "It was absolutely amazing", said Gavin, "I was listening and found VK3MO calling CQ. I couldn't resist a call and a short QSO followed; we managed to exchange callsigns, name and signal strength and QTH. Awesome!"

Who says the bands are dead? Glad to know you are enjoying the hobby Gavin.

OLD EXAM, NEW LICENCE?

Newcomers come in all shapes and sizes. I was recently asked a question about taking out a licence some time after gaining the all important pass slip.

It seems an amateur in Brighton has a boss (an electronics circuit designer) who took and passed the Radio Amateurs Examination about 25 years ago. He did not, however, take out an amateur radio licence at that time. As retirement now approaches, he is now interested in taking up the hobby and is asking how he should now go about taking out the licence with his old RAE qualification.

As I understand it, there is no time limit on the written examination pass slips. So long as you have the necessary paperwork there should be no problem in gaining a licence, no matter how long ago the qualification was gained. However, the callsign will of course be from the current series, not the series that was being issued when the exam was passed.

A FIRST RADIO AWARD?

Every year the Cornish Radio Amateur Club organises International Marconi Day. The 2005 event is due to take place on Saturday 23 April. The event is, of course, to commemorate the achievements of radio pioneer Gugliemo Marconi. If you have never managed to gain an award for your radio achievements this is a good opportunity to make a start.

Marconi Day is not a contest, but award certificates can be obtained for working a number of the special event stations operating during the day. Full details can be found on the web (see 'Web search' below) or by contacting Geoff Chance, M0GRC, whose details are listed in the *RSGB Yearbook*.

SIX METRES

In the November column I mentioned the threat to the 50MHz contests due to lack of entrants. Roger Beever, G6CKR, wrote to say he is intending to join in the 2005 events. However, he questioned the connection between my delta loop in the loft and my hilltop contesting, both being mentioned in the same context.

I have a delta loop in my loft, tuned up for 50MHz operation and when the band is open it is surprisingly effective. I have used it to work contest stations from the main station, but not portable. That said, I am sure it would work quite well supported by a glass-fibre fishing pole, or similar.

For my portable operation I have two antennas: a 3-element Yagi and a bi-square. The bi-square antenna is a kind of two-wavelength quad and I have used it with great success. Information on the bi-square is quite scarce and the formula I did find quoted in two text books did not work – I had to crop the antenna quite considerably to bring it to resonance. Once tuned up, the antenna has about the same gain as my 3-element Yagi (see *RadCom* November 1999) but it is a bit tricky to turn, being guyed down to keep its shape.

Details of this year's RSGB contests were published in the January *RadCom* and the full rules can be found on the RSGB HF and VHF Contests Committee's websites (see 'Web search' below). If you can make a date for the 50MHz Backpackers it would be great to work a logbook full of readers. ♦

WEB SEARCH

International Marconi Day:	www.gb4imd.co.uk
RSGB HF Contests Committee:	www.rsgbhfcc.org
RSGB VHF Contest Committee:	www.blacksheep.org/vhfcc

Hilton Willott, MW0OPS

1 Sycamore Avenue, Chepstow, Monmouthshire NP16 5RH.

E-mail: HWILLOTT@aol.com

A simple home-made 2m Yagi for portable operation

Hilton Willott describes an easy-to-build 2m Yagi suitable for portable use and in particular SOTA hilltop operation, where light weight and ease of physical transportation are prime considerations. It would be an ideal project for anyone contemplating operation in this year's RSGB 144MHz Backpackers events, which start in May.

I am an avid reader of the technical articles in *RadCom* and am constantly amazed by the high standard of technical ability of the authors. It is with some trepidation that I sat down to write this article. I did a year as an M3 and in December 2003 took and passed the RAE, but I consider myself very much a novice. I have no special electronic or mechanical skills but thought that if this project worked for me there was no reason that it should not benefit others in my situation. It needed the minimum of expertise, tools and cash. This is cheap, real 'Blue Peter' stuff, *but it works well.*

INSPIRATION

The motivation began whilst doing the September 2004 RSGB 144MHz Backpackers contest. I had just carted all of my gear up to the top of Hay Bluff and only just managed to set up prior to the start. The antenna that I use is a Tonna 9-element Yagi for 2 metres. It splits at the centre but is still very awkward to carry, with the elements protruding all over the rucksack and by the time I arrived I looked like a demented porcupine and the antenna needed serious straightening (see 'Down to Earth', *RadCom* February 2005, front cover and pages 40 – 41). This, together with four five-foot aluminium poles for a mast constituted a considerable load. I needed something smaller. During the contest I was fortunate to have QSOs with MW0YLS/P on SOTA summit NW016 and GW1INK/P on NW028 (thank you both). I made a mental note to find out more about SOTA.

I went back to the July 2004 *RadCom* and read the article by John Linford, G3WGV, and visited the excellent SOTA website (see 'Web search'). It seemed a great way to combine hill walking and amateur radio. All I needed was an antenna system that was easier to carry. By chance I found an article on the Internet by Kent Britain, WA5VJB, entitled 'Cheap Antennas for VHF/UHF'. He gives dimensions for 19 types of Yagi for VHF and UHF. I was impressed by the simplicity of the construction. Most great ideas are simple.

BUILDING THE BEAM

Kent used a piece of 1/2in x 3/4in wood as the boom for his antennas. I did not have any wood lying about but I did have some 1.5in plastic waste pipe. I then realised that if I used a pipe as the boom it would also act as a carrying tube for the elements whilst walking. The other thing I needed was some 1/8in silicon bronze welding rods. A friend had some 2m lengths of 3mm stainless steel welding rods; not ideal but I thought I would give it a go with this instead.

The tools that I used were: hacksaw, tape measure, vice, bench drill, file and a marker pen. The dimensions for 3, 4 and 6-element versions of the beam are given in **Table 1**. Note that all spacings are measured from the reflector, the rearmost element. Being American, all dimensions in Table 1 are in inches! See **Fig 1** for details of construction of the driven element. The distance H on the driven element is 1in.

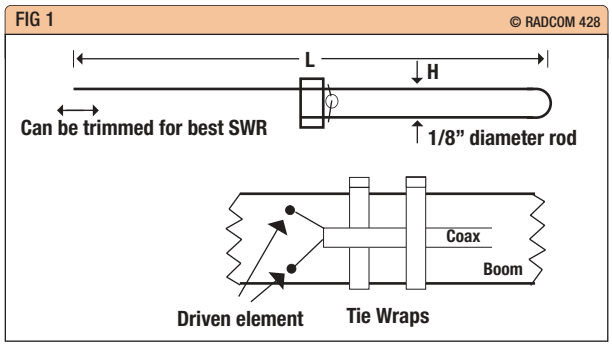

Fig 1: Detail of construction of the Yagi's driven element

The completed antenna under test in the author's garden.

The first thing to do is to note the length from the reflector to the last element and add a few inches, this is then used to cut a length of the plastic waste pipe. I then had the problem of making sure that the holes for the elements were all drilled as near to 90° to the axis of the pipe as possible. I noted that along the length of the pipe there was writing, printed in a continuous straight line by the manufacturer. I used this as a reference to mark out the places where the holes for the elements needed to be drilled. I suspect the engineers among you have a cunning method for all of this.

I drilled the first hole for the reflector about 1in from the end of the pipe and then carefully measured the correct length on the welding rod and cut it. This was to be my reference point both for the distances of the reflector and the angle at which the tube needed to be held to get the elements in line. I did not have a vice to clamp the pipe to the table of the drill so I used a couple of 'U' bolts I had in my box of bits. I inserted the reflector into the hole made in the pipe and used it to

Table 1

	144 MHz	REFLECTOR	DRIVEN ELEMENT	DIRECTOR 1	DIRECTOR 2	DIRECTOR 3	DIRECTOR 4
3 Element	Length	41.00in	38.50in	37.00in	-	-	-
	Spacing	0	8.50in	20.00in	-	-	-
4 Element	Length	42.00in	38.50in	37.50in	33.00in	-	-
	Spacing	0	8.50in	19.25in	40.50in	-	-
6 Element	Length	40.50in	38.50in	37.50in	36.50in	36.50in	32.75in
	Spacing	0	7.50in	16.50in	34.00in	52.00in	70.00in

Table 1: Element lengths and spacings for 3, 4 and 6-element versions of the Kent Britain, WA5VJB, portable 2m Yagi. The spacings are measured from the Reflector, the rear-most element of the antenna. The distance, H, on the driven element (see Fig 1) is 1.00in. Elements are 1/8in diameter.

Left: The completed 2m Yagi.

Above: Detail of driven element construction. Note the elastic band to provide just sufficient friction to stop the elements from sliding in and out.

Above left: Close-up showing the method of mounting on a telescopic fishing rod. The hole at right angles is to allow the antenna to be used with vertical polarisation.

sight along and get it in line vertically with the drill bit, chuck and shaft of the drill. Not very scientific but it worked OK. Having made another hole I made another element according to Kent's table and then placed that into the pipe and sighted along both of them. I then repeated the process until all of the holes were drilled. As I made the elements I made a light cut with the hacksaw half the diameter of the tube away from the centre of the element. This was to allow me to position the cut against the tube to get the elements centralised when assembling them. I also made a number of cuts in the end of each element according to its position number, again to ensure that I assembled it correctly in the field. The holes that I drilled were a gentle push fit but I was concerned that the elements did not move when they were in place as the holes gradually enlarged over a period of time. All I did was use a rubber band looped over the element, round the tube and then again over the element as it passed through on assembly. This provided good friction, yet by lifting the band the element could easily be slid out.

A problem that I had was how to attach the coax to the driven element as it was stainless steel. I do not have the kit to solder to stainless and the ability to easily attach and take off the coax seemed useful. I overcame this by filing a flat spot about 10mm long on the two points of attachment on the driven element and sliding the brass ferrule from a block connector on to the rod. This gave me one screw to locate the point of feed and the other to attach the coax.

I finished the construction (that is a very posh word for a process that took less than an hour and a half) and realised that I had failed to consider how I was going to mount the beast. I have a fibreglass fishing rod which I had bought from the local market for a fiver. It is a roach pole and extends to about 6m by sliding out the tapered sections. All I did was to select the sections that would give me about 4m in height and seemed stiff enough to cope with the antenna. I measured the diameter of the top section and drilled a hole in the waste pipe at the point of balance. In order to use the antenna for both SSB and FM [which on 2m are normally horizontally and vertically polarised, respectively – Ed] I drilled another at right angles to the first. As the fibreglass section is tapered the antenna slides down a couple of inches and becomes a nice firm fit – simple and easy.

TESTING, TESTING

Now for the moment of truth. I did not have high expectations as I am no antenna buff and no construction expert. I tied the pole to the washing line in the back garden and mounted the antenna. I fed it through my Avair AV 200 SWR meter to the trusty Icom IC-706MkII. I had an SWR of 5:1.

I pruned the driven element by half an inch. There was no science in this, just a guess. I got 2.5:1, by nibbling it down further by very small lengths I got it down to 1.4:1. I expect someone who knew what they were doing could get a better match but it was good enough for me to try it out.

On 4 October last year I went to a location near my Chepstow QTH at about 150m ASL and had a go. My first contact was with G3EDD using 10W on SSB with a report of 55. The second was with GW0PLN both on FM and SSB with reports of 57. The thing actually worked! Since then, my best DX with this antenna was from a location near my home at a height of 137m ASL, IO81PQ, on 16 December 2004 with F6KEQ in IN98 with a report of 55.

Kent notes that the antenna as designed is peaked for 144.2MHz but its performance is still good at 146MHz.

I have now also constructed one of Kent's 70cm antennas. It was as simple to construct as the one for 2m, and using the same methods and materials. I did have to spend a little more time playing with it to get the centre frequency right and to get the SWR down, but it was well worth it.

What next? Well, I was thinking that for SOTA it would be nice to pull the antenna out of the rucksack and have it self-assemble – rabbit out of a hat job. I am about to try to construct one of Kent's 2m antennas using pieces of metal from a tape measure. They seem stiff enough to retain their form yet bend easily when stuffed into a small space. We will see. ♦

WEB SEARCH

'Backpackers' contest (RSGB VHF Contest Committee):	www.blacksheep.org/vhfcc
SOTA:	www.sota.org.uk
'Cheap Antennas for VHF/UHF' (Kent Britain, WA5VJB):	www.clarc.org/Articles/uhf.htm

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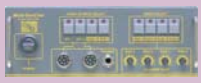

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No.30 ★★★★★★★★★★★★
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Max power:	120W (10/6 m: 80 W)
Impedance:	50 ohms, M-plug/PL-259
Length:	1.19m
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Manufactured:	Japan, 2003-200x
Other:	Suitable for Yaesu FT-8900R.

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HFC-10L 28MHz	•TYPE 1/4λ, •MAX POWER INPUT 250W SSB •CONN. M-P •LENGTH 1515mm •WEIGHT 245g	**£34.95**
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HF

Just how many DXCC entities is it possible to work in one calendar year? Don Field looks at some analysis. Plus news of DXpeditions to Peter 1st, Kerguelen and the Spratly Islands, and much more.

As I write this, we know that the Peter 1st Island DXpedition has been delayed due to problems with the ship. Two of the team members are at the port in Chile, keeping a day to day eye on the situation. A final go / no-go decision was due to be made in early February, with the hope that the expedition could be on the air by about 18 February. As an echo of my introductory remarks last month, I have already seen disparaging remarks on the *Cluster* system about 3Y0X, and the delay. Clearly any delay was quite outside the team's control, and it is to every team member's credit that they have been able to rearrange their schedules to be available for the later time slot. Giving that the trip involves several weeks away from work and home, this demonstrates a very high degree of commitment. Let's hope they made it; you will know by the time this appears in print.

COUNTRIES WORKED, 2004

(last one for 2004, sorted this month by Mixed totals)

CALL	CW	SSB	DATA	MIXED
W1JR	258	248	201	273
G3XTT	243	215	79	267
G3TBK	253	206	146	263
MM5DWW	122	250	137	255
GM3POI	240	176	7	251
G4WFQ	214	44	109	226
G0KBL	224	0	0	224
G4OBK	178	119	106	217
GM4FAM	205	148	0	217
G3LHJ	196	76	123	212
G3TXF	206	13	4	208
G4WXZ	158	152	0	207
G4NXG/M	0	203	0	203
G4KFT	201	0	0	201
VK4BUI	175	155	0	194
G4IRN	192	0	0	192
GM0TGE	130	159	0	189
G3SXW	187	0	0	187
G3JFS	144	110	137	185
G3VDL	185	0	0	185
M5GUS	0	174	0	174
MM1APX	119	148	70	173
M0BKV	51	165	45	171
MU0FAL	162	113	0	170
G3YVH	153	21	0	153
M1DDD	0	152	0	152
GM8OEG	83	126	88	150
G3YMC (QRP)	148	0	0	148
G6CSY	0	144	0	144
G1VDP	0	142	0	142
M0CNP	36	118	89	142
G4FAL	103	111	0	141
G6HOU	0	133	9	133
M0BVE	131	0	0	131
M3TBK	9	120	3	124
G4FVK	71	98	0	120
G4JZO (QRP)	104	0	15	119
G0GFQ	32	109	33	117
G0LGJ/M	0	107	0	107
G1UGH	0	100	0	100
G4DDL	98	10	14	98
2U0GSY/MU3GSY	21	89	0	89
G3WP	81	0	0	81
G3URA	0	0	60	60
M5AEF (1W)	28	41	0	49

John, G3LAS, and I have been comparing notes on what we worked in 2004, and find that we have 275 entities between us. This is close to W1JR's 273 though the mix is slightly different as Joe worked some Pacific ones that that were impossible from the UK. This begs the question of how many were active in 2004, and how many DXCC entities remained QRT during the year. Joe and Bernd, DF3CB, have separately published lists of those they believe were QRT in 2004, and my attempt to compare them leads to the following: Africa: 3B6, 3C, 3C0, 3Y/B, 9X, D6, E3, FR/G, FR/J, FR/T, FT/W, FT/X, FT/Z, J5, TL, VK0H, Antarctica: 3Y/P, Asia: 1S (Spratly), 7O, BS, BV9P, E4, P5, VU7, Europe: JX, North America: CY9, CY0, FO/C, KP1, KP5, TI9, Oceania: 3D2/C, 3D2/R, H40, KH1, KH3, KH5P, KH5K, KH7, T31, VK9M, VK9W, VK0M, VP6/D, ZL8, ZL9, South America: 3Y/P, CE0X, HK0M, PY0T, VP8/Sand. There is some uncertainty as to whether ZK1/N was active and whether the 5A station which appeared briefly was a pirate. Personally, I don't recall any activity from S0 or 1A0, but memory may be failing me. JX does not appear on Bernd's list and TL does not appear on Joe's. Anyway, the conclusion seems to be that there were about 287 entities active in all, which is slightly lower than in the last few years, perhaps reflecting less of a willingness to mount major DXpeditions now that solar activity is on the wane. However, activity is already promised from several of those missing ones during 2005 (Spratly, 3Y/P, CY9, FR/G, FT/X, ZK1/N). Bernd makes the point that, to have worked all DXCC entities, you would have had to have been active since March 1989, when the Laccadive Islands were last aired.

The CQ 160 CW contest at the end of January saw plenty of activity, with somewhere around 70 DXCC entities heard or worked from the UK

PHOTO: PETER 1ST ISLAND DXPEDITION WEBSITE WWW.PETER0NE.COM

Right, above: Maurice, ZL2MF (right), with Brian, G8ZVK, at the Flight Refuelling Rally in 2004 (see 'DX News').

Right, below: Peter 1st Island, taken in 1987 by Trond Eiken of the Norwegian Polar Institute. The drawing of the antenna (bottom right) shows the proposed 3Y0X campsite. More people have flown in outer space than have set foot on Peter 1st Island!

(ON4UN, operating with special prefix OO4UN from Belgium, worked over 80), as well as West Coast USA. Just a word of caution, though. The UK allocation starts at 1810kHz; several UK stations were heard operating below this frequency over the course of the weekend.

DX NEWS

Willi, DJ7RJ, will be active from 28 February until 19 March from the **Dodecanese Islands** (EU-001). Look for SV5/DJ7RJ to be on 10 to 160m CW and SSB, mostly on the low bands.

The next activity by the Council of Europe Radio Club takes place on 4, 5 and 6 March to honour International Women's Day (8 March). The operators of TP1CE will, on this occasion, all be YLs. This station counts as **France** for DXCC, but it's a nice prefix. QSL via F5LGF.

Janusz, SP6IXF, and Przemek, SP7VC, will be in **Namibia**, V5, from 25 February until 11 March. They have applied for the callsigns V51IXF and V51VC. They plan to have a website up and running before they go.

The 'Microlite Penguins' DXpedition team (who activated South Sandwich and South Georgia in 2002) will activate **Kerguelen** (FT8/X) between 15 March and 02 April. This is a 12-man operation, with round-the-clock activity. Mark, M0DXR, and Andrew, GI0NWG, will be among the operators.

JA9BV and JA3DYU will be active

QTH Corner

TO7C:	Bernard Chereau, F9IE, PO Box 211, 85330 Noirmoutier en l'Ile, France
VU4NRO and VU4RBI:	National Institute of Amateur Radio, Rajbhavan Road, Somajiguda, Hyderabad - 500 082, India.

as XV3BV and XV3DYU (**Vietnam**) from 14 to 17 March, then as BW2/JA9BV and BX2/JA3DYU (**Taiwan**) from 18 to 23 March. Activity will be on mostly SSB and CW. QSL via the bureau or direct to their home callsigns.

A Japanese group will be on from the **Marshall Islands** from 18 to 28 March. They will use the following callsigns: V73JY (JA1JQY), V73KJ (JA1KJW), V73HE (JA1HEE) and V73OP (JI1FPO).

Gil, 4F2KWT, should be on one of the Philippine-controlled **Spratly Islands** by the time this appears, and will be joined by two or three other operators in late March. The plan is for activity on all bands and modes through to late April. The callsign will be DX0K. QSL via 4F2KWT. This is good news as it is some years since the Spratlys were activated. The most recent operations were from Malaysian-controlled Layang-Layang, but since 9/11 it has not been possible to gain operating permission from the military authorities on the island.

Sigi, DL7DF, and others will be active from the **British Virgin Islands** VP2V from 23 February to 9 March 9. Operators and callsigns will be VP2V/DL7DF, VP2V/DL7UFR and VP2V/DL4WK. They will use three transceivers and two amplifiers, a Titanex V80 vertical, an R7, a Hexbeam, plenty of wire and a K9AY loop. They will emphasise the low bands. Look for activity on all modes.

Bill, J6/WB5ZAM, will be on a DXpedition and vacation to **St Lucia** from 20 March to 3 April. He will have his FT-100D and keyer along. A G5RV antenna has been sent ahead. Bill will be at the Villa Beach Cottages, "and propagation is perfect from there." He will spend most of his time on CW. QSL to his home call.

Flo, FG/F5CWU, will be on the air from **Guadeloupe** from 3 to 10 March, all bands and modes.

Art, N2NB, will be in **Montserrat** from 24 February to 8 March with the callsign VP2MDY. He will be on all bands and modes including PSK31.

Ten operators from the Lufthansa Amateur Radio Club will be on from **Trinidad**, 9Y, from 23 February to 2 March. At least two stations will be on the air, 160 - 10m, all modes. QSL via DJ3FK, who is also hosting the group's website.

A group of nine French amateurs will sign TO7C from Iles du Salut (SA-020), **French Guiana**. They will be on all bands and modes from 10 to 17 March.

Helmut, DF7ZS, and Wolfgang, DK9VZ, will be in the **Netherlands Antilles**, from 10 to 24 March (Wolfgang for the second week only), signing PJ4/DF7ZS with activity from 12 to 30m. QSL via DF7ZS.

Maurice, ZL2MF (ex-G3ZXD), writes that he is now living in, as he puts it, the glorious Bay of Plenty in the North Island near the town of Katikati, pronounced "catty catty". He runs accommodation for backpackers and is setting up a fully-equipped HF station. So you can see **New Zealand** and get some operating in, too! E-mail him at zl2mf@xtra.co.nz or check his website for further information.

Vladimir, RV3LZ, writes that many UK stations worked special event stations R200MIG and UE3LMG (200th Anniversary of Great Russian composer Mikhail Ivanovich Glinka) last June. By now all contacts will have been QSLd via the bureau and applications are being accepted for the 'Composer M I Glinka' award. Please send the application and payment - 6 IRCs - to the Award Manager: Vladimir Ivanov, PO Box 350, Smolensk - 214000, **Russia**. Vladimir can be contacted on rv3lz@mail.ru

The *CQ* WPX SSB contest runs over the last full weekend of the month (26/27 March) and many interesting operations are planned. At the time of writing, those I know of include J7 (Dominica) by members of the W2RZS radio club, ZD8Z (Ascension) by N6TJ, CN2J (Morocco) by K7EJ, and MU2Z by M5RIC. As always, the NG3K website is the best

9 BAND TABLES No 53

MIXED MODE

CALL	1.8	3.5	7	10	14	18	21	24	28	TOTAL
G3KMA	259	303	329	325	334	330	335	324	332	2871
G4BWP	254	306	333	323	335	329	335	317	326	2858
G3XTT	237	282	320	289	334	320	333	302	314	2731
GW3JXN	197	267	302	294	329	322	323	299	305	2638
G3GIQ	153	248	305	270	334	322	333	310	328	2603
G4OBK	199	239	292	300	330	313	320	307	303	2603
G3SED	241	271	301	292	317	299	305	279	289	2594
G3TXF	145	247	306	304	329	308	327	290	306	2562
G3TBK	150	247	290	283	333	312	324	297	298	2534
G3SNN	188	244	294	253	333	303	326	285	305	2531
GM3YTS	150	247	302	292	334	296	324	261	301	2507
G3LAS	123	218	273	282	323	311	320	303	303	2456
G3YVH	149	184	271	295	326	316	318	282	287	2428
G0JHC	64	162	255	291	291	310	319	300	309	2301
G3IFB	65	229	291	249	327	255	307	250	289	2262
G4PTJ	52	200	260	223	326	282	323	273	305	2244
GM3PPE	148	211	256	278	320	271	282	247	229	2242
G3AKU	115	173	245	254	303	270	277	268	276	2181
G5LP	76	234	287	237	312	254	286	196	257	2139
G3VKW	50	176	244	154	329	253	325	266	310	2107
G0EHO	0	155	208	205	283	223	278	222	243	1817
G4WFQ	55	171	233	221	263	229	239	186	204	1801
M0AWX	48	127	168	26	298	266	292	241	253	1719
G4OWT	58	118	207	114	311	150	299	122	271	1650
G4BGW	12	90	199	181	236	209	236	175	222	1560
G4NXG/M	29	62	150	0	298	241	293	203	255	1531
GM4FAM	48	87	125	150	200	177	193	172	158	1310
G0PSE	49	67	137	133	222	140	181	155	188	1272
MU0FAL	26	32	164	162	167	109	210	154	167	1191
G0LRX	11	107	128	0	242	73	262	86	237	1146
G4FVK	44	79	109	63	191	109	196	87	176	1054
M0CNP	11	58	88	16	171	108	160	80	124	816
M3CVN	16	55	94	0	129	63	103	41	0	501
M5AEF	0	22	13	7	69	92	72	30	34	339
AVERAGE	**101**	**174**	**229**	**199**	**282**	**240**	**275**	**224**	**250**	**1974**

CW ONLY

G3KMA	253	284	326	325	334	325	332	312	322	2813
G4BWP	234	242	311	322	313	311	314	288	270	2605
G3XTT	229	259	307	289	312	304	310	285	290	2585
G3TXF	145	244	304	305	324	305	322	289	297	2535
GW3JXN	194	249	289	294	315	308	312	278	279	2518
G4OBK	191	224	284	299	315	304	300	290	287	2494
GM3POI	222	253	299	287	312	281	291	252	263	2460
G3SED	240	259	295	292	292	270	273	237	231	2389
G3YVH	148	184	265	295	317	302	301	266	272	2350
G3SXW	97	209	268	274	318	292	303	260	286	2307
G3LAS	122	163	254	282	287	292	292	268	269	2229
G3AKU	115	173	245	254	293	260	266	251	260	2117
G5LP	76	230	286	237	302	254	277	195	250	2107
G3NOH	51	124	211	263	303	292	300	258	272	2074
G4PTJ	51	155	235	223	285	264	294	256	268	2031
G3VKW	44	120	200	153	256	202	280	213	223	1691
G4WFQ	53	168	225	219	207	197	186	154	133	1542
G4BGW	9	89	192	181	186	200	209	164	195	1425
G4OWT	51	112	182	114	250	107	241	96	218	1371
GM4FAM	48	87	123	150	190	164	182	166	145	1255
G0PSE	48	67	136	133	212	140	175	151	183	1245
MU0FAL	26	21	161	162	147	103	190	131	120	1061
AVERAGE	**120**	**178**	**245**	**243**	**276**	**249**	**270**	**230**	**242**	**2055**

Next deadline 8 April 2005. Prepared by G3GIQ, henry@topdx.com 8 January 2005

place for a last-minute list of announced operations for major contests.

It's also worth remembering that the ARRL DX Phone contest is on 5/6 March. While UK stations can only work US and Canada during the contest itself, several of the expedition stations will be active before the contest working other parts of the world.

CORRESPONDENCE AND TABLES

Alan, G4NXG/M, added three more in December by way of ZD7ZA (G3ZAY), 9G and 5T to finish the year at 203. Alan says he missed some easy ones during the year, but compares his efforts with 1989, the last time he made 200 in the year. The contrast is that 1989 was a sunspot peak, while the benefit nowadays is that the *Cluster* system alerts him to possible new ones and he can jump in the car to chase them. Dave, G3TBK, says he has made a slower start to the year, mainly due to the poor band conditions. By the time this appears, he will be working in J8 (St Vincent) and active when time allows. He may also make a side-trip to J3 (Grenada). Stan, G0KBL, started 2005 with three nice new ones on 80m, by way of 3G0YP (Easter Island), YA5Y (Afghanistan) and 5Z4DX (Kenya) producing, as he says, that warm feeling we all crave. Dave, G4FVK, also reports a slow start to 2005. He also comments that, in his view, the VU4 team did a great job from the Andamans, giving out a new one to many DXers.

Cris, GM4FAM, has been working some nice ones recently, including T6KBLRM (special prefix from Afghanistan) on 20 and 30, ZD7ZA (St Helena) on 15 and 17 and ZD8ZA (Ascension) on 15, 17 and 20. YK1BC (Syria) on 30 was also a nice one, Syria being quite a rare catch these days.

Joe, W1JR, says he will take it easy in 2005, just trying to work each entity once, rather than once on each mode. He says that when he moved to the present QTH in 1991 he started counting his totals all over again. It took him four years to work enough to have qualified for Honor Roll (no more than 10 missing from the DXCC list), but the remaining 10 took until last December, VU4 being the final one (though I am a little confused by this because, as mentioned earlier, the last Laccadive Islands operation appears to have been as long ago as 1989).

Colin, MU0FAL, reports over 9500 QSOs in 2004, slightly lower than in previous years, mainly due to the poorer conditions. He enjoys the annual table, which he feels is a great barometer for the newer operators, and is glad to see more of them joining in. He has now let his 2U0ARE licence lapse.

Damian, M0BKV, is happy with his 2004 results, achieved with 100 watts maximum and limited to weekend operation. Recent DX includes P3F, ZC4LI and ZF2NT on 10 CW, 5Z4DZ 15 CW and ZD7ZA on 15 (SSB and CW).

My thanks, as always, to Henry, G3GIQ, for compiling the all-time 9-band table. As mentioned previously, the table reverts this time to British Isles only.

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 **May** issue by **19 March**. ♦

WEB SEARCH

3Y0X:	www.peterone.com
DJ3FK:	www.dj3fk.com
NG3K:	www.cpcug.org/user/wfeidt/
TO7C:	http://to7c.free.fr/
ZL2MF:	www.kingfisher-backpack.co.nz

HF F-Layer, Propagation Predictions for March 2005

Compiled by - Gwyn Williams, G4FKH

	3.5MHz	7.0MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	75.....5557	471....27667	..1444557...	...78998....	.....77.....	.....	.....
*** Asia							
Yakutsk	.....1..	2432	...545.....	...15.....	....1.....	.....	.....
Tokyo	.....	.....122..	.....	....1.....	.....	.....	.....
Singapore	.....	.....1...	.....121...	.....231...	.....21....	.....1.....	.....
Hyderabad	.....	.....	.....23...	...11156....	...22364....	...2346.....	.....
Tel Aviv	66.....3233	421....16655	...533466...	....1112....	.....	.....	.....
*** Oceania							
Wellington	.....	.....346...	...134534...	....111.....	.....	.....	.....
Well (NZ) (LP)	.....	.12.....	..1.....	.....	.....	.....	.....
Perth	.....	.....11..	.....	.....11.....	.....1.....	...112.....	.....
Sydney	.....	.....11...	.....111...	....1122....	....1.....	....2.....	.....
Melbourne (LP)	.....	.....	.....	.....	.....	.....	.....
Honolulu	.....	.....	.....	.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....1...	.....1...	.....1...	.....1...	.....
W. Samoa	.....	.....	....234.....	.....22.....	.....11.....	.....	.....
*** Africa							
Mauritius	.....	1.....1.1	.....12...	.....11...	.....1....	.....	.....
Johannesburg	35.....22	77.....3777	..1....27731	.....261..	...111134...	...356676...	...23556....
Ibadan	.....	12.....111	..72...155..	...865678...	...877888...	...8.6998...	.....88....
Nairobi	.....	1.....	1111	..2....13...	..121.134...	...433451...	...12452....
Canary Isles	234.....532	667.....3656	...52123562.	...7667776..	...377778...	....22232...	.....
*** S. America							
Buenos Aires	..1.....	445.....24	.....	....1...13..	....111121..	.....1111...	.....1111...
Rio de Janeiro	.....	..1.....1.	.....1..	....211135..	....322242..	....22123...	.....1112...
Lima	.....	.....	.....	.....1..11..	.....11111..	.....1..1...	.....
Caracas	.....	.....	.....	.....1..	.....1111...	.....1111...	.....
*** N. America							
Guatemala	.....	.....	.....	.....	.....	.....	.....
New Orleans	.....	.....	.....	.....4341..	.....454...	.....	.....
Washington	.....	222.....13	.....1..131.	.....13452..	.....265...	.....	.....
Quebec	553.....36	6221.....176	.....1.113..	.....37775..	.....566...	.....	.....
Anchorage	.....	313.....1	.....	.....	.....	.....	.....
Vancouver	.....	.....	.....	.....1...	.....	.....	.....
San Francisco	.....	.....	.....	.....11...	.....	.....	.....
San Fran (LP)	.....	.....	.....	.....1....	.....1....	.....1....	.....

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

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at http://members.aol.com/g4fkhgwyn The page is updated monthly. The provisional mean sunspot number for January 2005 issued by the Sunspot Data Centre, Brussels, was 31.3. The daily maximum / minimum numbers were 65 on 16 January, and 10 on 8 January respectively. The predicted smoothed sunspot numbers for March, April and May are respectively: (SIDC classical method - Waldmeier's standard) 29, 28, 26 (combined method) 34, 33, 32. Longpath predictions are shown with (LP) following the path name. Higher input power and superior aerials have been used for these predictions; less well-equipped stations may find the longpath predictions somewhat inaccurate.

SMARTTALK TUNERS vs. COUPLERS

First in a series from SGC

There is quite a bit of confusion about the difference between "antenna tuners" and "antenna couplers". Although the terms are frequently used interchangeably, the products actually function very differently.

A **tuner** is installed at the output of the transceiver and tunes everything after it, including the feed line and the antenna. Its purpose is to match the feed line to the impedance required by the transceiver (usually 50 ohms). This means that it is also tuning the additional impedance of the feed line.

A **coupler** is installed at the feed point of the antenna. It matches the antenna to the impedance of the feed line (usually 50 ohms). The antenna is being tuned more efficiently, since the feed line is not being calculated into the tune. And, energy to your radiating element (the antenna) is being maximized.

Which is better? The antenna feed point is the optimum place to tune for maximum radiating efficiency. The 2003 Antenna Book, published by the ARRL states that "An antenna tuner does not alter the SWR on the transmission line going to the antenna. It only insures that the transmitter sees the 50 ohm load for which it was designed." [1] In short, a tuner works for the transceiver, while a coupler works for the antenna.

So which do you want? A tuner built into your rig is there to protect the transceiver, not to give you the best signal. It's convenient, simple, and at most HF frequencies, losses will be fairly small. However, by using a coupler, you will maximize the energy flow into the antenna, and minimize loss across the feed line to get the best possible signal.

Where does SGC fit in? The SGC Smartuner™ is a coupler that takes things a step further. With one antenna, it will typically tune better than 1.5 to 1 on any frequency in its range (1.8 to 30MHz, some to 60MHz). The Smartuner automates the tuning by measuring the SWR for you, finding the best possible match and storing the combination in memory for next time. And it does all of this independently, in less than 2 seconds, so you can **stop tuning and start talking.**

1 The ARRL Antenna Book, 20th Ed.; ARRL, 2003; p. 25-1

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A new SWL results table for 2005

Bob Treacher introduces a new 'All-Bands Heard' table, but asks why there appears to be little or no interest in taking part in SWL contests these days.

Listeners would have seen from the IOTA contest write-up in last month's magazine that the RSGB HF Contests Committee has taken the decision following the receipt of no entries from British Isles listeners in 2004 to drop the SWL section from next year's contest. You might also have noticed that I have joined the transmitting ranks, but that is another story!

IOTA is now our premier contest and it is a great disappointment that no SWL was able to take part. It seems that all SWL contests are struggling to attract entries. The RSGB 21/28MHz contest is another contest where the SWL section has been scrapped. Even my CQWW SWL Challenge was poorly supported this time around.

I do not know what the answer is. Are the rules too complicated? Is there now no interest in SWL contests? Do listeners just not have the time these days to dedicate to taking part? Is the QRM too much for listeners? Are there no listeners around now who like contest operation? I really would like your views – by e-mail preferably. By failing to register your views, you might be sounding the death knell to SWL contests in the UK. Once again, the ball is in *your* court.

A QSL card from a past CQ WPX contest. This year's contest takes place over the Easter weekend at the end of March, when the bands will be full of interesting stations to log.

NEW ANNUAL TABLE

Now that we have started the new year, a reminder that I will run an 'All-Bands Heard' table this year. The table will include all bands from 6m to 160m. Please let me have your entries. Please make sure that you use a current DXCC list to determine your band scores.

I published Sean Gilbert's, G4UCJ, 2004 table figures in the last issue. He updated them at the end of the year and I have printed the final version in **Table 1**, a) as an indication of what was possible last year, but b) as an incentive to others to share their 2005 listening results with us.

Table 1: Final 2004 DXCC entities heard by Sean Gilbert, G4UCJ.

2004 ONLY

Band	Total	CW	SSB	DIGI	RTTY	PSK31	SSTV
160m	90	87	29	0	0	0	0
80m	134	122	54	45	32	39	0
40m	179	162	69	85	68	66	4
30m	160	157	0	23	10	14	0
20m	215	171	74	132	92	100	21
17m	143	122	39	48	20	40	0
15m	188	148	54	108	64	83	1
12m	93	78	24	12	10	5	0
10m	118	110	29	12	6	7	0
6m	54	49	41	2	1	1	0
Total	248	231	145	165	125	132	24

Sean was trying to rid his station of electrical noise when he e-mailed me. He found one major source was the PSU in his main PC that gave particular difficulties on 80 and 160m. He does, however, use a different PC for radio work, so he is able to switch the offending one off when he wants to chase DX on the low bands. He also discovered that another source of QRN was the display on his IC-756 transceiver so he has moved his ATU further away. He did comment that it was a pity that he had been unable to do anything about the numerous TV timebase harmonics that plague the HF bands!

DX NEWS

Well, another year is over. Every year seems to pass quicker than the one before. In terms of SWLing what did the year hold for *you*? You really can e-mail me to let me know!

Conditions this year are unlikely to be on a par with 2004 as we are slipping further down the sunspot cycle. Conditions were good for *CQ* World Wide phone, but since then we have been on a downward spiral. Robert Small, BRS8841, comments that conditions for the CW leg of the contest were nowhere near as good as for the SSB leg. The HF bands are now closing very early indeed. Anyone who gets home from work, college or school after 1600UTC finds that the HF bands are dead. However, the bonus is that the low bands – 40, 80 and 160m – come into their own, especially at this time in the sunspot cycle. I wonder how many listeners heard the W7s at the top end of 80m over the Christmas period? How many have added some new DXCC entities on the low bands since the turn of the year?

Robert heard 9N7BCC on 160m CW – his first 'new one' on that band for a long while. He had also heard some Stateside and Canadian stations. 80m SSB gave Robert XU7AAA. He found nothing new on 40m but heard 3W3FS, A71BX, YA/EA4FAS, YB2DX, HZ1IK and A61Q/P (AS021). 30m produced one new one in the shape of YI9KT. Conditions on 17m had been mixed, but Robert did catch VU4RBI before the terrible events of Boxing Day.

During daylight hours, Robert thought that 15m provided some of the best conditions of the period – he logged BG9TD, YI9KT, XW1FAN, UK/JA8WGG, BD7IN, 9N7CQ, 8Q7DV and VU2AU. 12m – perhaps surprisingly – had given Robert three 'new ones' this time: 6O0W and HS72B on CW, and VU4RBI on SSB.

CAN YOU BEAT THIS?

In 1982 BRS45940 sent a report to this SWL column. In 2005, I have his second SWL report! Mike Price is now G6HOU but he listened to 80m SSB over the Christmas period (24 – 31 December) using a temporary Z-shaped long wire while operating /P from Wales. Concentrating his efforts on the grey-line period and subsequent darkness, his DX included: VK1MJ, VK2DO, VK3PA (on several days), TF3BM, VA2DF, VE2ENM, N7JW (West Coast), J69B (St Lucia), UN8GF, EX8LP, BA4DW and 9K2HN. He was also surprised to hear K4JPE on 5403.5kHz, who was running 50W from North Carolina. Thanks to Santa, Mike was able to venture on to PSK31 and picked up OE6HTG and LZ2DF on 160m, A45XR and numerous Europeans on 80m, and VE9DX on 40m. Taking advantage of the Quadrantids meteor shower on 3 January using his long wire antenna on 6m with JT6m, Mike received two short bursts (about 1.9 seconds) from IW3SNU.

INTERNATIONAL MARCONI DAY

The Cornish Radio Amateur Club, which organises the annual International Marconi Day, has asked me to draw listeners' attention to the event which commemorates the achievements of Gugliemo Marconi and is held on the Saturday nearest to his birthday. It is not a contest, but awards can be claimed. Full details can be found at www.gb4imd.co.uk This year's event takes place on 23 April. ♦

Roger Balister, G3KMA

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IOTA

Roger Balister reflects on the importance of portable amateur radio operations such as DXpeditions to the authorities at times of natural disaster. On a lighter note, he also provides a beginner's guide to how to apply for your first IOTA award.

Much has been said about the human tragedy in South East Asia wrought by the tsunami and our hearts go out to all who have suffered loss, wherever they are. On first news we were naturally concerned for anyone we knew of who could have been affected. Obviously our radio friends in that area and particularly any DXpeditions that had ventured there for the DXCC and IOTA programmes sprang to mind. Bharati, VU2RBI, and her team were in the last week of their VU4RBI and VU4NRO operation from Port Blair in the 'much wanted' Andamans. Like everyone else, we held our breath until we heard that they were safe. It is to their credit that they were able to convert from DXpedition-style operating to an emergency relief communications link to the mainland – the only one in the Andamans – within half an hour of the tsunami striking.

There was more relief when checking the DX bulletins we found that there were no other DXpeditions active in that area on that day. It could have been so different . . . On two occasions during QSOs earlier in their operation Bharati had asked which islands the team could go to to put on a different VU4 IOTA. I had replied "the Nicobar Islands, that's really rare". Had they taken up this suggestion and gone, the chances are high that they would not have survived. A sobering thought.

In almost all the countries affected amateurs are known to have played a significant role in the provision of emergency communications. The full story is yet to be told but there is little doubt that in many areas they provided the only link for emergency traffic. Once again governments have been reminded – and in a most horrific way – that the kind of skills that amateurs have in portable communications can be of invaluable use in an emergency.

Ramon, XE1KK; Yuri, XE1UN, and Alberto, XE1NK, on their XF3T operation from Tamalcab Island (NA-200) in December 2004.

FROM THE IOTA DATABASE

Especially for those of you who find this kind of information interesting...

- on average 95 of every 100 cards submitted for checking are known to the database; only five are new with two of these for very recent operations where cards have only just started being issued and the other three for very easy IOTA groups with high amateur populations where matching is less likely.
- there are 1057 numbered IOTA groups, but this will drop to 1052 with the removal of five groups in the late spring (following implementation of decisions previously announced in the *IOTA Directory*).
- the number of numbered IOTA groups that have not seen any activity in the last 20 years has now dropped to less than 10 (1%); in the region of 95% have been activated in the last 10 years (someone with time may wish to research this!)
- over 48,000 different island call signs are credited on members' records with the rarest 500 groups accounting for little more than 5%. ♦

HOW DO I APPLY FOR AN AWARD?

The basic award is the IOTA 100 Islands of the World and this is where to start. First, check your cards carefully against the island listings and the rules published in the *IOTA Directory*. This information is updated on a regular basis on the RSGB IOTA website and can be downloaded from there for personal use.

You can submit your application on paper or, if you have a PC, you can use a specially written computerised software program, called *IOTAMEM*. We strongly advise the latter. This has the advantages of saving you time by simplifying the application process as well as your own IOTA record-keeping, entitling you to a significant reduction in administration fees, endearing you to your Checkpoint by enormously easing his task, providing an exact copy of your record at IOTA HQ, and by being re-usable, offering the same advantages on each subsequent occasion.

The IOTA Members Application Disk (*IOTAMEM*) is available from your Checkpoint for a small charge. Or, if you want the Windows version (*IOTAMEM4WIN*), you can download this from the RSGB IOTA website. This will start you off but you will still need a customised file on the *IOTAMEM* disk if you wish to submit a claim.

When ready, send the computer disk or the paper application with the QSL cards, the appropriate fee and adequate return postage for the QSLs to your Checkpoint – see the website for a list of these. After processing, the disk is returned by your Checkpoint for the price of postage and packing only, ready for the next update.

ADDITIONS TO IOTA DIRECTORY – 40TH ANNIVERSARY EDITION

AF-095	TJ	Cameroon group (Cameroon)
AS-170	ROI	Shelikhova Bay group, Magadanskaya Oblast (Russian Federation – Asia)
OC-267	VK9	Coral Sea Islands Territory North (Australia)

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By Don Field

This 6th edition of the RSGB Amateur Radio Operating Manual has been completely updated and redesigned this edition reflects the huge changes in hobby in recent years. The impact of licensing changes and the ubiquity of PCs and the Internet are just some of the challenges in the hobby in the 21st Century. To deal with these, RSGB Amateur Radio Operating Manual has a completely new look at the content and approach. For example, some of the traditional demarcations between HF and VHF and between the various operating modes have been overturned. New and comprehensive chapters can be found on topics such as PCs in the Shack and Operating Modes. There is also a huge amount of new material included, for example, the 136kHz and 5MHz allocations, new data modes and the WSJT software suite, APRS and VoIP. Much of the book has been heavily updated and there is a complete rewrite of the chapter on Satellites and Space communications. If you are interested in amateur radio the RSGB Amateur Radio Operating Manual is the book you should not be without. This book provides a comprehensive guide to operating across the amateur radio spectrum. Packed with information and tips this book has long been a standard reference work found on the bookshelf of radio amateurs. The RSGB Amateur Radio Operating Manual is a valuable addition to your bookshelf and the must have book for everyone interested in amateur radio. Size: 210mm x 297mm, 224 pages,
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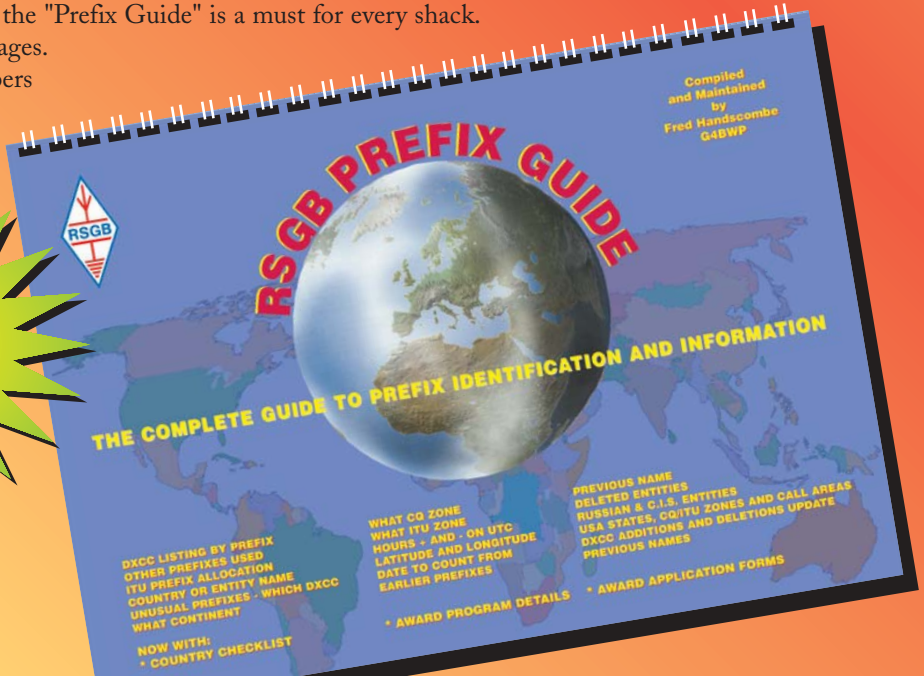

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Contest

Tim Kirby looks at the RSGB Commonwealth Contest and other events taking place in March, and welcomes the enthusiasm of younger operators for contest operating.

Brian, VE7JKZ, wrote with welcome news of his activity as VE7RAC during the Commonwealth Contest, this year on 12 / 13 March. Brian writes, "After more than 25 years of steady BERU activity as VE3JKZ, VE6JKZ, and now VE7JKZ, I'm pleased to report that this year I will operate a Radio Amateurs of Canada HQ station. Specifically, I shall use the call VE7RAC, with 'HQ' following the exchange. I don't suppose the propagation will be too good, particularly on 10 / 15, but I'll give the opportunity for an extra bonus."

NEWS OF YOUNGER OPERATORS

It's always great to see newly-licensed operators doing well in contests. Although Simon Treacher, M3CVN, is comparatively newly licensed, he could hardly be described as inexperienced, having been involved at events such as M2000A and GB50, as well as having been under the tutelage of his father Bob, BRS32525. Nevertheless, it gave me a thrill to read the following e-mail from Dave, G4BUO. "On Saturday morning I drove 25 miles to Dartford to help G0FDZ, M3CVN, 2E0ATY and G0VJG put up a mast at a Scout hut so that Simon, M3CVN, could operate the 80m AFS contest using the Cray Valley RS club call. G3NPS was on-site throughout the contest so it was all nice and legal.

"We got a dipole up at 45ft on a scaffold mast, the rig was a TS-50 driving a KW-1000 amplifier. This amplifier had been very kindly donated to CVRS by Dennis, G3MXJ, when he moved to France.

"With this far from ideal set-up, G3RCV made 370 QSOs; a fantastic piece of work from a 17-year old operator. So, I'm relegated to second place in the team with a mere 358 QSOs".

Congratulations, Simon, we shall look forward to the results in due course, and congratulations to the Cray Valley RS for doing so much to encourage new licensees. This is what happens when you do!

My 8-year old stepson, Russell, is showing signs of interest in amateur radio and in particular the data modes. During this year's ARRL RTTY Roundup, Russell came to the MW2I station and was keen to get involved with the contest, so we had him tune around and search for multipliers. It does seem that the data modes can be attractive to the younger generation, and perhaps a good way of getting them involved early on. All being well, we will have Russell do a Foundation Course before long.

Eight-year old SWL Russell Taylor at MW2I during the ARRL RTTY Roundup, 2005.

CONTESTS THIS MONTH

As we have already mentioned, the Commonwealth Contest on 12 / 13 March is the main RSGB event this month. A great contest for working DX: this one gets better the more years you've been operating! The 80m Club Championships run on 7, 16 and 24 March. On the international contest scene, the SSB leg of the ARRL DX event runs on 5 and 6 March. The *CQ* WPX SSB event, always great fun, takes place on 26 and 27 March.

As well as the regular VHF activity contests, there's the final 70MHz Cumulative on 13 March. The first contest which usually attracts some portable activity, at least for the southern part of the UK, is the March 144/432MHz event on 5 / 6 March. ♦

Contest Calendar

HF Contests

Date	Time	Contest	Mode	Bands	Exchange
5/6 Mar	0000-2359	ARRL DX	SSB	1.8-28	RST+Power
7 Mar	2000-2130	RSGB 80m Club Championship	DATA	3.5	RST+SN
12/13 Mar	1000-1000	RSGB Commonwealth	CW	3.5-28	RST+SN
16 Mar	2000-2130	RSGB 80m Club Championship	CW	3.5	RST+SN
19/21 Mar	0200-0200	BARTG Spring RTTY	DATA	3.5-28	RST+SN+Time(GMT)
19/20 Mar	1200-1200	Russian DX	CW/SSB	1.8-28	RST+SN
24 Mar	2000-2130	RSGB 80m Club Championship	SSB	3.5	RST+SN
26/27 Mar	0000-2359	CQ WW WPX	SSB	1.8-28	RST+SN

VHF Contests

Date	Time	Contest	Mode	Bands	Exchange
1 Mar	2000-2230 Local	RSGB 144MHz activity & Club Championship	ALL	144	RST+SN+Locator
5/6 Mar	1400-1400	RSGB 144/432MHz	ALL	144/432	RST+SN+Locator
8 Mar	2000-2230 Local	RSGB 432MHz activity	ALL	432	RST+SN+Locator
13 Mar	1000-1200	RSGB 70MHz Cumulative	ALL	70	RST+SN+Locator+QTH
15 Mar	2000-2230 Local	RSGB 1.3GHz/2.3GHz activity	ALL	1.3G/2.3G	RST+SN+Locator
22 Mar	2000-2230 Local	RSGB 50MHz activity	ALL	50	RST+SN+Locator
29 Mar	2000-2230 Local	RSGB 70MHz activity	ALL	50	RST+SN+Locator

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

1st 144MHz BACKPACKERS, 2004

Hot, sunny weather greeted the 31 entrants for this contest. Band conditions were mixed with only some stations able to work continental DX. However, there was activity from most corners of the UK to compensate for this. Most stations commented that they had had a good day out in this contest.

As normal in the first Backpackers contest of the year, there was the usual crop of problems. Several stations mistakenly started to operate up to one hour early. It always pays to check the start time of a contest and to check if the time given in the rules is in UTC or local time.

Once again, the standard of logging was very variable with an average of nearly 18% of points lost. The most accurate logs only had just over 1% of points deducted for errors. At the other end of the scale, the least accurate logs had nearly 60% of points deducted! Correct copying of signal reports and serial numbers seemed to cause the most problems to station.

In the 10W Multi-operator section, congratulations to the One Man and His Dog Contest Group, G8NMW/P, for just managing to beat G0KYS/P in a very close scrap at the top of the table.

The 3W Multi-operator section, G0HDV/P was a run-away winner with the West Kent ARS, G1WKS/P, in second place.

Congratulations to Dave Hewitt, GW8ZRE/P, for winning the 10W Single Operator section with a score over three times that of the runner-up, Mike Chapman, GM4IGS/P.

Finally, the 3W Single Operator section was won by Charlie Jordan, GW0PZO/P, with Neill Taylor, G4HLX, as the runner-up.

Thanks to GD4WXM/P for the very useful checklog.

Ian Pawson, G0FCT

10W Multi-Op

Pos	Callsign	Loc	QSO	Mults	Total	Best DX	km	Ant
1*	G8NWM/P	IO92TR	80	79	1278536	F4CDJ	619	17el
2*	G0KYS/P	IO80AQ	70	65	1105780	DK5DQ	790	10el
3	G3BPK/P	IO83PN	47	58	433318	GM4VVX/P	510	13el
4	G4HSO/P	JO01CO	36	38	137180	G4DBL/P	297	4Q

3W Multi-Op

Pos	Callsign	Loc	QSO	Mults	Total	Best DX	km	Ant
1*	G0HDV/P	IO93UK	75	73	1004042	GI4OWA	486	13el
2*	G1WKS/P	JO01ED	54	51	370770	G3BPK/P	341	2x8el
3	M0WEN/P	IO93EI	37	46	265512	GM4VVX/P	549	17el
4	G0HRW/P	IO83RO	32	39	157131	G5LK/P	346	3el
5	G6ZME/P	IO82SQ	21	31	77562	GU8FBO	362	10ZL

10W Single Op

Pos	Callsign	Loc	QSO	Mults	Total	Best DX	km	Ant
1*	GW8ZRE/P	IO83JA	117	105	2367225	GM4AFF	424	7ZL
2*	GM4IGS/P	IO74NP	40	59	683043	GU8FBO	599	17el
3	G0PQF/P	JO01AX	49	59	499730	DK5DQ	506	9el
4	G3YDY/P	JO01FQ	59	57	427215	GI6ATZ	524	4el
5	M0BAO/P	IO80LV	34	43	288487	PE1EWR	463	17el
6	G6MXL/P	IO80WP	30	41	207952	MS0LIV/P	570	5el
7	MW0OPS/P	IO81KP	27	36	193212	GM4AFF	576	9el
8	M1VPN/P	IO70QO	20	32	160960	GM4IGS/P	450	3el
9	G8XCK/P	IO91KG	34	31	109151	ON7LAO	386	9el

3W Single Op

Pos	Callsign	Loc	QSO	Mults	Total	Best DX	km	Ant
1*	GW0PZO/P	IO83ID	89	74	992932	DK5DQ	750	9el
2*	G4HLX/P	IO91FN	64	66	649836	MS0LIV/P	472	13el
3	G4HUN/P	IO92XA	49	56	426944	GI6ATZ	474	7ZL
4	G8XQS/P	IO95AG	30	48	398688	G4DBL/P	557	9el
5	GI7JYK/P	IO74BS	32	46	333960	G5LK/P	560	12ZL
6	M5CSM/P	JO01GP	46	46	287730	GW4DGU	345	11el
7	G0POT/P	IO91HH	47	47	256526	PE1AHX	458	3el
8	G0NFO/P	IO82QJ	35	45	201510	GM0AYR/P	336	3el
9	G0FUW/P	IO81PH	31	40	195360	G3XNO/P	295	7el
10	G0BVW/P	IO92QA	32	41	175562	PE1AHX	401	9el
11	G3UFY/P	IO91WJ	33	39	169767	G3XNO/P	298	9el
12	G7NBE/P	IO92FP	29	40	148640	G0KYS/P	274	9el
13	G4VRC/P	IO90NX	28	34	142970	GM0CLN/P	474	12ZL

MAY 144MHz 2004

After the awful weather of 2003, this year's warm and sunny weather was welcomed by all. Even conditions were generally thought to be above average and most contestants said they enjoyed the event. This year, in the Multi Operator section, the A1 CG, G4ZAP/P, moved away from the east coast back to their Pennine spot and with very good effect. The use of multiple modes and aerials combined with their central location enabled them to gather a very large number of multipliers and push the Five Bells Group, G4SIV, into second place. In the Single Operator Fixed Station section, Roger Piper, G3MEH, claims first place for the third year in a row, from Peter Rackham, G3IRQ, in second place. Tim Stanley, G4DBL/P, managed to find a 'great spot' near Torquay on the Devon coast which he used to claim first place in the Single Operator Others section.

In the 6-hours Others section there was a very closely fought battle between the Warrington CG, G3CKR/P, near Leek in Staffordshire and Dave Wood, G4CQR/P, at Beachy Head on the south coast. Although the QSO numbers were almost identical, the actual logs were very different, with G4CQR/P having a much higher points per QSO and G3CKR/P working more multipliers. In the end it was the Warrington CG, with a slightly more accurate log, that took first place by a hair's breadth. First place in the 6-hour Single Operator section went to John Hall, G0ODQ. Congratulations to all other certificate winners, marked with a * in the results table.

Pete Lindsay, G4CLA

Section M

Pos	Call	Loc	QSOs	Mults	Total	Best DX	Dist	Group
1*	G4ZAP/P	IO93EH	590	136	22,723,288	HB9FAP	1004	A1 Contest Group
2*	G4SIV	IO92WS	568	119	20,871,172	OK1KVK	929	Five Bells
3	G0VHF/P	JO01HW	459	116	14,623,888	DG5CST	820	Colchester CG
4	G5LK/P	IO90JO	439	108	13,816,764	DF0HF	903	Reigate ATS
5	G2BQY/P	IO81TK	454	120	13,309,560	DF9IC	836	Trowbridge & DARC
6	G3XNO/P	IO93DV	226	78	2,528,994	F5RMY/P	801	Otley ARS
7	G3YNN	JO00EU	165	64	2,356,352	EI5FK	628	Herstmonceux Megacycles
8	MS0LIV/P	IO85SS	114	74	2,076,218	PA0PVW	682	-
9	GB2ME	IO92BK	41	35	248,780	DK5DQ	642	-

Section SF

Pos	Call	Loc	QSOs	Mults	Total	Best DX	Dist
1*	G3MEH	IO91QS	330	92	7,096,420	HB9FAP	844
2*	G3IRQ	JO02OD	219	69	3,873,384	DG5CST	782
3*	M5ADF	IO91TO	64	44	346,808	GI6ATZ	486
4	G3FIJ	JO01KV	48	30	228,270	DK7BY	474
5*	M3RCV	JO01AL	68	36	225,216	G0KYS/P	293
6	G7RLH	JO01LV	30	21	168,483	PA0PVW	619
7	2E1GUA	JO01FR	36	27	114,291	G4RRA	320
8*	MU0FAL	IN89RL	14	13	32,760	G4ZAP/P	431

Section SO

Pos	Call	Loc	QSOs	Mults	Total	Best DX	Dist
1*	G4DBL/P	IO80FI	116	57	1,930,647	DK5DQ	767
2*	G6HOU/P	IO91QB	99	47	746,642	DK5DQ	552

Section 6O

Pos	Call	Loc	QSOs	Mults	Total	Best DX	Dist	Group
1*	G3CKR/P	IO93AD	196	99	3,937,725	DJ2JS	671	Warrington CG
2*	G4CQR/P	JO00DR	197	84	3,936,576	GM3SBC/P	651	-
3	G0MWT/P	JO01GP	166	57	2,221,917	DF0HF	786	-
4	GW8ZRE/P	IO83JA	111	79	1,649,520	GM4AFF	424	-
5	GM0CLN/P	IO84AT	92	59	1,312,750	G4CQR/P	536	-
6	GM4VVX/P	IO78UB	49	44	685,124	G5LK/P	853	-
7	G4ADV	IO70LK	26	17	83,895	GM0CLN/P	492	Newquay & DARS
8	G6GVI/P	IO84ME	11	12	32,868	G5LK/P	416	-
9	G3VQO/P	JO01BB	14	11	19,481	G4ZAP/P	277	-

Section 6S

Pos	Call	Loc	QSOs	Mults	Total	Best DX	Dist
1*	G0ODQ	IO91NQ	97	65	1,076,465	GM4AFF	579
2*	GW3ATZ	IO83LE	31	28	110,040	G5LK/P	314
3	G1KHX	IO81MI	29	25	104,125	G3IRQ	300
4	G4APJ	IO83UP	24	23	88,665	G4CQR/P	369
5	G3YJR	IO93FJ	8	8	10,464	G5LK/P	311

Checklog: GU8FBO.

2nd 50MHz BACKPACKERS CONTEST, 2004

Poor weather and worst band conditions were the main features of this contest. The Sporadic E propagation that was evident before this contest started diminished rapidly once the contest commenced. All of the DX was worked in the first hour of the contest.

Congratulations to the One Man and His Dog Contest Group, G8NWM/P, for winning the 10W multi-operator section. Congratulations to Dan Esdale and his team operating as G0RMX/P for winning the 3W multi-operator section. The West Kent Amateur Radio Society, G1WKS/P, were runners-up. Finally, congratulations to Dave Hewitt, GW8ZRE/P, for winning the 10W Single Operation section. Mark Palmer, G0OIW/P, was the runner-up. All winners and runners-up will receive certificates.

Ian Pawson, G0FCT

10W Multi-Operator

Pos	Callsign	Loc	QSOs	Mults	Total	Best DX	km	Ant
1*	G8NWM/P	IO92TR	19	27	67176	GM4NFC	399	5el

3W Multi-Operator

Pos	Callsign	Loc	QSOs	Mults	Total	Best DX	km	Ant
1*	G0RMX/P	IO82TC	39	32	170208	IH9/I2ADN	2038	5el
2*	G1WKS/P	JO01ED	21	28	91140	EH3RU	1119	4el

10W Single Operator

Pos	Callsign	Loc	QSOs	Mults	Total	Best DX	km	Ant
1*	GW8ZRE/P	IO83JA	45	56	572376	IS0/IW2MXY	1624	HB9CV
2*	G0OIW/P	IO91MO	5	10	4680	GW8ZRE/P	220	Dipole

MARCH 144/432MHz 2004

The first major VHF/UHF event of the year always attracts interesting weather and tends to deter portable activity. This year's event saw a welcome upturn in portable activity though this was mainly limited to the 6-hour sections. The weather was not kind to entrants, with cold and windy conditions with snow in the north and one entrant concerned about frostbite.

Conditions were summed up by phrases such as "terrible", "abysmal" and "mediocre". However, analysis of the logs shows that there was a number of stations worked at significant distances. Static rain was a problem for a number of stations. Activity levels were low across the UK though this was offset by good activity on the continent, particularly in France.

Congratulations go to: the Five Bells CG, G5B, who won both bands and continue their dominance of this event; Bryn, G4DEZ, who stepped up to the 24-hour event and narrowly deposed last year's winner, G3MEH, in the single operator fixed section; Steve, M0BPQ/P, for winning the single operator others section; Daniel, MW1MFY, and John, G3XDY, for their joint win in the six hour single operator fixed section; Bob, G0KYS/P, and Mark, G0OIW/P, for their joint win in the six hour open section; All other band winners and runners-up who together with stations marked (*) will receive certificates.

Roger Dixon, G4BVY

144 MHz

Section O

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	G5B	IO92WS	402	154298	DL1ARJ/P	867
2 *	G0VHF/P	JO01GN	314	94123	DG3FK	782
3 *	G3XNO/P	IO93DV	181	15043	F6CQY/P	785
4 *	G3YNN	JO00EU	30	8063	DL0PVD	568

Section SF

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	G4DEZ	JO03AE	238	88735	DJ0QZ	812
2 *	G3MEH	IO91QS	197	52913	F6FHP	783
3	M5FUN	JO00DX	78	17623	DL0SAW	785
4 *	2E0NEY	IO81VK	29	7986	DL0ES	660
5 *	M5ADF	IO91TO	39	5706	DK0BN	601
6 *	G3FIJ	JO01KV	17	3885	DK0BN	529
7	GW4HBK	IO81KP	16	2557	F6APE	510

Section SO

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	G6HOU/P	IO91OG	69	12357	F4CQY/P	545
2 *	M0BPQ/P	IO91WP	24	6173	DK0BN	586

Section 6S

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	MW1MFY	IO81FL	45	14299	F1ERG/P	754
2 *	G8ZRE	IO83NE	51	7526	F6KIF/P	641
3	G8SRL	JO01ED	33	5930	DJ1CW	543
4	G1KHX	IO81MI	29	4758	ON7RY	513
5 *	G3JJZ	JO01AJ	13	2357	F5SGT/P	447
6	G4XPE	IO92GU	8	967	G0VHF/P	198

Section 6O

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	G0KYS/P	IO80AQ	43	11989	F4CQY/P	719
2 *	G0POT/P	IO91HH	34	5150	DJ1CW	656
3	M0BAO/P	IO80LV	29	3909	G4DEZ	331
4	G2HDF/P	IO82UK	7	1673	ON4WY	390

432MHz

Section O

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	G5B	IO92WS	138	47012	DF0XG	752
2 *	G0VHF/P	JO01GN	143	39668	DL3LAB	721

Section SF

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	G3MEH	IO91QS	54	8473	DF2VJ	599
2 *	G4DEZ	JO03AE	18	5170	DF2VJ	642
3 *	2E0NEY	IO81VK	7	2356	OT4D	586
4	GW4HBK	IO81KP	4	700	G0VHF/P	253
5 *	M5ADF	IO91TO	9	649	PA6NL	312
6	G3FIJ	JO01KV	1	0	-	- 0

Section SO

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	M0BPQ/P	IO91WP	6	715	PA6NL	294
2 *	G6HOU/P	IO91OG	1	48	G1JDM/P	48

Section 6S

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	G3XDY	JO02OB	36	16647	SK7MW	861
2 *	G1KHX	IO81MI	11	2362	OT4D	637
3	G8SRL	JO01ED	14	1703	DH5HV	399
4 *	G3JJZ	JO01AJ	5	296	G5B	153

Section 6O

Pos	Call	Locator	QSOs	Total	ODX Call	ODX km
1 *	G0OIW/P	IO91IH	5	318	G5B	181
2 *	G0POT/P	IO91HH	1	73	G3MEH	73

OVERALL RESULTS

Section O

Pos	Call	144MHz	432MHz	Total	Group
1 *	G5B	1000	1000	2000	Five Bells
2 *	G0VHF/P	610	844	1454	-
3	G3XNO/P	97	0	97	Otley ARS
4	G3YNN	52	0	52	Herstmonceux Megacycles

Section SF

Pos	Call	144MHz	432MHz	Total
1 *	G4DEZ	1000	610	1610
2 *	G3MEH	596	1000	1596
3	M5FUN	199	0	199
4	2E0NEY	90	278	368
5	M5ADF	64	77	141
6	G3FIJ	44	0	44
7	GW4HBK	29	83	111

Section SO

Pos	Call	144MHz	432MHz	Total
1 *	M0BPQ/P	500	1000	1500
2 *	G6HOU/P	1000	67	1067

Section 6S

Pos	Call	144MHz	432MHz	Total
1= *	MW1MFY	1000	0	1000
1= *	G3XDY	0	1000	1000
3	G8ZRE	526	0	526
4	G8SRL	415	102	517
5	G1KHX	333	142	475
6	G3JJZ	165	18	183
7	G4XPE	68	0	68

Section 6O

Pos	Call	144MHz	432MHz	Total
1= *	G0KYS/P	1000	0	1000
1= *	G0OIW/P	0	1000	1000
3	G0POT/P	430	230	659
4	M0BAO/P	326	0	326
5	G2HDF/P	140	0	140

Sam Jewell, G4DDK

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Microwave

One of the best periods of good microwave propagation in several years occurred in December. The bands between 1296MHz and 24GHz provided DX in abundance for the vigilant microwave operator.

G3PHO/P operating portable in the 5.7 and 10GHz Cumulative contests in 2004.

A large, slow-moving, high-pressure system crossed the UK and then paused over central Europe during the period between 6 and 14 December 2004. Dull, cloudy, days with some overnight frost resulted. Slow-moving, high-pressure, systems often give the best propagation conditions for VHF and above, and this system didn't disappoint. It is possible that several new European microwave distance records have been set. We should know in the next few months as QSL cards are sent and received and claims made and ratified.

The 'lift' allowed contacts on the higher bands from the UK into Scandinavia, eastern Europe and south-west France. At least one Swedish station was heard working into France on 23cm on the evening of 10 December. A remarkable distance for a UHF band contact.

A detailed e-mail report from David Millard, M0GHZ (IO81), located near Chippenham, includes details of some excellent long-distance contacts on 23, 13cm, 9cm and 3cm, made during this propagation event, with the comment he was able to work outside the UK on 9cm and 3cm for the first time. On 8 December, operating on 23cm, David's list includes F6FHP (IN94) near Bordeaux at 758km, and DF9IC (JN48) at 826km, whilst DH9NBU (JO40) at 853km was worked on both 23cm, and 13cm. David runs 200W to a 55-element Yagi on 23cm, 40W to a 48-element quad loop Yagi on 13cm, 7W to a 1.2m dish on 9cm and 700mW to a 60cm dish on 3cm.

David comments that learning CW has certainly paid off in completing contacts with some of the weaker signals, although in common with some other operators (myself included) he still finds it difficult to master, particularly with weak microwave signals that tend to suffer noticeable scintillation distortion.

Another new correspondent is David Storrs, G8GXP (IO93). David sent in a very impressive report of stations worked in this event. The following is just a small selection from his report. The lift started for David on 8 December with a 23cm contact with HB9AMH/P (JN37) at 952km. This was followed by OE5VRL/5 (JN78) at 1248km at a solid 57/58 for a new country. On the 9th, David worked SM7FMX (JO65) at 951kms on 23cm. G8GXP runs a Kenwood TS-2000X at 2W driving a homemade two-brick Mitsubishi M57762 amplifier at 40W output to a single 37-ele at 13m high, fed with Belden 9913 coaxial cable.

CUMULATIVE RESULTS

I have been reporting the Cumulative contest activities during the past year. Now that the 5.7GHz, 10GHz and 24/47GHz Cumulatives are over for another year, the headline results are presented here. My thanks to G4KNZ for both adjudicating the contests as well as providing the following information. The full results are published on the web, at the address shown at the end of the column.

On 10GHz, the Open Section was won by G4EAT (JO01) with 407,328 points. John's 10GHz home station comprised a DB6NT transverter and a 10W solid-state PA, to a 60cm offset dish mounted 20m above ground. John's best DX was DJ5BV, at 435km, worked during the July session.

The 10GHz Cumulative Restricted section was won by G8LSD/P with 211,410 points. Allan was running just under 1W to an 80cm prime focus dish at 3m above ground.

There were 11 entries in the 10GHz Open Section and nine in the 10GHz Restricted Section, although more than 30 different stations were known to be active at various times during the contest.

The 5.7GHz Cumulative Contest has two sections, but no one entered the Restricted Section. The Open Section was won by G3PHO/P with 100,780 points. Peter operated portable using a DB6NT transverter and a 12W PA, to a 1.2m prime focus dish on a short mast. Peter's best DX was F1PYR/P at 620km.

The 24 and 47GHz Cumulatives were both won by G3PHO/P operating portable from various locations. Peter's winning score on 24GHz was 968 points and on 47GHz it was 459 points. On 24GHz, Peter runs a DB6NT transverter with Millitech 2W amplifier to a 60cm dish and on 47GHz he runs 22mW to a 35cm offset dish. On 24GHz, Peter's best contact distance was 154km and on 47GHz it was a very creditable 94km.

NEW AMATEUR 403GHz WORLD DISTANCE RECORD

On 21 December, WA1ZMS/4 worked W4WWQ/4 on a frequency of 403GHz over a distance of 1.4km. Signals were reported as very weak at the W4WWQ end, but with several dB of margin at the WA1ZMS end. The exchange had to be sent several times for W4WWQ to copy the CW by ear. This new QSO exceeds their former DX of 0.5km as well as exceeding the 1km barrier for amateur operation above 400GHz (except for visible light).

Thanks to Brian Justin, WA1ZMS for the report and hearty congratulations to both operators for the outstanding contact.

COLUMN INPUT

That's it for this issue. Please send your activity contributions to the address at the top of the page. The latest date for copy is 4 March for inclusion in the May column. My thanks to all correspondents to this month's column. ♦

WEB SEARCH

UK Microwave Group	www.microwavers.org
WA1ZMS	www.mgef.org
Contest results	www.pho.free-online.co.uk/microwaves/contests.html

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NARSA

NORBRECK

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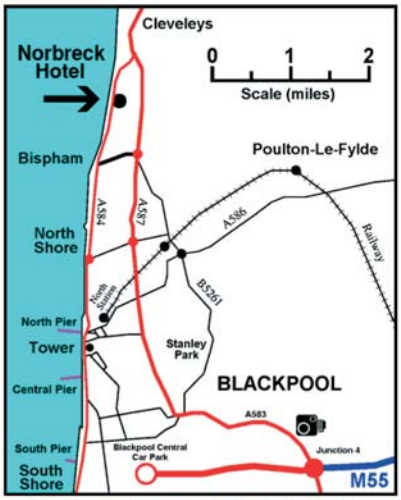
on Sunday, March 20th, 2005 - Doors open at 11 a.m.



It's time for the Norbreck rally again! This will be the 43rd rally organised by NARSA, an association of over 40 clubs from the North West. The rally started life at Belle Vue in Manchester and last year we had over 4,000 visitors. The 2005 rally will feature:

- Over 100 trade stands (rigs, aerials, computers, surplus, components etc.)
- Over 30 club stands interspersed with the trade stands
- RSGB stand (several local and national officers usually attend)
- Bring and Buy stand (run by the East Cheshire Radio Group)
- Construction competition (why not bring something!)
- Accommodation available at the Norbreck Hotel and lots nearby
- Radio talk in on S22 (by the Thornton Cleveleys Club)
- Run by Amateurs for Amateurs (friendly atmosphere)
- Facilities for the disabled (all the stands are on one floor)
- Hot and cold food and drink available in the hotel (at reasonable prices)
- For the latest information visit http://www.narsa.org.uk

Admission £3.50 (OAP's £2.00, under 14's free) by exhibition plan - Exhibition Manager: Peter Denton, G6CGF, 0151 630 5790

Norman Fitch, G3FPK

40 Eskdale Gardens, Purley, Surrey CR8 1EZ.

E-mail: g3fpk@compuserve.com

VHF/UHF

A new annual Locators and Countries table in which to participate and reports on some spectacular 'tropo' propagation, compiled by Norman Fitch.

For the benefit of new readers and contributors it seems appropriate to mention some of the conventions used in 'VHF/UHF'. All times are given in UTC and 'QTHR' means that a station's address is correct in the current RSGB *Yearbook*. An asterisk (*) after a callsign indicates that a CW QSO took place, otherwise SSB can be assumed. FSK441, JT65b, PSK and so on identify digital mode contacts. 'QRV' means that a station is either ready to operate or did operate on a particular band/date/mode. In the 'Moonbounce' section, a hash (#) indicates an 'initial', a station worked for the first time. 'ODX' means best DX in terms of distance.

The locator system is the one proposed by Dr John Morris, GM4ANB [1], and which the IARU adopted on 1 January 1985. The first two letters are known as 'fields', the next two numbers as 'squares' and the last two letters as 'sub-squares'. The reference stated after a callsign, eg G3FPK (IO91) is now called the 'grid' and is the one used in the new annual table instead of district codes. The Q-code 'QTE' is used to indicate the antenna heading - I suggest this is more appropriate than the widely-used QTF which, strictly speaking, concerns locating by two or more stations.

CONFIRMATIONS

There has been considerable correspondence on the Moon-Net website concerning the lack of QSLs from some regular EME operators. It began when one contributor published a list of those who never seemed to QSL even when IRCs or return postage were sent. This revealed extremes of views from those who said that they always sent a card to new stations worked, to those who said they thought confirming a QSO was irrelevant and that one should just enjoy the fact that a contact had been completed. It would be useful to know whether or not the station you work will send a card if requested and it would seem sensible if this information was included in operators' comments on the QRZ.com website. An honest "I don't want QSLs" or "QSL direct only with SAE and $1 bill" is preferable to no information.

Dave Blaschke, W5UN (EM23), advises that all stations submit their logs to the ARRL's 'Logbook of The World' (LoTW) confirmation system which can be used for DXCC and WAS purposes without actually sending any cards. He admits that it's a bit cumbersome at the moment but says he is "encouraging" the ARRL to simplify its use. He says that he doesn't send QSLs for many contacts unless he receives one first but will continue answering every one received; if you'd like a card direct, send him an addressed envelope. He has a website - see 'Web search'.

FM DEVIATION

The item about excessive FM deviation in the January 'VHF/UHF' resulted in a very useful contribution from Richard Drabble, G1SLE. He points out that the current PMR specification, ETS 300-086, requires that "For 12.5kHz channel spacing peak deviation should never exceed 2.4kHz and for 25kHz peak deviation should never exceed 4.8kHz." He says that many 25kHz radios he has come across have the deviation set to 7kHz or even more resulting in "a ghastly wide signal."

He continues, "When setting deviation the radio's CTCSS encoder should really be on, because CTCSS is usually injected after the limiter and it is therefore added to the speech deviation. On the subject of CTCSS the correct level is 250Hz for 12.5kHz channelling and 500Hz for 25kHz systems. Where DTMF or other in-band signalling is used aim for the DTMF encoder to generate plenty of deviation, but not enough to result in limiting; a value of 1.5-1.8kHz for 12.5kHz and 3.0-3.6kHz for 25kHz systems being typical.

"When adjusting deviation be careful to ensure that your deviation meter is looking at the whole audio spectrum from CTCSS right through to the top end of speech; 10Hz to 15kHz should be OK. Beware because some meters 'helpfully' filter out the CTCSS with a 300-3400Hz band-pass filter, resulting in only the speech, not the speech + CTCSS being measured.

"Of course deviation setting is only half the story. A 25kHz set with deviation turned down to 2.4kHz should cause no offence to users 12.5kHz away, but if its receiver IF filter(s) are left 'as is' it may still be interfered with by users with correctly adjusted deviation 12.5kHz away. For 25kHz use IF filters should be 12kHz or at an absolute maximum 15kHz wide at -3dB and for 12.5kHz systems halve these values to 6.0-7.5kHz. Ideally IF selectivity should fall away to at least -90dB on the adjacent channel and typically -70dB at ±8.75kHz for 12.5kHz use or -70dB at ±17.5kHz for 25kHz use.

"Carrying out modification to the receiver is a considerably more expensive and involved task than adjusting transmitter deviation. When changing IF filters it should be remembered that in many cases the surrounding IF circuitry may need minor changes to correctly match to the new filter as terminating impedances for 12.5 and 25kHz filters are often different. However, simply adjusting transmit deviation to the correct value will ensure no inconvenience to other band users, which is I think the main thing.

"It should be remembered that a set fitted with 12kHz wide filters will receive a transmission with 2.4 to 4.8kHz deviation acceptably (in the absence of other signals), but a set with 6kHz wide filters will receive only deviations of up to 2.4kHz properly, anything more will sound awful." Thanks for your very detailed notes, Richard.

SOLAR AND GEOMAGNETIC DATA

In the 30 days to 11 January the solar flux was fairly steady varying from 105 units on 28 December to 83 on 6 January giving an average of 93.4, 11% down on last month. The SESC sunspot number varied from 11 on 27 December to 60 on the 31st and only nine new regions were logged. The middle latitude A-Index at Fredericksburg was below 10 on 18 days, down to just one on 19 December with a maximum of 21 on 7 January, so once again, no auroral activity for British Isles stations was reported.

VALE OH1NL

Another pioneering EME operator has become a silent key. Hannu

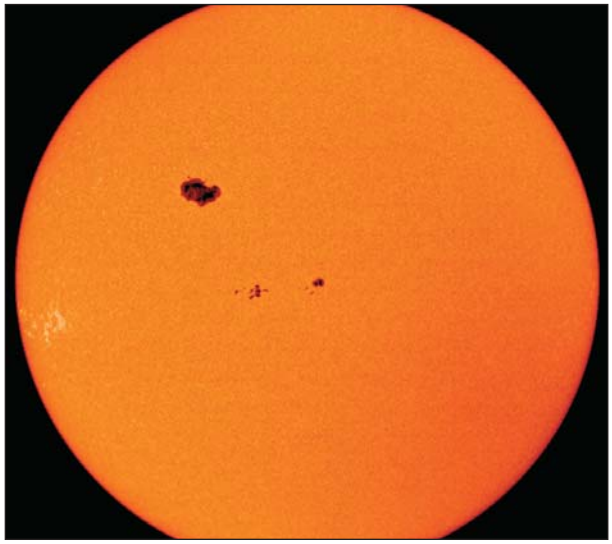


PHOTO: SOHO/MDI, HTTP://SPACEWEATHER.COM

Sunspot group 720 grew from an almost invisible speck on 11 January to a giant, seven times the earth's diameter, by 14 January. The giant sunspot group poses a threat for strong M-class solar flares.

Forsström, OH6MAZ, posted the sad news on the Moon Net website that Lennart Suominen, OH1NL, passed away on 3 December 2004. Lenna completed the first 2m EME QSO in the world with W6DNG on 11 April 1964 at a time when few believed that such contacts were possible on the band. The news greatly saddened Chris Bartram, GW4DGU, who formed part of the generation of EME-ers first active in the 1970s. He writes, "Perhaps the time has come for someone to write an authoritative book on the history of EME. It could be a remarkable story of human and technical triumphs. Failing that, I very much support the idea of an EME Hall of Fame although, like a number of other people, I feel it should be reserved for those who are no longer with us."

MOONBOUNCE

First some further news about last year's ARRL International EME Competition in which Simon Freeman, G3LQR (JO02), spent only a little time in the contest due to the Moon's low declination shortening his window time. On 70cm he completed with HB9Q, KL6M, K1FO, OZ4MM, DL9KR, F6KHM, OH2PO, G3LTF, N2IQ and K2UYH. On 23cm he added G3LTF, OZ6OL, DF3RU, F6CGJ and LA8AF. Peter Blair, G3LTF (IO91), ended with 6x5 on 2m, 49x27 on 70cm, 54x32 on 23cm and 12x11 on 13cm. Roy Reed, G3ZIG (JO02), had a difficult time on 2m finding low activity and conditions not too good. He ended with 58 QSOs and 31 multipliers, three new initials being KM5PO, G3IRQ and RA3AQ.

Howard Ling, G4CCH (IO93), was QRV on 23cm in the latter part of December and on the 19th completed on CW with LA9NEA, N2UO, ON7UN, K9SLQ, NA4N, W4SM #197 and OZ6OL. IW2FZR (M/RO) was #198 in a sked at 2000 on the 20th; Dario has a 4m dish and 80W. The 26th brought CW contacts with DF4PV and K9SLQ and next day he completed with W7BBM (55/55 on SSB) and John now has 200W and is much louder. Finally on CW on the 29th OH6NVQ (RO/M) was #199 and runs 150W to a 3m dish, followed by OH3MCK (RO/O) with 200W and 27dBi linear polarisation.

Bryn Llewellyn, G4DEZ (JO03), completed his first digital QSO on JT65b on 10 December with RN6BN (KN95) who peaked at S3. Brian Cator, G4AED, sent a report of activity at G8VYK, the callsign of the BAe Systems Sports and Leisure Club station in Basildon (JO01) of which he is the sole operator. He, too, managed his and the club's first EME QSO with RN6BN using JT65b mode.

The following items were culled from the Moon Net website. Bernd Mischlewski, DF2ZC (JO30), reports that 5B8AD has swapped antennas and now uses a modified 13B2 with three added elements. Alex is now easier to work with 300W and is using JT65b only at present. He's frequently on the N0UK Logger. 5B8AV is another Cyprus operator and Norman uses a 16JXX antenna and is investigating possible ZC4 operation using digital modes. Bernd says that most operation these days is on JT65 and those interested should look on a website - see 'Web search'.

Johan van de Velde, ON4IQ, mentions the following expeditions: Ted Jiminez, HI3TEJ, is working on his HH licence for a possible Haiti EME operation this year. Johan is building some equipment for him. There is a firm plan to activate Grenada (J3) on 2m EME using a single Yagi and a 3CX800A7 PA. If he can finish his 70cm cavity PA in time he could be QRV on that band too. He has already shipped a 5-wavelength M^2 Yagi to PJ2 for operation from there, PJ7, FS and P4.

Goran Stojkovic, YU1CF (KN03), has improved his *Moon* software program which has been successfully tested with the *Windows 98* and *Windows XP* operating systems. The program is freeware and can be downloaded from the Dual website - see 'Web search'. Guy Fletcher, VK2KU (QF55AI), is now QRV on 2m EME running 400W to 4 x 12-ele horizontally polarised Yagis. He would welcome CW or JT sked proposals on 14.153MHz: his e-mail address is vk2ku@tsn.cc

David Anderson, GM4JJJ (IO99), reports that his antenna system suffered damage in the violent storm on the night of 11 January. He writes that his *MoonSked* software now supports the AlphaSPID az/el rotator. This is a free driver for registered users of *MoonSked* and is available by an e-mail request to david@gm4jjj.co.uk

Roger Rehr, W3SZ, tried out the *Linux* version of David's *MoonSked* program and found it very easy to install and that it worked perfectly. He lavishes praises on it for many reasons and advises those interested to look on the website - see 'Web search' - where there is a full explanation of what the program will do.

I omitted to mention the EME SSB Contest last month, which is a 24-hour 'fun event' starting at 1200 on 19 February. It's for 23cm single or multiple operation from one location and CW to SSB contacts are encouraged. SSB/SSB contacts score two points and SSB/CW QSOs are worth one point, the required exchange being your field, eg IO, FN. Scoring is QSO points multiplied by the total number of fields. Logs should go to the *432 and Up EME NL* at a.katz@ieee.org and the Moon data for this weekend were given last month.

The proposed March activity weekend (AW) is 19/20 when London latitude stations will have 33 hours of Moon time. The declination ranges from +28.06° to +23.9° and the 144/432MHz sky temperature varies from 456/35K to 222/17K. The signal degradation at this apogee weekend is -1.9dB and the Sun offset at Saturday midnight is +114°.

ANNUAL VHF/UHF TABLE 2004 (FINAL PLACINGS)

	50MHz		70MHz		144MHz		430MHz		1296MHz		Total
Callsign	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Points
G4DEZ	101	59	67	12	103	28	52	15	22	11	470
G3FIJ	20	12	22	5	65	9	15	4	1	1	154
G8VYK	15	26	4	1	55	26	1	5	-	-	133
G4APJ	22	23	-	-	46	7	31	4	-	-	133
M0XLT	26	39	-	-	26	5	2	1	-	-	99
G6TTL	3	23	-	-	38	7	17	7	-	-	95
G8RWG	-	-	-	-	32	17	-	-	-	-	49

The District Codes were the 124 listed on page 56 in the January 2003 *RadCom*. Up to 6 different GI stations and up to 3 different GM stations in each Scottish district were counted. Countries were the current DXCC ones plus IT9. The deadline for first 2005 entries is 8 March. Note: New rules for 2005, see the text.

BAND REPORTS

50MHz

Ted Collins, G4UPS (IO81), reports January Es openings on two days up to the 10th. On the 3rd his first QSO was with S57AC* (JN76) at 1135 followed by YU1DG and YT1AU (KN04). SM7AED* (JO65) was worked at 1215 at 90°, then S51CK (JN76) before fade-out at 1300. On the 5th at 1607 he contacted SM7AED*, then SM7NDX* (JO77), SM7ELV* (JO89), SM7VXS (JO65), OZ0JX* (JO54), LA8AV* (JO59), SM3GSK (JP84), SM0ELV* and LA1TV* (JO49) with fade-out at 1701.

Kevin Jackson, M0XLT (IO83), would like to make it quite clear that during the aurora on 8 November, reported in the January 'VHF/UHF', his QSO with TF8GX was conducted on 50.150MHz and *not* on 50.110MHz as may have been construed. Nor was he the station referred to as persistently calling CQ on 50.110MHz during an aurora. He comments on the constant low-level beacon signals mentioned by G4DEZ and observes this phenomenon with TV video transmitters on 48.250 and 49.740MHz, ". . . not unlike tropo that can last for hours": he thinks the transmitters are located in Sweden or Estonia. At 1610 on 22 December he copied the Italian beacon I0JX but subsequent CQs brought no replies. On the 26th he heard beacons 9A0BHH, OE3XLB and HB9SIX with similar non-results.

THE NEW ANNUAL TABLE

For many years the annual table was based on the 124 District Codes used in some RSGB contests. These data are not required in major contests, such as VHF NFD and IARU events, and portable operators may not know what District Code they are in: after all, what's the postal district of a field in the middle of nowhere? Table participants seeking to ascertain the information on a fixed station from the *Yearbook*, sometimes found that the callsign was in the 'Details withheld' category. By contrast, the locator is usually required in contest exchanges and readily given during non-contest QSOs.

Many readers suggested that, if locators replaced the district codes, they would more likely submit entries. Accordingly from 1 January this year that's what it will be, the grids, such as IO93 or KO10, with the countries remaining as the current DXCC 'entities' plus IT9. As to qualifying QSOs, only direct station-to-station QSOs should be counted, so satellite, repeater and packet radio contacts are invalid. So as to encourage entries from average stations, EME contacts will be excluded for this year, but if there's a demand for such to be included, it can be reconsidered for next year: let me have your comments. The first appearance of the new look table will be in the May *RadCom*, the copy deadline for which is 8 March.

144MHz

Steve Bunting, M0BPQ/P (IO91WP), was QRV in the big tropo opening on 8 December and used 180W to a 5-ele Yagi to work DK1FG (JN59), DL6NAA (JO50), DL1YAW (JO41) and F2GL (JN17). Dave Crake, M0DFA/P, did some SOTA operating during this opening from the Ditchling Beacon (IO90WV) using a Kenwood TH-K2 'handie-talkie' at 5W to a J-pole antenna hung from a telescopic fishing rod tied to a fence post. With this he worked G0CQB in Norfolk, MW5AGS in Powys, G6NWT in Telford, M0BPL in Lincolnshire and ODX ON5SB in Tongeren at about 390km.

G4AED lists 19 "notable tropo contacts" in December for G8VYK when ODX were SP2JYR (JO92) and SP2OFW (JO93) both at 1310km. He was also QRV on FSK441 MS and lists 19 QSOs with stations in 14 countries ODX being RX1AS (KO59) at 2127km. The station comprises an IC-251E, homebrew 180W PA and 15-ele Yagi at 15m AGL.

G4DEZ made over 320 contacts on 2m, 4m, 70cm and 23cm in the early December lift including over 20 SPs on 2m. There were hundreds of DLs on all bands. Mike Pugh, G4VPD (IO92), contacted DK1CL/P (JN48) and OE5MPL (JN78) on 6 December and some SPs on the 9th, ODX being SP7ODG (KO01) at 1500km.

Bob Harrison, G8HGN (JO01), was QRV in the RSGB 144MHz AFS contest on 5 December and made 128 contacts with stations in 31 grids and seven countries. ODX was DK2GR (JN59) at 774km. GI4SNA and EI5FK were heard. In the afternoon of the 7th there was good tropo propagation to OE and DL, stations worked including DH9YX (JN68), OE2CSM and OE2LCM (JN37 and ODX at 1003km), OE2WAO (JN67) and HB9AMH/P (JN37). In the UKAC that evening he completed 36 QSOs with stations in 15 grids, ODX being OE5XBL (JN68) at 998km. On the 10th OZ3TT (JO66) was grid number 209 and shortly afterwards SK0UX (JO99/1410km) was another new grid and Bob's best ever 2m tropo DX.

430MHz UP

Ken Punshon, G4APJ (IO83), was QRV in the Christmas Cumulatives and worked GM4ODA/P on Mull for a new grid on the 28th in uninspiring and low activity conditions. G4DEZ worked 25 SPs during the early December tropo but the prize was when US5WU (KO20) called Bryn for his best-ever DX at 1653km. He worked five SPs on 23cm. G4VPD's ODX was DK3WG (JO72) for a new grid but Mike's 50W wasn't enough to be heard in OE and SP.

At 1925 on the 8th G8HGN worked OE5VRL/5 (JN78) at 1048km for new grid number 78, then DF9IC (JN48) and GW4DGU for grid number 79. On the 10th DL7QY (JN59) was Bob's 80th grid. G8VYK lists five tropo QSOs in the December lift, ODX being OZ1ING (JO57) at 970km. M0BPQ/P lists 26 stations worked in the 9-12 December period, one on FM, 14 on CW and 11 on SSB, with stations in DL, F, G, OE, ON, OZ, PA and SM, when OE5VRL/5 at 1087km was Steve's new all-time country and ODX. He also completed eight 23cm SSB QSOs with DC8UG (JO30), DH9NBU (JO40), DJ5BV (JO30), HB9AMH/P and DL6NAQ/P (JO40) on the 8th and with F6FHP (IN94), SK7MW (JO65, new DXCC and ODX at 963km) and DK6AS (JO52). He'd like more power on 23cm so is looking for parts to build a 100W PA or buy a complete unit; Steve's e-mail address is steve@m0bpq.com

GW4DGU stayed mainly on 70cm and 23cm during the December tropo opening and found there was little audible from the Low Countries and the western part of Germany. The duct system seemed to stop at the mountains only allowing brief openings when its height rose to clear them. When signals were present their strengths were greater on 70cm than on 2m.

Most of Chris's QSOs were with Germany although on the 9th there was a brief opening to Scandinavia when he worked OZ1FF on both bands and was called by SM7ECM on 70cm. An hour later SP7OGS (JO91) was copied in QSO with a Dutch station a QRB in excess of 1600km but later on OE5VRL/5 came out of the noise resulting in contacts on both bands and, at 1389km, was his ODX ever on 23cm.

Things were quieter on the 10th and 11th but livened up again on the 12th starting with a 70cm QSO with DL3LFA (JN67/1326km) who had to beam at 120° to copy Chris best. Subsequent contacts were with DK2JR on 70cm, HB9AMH/P on both bands, DL6WU, OE5VRL/5 again on both bands ending with DL6NAQ/P on 23cm. Chris was QRV on 70cm in the Geminids meteor shower and completed with DF5JJ (JO43) in just over 20mins, then S53RM (JN76) at 1529km which was the first GW/S5 QSO on 70cm MS according to Sine.

FINALE

Thanks to the *Dubus* organisation for issue 4/2004 which, as always, is packed with a wealth of articles and reports. The deadline for copy for the May edition in **8 March** and for June it's **12 April**. My telephone answering and fax machine is on 020 8763 9457 and my CompuServe ID is g3fpk ♦

REFERENCES

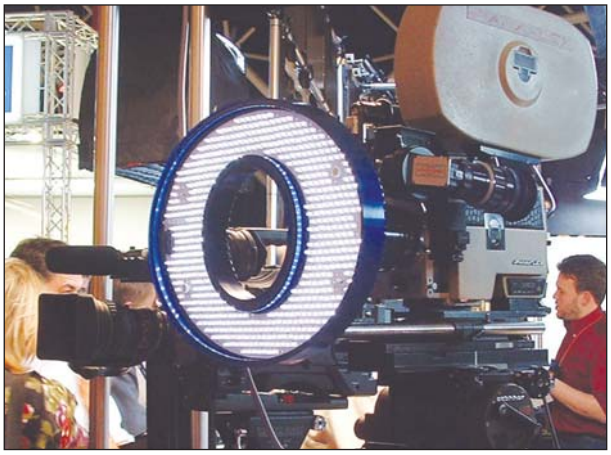
[1] 'The New Locator System', *RadCom* October 1984, pp 862-865.

WEB SEARCH

Dave Blaschke, W5UN:	http://web.wt.net/~w5un
JT65 EME website:	www.chris.org/cgi-bin/jt65eme
***Moon* program (YU1CF):**	www.dual.co.yu/yu1cf/index.htm
***MoonSked* software (GM4JJJ):**	www.gm4jjj.co.uk/MoonSked/moonsked.htm

Trevor Brown, G8CJS

E-mail: chairman@batc.org.uk



Left: Professional film LED light.

Far left: Mike Cox's LED camera light.

ATV

G8CJS has a number of items from the 'fun' side of amateur TV, items which are no less technical, despite being immediately attention-grabbing.

Since I started writing this 'ATV' column, although I have tried to concentrate more on the unusual and fun aspects of ATV, it has a serious side. There is always someone out there trying to set a new world record for 10GHz ATV, experimenting with DATV, setting up an ATV repeater, or designing a new piece of ATV kit, but its always the fun items that generate the feedback: the French amateur radiating underwater pictures from his yacht; the local repeater; the Dutch DF hunt for a downed ATV met balloon; the ATV-equipped model helicopter; or, as was the case with the last column, the chair that was lifted by met balloon to the edge of space. ATV is a serious hobby but, when it lets its hair down, there is more scope to entertain than with any other branch of amateur radio. I have spent over 30 years on ATV and have written several of the ATV handbooks, dating back to the days when you needed a special licence complete with a special callsign – mine was G6AGM/T. The technology has changed and has opened the door for some of the more quirky aspects of the hobby. The model helicopter would never have got off the ground with my QQV06/40 transmitter – even ignoring the rack mounted power supply...

WEB CAM CONTACTS

I was discussing this with Richard Carden, VK4XRL, via the Internet with web cam accompaniment as you do, when he raised the point that some of the other amateurs in Australia don't regard DATV as ATV; I'm not sure what they would think about our web cam link. I don't see a lot of difference between the web cam link and my first-ever ATV contact except it was a little easier to implement than my first 70cm effort on frequencies that have long since been removed from the grasp of amateurs. If you have never tried it then speculate a few pounds on a web cam and subscribe to the dreaded *MSN Messenger* and give it a try. Your junk mail will rise a little but, if you set up your filters correctly, most of it will not get through. If it does and the millions from a Nigerian business deal really come through for you, remember my e-mail address!

GLIDER CAM

The point I am trying to make is that the way forward is flowing with the technology and finding new applications with which to apply ATV. I rather liked the Glider Cam from KE3QG. The aerial view is excellent and I suspect the coverage that goes with the elevated antenna might also be envious; it's probably a one-way contact, as the operator does seem to have his hands rather full.

LED CAMERA LIGHTS

Mike Cox, the BATC president has also been experimenting with the improvements in the brightness of LED's and has put together a small movie light for his camcorder. This is not the first time the new generation of LEDs has been used for lighting – they can be found on webcams, CCTV, and serious professional film lighting kit. The advantage of this technology is the colour temperature which is very near to daylight temperatures and as such can be used to fill shadows outside or illuminate the inside of a room to match the picture coming through the window without resorting to blue gels. The LEDs need a series shunt resistor to limit the current and, in Mike's case, they are also driven from an elegant pulse width modulator that gives control over the mark space ratio in order to make the brightness adjustable. Heat sinks are also required but, in the case of the Luxeon LHXL BW01, the heat sink is an integral part. Maplin now stocks these. The more expensive LXHL-PW03 can achieve a light output of 25 lumens. If you want to soften the light, some form of scrim is required, the low surface temperature removes the requirement for fire-proofing, and they are far more robust than halogen lamps. The full article including the schematic diagram of the control unit is in *CQ-TV* magazine no 209.

502km ATV ON 3cm

PI6ATV, an ATV repeater installed on a broadcast TV mast in Holland, (JO22MA) is a multi-band repeater and one of the output frequencies is 10.425GHz, which is the same as GB3YX input, and on 7 September was visible for several hours via GB3XY At times it reached a good P4. The path was 502km which isn't bad for 3cm ATV!!

OMISSION

We apologise for the omission of the following from the photograph of the chair on p67 of January's 'ATV'. It should have read: 'Copyright Simon Faithfull, 2004'. ♦

WEB SEARCH

***CQ-TV* magazine download**	www.cq-tv.com
BATC site	www.batc.org.uk
MSN Messenger	http://messenger.msn.com/

John Heath, G7HIA / M3BBX

Chestnuts, Desford Lane, Kirkby Mallory, Leics LE9 7QF.

E-mail: g7hia@amsat.org

Satellite activity – good and bad

A veritable *pot-pourri* this month. G7HIA gives some information on the Group for Earth Observation, the imminent launch of an Indian satellite, the misuse of *AsiaSat3*, the necessity to use low power with the satellites, the *SSETI* initiative, and finally, news of *AO-51* on mode L/S.

Readers with an interest in weather satellite imaging may be interested to learn that GEO, the Group for Earth Observation, plans to hold its second Symposium at the National Space Centre, Leicester on 30 April, 2005. Full details about the event will be in *GEO Quarterly* No 5, due for publication in early March. This information will also appear on the GEO website. The GEO informs me that *RadCom* readers will be most welcome to attend.

In addition to its Symposium, GEO publishes an A4 size magazine dedicated to Earth imaging each quarter. The *GEO Quarterly* features articles on satellite reception and weather phenomena as well as many high-resolution images, many in full colour. Annual membership of GEO is £16 for UK residents and you can download a membership form from its website. Anyone requiring further information about GEO can contact the group's chairman, Francis Bell, who will be delighted to answer queries.

NEW INDIAN SATELLITE IMMINENT

AMSAT-India has indicated that there will be a new LEO amateur satellite – *VUSAT* – in February or March. Unlike the FM satellites, which can only handle one contact at a time, this one will have a linear cross-band transponder (435 to 145.9MHz) which will allow many SSB and CW contacts to take place simultaneously. There are several AMSAT organisations contributing various components, and more details can be found on AMSAT-India's website. Thanks to Trevor, M5AKA, for forwarding this item. I am always happy to receive pictures, questions and requests from readers for this page.

PIRATES HIGHJACK *AsiaSat3*

Operators of *AsiaSat3* are considering extra security measures after their main transponder was pirated by a high-power signal from an unknown source within East/South East Asia. The transponder beams TV pictures to China and it was pirated for four hours during prime viewing time. Visit the Space News website for more on this story, and other commercial space news.

Howard, G6LVB/P, completes a contact with Ib, OZ1MY, via *AO-51*.

EXTREME QRP VIA SATELLITE

The receivers on *AO-51* and *SO-50* are very sensitive, and high power is NOT required to access them. Due to the FM capture effect, high-power stations can completely dominate the transponder and prevent other stations from making any contacts. Many beginners, I am sure, feel that the request to keep uplink power levels low is simply a mantra from the established satellite community. After all, the satellites are about 700km away so it must need plenty of transmitting power to reach them. It sounds plausible I know, but in fact it's wrong, and I am always pleased to have independent proof. Pat, KA9SCF, recently reported successful contacts on both of the satellites using just 50mW to a small, hand-held commercial Yagi antenna (the Arrow, available from AMSAT-UK). Nearer to home, Robert, G8ATE, regularly works through *FO-29* with just one watt or so. So let's all turn the power down, prolong the battery life of the satellites, and let more low-power stations have access.

SSETI

SSETI is the first satellite to be built under the auspices of the European Space Agency Education Office for Student Space Exploration and Technology Initiative. AMSAT-UK is heavily involved in supporting the satellite build through a project team consisting of Sam, G4DDK (our 'Microwave' columnist), David, G0MRF, Jason, G7OCD, Howard, G6LVB, and Graham, G3VZV. The flight model of the S-band transmitter module has been completed and uses a PA which has been provided *gratis* by Charlie, G3WDG. The transmitter will be used for the 38K4 telemetry and image data downlink. *SSETI* will also have a capability of a US FM transponder later in the mission. Active support of new satellite projects is just one of the many reasons for joining AMSAT-UK, the organisation for anyone interested in amateur radio in space. Membership details are on the website, or contact the membership secretary Charles Riley, G4JQX, Pandown Farmhouse, Coppershell, Gastards, Wiltshire SN13 9PZ.

ESA is keen for radio amateurs to collect the *SSETI* AX.25 data, both at 38K6 on 2.4GHz and 9K6 on 437MHz. There will be a prize for the radio amateur who contributes the most data to ESA. Details of the prize will be released by ESA at a later date. For more information about *SSETI*, visit the website and click on 'Missions' then 'Express'. Thanks to Graham, G3VZV, and *AMSAT Oscar News* for this update.

AO-51 ON MODE L/S

During the final technical meeting of the AMSAT-UK team constructing the *SSETI* Express S-band transmitter at the QTH of Sam, G4DDK, Howard could not resist the temptation of trying a brief contact via *AO-51* as it was operating in the L/S mode.

The equipment consisted of a TS-2000 for uplink on 1268MHz, a DN6NT down-converter from 2.4GHz to 144MHz, a small 12V battery and an even smaller hand-held dual-band L/S patch antenna. The chair was 'borrowed' from Sam's shack.

Notwithstanding the small antennas, the *AO-51* S-band signal was quite readable and, amazingly, the uplink signal was also making it through the satellite.

Howard also had a brief contact with F6BYJ during the same pass.

Thanks to Graham, G3VZV, for the report. ♦

WEB SEARCH

Group for Earth Observation	www.geo-web.org.uk
Francis Bell e-mail	francis@geo-web.org.uk
***Space News* publication**	www.space.com
AMSAT-UK	www.amsat-uk.org
AMSAT-India	www.amsatindia.org/

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Most items are available in kit form (KT suffix) or assembled and ready for use (AS prefix).

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Feedback from readers

G4NJH covers some of the feedback he has had from readers, together with some news of the S E Asian tsunami.

To start with, may I take the opportunity to thank those readers who give me feedback on articles. I usually try to reply to them quickly and directly.

PSK31/63

The last column mentioned PSK31 and when I expressed some puzzlement at what one site's reference to PSK36 was – about which I could find nothing more – I was delighted to hear from Peter Martinez, G3PLX, author of the mode, who wrote: "You asked about PSK36. You will probably have a huge mailbag by now telling you that this is a typo for PSK63, which is no more than a double-speed version of PSK31 (ie 62.5 baud). Its only attribute is that it goes twice as fast as you can type, which means that it is not much use for natter QSOs. It takes up twice the bandwidth and needs twice the power. It was promoted mostly by the author of *DigiPan* who thought it would replace RTTY for contest working, but it hasn't.

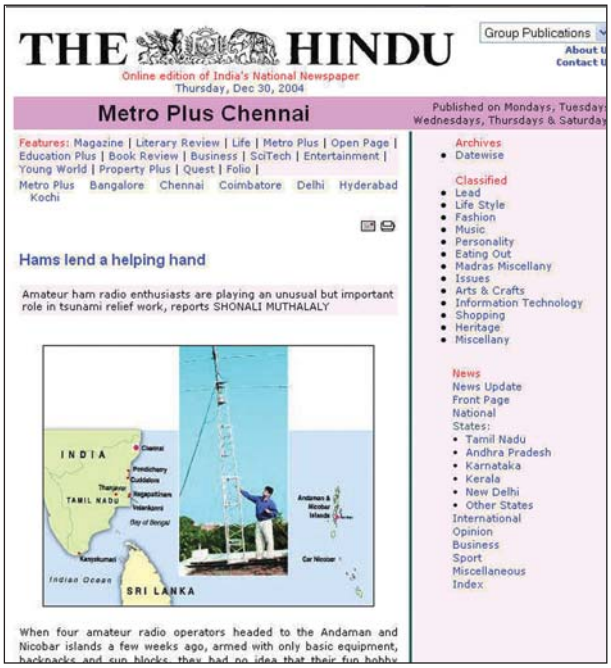
"By the way, the Russians use PSK31 with their own Cyrillic alphabet on the air, the only currently-used 'data' mode where they can do this. Russian versions of *Windows* have the Cyrillic alphabet as standard, and all the available PSK31 programs will let Russians type and read Cyrillic text without any special tricks."

Phil Cooper, GU0SUP, of BARTG adds: "There are many programs that handle PSK63, including a few you didn't mention, such as *DXPSK* and *MultiPSK*, and there is always *MMVARI* by Mako, JE3HHT, author of *MMTTY*. PSK63 has some following, although it isn't often heard as much as PSK31. Generally, you find it 2kHz above the typical PSK31 frequencies, ie, 14.072, 21.072 etc. *MultiPSK* is by F6CTE, and as the name suggests, it handles many modes, including MFSK, MT63, Throb, Hell, CW, and many more. *MMVARI* is also a very good piece of FREE software, and handles PSK31, PSK63, MFSK and AFSK RTTY.

LINUX AND SOFTWARE

Gervase, GW4URJ, writes: "My Linux-based software, *gmfsk*, can operate both PSK31 and PSK63. According to the help file there is further information… although I have been unable to access the site mentioned. The program…was written by Tomi Manninen, OH2BNS." I leave readers to follow the links.

"Incidentally," Gervase continues, "in any future article about digital mode software, you might like to mention *Linux*-based software, since it would seem to me to be more in line with the amateur philosophy than commercial software. *GPSK31* also does PSK31 but *gmfsk* covers a number of modes apart from PSK, including RTTY, MT63, MFSK, Throb and Hellschreiber. It is a bit like a black-and-white version of *MixW*, but without some of the bells ands whistles. It has all the basics and I can recommend it." I don't myself test software and OS, but readers should be aware of what is out there and I am always glad to hear readers' recommendations and experiences to pass on.


THE HINDU

Online edition of India's National Newspaper
Thursday, Dec 30, 2004

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Hams lend a helping hand

Amateur ham radio enthusiasts are playing an unusual but important role in tsunami relief work, reports SHONALI MUTHALALY

INDIA
TAMIL NADU
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Indian Ocean

When four amateur radio operators headed to the Andaman and Nicobar islands a few weeks ago, armed with only basic equipment, backpacks and sun blocks, they had no idea that their fun hobby

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Front page of *The Hindu* on-line newspaper with news of amateur radio involvement.

TSUNAMI AND THE ROLE OF THE AMATEUR

I was interested and grateful to receive this link from David Cutter, G3UNA, and I pass on the URL for *The Hindu* newspaper online.

It refers to a DXpedition which played its part in the emergency and I will quote at some length to keep the sense: "When four amateur radio operators headed to the Andaman and Nicobar islands a few weeks ago… they had no idea that their fun hobby would soon become the islands' only lifeline… They went because its a 'high value' country for hams since you need special permission from the Government to operate there…The team, which came from across India, left Chennai on 3 December on their 'DXpedition'. [They] all carry radios and dismantled antennas… and contacted about 35,000 hams across the world. Then, the earthquake began, followed by tidal waves, which swept over the small islands. They were actually in operation when the tremors began. Bharathi, the team leader, was talking to an Australian on the radio. He says her voice suddenly rose by a few octaves and she yelled "tremor". Then, her radio went dead.

"The islands were devastated by the quake and crashing waves. Phones died, the electricity went out and life in Andaman and Nicobar came to a stunned halt. On the airwaves too, there was a loud silence, as hams across the world held their breath, wondering whether the team had survived. However, about two hours later, unbelievably, they were back on the air.

"Every other form of communication was down… the tsunami had engulfed the island, paralysing all machinery and communication systems. The ham radio however, … was in working order… In the tradition of hams, the team stayed on to help, the DXpedition was converted into an emergency network and hams from across the world, especially India, swung into action. Two more people headed to the islands to support the emergency network, and with help from the Indian Army, which is providing the hams with food, camping and batteries, the station on Port Blair continues to operate, while another station has been set up at Car Nicobar, which has been practically obliterated by the catastrophe."

It is important, I think, for the public to know just what our operators worldwide are capable of and, also, their sense of social responsibility. It's not just an expensive hobby for the few. I'm sure we shall hear more similar examples.

Not so many pages reviewed this month, but I thought readers would appreciate a change of format. ♦

WEB SEARCH

F6CTE	http://members.aol.com/f6cte/index_anglais.htm
***MMVARI* software**	http://mmhamsoft.ham-radio.ch/MMvari
***GMFSK* software**	http://gmfsk.connect.fi
The Hindu	www.hinduonnet.com/mp/2004/12/30/stories/2004123000350100.htm

Steve White, G3ZVW

Moorcroft, Crewkerne Road, Raymond's Hill, Axminster, Devon EX13 5SY.

E-mail: g3zvw@dsl.pipex.com

Whatever next

This month, G3ZVW looks at the likely outcome of the Ofcom Spectrum Liberalisation document, in the context of mobile phones • The production of ever-lower voltages for the shrinking mobile phone • The latest update on the 'ideal' transceiver.

FIG 1 © RADCOM 429

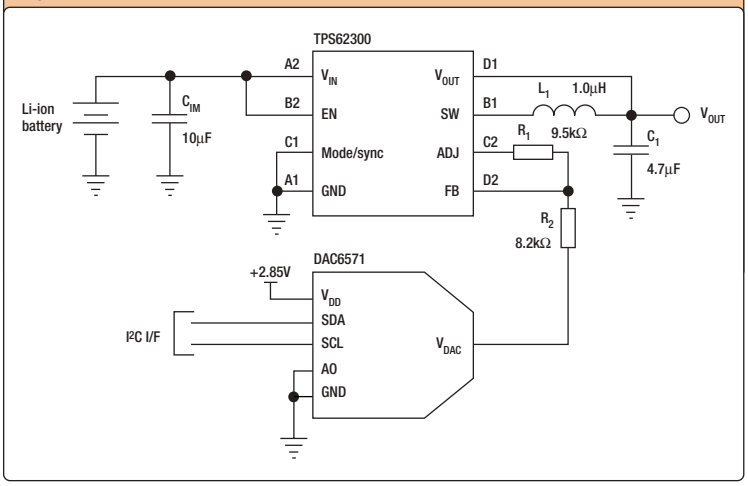

Fig 1: A DAC6571 (10-bit DAC) is used to control a TPS62300 (DC-DC converter) which can provide up to 500mA output at as little as 0.6V.

The rollout of third generation mobile phone services received a boost in late January, when Ofcom published its *Spectrum Liberalisation* document. This wide-ranging document contained the conclusions of its 2004 public consultation on spectrum liberalisation. On the subject of mobile phones, the document states that (subject to consideration in consultation on the Spectrum Framework Review) after 2005 there may be (a) "a change within 2G/3G bands", and (b) "a change to 3G use in bands other than those allocated to 3G". So the writing appears to be on the wall for 2nd generation phones, just as it was for analogue services back in the 1990s.

As I see it, the adoption of a more flexible approach to licensing may also have an impact on other parts of the microwave portion of the spectrum, as more and more wireless services appear and are adopted. A prime example of this will be 4th generation mobile phones, currently under development. Last year Japan, China and Korea agreed jointly to develop communications and other technologies for 4th generation cellular phones, which are expected to come into commercial use around 2010. Fourth-generation cellphones are expected to be capable of a 100Mbps throughput - equivalent to the speed of fibre-optic communications. They are also expected to allow users to watch crystal-clear video on their displays, even on fast-moving trains. The agreement is aimed at having the three countries adopt a unified communications protocol. Together, they account for about 30% of all cellphone users around the world, so the protocol could eventually become the *de facto* standard. Interestingly, India has apparently decided to leapfrog 3G mobile technology by migrating directly from 2nd generation to 4th generation.

DYNAMIC VOLTAGE MANAGEMENT

Linear power supplies tend to be:

- heavy, because they rely upon transformers which run at the relatively inefficient frequency of 50Hz;
- large, because for high current applications they need high-value smoothing capacitors;
- hot, because significant power needs to be dissipated by the pass transistor(s)/regulator(s) and their associated heat sinks.

Switch-mode power supplies on the other hand are:

- lighter, because they typically run at 20-40kHz, where transformers can be made smaller and more efficient;
- smaller, because lower value smoothing capacitors can be used because they are having their voltages topped-up far more often;
- less hot, because less voltage needs to be dropped across the pass transistor(s) / regulator(s).

Managing low voltages has become a far bigger issue in recent times, as the voltage required by the CPU chips of computers (for example) has gone down. The way that 2V would be produced from a 5V supply, if you want good electrical efficiency, is not to use the linear approach, but a DC-DC switching regulator. Cellular phones are now using lower voltage chips, so the manufacturers are also having to use DC-DC switching regulators to drop the voltage without wasting power. The problem is that a DC-DC converter requires an inductor and a smoothing capacitor, both of which take up space in a device which you want to make small and light. Texas Instruments' solution has been to ramp the switching frequency up to 3MHz, which results in the requirements for the inductor and capacitor being reduced to the degree that they can be low cost chip components. **Fig 1** shows how TI have combined its new high frequency DC-DC switching regulator with a digital-analogue converter (DAC) that contains an I^2C serial interface to produce a DC-DC regulator in which the output voltage can be stepped in minute increments.

This development makes me wonder how much smaller a mains power supply could be made that could deliver the current requirements of one of the new generation of 200W output transceivers?

THE NEXT GENERATION – UPDATE 2

Since the previous update I have received several more e-mails and letters from *RadCom* readers who have made suggestions for what seems to have become labelled 'the ideal transceiver'. By the time this column is published the discussion session at the Stevenage Show to thrash out the design for it will have taken place and over the coming months I will let you know the outcome. In the meantime, here are a few of the more recent suggestions:

- I think you need two 'ideal' rigs - one small and compact for mobile use, and one a bit bigger for use in the shack. They could be functionally the same, but it would be nice to have a bigger tuning knob and loudspeaker on the rig at home than is possible on a reasonably-sized mobile.
- Bluetooth capability, for a Wireless Morse Key or wireless headphones.
- The amateur radio licence on a smart card, to be inserted to enable the rig.
- Security type access via a pin number or fingerprint device.
- For DF hunts, an S-meter output socket to drive a milliammeter. It should be possible to have a dynamic range of about 70dB.
- Iambic modes 'A' and 'B'. ♦

WEB SEARCH

Ofcom Spectrum Liberalisation document: www.ofcom.org.uk/consult/condocs/liberalisation/statement.pdf
Dynamic voltage management: http://neasia.nikkeibp.com.hk/neasia/000028

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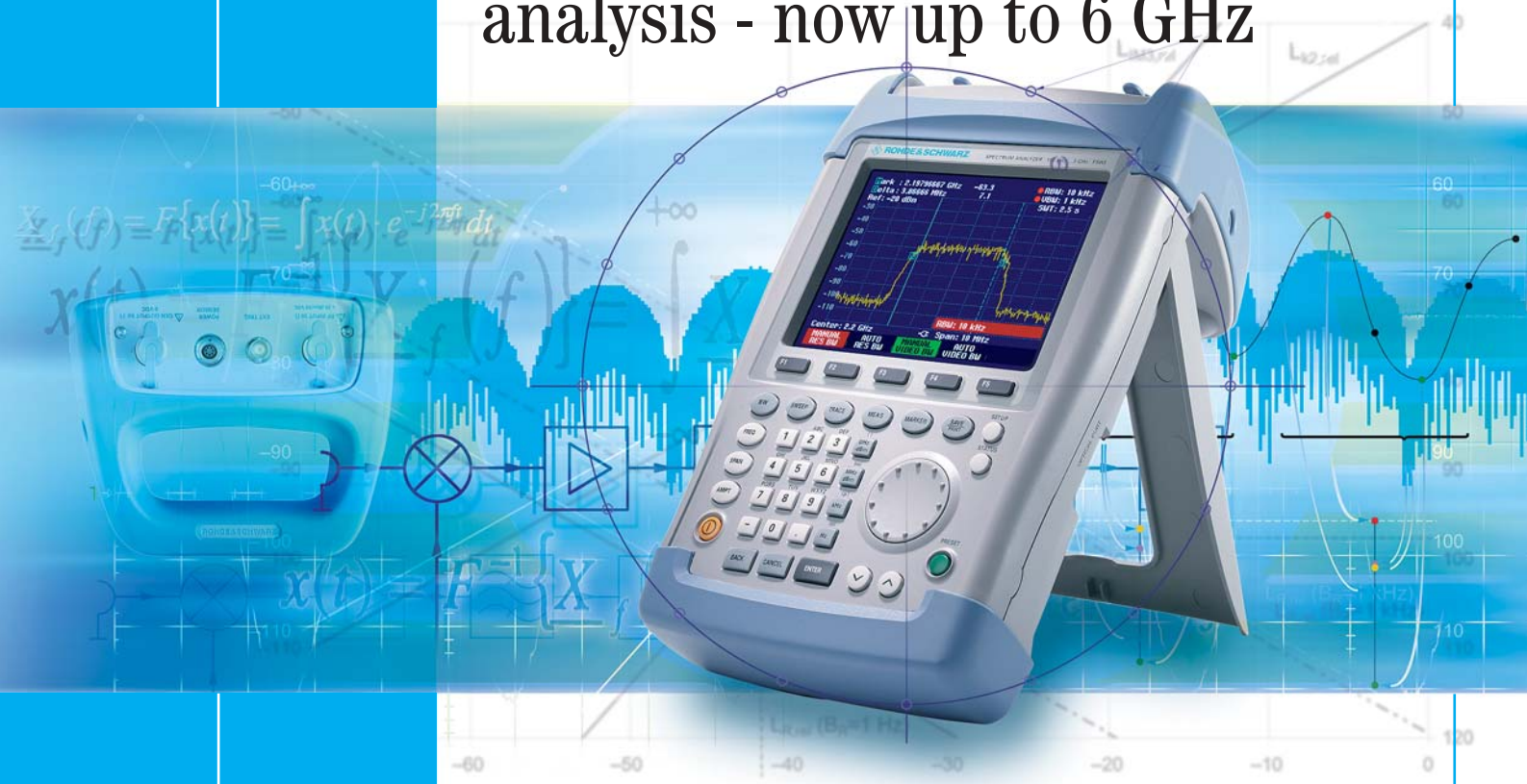

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Don Beattie, G3BJ

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Emergency communications and preparations for Region 1 conference

Don Beattie reports on the newly-appointed IARU International Coordinator for Emergency Communications and the preparations underway for the Region 1 Conference in Davos later this year.

It was, perhaps, just fortuitous that the IARU Administrative Council appointed Hans Zimmermann, HB9AQS, as International Coordinator for Emergency Communications in the latter part of 2004. Hans's role will be to keep the Administrative Council informed on developments in international disaster relief communications that may affect the Amateur Services, to advise the Council about actions to be taken to defend and promote the interests of radio amateurs, and to ensure that the capabilities of the Amateur Service to prepare for and provide emergency communications are uniformly applied world-wide.

Just a few months after the appointment was made, and whilst Hans was taking up the reins, the world's most dramatic and far-reaching natural disaster took place at the end of December in South and South-East Asia. As I write this, the death toll is in excess of 150,000 and, tragically, is expected to rise further.

In the immediate aftermath of the tsunami, amateur radio operators in the affected regions played a significant role in providing emergency communications when all else failed. There was, rightly, extensive international press coverage of these efforts, particularly about the work in Sri Lanka and the Andaman and Nicobar Islands (which luckily had a DXpedition team on site at the time).

PHOTO: Y KARAKAWA

Hans Zimmermann, HB9AQS, the new IARU International Coordinator for Emergency Communications.

In this world of a global telecommunications infrastructure, which can instantly flash television pictures and phone calls from almost every point of the globe, it is only too easy to forget that such infrastructures can be very fragile, and are easily rendered inoperative by major natural disasters. It is also too easy to think that disasters 'won't happen here'. Fortunately there is a core of amateur radio operators who believe in a public service role, train for it, and are ready for the call when it comes.

Hans Zimmermann has a big task ahead, to work with IARU Regional Emergency Communications Coordinators and through them, with the Member Societies, to ensure that the readiness of the Amateur Service is enhanced and the role that the Service can play is properly recognised by those in high office who in some cases decry the need for such a capability. Keep an eye on the new pages on the main IARU website devoted to emergency communications (see 'Web search' below).

REGION 1 PREPARES FOR GENERAL CONFERENCE

Preparations are now well underway for the IARU Region 1 General Conference in Davos, Switzerland, in September. At the time of writing some 50 societies have indicated that they plan to send delegations. Representatives of the other two IARU Regions and the International Secretariat will also attend.

The Swiss national society, USKA, is playing host to the conference, and a planning team is already hard at work, liaising with the Region and with the permanent conference team at Davos (Davos is a major international conference centre) and addressing the myriad of details that will make the conference a good one.

Member societies are also hard at work. Papers have to be submitted by the end of February, after which they will be assembled into a working agenda and distributed to member societies. The conference is organised into three principal streams, covering administrative and organisational issues, HF issues, and VHF / UHF / microwave issues. Based on past experience, we can expect to consider around 100 papers over the period of the conference.

General conferences are the opportunity to discuss all current matters facing amateur radio. At Davos we can confidently expect issues such as PLT, emergency communications, new band plans, new (or hoped for) frequency allocations, new licence structures, international compatibility of licences, ARDF, contesting, high speed telegraphy, beacons, World Radio Conference 2007, support to developing countries and the IARU coordination of monitoring activities, to be on the agenda.

General conferences are, of course, not only about formal papers. So often at conferences, one society gains new ideas or inspiration from a chance remark from another. There is much innovation going on in amateur radio - not only technically, but also in licensing and regulation. Sharing new developments and thoughts in informal discussion is one of the hidden benefits of a conference. And, of course, one of the strengths of the Amateur Services is the wide spectrum of professions represented amongst the ranks of radio amateurs and the way in which these people can, in their professional life, take account of, and support, the interests of the Amateur Services. If past conferences are anything to go by, it is inevitable at Davos that discussions will continue well into the night on the key challenges facing amateur radio today.

The RSGB, as the second largest society in Region 1 (after DARC of Germany), plays a leading role in all such conferences. The RSGB is much admired outside the UK for its forward-thinking and progressive stance on many aspects of amateur radio and its contribution to the Davos conference is eagerly anticipated. ♦

WEB SEARCH

IARU: www.iaru.org
IARU emergency communications pages: www.iaru.org/emergency

PETER NAISH, VK2BPN, SK

Peter Naish, VK2BPN (formerly G3EIX), became a Silent Key on 9 January after a short illness. Peter was a long-serving Director of IARU Region 3 and since the February 2004 Region 3 conference in Taipei, Taiwan, was the Chairman of Directors in Region 3. He was also the Secretary of the Wireless Institute of Australia and had served as Federal President of that organisation. Peter's funeral took place in Sydney, where the RSGB was formally represented by Don Beattie, G3BJ, who was on holiday in Australia at the time.

PHOTO COURTESY OF TREVOR, M5AKA

Peter Naish, G3EIX, operating his first station in 1948.

Peter Dodd, G3LDO

37 The Ridings, East Preston, W Sussex BN16 2TW.

E-mail: g3ldo@ukonline.co.uk

Antennas

G3LDO looks at different types of ATU, and their characteristics

The subject of ATU efficiency was discussed in 'Antennas', February 2003. Doug Harris, GW3NDR, described his results comparing several ATUs using a centre-fed wire about 80ft (24m) long and fed with slotted feeder some 20ft (6m) long and about 28ft (8.5m) above the ground. This was done by measuring the current in the twin feeder using a twin meter version of the RF meter while, at the same time, measuring the power into the ATU using a power/SWR meter. The tuners compared were listed below in order of efficiency.

- Home Brew ATU using a balanced transformer output. Described as a half Z-match.
- MFJ Versa Tuner V (989C)
- SSM Z-Match
- MFJ Versa Tuner II
- SG-239 Smartuner

The MFJ-989C came out quite well in these tests. This ATU uses a T-network, which is the basis of most commercial units available today.

THE T-NETWORK ANTENNA TUNER

The classic π-network can be used as the basis of an antenna tuning unit (ATU). It is a low-pass filter and is theoretically capable of matching any transmitter to any antenna impedance (resistive or reactive). However, in practice, the matching range is dependent on the component values. For the widest step-up and step-down transformations, the high-voltage variable capacitors need to have low minimum and very large maximum capacitance values, a very expensive and impractical solution.

Because modern solid-state transceivers include built-in low-pass filtering tailored to the individual bands, there is far less requirement for the harmonic attenuation previously provided by the ATU. This has led to greater use of the T-network, which can provide an acceptably wide range of impedance transformations without a requirement for large-value variable capacitors found in the π-network design.

However, the T-network has a reputation for low power-transfer efficiency on the higher frequencies at some impedance ratios. G3LNP describes [1] a simple method of overcoming some of these losses by allowing any T-network ATU, either home brew or commercial, to be switched to an inverted L-network (series C, parallel L) by modifying both capacitors with shorting switches to create the circuit shown in **Fig 1**.

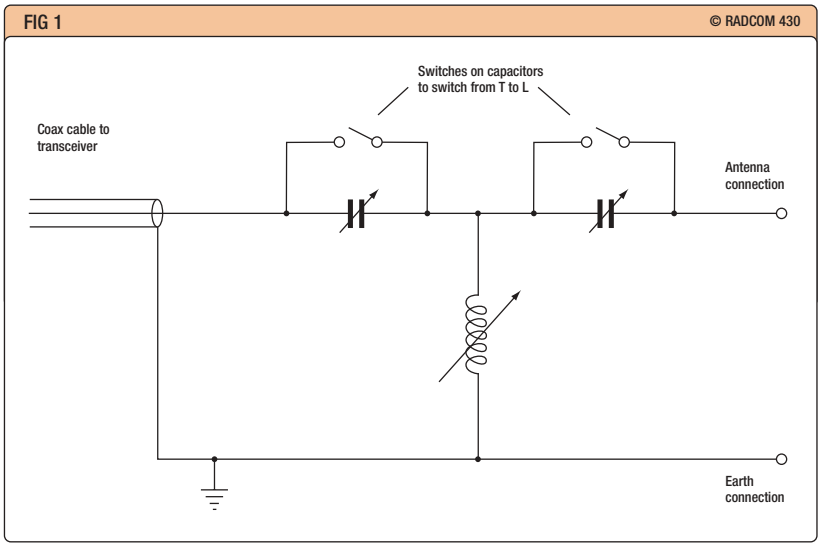


Fig 1: The series capacitor T-network, which forms the basis of most modern ATUs. The shorting switches across the capacitors allow the unit to be switched to an L-network, see text.

AUTOMATIC TUNERS

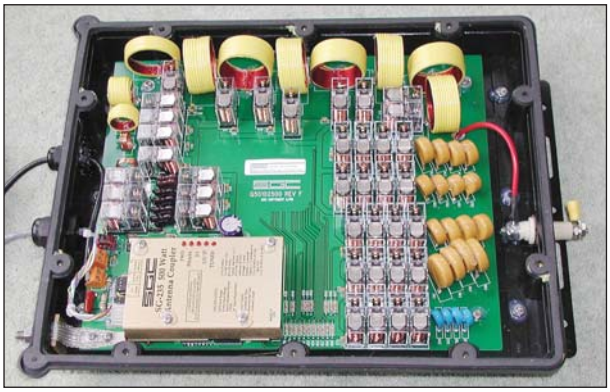
The SG-239 Smartuner fared less well in GW3NDR's tests. On the other hand it appears that automatic ATUs have been used by others with some success. You may recall a competition that was run during 2002, in the 'Antennas' column; to use a small 50ft (15m) length of wire and see how many countries and contacts could be made in 50 days. The winner was Peter Cole, G3JFS, who made 1248 contacts with 139 countries [2].

The antenna arrangement by M1BXO with the tuner outer weatherproof cover removed. The twists in the feeder improve antenna mechanical stability and can also improve feeder balance.

The simple wire doublet centre-fed with open wire line is G3JFS's antenna of choice but, for this competition, he used a 50ft (15m) end-fed wire hung from trees at the bottom of his garden. This antenna, tuned by a SG-230 Smartuner situated in a garden shed. The end-fed wire plus the Smartuner does not perform quite as well as the doublet but was very convenient.

The 139 countries worked by G3JFS included 9L1BTB Sierra Leone, FR/PA3GIO/P Reunion Island, 3XY6A Republic of Guinea, JT1CO Mongolia, C98DC Mozambique, XX9TEP Macao, JY9AX Jordan, HC8N Galapagos, XV9DT Galapagos Islands, ZL7C Chatham Island, YA5T Afghanistan, plus many more - not bad for 50ft of wire.

A few months ago I had a call from Dennis Ellis, M1BXO, who lives near me. He was experiencing heavy electrical QRM, and because of a peculiar type of QRM that is affecting radio amateurs in this area, I went to investigate. As it turned out, this particular QRM was not the problem - just a high level of electrical noise generally. M1BXO was using a SG-230 automatic tuner located inside the house, end feeding an 80ft (23m) length of wire against an earth system shared



Internal view of the SG-235 automatic tuner.

with the electrical system. The antenna was an inverted-L with the vertical section against the wall of the house. Moving the ATU to the shed located at the end of a small garden was not an option because the shed was supplied with mains for power tools (source of noise) and there was no convenient area to install a counterpoise system.

I suggested a centre-fed doublet. The manual and [3] suggest placing the SG-230 at the feed-point, but this was impractical in this situation. The most convenient arrangement was to mount the SG-230 on the wall about 8ft (2m) high and feed the doublet via a short length of ladder line as shown in the photograph. This turned out to be a considerable improvement on the original installation.

SG-235 AUTOMATIC TUNER

At around the same time, I received the offer of the loan of a SG-235 from Peter Craw, G3CCX, who also lives nearby. This is quite a robust unit is said to be capable of handling 500W and is obviously the big brother of the SG-230. I also borrowed the manual, which contained the circuit, a simplified version of which is shown in **Fig 2**. From this we can see that the SG-235 is a π-network, although if one of the banks of capacitors were switched out it would be an L-network.

Earlier, I mentioned the disadvantage of the π-network because it needed high-voltage, high-capacity variable capacitors. With switched fixed capacitors there is much less of a problem because it is possible to build fixed capacitors of any size and voltage working, within reason.

On the left hand side of Fig 2 are the capacitors associated with the low impedance 50Ω input from the transmitter. This bank of capacitors, with a total capacitance of over 6000pF, can be switched in or out (with a resolution of 100pF) with relay contacts. On the antenna side of the ATU, a total of nearly 400pF can be switched in with a resolution of 12.5pF. These capacitors are made up of groups of series / parallel capacitors to obtain a safe voltage working.

Additionally, these capacitors are switched using four sets of relay contacts in series for both switching voltage working and to reduce stray capacitance. The construction of the SG-235 is shown in the photograph. The π-section inductor (the section between the capacitor banks) is actually made up of eight inductors having a total inductance of 15.75µH and a switching resolution of 0.125µH. All this is fine for antennas longer than lambda/4, but what about short antennas, which present low and capacitively reactive impedances? This appears to be accommodated using four 4µH inductors (top right) that can be switched in or out to load a short antenna.

As with all automatic ATUs, tuning is accomplished using an RF head, which samples SWR and impedance on the feed-line and, in turn, operates the inductor and capacitor switching relays through a microprocessor using an embedded tuning algorithm.

Fig 3: The switched L-matched section used in the G3XJP ATU. Each relay contact is, in fact, two normally-open contacts in series to increase breakdown voltage and to reduce capacitance across the contacts. Capacitor values C1 – C11 are nominal.

FIG 3

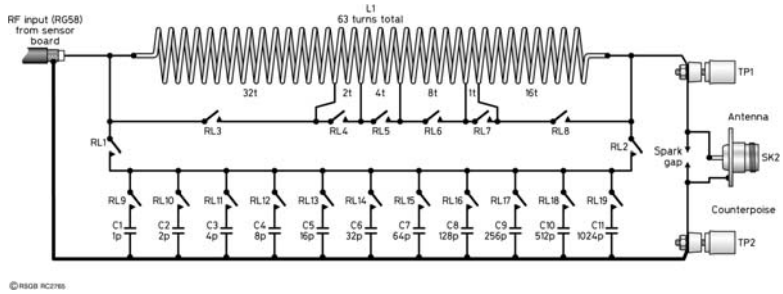
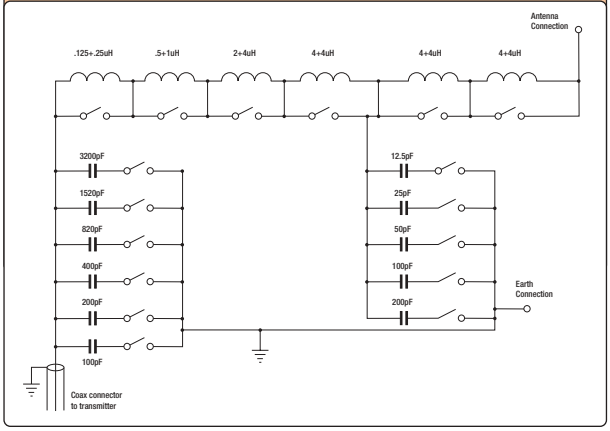


Fig 2: Simplified diagram of the SG-235. The p-section inductor (the section between the two capacitor banks) is actually made up of eight inductors, while the inductors (top right) are switched in for short antennas. Switching relays are controlled by a SWR/microprocessor circuit (not shown).

FIG 2 © RADCOM 431



GENERAL

Judging from the construction of the SG-235, these units appear to be very well-designed and constructed, although they are not cheap [note 1]. However, you can build one. The G3XJP PicATUne automatic ATU [4] is a simpler design employing a series-L – parallel-C – inverted-L network, see **Fig 3**. The antenna may need to be pruned lightly to avoid wild feed-point impedances.

All automatic antenna tuners appear to be designed for feeding end-fed antennas and there is no provision for feeding a balanced antenna via a length of twin feeder. This might have resulted in the inferior performance of the SG-239 described above. The MFJ-993 auto tuner has a balanced output, but I know nothing about this unit at the time of writing.

With the M1BXO installation, the doublet is fed by a short length of ladder-line, one conductor connected to the ATU antenna connection and the other to the ATU ground. Could a balun transformer be used on the antenna side of the ATU as is done on manual T-network ATUs?

David Knight, G3YNH [3], recommends not using a balanced transformer in this way, and to isolate the ATU using a current choke in the coaxial feed. However, commercial designs use transformer baluns in the outputs of their T-network ATUs. I have used the diminutive MFJ-901B with an IC-706 (100W), which gave excellent results. The 25mm OD ferrite was only slightly warm after hours of CW operation. ♦

REFERENCES

[1] 'Save Your Tuner for Two Pence', Tony Preedy, G3LNP, *RadCom* May 2000.

[2] 'Antennas', *RadCom* February 2003.

[3] *From Transmitter to Antenna*, David Knight, G3YNH, with contributions from Nigel Williams. Seven chapters including antenna coupling techniques and impedance matching. Appendix 1 gives a very good description of the SG-230 tuner. www.camera-sunderwater.co.uk/zbook

[4] 'PicATUne – the Intelligent ATU', Peter Rhodes, G3XJP, *RadCom* September, October, November, December 2000 and January 2001.

Note 1: The SGC automatic tuners described above can be obtained from Waters and Stanton. Check availability and prices on their website: www.wsplc.com.

Pat Hawker, G3VA

37 Dovercourt Road, Dulwich,
London SE22 8SS.

TT

Pat unfolds more of the small-loops saga • Wide-band diode and LED mixers • Hybrid 'autodyne' receiver • Premium receivers •

BEANO TOPICS

I cannot pretend that the publication of the January 'TT' in mid-December 2004, heralded for me a good start to the festive season.

Due to Christmas postal delays, my corrected proofs did not reach the editor until after the issue had gone to press, only the second time this has occurred in many years of 'TT'. The result was errors in diagrams (mostly minor but in Fig 6 the fixed oscillator block should have been connected to the [product] detector stage rather than to the audio amplifier block); some text errors also went uncorrected.

In the text I had added a note on the proofs of doubts about some of the claims made for the ATUs shown in Figs 3 and 5 of the December 'TT', and corrected the slip of the keyboard that claimed a span of "53 years" for 'TT' rather than the near 47 years since April 1958. Michael O'Beirne, G8MOB, has also pointed out that my reference to the Army 1960s receiver with a 52in film scale and modular construction built by AT & E should have been to the R210, not R206 (see later).

These were minor vexations compared with the receipt of protests from my daring once again to question the obviously sincerely-held belief of Professor Mike Underhill, G3LHZ, that he has shown that the classical antenna theory of small transmitting loops vastly underrates their efficiency (see later also).

But the unkindest cut of all was to see an advance copy of the letter from Andy Talbot, G4JNT ('The Last Word', *RadCom*, February 2005, pp96 – 97), in which he suggests that the contents of 'TT' are reducing *RadCom* to the status of a comic. Andy, it would appear, judges any reference to 'valves' as an unwarranted trip in nostalgia. He is, of course, entitled to his view and to express his views strongly. However, some 95% of the basic circuitry and mechanical facilities used in our equipment were developed in the thermionic era, and any feeling for the development of our technology must reflect this.

THE G3LHZ LOOP

My continued scepticism (January 'TT') in respect of the radiation efficiency claims of over 90% made by G3LHZ for the small transmitting loops developed in conjunction with his student, Marc Harper, has upset, among others, Tony Wadsworth, MIEE, G3NPF. In a long e-mail, he comments on my belief that a disturbing aspect of the whole affair is that G3LHZ's claims have been published in peer-reviewed professional publications and presented at professional conferences. He considers this can only mean that I believe that "anything that has been professionally peer-reviewed to be technically suspect, but anything that is reviewed only by himself and his attendant sycophants [also condemned by G3NPF as 'so-called experts'] is almost, by definition, guaranteed to be 'the true faith'. Professor Underhill has always maintained that his theories should be proved, or disproved, by practical experiments carried out by others."

Let's get things straight. When G3LHZ submitted his letter to the IEE's *Electronics Letters*, the professional reviewer (a highly respected professional antenna designer) did not accept the efficiency claims as valid. I cannot trace any evidence supporting G3LHZ's claims from any professional antenna engineer. My comments as a technical journalist have been relatively mild, meant to be far from arrogant, and reflecting a high regard for Mike's past contributions to the technology of radio communication.

G3LHZ himself continues the attack on my comments: "Pat Hawker thinks that my 90% small loop efficiency claims should be buried and put to rest. But why? He has given no reasons. Perhaps he takes his lead from the orchestra (or is it choir?) of critics with opinions that do not appear to be supported by any practical efficiency measurements whatsoever. So I repeat my challenge to the critics – please devise a practical experiment that uses traditional physics to demonstrate that the efficiency of a small transmitting tuned loop on its own is less than say 10%. Please ensure that losses from any adjacent environment are not included. Why is there such reluctance to take up this challenge or even refer to it?"

There seem to be several points here. G3UUR in *RadCom* November 2004 showed, to my mind conclusively, that G3LHZ's method of measuring the power losses in his loops is fundamentally flawed, and I have yet to see any attempt by G3LHZ to contradict him. Again, long before G3LHZ launched his University research project, there appeared in *RadCom*, a two-part article 'Loop Antennas – Facts not Fiction', by Tony Henk, FIEE, G4XVF, (September/October 1991). Based on theory and practical measurements, G4XVF concluded: "radiation efficiency as a percentage was often in single figures (significantly below 10 per cent) whereas that of a resonant and well-matched half-wave dipole approaches 100 per cent."

One of the problems in rebutting the G3LHZ hypotheses is that he seems to redefine the rules and IEEE definitions as he goes along. For example, his request above that "losses from any adjacent environment are not included" would suggest that the only way of testing his figures would be to put a small loop in free space – a practical impossibility. I am not going to rehash the many detailed measurements (not only computer simulations) carried out over many years by Dr John Belrose, VE2CV, whom I imagine G3LHZ would define as one of the "orchestra" (though few would think of Jack as an "establishment figure").

Mike believes that I have been persuaded by an orchestrated opposition in a way that could damage my "undoubted reputation". But he does not hesitate to denigrate the classic electromagnetics of Kraus, Wheeler, et al and computer simulations

based on *NEC* and the Method of Moments. As a technical journalist and not a professional engineer, I can only play it as I see it, and try not to mislead readers into accepting claims that not only contradict well-established theory but which themselves have shown to be based on error. This, of course, does not mean that small transmitting loops are not of considerable value to amateur radio.

WIDE-BAND-GAP DIODE & LED MIXERS

If G4JNT had not been put off reading the January 'TT' by the sight of diagrams containing valves, he might have found interesting the item 'High-Level Mixers Using LEDs'. D G Phillips, G8AAE, brought to notice recent developments and ideas relating to the use of wide band-gap semiconductors such as SiC, GaN, AlGaN to form wide dynamic range mixers, including the novel website suggestion stemming from Pascal Nguyen that blue and super-blue GaN LEDs could be used in this way. The item brought to notice the important US Patent 6,111,452 (2000) of Fazi and Neudeck, assigned to the US Military.

Fortunately, Michael O'Beirne, G8MOB, never one to be put off by a triode-mixer symbol, was intrigued and delved further via e-mail and the websites. He was intrigued to find that no member of his elite discussion group 'Premium Radio', comprising mainly American enthusiasts owning 'premium' (high-grade commercial) receivers was aware of this recent development. His posting of the 'TT' item has sparked off considerable interest, with Roger Wehr, W3SZ, digging into the topic and providing a number of relevant references in recent professional journals and the full text of the US Patent by Fazi et al.

In his posting, G8MOB pointed out: "The patent seems well worth reading, though whether one would be able to deliver the required LO power is another matter. We already need about +17dBm to drive a high-level diode mixer, so finding another 20dB will not be easy... I cannot but feel that a better approach to mixer technology is to use the H-Mode mixer developed by Colin Horrabin, G3SBI [first described in 'TT' a decade ago], which uses a high-speed bus switch. The receive section of the CDG 2000 transceiver (*RadCom*, June/August 2002) incorporates such a mixer with an IP3 of +40dBm and a noise figure of 10dB. It also uses a very low-phase-noise LO which achieved –140dBc/Hz at 9kHz offset from the carrier, and –150dBc/Hz at just over 20kHz offset on the 20-metre band. The limitation in dynamic range was, in part, not the mixer but the coils in the bandpass filters, being 13dB better for hand-wound coils than for commercial Toko inductors. This is rather like the old Racal RA1772 'professional' receiver, where the limiting factor in the prototype was the IP3 of the roofing filter and not the then novel switching mixer using a range of four FETs. All the original ferrite material in the filter had to be removed in order to achieve the IP3 spec of +27dBm. In the CDG2000 with its IP3 of +40dBm and a noise floor of –130dB, an IP dynamic range of 113dB was achieved... That's better than many commercial premier receivers."

While I think G3SBI and I7SWX would agree that the H-Mode mixer remains the optimum approach for HF and possibly low VHF receivers, it would appear that wide band-gap semiconductor diode mixers could represent a state-of-the-art approach to UHF mixers.

G8MOB and W3SZ have downloaded *inter alia* two relevant papers: (1) 'Intermodulation-Distortion Performance of Silicon-Carbide Schottky-Barrier RF Mixer Diodes', by Rainee N Simons and Philip G Neudeck (*IEEE Trans on Microwave Theory and Techniques*, February 2003, pp669 – 72), with the work carried out at the NASA Glenn Research Center, Cleveland, Ohio; and (2) 'Resistive SiC-MESFET Mixer', by Kristoffer Andersson et al (Chalmers University of Technology, Göteborg, Sweden), *IEEE Microwave and Wireless Components Letters*, April 2002, pp119 – 21.

While the devices under investigation in these papers are different from the blue LEDs discussed in January, it is clear that the use of wide band-gap semiconductors as high-level mixers represents a new advance in mixer technology. (1) Describes the use of single-balanced mixer circuits with a diode in each arm (two diodes total) at 200MHz and 1.5GHz, achieving conversion loss/input third-order intercept point (IP3) are 8.0dB/+25dBm and 7.5dB/+22dBm at these frequencies, respectively. The measured IP2 over the VHF band is +39dBm. The paper points out that the above conversion-loss values are about the same as that of commercially available single-balanced mixers with silicon Schottky-barrier diodes. However, to achieve a comparable input IP3 performance with silicon Schottky-barrier diodes, a more complex design involving double-balanced mixers with at least eight diodes in a quad configuration is required. **Figs 1 – 3** come from this paper.

The importance of achieving good intermodulation distortion performance at VHF/UHF has been well recognised, not only by amateurs. The paper notes: "Electromagnetic emissions from carry-on electronic devices can potentially degrade the minimum detectable signal level of important RF-based navigational instruments, on board commercial and general aviation aircraft. In some situations, the interfering signal frequencies may not coincide, but may be very close to the navigational frequencies. For example, the lowest frequencies used for VHF omni-directional range |(VOR) and instrument landing systems (ILS) localiser instruments are just above commercial FM broadcast frequencies. In such cases, the IMD products are located adjacent to the desired signal spectrum at the out-

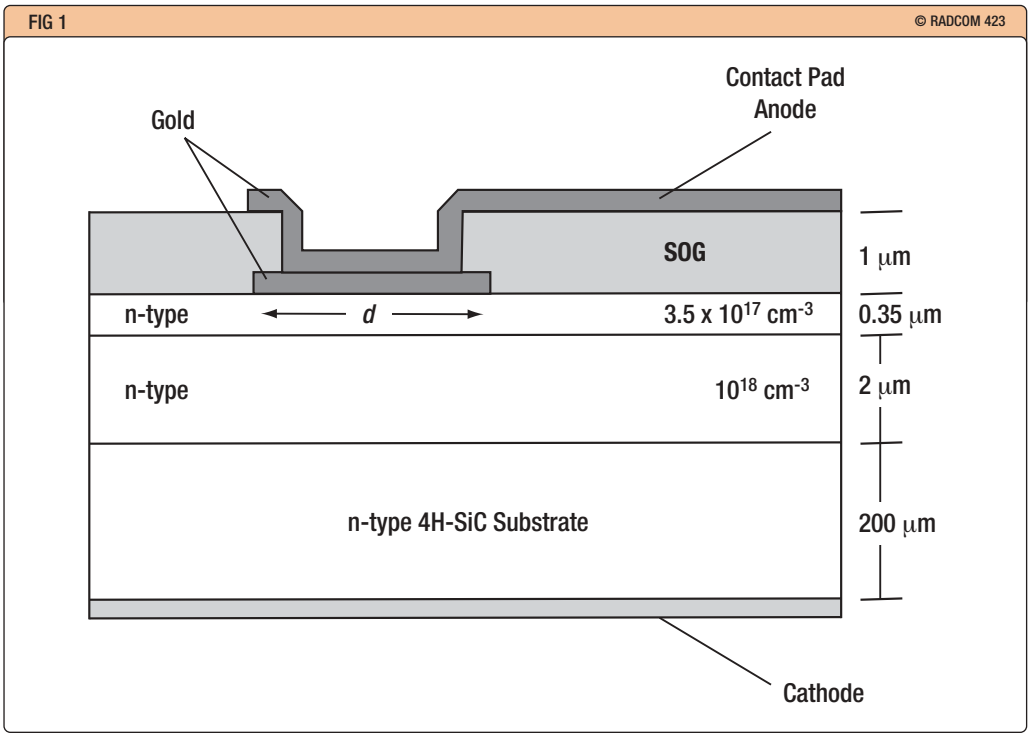


Fig 1: Cross-section of the SiC Schottky-barrier mixer diode as described by Simons and Neudeck of the NASA Glenn Research Center, Cleveland, Ohio.

FIG 2 © RADCOM 424

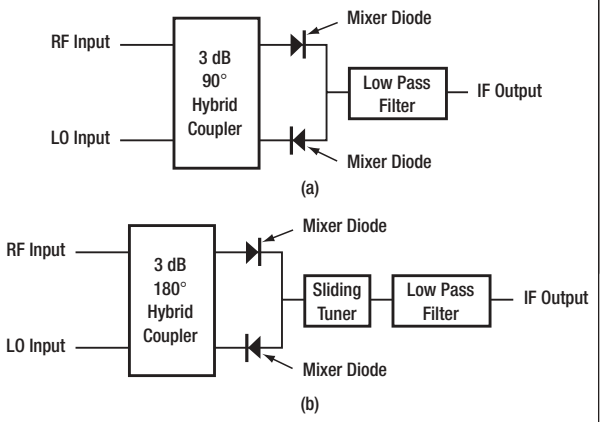


Fig 2: The experimental single-balanced mixer circuits of Simons and Neudeck. (a) For the VHF band with 3dB 90° hybrid coupler. (b) For GPS band with 3dB 180° hybrid coupler.

put… the ID products could be second, third fifth order, etc… In the literature, several schemes have been proposed to suppress diode mixer IMD products, including adding resistance in series with the diodes, or using two or more diodes in series, or using diodes with higher turn-on voltage…"

The short Swedish paper describes the design and characteristics of a single-ended silicon carbide (SiC) resistive MESFET mixer with a minimum conversion loss of 10.2dB and an input third-order intercept point of 35.7dBm at 3.3GHz . "This is, to our knowledge, the best result reported for any resistive FET/HEMT mixer. It is our belief that conversion loss can, by more careful mixer design, be reduced to at least 6dB. The mixer was not optimised for low intermodulation, thus making further improvements possible."

JA9MAT'S HYBRID 'AUTODYNE' RECEIVER

There is still interest in building simple regenerative HF receivers, with the view quite widely held that for such designs, that the valve can still provide overall better performance that the transistor – though it would be difficult to prove this, and one risks the charge that we should no longer be drilling out the large holes needed for valve sockets.

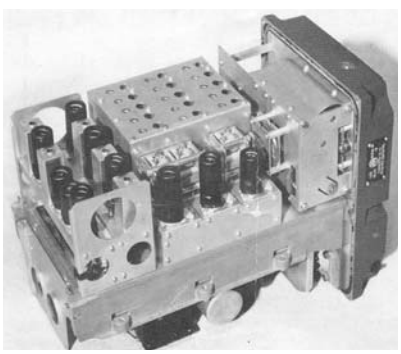
Be that as it may, several recent 'TT' topics seem, by coincidence, to have come together in an item '12BH7A 12V Separate Autodyne Receiver', by Hidehiko Komachi, JA9MAT (*Sprat* – the Journal of the G QRP Club, Issue 121, Winter 2004/5, p7) with its brief outline of a regenerative 'homodyne-type' receiver using a separate regenerative oscillator, electronic fine tuning and 12V operation of the twin-triode 12BH7A feeding an IC AF amplifier: **Fig 4**. As presented, it covers 600kHz to 12MHz including the 3.5 and 7MHz amateur bands with four plug-in coils (coil data are given for the 7 to 10MHz amateur bands and for 0.5 to 1.6MHz medium-wave broadcast reception).

PREMIUM RECEIVERS

Although, as emphasised a number of times in 'TT', the future of communications receivers will increasingly depend on software-defined technology and digital signal processing, the performance of such receivers will inevitably be a function of the device designer rather than the circuit designer and the mechanical engineer. There is no doubt that remarkable progress is being made, reflected in lengthy articles in QEX and in the unlimited spaces of the Internet.

But this does not mean that discussion of past analogue designs, valve and solid-state, has become little more than 'nostalgia'. During WWII and the subsequent decades of the Cold War, the importance of signals intelligence (SIGINT) ensured that the leading receiver manufacturers were encouraged to develop designs capable of the highest possible HF performance, flexibility and operability, including remote control over long distances. Even in the 1960s, professional HF receivers could cost around £20,000 equivalent to well over £50,000 in today's 'Monopoly money'.

Top to bottom: The Russian Volna-K maritime receiver covering 12kHz to 23MHz with gaps in nine bands. Single conversion with IF 85kHz up to 600kHz and double-conversion with IFs of 915kHz and 85kHz above 1.5MHz. Optical projection calibration scale.



The AT & E R210 British Army receiver developed in the 1960s with 52in film scale, modular (hinged) construction, covering 2 to 16MHz.

Internal view showing modular construction of the R210.

The study over the years of British, American, German and Russian 'premium' receivers by Neiol Clyne, G8LIU, Michael O'Beirne, G8MOB, and Dick Rollema, PA0SE, has underlined how little attention the Western powers paid to the excellent German wartime designs, such as the E52 series. G8MOB, for example, has shown how the Russian maritime 'Volna K' receiver (see *Radio Bygones*, Issue 74, Christmas 2001, pp8 – 17 and cover photos) that included an optical projection calibration scale with readout at VLF to 250Hz and better by interpolation: "The scale was also surprisingly linear despite the wide bands. The model purchased by John Midwood, G7PTD, was said to have come from a Russian trawler, but may well have been used for electronic surveillance".

G8MOB has also confirmed that the AT & E R210 (not R206 as stated in the January 'TT') did indeed go into production in the 1960s. He writes: "I used it for many years in Land Rovers, partnered with the powerful C11 AM/CW transmitter. These were usually a Royal Signals responsibility and would form a rear link from battalion to brigade, or other long-range communications. The C11 puts out about 50W of pure AM with high-level anode and screen modulation, and has some voice AGC to keep the level constant. The R210 was extremely reliable and highly sensitive and reasonably selective. Not one ever failed on exercise. The tuning can be a bit stiff, but some are delightful. The film scale takes you to within 5kHz. There is also a normal CW audio filter which is a bit too sharp, and a reasonable noise limiter. The 450kHz IF output can be fed to a box of similar size called the RTA (Radio Telegraph Adapter) to run a teleprinter link with the Siemens T100 teleprinter. These were made by MEL at Crawley and are quite good… One day I will buy a reasonable R210 as a memento of happy days."

To quote further from the letter from Pat McAlister, G3YFK (see 'TT' November 2004, p40), a self-confessed member of the 'high-class HF receiver bunch': "One wonders where all the interesting HF receivers that were easily available (to the cognoscenti) 10 years or so ago have gone? Looking back then I had here, either to repair or purchase, Racal RAs 1171, 1172, 1778, 1779, 1781, 1782 (a rare push-button version of the 1773 specially made for GCHQ), 1784, 1792, 6790, 6793, VHF 1795, etc. Later 3701s, and, in the final two years, DSP 3791s appeared. Eddystone 1650 variants were plentiful, even the rare STR 8212 DSP sets were about! The ultra-rare Drakes like the R4245 and TR4310

used as standby by the British Antarctic Survey (with the last production run being bought up by the late JY1 for his army) appeared along with various Collins sets like the 651S1 and the infinitely-better 51S1 – although I have never yet discovered an 851S1A.

"Various Marconi [badged] machines were about, notably the H2540 and H2541 (around in Saudi) and the rebadged Dansk Radio, M5000. Plesseys were plentiful, the PR155, 1553, the later 2280 and 2282 and the better 2250 (mostly ex-Hanslope Park DWS).

"One is always wise after the event. There are few of these that I would bother to keep now! The Collins 51S1 and Racal RA1779 come to mind due to their excellently-clean local oscillators. My later RA3701 (ex Culm Head) sounds awful due to poor audio tailoring, one wonders if these sets were used for data with nobody actually listening on them. I am biased, but none compares with my rebuilt Collins 75A4 amateur bands receiver, a six month task completed in 2002. I incorporated all the Electric Radio modifications and a few of my own resulting in an IP3 of –16dBm as opposed to the normal unmodified-set result of –43dBm.

"German receivers have been notable by their absence. Few R/S, Siemens or Telefunken receivers seem to surface in the UK. Portishead Radio is said to have evaluated R/S receivers but ended up with Racal RA1792s on a cost basis. The main German competitor was the R/S EK070, but I agree with G8MOB that, from the ergonomics view, the best receiver is the RA1792 – totally intuitive! The EK070 does not come close.

"Some time ago, 'TT' mentioned the use of the 4066IC for use as a switching product detector and I note that an FST3125M fast bus version is described by Sergio Cartocet, IK4AUY, in *QEX* (July/August 2004). R/S seems to have been using 4066 detectors for years in the EK070 and EK085 receivers, and I can vouch for their audio quality. I suspect, but cannot confirm, that the later EK890-series probably also use these or similar devices.

"Finally, I have been thinking of building a home-brew receiver with a 7360 [valve] front end but am now tending towards H-mode technology. I firmly believe that had the American firm Squires Sanders [which introduced the use of the 7360 beam-switching mixer front-end] not been tragically wound up on the death of its founder in an air crash, the firm would have given Collins a run for its money. But I wonder if anyone has any measured IP3 figures for a 7360 switching mixer?"

Fig 3: Conversion loss as a function of the local oscillator power. RF input power 11.0dBm at 195MHz, local oscillator frequency 175MHz, d = 50 µm.

FIG 3 © RADCOM 425

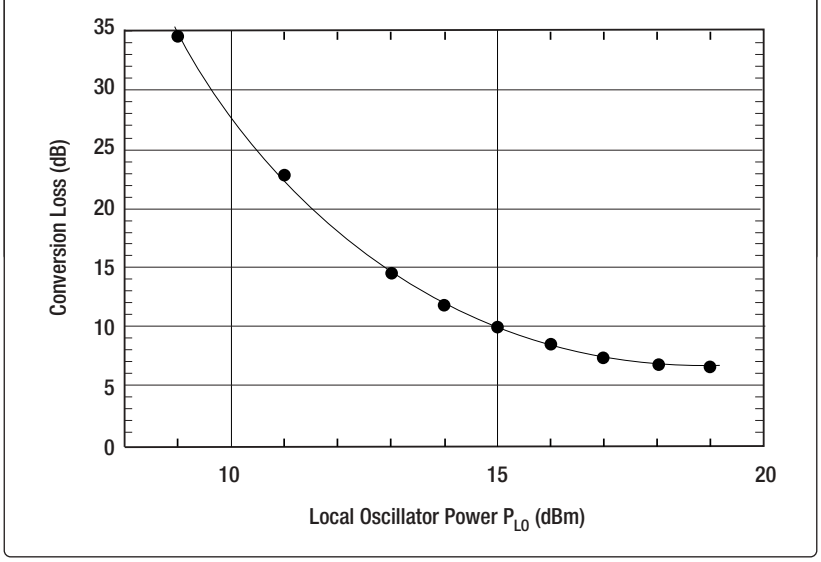


Fig 4: The simple autodyne (homodyne) receiver using a 12BH7A twin-triode valve with an HT supply of 12V DC. With four plug-in coils covers 600kHz to 12MHz including 3.5, 7 and 10MHz amateur bands. Coil data for 7 – 10MHz: L1 39 turns, L2 4 turns on T50 – 2 core. For 0.5 to 1.6MHz AM broadcast receiver ferrite slab coil, with IC AF amplifier.

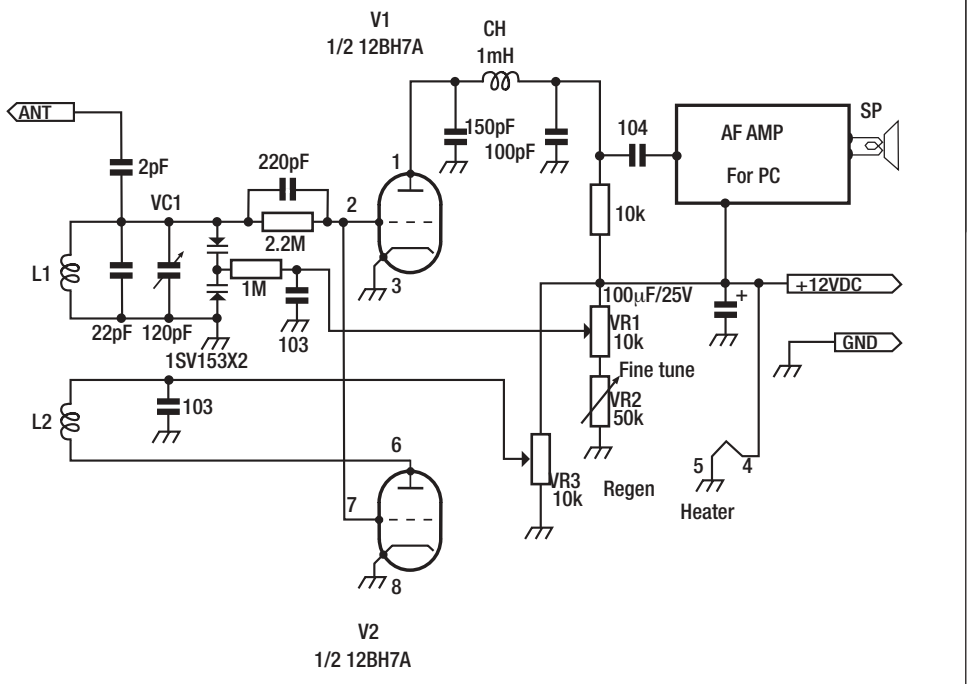
HERE & THERE

Jim McGowan, M0MAC, believes that some years ago, he read in 'TT' a tip on how to clean surplus variable capacitors possibly using baking soda and hot water although the process used now escapes him. He is anxious to pursue this tip since he has recently acquired some old valved equipment containing various types of variable capacitors.

It was recently suggested to him to use Goddard's Silver Dip and he finds this works really well with the silver-plated types (C804s etc), but doesn't work on other types, and he would like to trace the original tip. Unfortunately, I cannot find it, and wonder if anyone else can either recall the item or provide an effective alternative solution? M0MAC adds: "These old components were made really well and I would like to re-use them in some vintage projects I have planned."

Fuel cell research at St Andrews University is reported to be leading to the development of high-temperature cells with power outputs between 1kW and 5kW with prices of around $150 per kW compared with the current prices of around $2000 per kW. The cells are based on the solid-oxide fuel cell (SOFC) running on natural gas. Markets envisaged include outdoor portable applications at remote sites and for the military. ♦

FIG 4 © RADCOM 426



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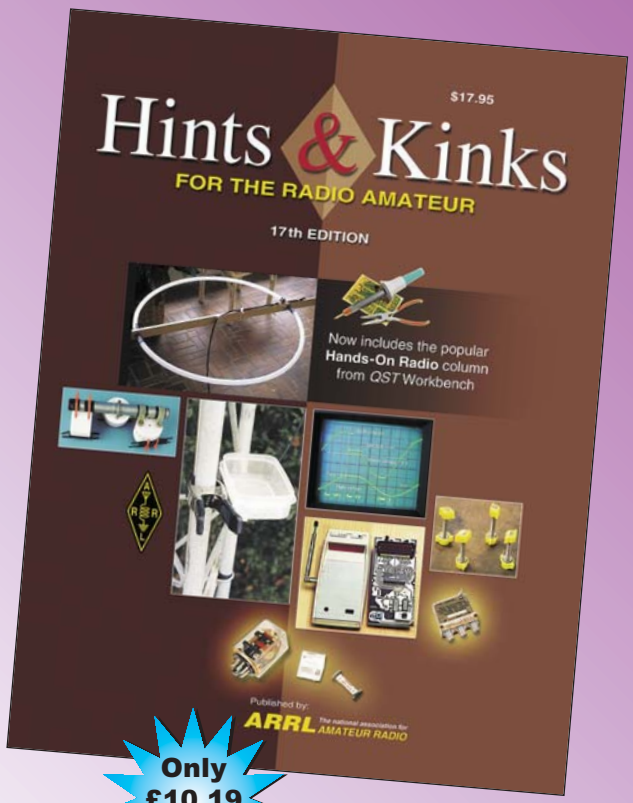

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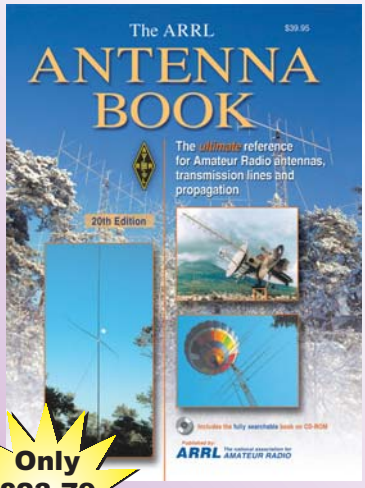

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In practice

Don't panic about 'Part P' ♦ Making coaxial power dividers work

HOUSEHOLD ELECTRICAL WIRING

Q Are we still allowed to do household electrical wiring?

A The short answer is: yes, but with some new restrictions. This question arises from the new 'Part P' of the Building Regulations, which came into force in England and Wales on New Year's Day.

You no doubt know about the Building Regulations that control both new building and significant structural alterations. These regulations have the force of law – which makes a lot of sense, considering the possible consequences of someone getting it wrong. For equally obvious reasons, gas installations are also covered by enforceable regulations. But contrary to popular belief, the IEE Electrical Wiring Regulations (BS7671) have never had the full force of law... until now.

Since 1 January 2005, household electrical work has become subject to the Building Regulations, which effectively makes compliance with 'Part P' and BS7671 a legal requirement [1]. The requirements apply to electrical installations in homes and also outbuildings. So even though your shed, garage or outdoor 'radio shack' may be exempt from Building Regulations in other respects, their electrical installations are now covered.

The Building Regulations contain a complex web of requirements for notification, inspection and certification that the work has been done correctly – but fortunately, there *are* some exemptions for DIY work. The broad summary that follows is not authoritative – I am only trying to draw your attention to what you will find in 'Part P' itself [1]. This is too long to reproduce in full, but I repeat: **the ONLY authoritative text is the EXACT wording of Approved Document P (including all amendments)** and of course the underlying legislation.

There are useful exemptions from notification in the following areas of 'minor electrical work'. You should check the exact text for more detailed limitations, but in broad terms the exemptions apply to:

- Replacing sockets, switches, ceil ing roses and similar accessories
- Replacing a cable that has been damaged (e.g. by fire, rodent or impact)
- Re-fixing or replacing existing socket boxes and similar compo nents
- Providing mechanical protection to existing fixed installations (eg sinking existing surface wiring and boxes into walls).

There is also a further category of exemptions from notification that only apply in *some* parts of the home and outbuildings. These additional exemptions do *not* apply to bathrooms, kitchens or certain other 'special locations' and 'special installations' that are formally defined.

- Adding light fittings and switches to an existing circuit
- Adding sockets and fused spurs to an existing ring or radial circuit
- Installing or upgrading equipoten tial bonding
- Telephone wiring or computer net work cabling (also not notifiable in kitchens).

However, even non-notifiable 'minor work' now requires a certificate of completion and testing, which should eventually be drawn to the attention of anyone carrying out subsequent work or inspections. The good news – and you won't find this in the publicity of any electrical installation trade association – is that you do *not* need a professional qualification in order to self-certify that non-notifiable work. You only need to be 'competent' to do so. The downloadable document contains a model 'Minor Electrical Installation Works Certificate' (Form 5), and the schedule of tests required to complete that form is a good indication of the level of competence needed.

The bad news is that the new restrictions of 'Part P' really bite hard on more ambitious DIY work that is not covered by one of the above exemptions. Electrical installation companies that are registered with a professional self-certification scheme can start work without giving prior notification; and when the work is complete, they can also self-certify the much more elaborate test and completion paperwork. DIYers can do neither. You could pay the notification fee and do the work yourself – but regardless of your personal competence, you would now have to find a registered installer that is prepared to test and 'sign off'

your work.

Now here comes the final ironic twist: 'Part P' applies only to the fixed electrical installation, so anything that is plugged into the fixed installation is not covered. I hope that 'Part P' isn't going to throw us back into the dangerous dark ages of 'temporary' extension cables and the like... but I fear it may.

VHF/UHF POWER DIVIDERS

Q I am about to build some coaxial power dividers using a round centre conductor in 1in square tubing, as described some years ago in your *VHF/UHF DX Book*. Can you confirm the correct impedance formula?

A *The VHF/UHF DX Book* is now out of print [2], so I'm happy to take the opportunity to reply in this column. These power dividers are typically used for feeding two or more stacked antennas. Each individual antenna presents a good impedance match to 50Ω, so you need some way of combining them so that the whole array still looks like a 50Ω load. Coaxial 'dividers', 'combiners' or 'splitters' (call them what you will) are based on the impedance transforming properties of a quarter-wavelength of home-made transmission line. In the example in **Fig 1(a)**, the two 50Ω loads in parallel at the left-hand end create an impedance of 25Ω, and a quarter-wave section of 35Ω line transforms this to 50Ω at the right-hand end. **Fig 1(b)** shows a different approach, where a single 50Ω load at each end is transformed up to 100Ω in the middle, and then the two 100Ω impedances in parallel produce 50Ω.

The characteristic impedance Z_T of the quarter-wave transformer line is given by:

$$Z_T = \sqrt{(Z_1 \, Z_2)}$$

where Z_1 and Z_2 are the two impedances to be matched. In Fig 1(a), Z_1 is 50Ω and Z_2 is 25Ω, so $Z_T = \sqrt{1250} = 35.4\Omega$. In Fig 1(b), Z_1 is 50Ω and Z_2 is 100Ω, so $Z_T = \sqrt{5000} = 70.7\Omega$.

It isn't difficult to make your own coaxial lines with these odd impedance values. The favourite amateur method of construction is based on 1in square aluminium alloy tubing, which will just fit the flanges of N sockets. The sockets should be mounted exactly a quarter-wavelength apart (measured centre-to-centre). An overhang of about an inch at each end is enough to make sure that the electromagnetic fields are confined almost entirely inside the tube, so you don't need metal end caps. The inner conductor of the line can be selected from 'K&S Hobby Brass' tubing which is obtainable in 1ft lengths from good model shops; a *very* good model shop can also order it for you in 3ft lengths. This tubing is available in a range of telescopic diameters, increasing in $^1/_{32}$in steps, so you can select the neareset diameter that is required to give the correct impedance.

All you need is the correct formula to work it out. The formula gives Z_T in terms of the ratio D/d, where big D is the *inside* wall-to-wall spacing of the square tube, and little d is the *outside* diameter of the round tube. The usual formula is:

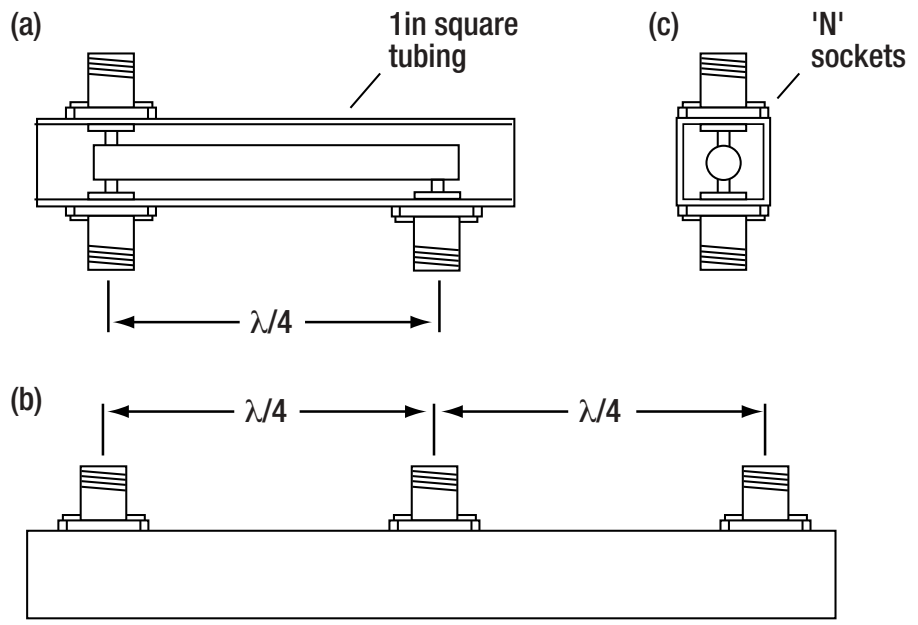
$$Z_T = 138 \log_{10} (1.08 \, D/d)$$

This is a modified version of the formula for a coaxial line with circular inner and outer conductors, and is quite accurate for impedances down to about 20Ω. OZ2OE has made a study of the various published formulae, which is reported in a link from the *VHF/UHF DX Book* web page [2]. In particular, there is an error in older RSGB publications that quote 1.178 instead of 1.08.

Armed with the correct formula, you should select the diameter of inner tubing that will be just a little *high* in impedance. For example, to make a 35.4Ω line, D/d should be 1.80. For typical 1in x 16SWG square tubing, D is 0.872in (but always check by measurement) so d should be 0.483in. The nearest available diameters of round inner tubing are 0.500in and $^{15}/_{32}$ = 0.469in. Choose the latter, because it makes Z_T slightly high (41.8Ω according to the formula) and there is a very simple way to make the impedance a little lower.

All you have to do is terminate the power divider in two accurate 50Ω loads, and move the line closer to one side wall of the outer tube until the impedance match is perfect. In practice, it is generally enough to move only one end of the line. However, there is a small caution attached: when you adjust the line, it must remain equidistant between the two output connectors, or else it will upset the symmetry of power division. For example, in **Fig 1(c)** you could adjust the impedance by moving the line sideways, but not up or down. ♦

FIG 1 © RADCOM 438



NOTES AND REFERENCES

1. Strictly speaking, it is still only the Building Regulations and related Statutory Instruments that have the force of law; but Building Control Officers have legal powers to enforce the regulations by reference to Approved Document P and BS7671. Hence people tend to talk about 'Part P', as if it were part of the Building Regulations themselves. Links to Approved Document P are on the 'In Practice' website (URL above) – and don't forget the amendments and corrections, which are already appearing.
2. Follow-ups and corrections for *The VHF/UHF DX Book* are on G3SEK's website (URL above).

André Saunders, GM3VLB

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Roxburghshire TD5 8BB.

A multi-band inverted-V dipole for portable operation

PART ONE

In this first part of a two-part article, GM3VLB describes one of his latest designs, which has been tried and tested.

At the time of writing, the author had activated 148 islands, 136 of these in the last eight years for the SCOTIA (and IOSA) Scottish island award programmes (for further information, see his website **www.gm3vlb.com**). Operating time is generally limited, with most operations (many of which have been 'solo') being of 1 or 2 days' duration. The majority of Scottish islands are uninhabited, and often inhospitable. Landings may have to take place in a strong Atlantic swell, and from very small craft such as a dinghy or RIB. ('rigid inflatable'). The time-consuming assembly of complex rotary beams has heretofore never been considered. Likewise, any amplifier would necessitate both a larger and heavier generator and more fuel. Even if used in conjunction with a beam, such a setup would be unlikely to give more than a few dB gain over the Kenwood TS-50S running 100W into a well-matched inverted-V near the sea. In practice, it has been found that 50W ($^1/_2$ an S-point less at the receiving end!) is frequently adequate. Indeed, given reasonable conditions and 'split' operation, the use of QRP is a perfectly viable option. All Scottish island operations have used one or more of either short, loaded 'fishing-rod verticals' or inverted-V multi-band dipoles. This article looks more closely at the latter.

The principal advantage of the inverted-V dipole is that it requires only one, central, support. The main 'mast' used by the author is ex-army and comes in a convenient shoulder bag containing eight 1m long fibreglass poles, two sets of guys (three at the centre and three at the top) and a simple pulley system (an ultra-lightweight version using a 'roach pole' has also been constructed). The mast is easily erected by one person, even in a howling Hebridean gale, and supports the antenna, which acts as a resonant $\lambda/2$ inverted-V dipole on each of the 20m, 40m and 80m bands. The antenna can also be used on the 15m band, where it behaves as a $3\lambda/2$ dipole ($3\lambda/2$ means 'one and a half wavelengths' – 21.150MHz is 3 x 7.050MHz, so $\lambda/2$ on 40m is $3\lambda/2$ on 15m.

A second, lighter, multi-band inverted-V covering 10m, 12m, 15m, 17m (and 30m with end extensions) supported at about 7m by a roach pole, is also available. (The author has recently tested another design of the same overall length as the 20/40/80m version, but with a slightly different configuration and in which the 20m dipole is $3\lambda/2$ long, giving a small, though useful gain on this band and with two additional main lobes, giving increased global coverage - see the Appendix next month for details.

As stated above, these antennas are complemented by a variety of multi-band verticals, most of which can also be used /M on islands with vehicular access.

Operating /P on the island of Killegray, Outer Hebrides.

BASIC DESIGN CONSIDERATIONS

The multi-band dipole is set-up in inverted-V configuration, ie the central feed-point is at the apex of the Λ at the top of the mast, with the two halves sloping down to points about 60cm (2ft) above the ground. On 20m and 40m, it is designed to be *resonant* mid-way between the IOTA CW and SSB frequencies generally favoured by island operators and (corresponding in this case to 14.150MHz and 7.050MHz). On 80m, the design frequency is 3.772MHz. A switched linear balun transformer at the feed-point (giving a choice of two ratios, either 1:1 or 2.25:1) allows impedance matching as well as unbalanced coax-to-balanced dipole operation. The feed-line consists of a 13.6m length of 50Ω RG-58 coax (75Ω coax was used, unwittingly, for several years - see below). This is a velocity factor-corrected half-wavelength on 40m, two half-wavelengths on 20m and three on 15m. On these bands, the coax simply reflects the impedance at the load end – in this case, the input to the balun. On 15m, 20m and 40m, this is reasonably close to 50Ω, thus providing a good match to 50Ω coax and thence to the TS-50S.

On 80m, at a height of only 8m (0.1λ), the textbooks would suggest an input impedance of only a few ohms. In practice, it would seem to be quite a bit higher, and can approach 50Ω. However, at the time of the early experiments, the author did not possess an antenna analyser. A lower value of around 20Ω was therefore assumed (had the physics teacher not repeatedly said "Never *assume* anything boy!"?). A 2.25:1 balun was designed to raise this to nearer 50Ω to provide a better match for the coax and the TS-50S. When the system was tested using this balun, the VSWR was, indeed, as predicted. Switching over to the 1:1 balun resulted in an unusable VSWR! All worked perfectly - except the maths!

One day, some years later on the island of Rum, a coax fault occurred. The spare coax was installed. Result? High VSWR on 80m! With the help of island partner Alex, GM0DHZ, and whilst battling the most intense infestation of midges ever experienced, everything was tried and tested…to no avail.

Later, whilst repairing the faulty coax, it was noticed to be of slightly larger diameter. It had been made from a length of RG-59 salvaged from the author's 5Z4 days in the π-output 1960s! It was 75Ω coax and *not* 50Ω as originally thought!

So why did it work? Well, it's amazing how you can 'prove' something with the wrong mathematics! Now, by working backwards, and applying what was believed to be the correct quarter-wave transformer formula, but the terms of which had been inadvertently transposed, the actual antenna impedance had been 'proved' to be 33.75Ω – this had seemed entirely reasonable!

In fact, no-one had challenged this 'proof' until a few weeks ago when Dale, WB6BYU, in Oregon e-mailed me saying (ever so diplomatically!): "You're wrong mate! The formula should be: $Z^2_{coax} = Z_{load} \times Z_{rig}$.

If we again work 'backwards' using $Z_{rig} = 50\Omega$ and $Z_{coax} = 75\Omega$, we get

FIG 1 © RADCOM 432

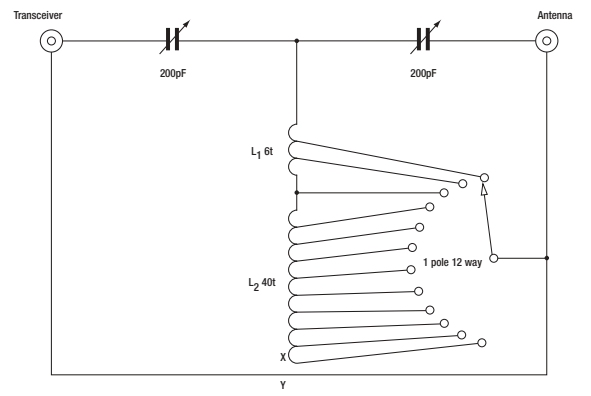
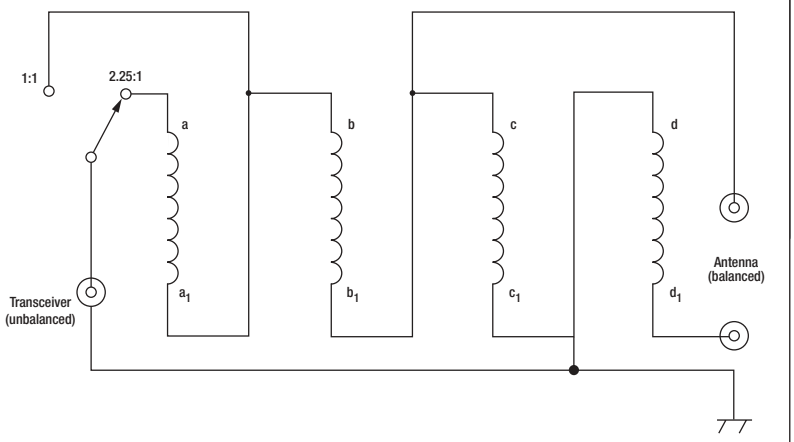


FIG 2a © RADCOM 433



Z_{load} = 112.5Ω.

Remembering our 2.25:1 balun, the antenna input impedance must in fact be 112.5/2.25 = 50Ω!

WB6BYU said that his own experiments indicated the input impedance *was* nearer this value and, if this was the case, all that was required was to use the 1:1 balun and 50Ω coax! This, in fact, is the case! This just shows that you shouldn't always believe what you read! Thanks, Dale…

ATU OR NO ATU?

Clearly, the antenna system is resonant and matched and an ATU is therefore not normally required on any of these bands (ie 15m, 20m, 40m or 80m).The author is basically 'anti-ATU', but does carry a very small homebrew T-match ATU consisting of two 200pF semi-variable capacitors, modified to have a shaft, and a switched 40-turn toroid + 6-turn fixed coil assembly – this is primarily used to tweak the GM3VLB multi-band fishing rod verticals which are also essentially resonant. See the ATU photograph.

Details of the ATU

Referring to **Fig 1**:
L1: 25mm diameter, 6t of 16SWG tapped at 2, 4 and 6 turns.
L2: T130-2 toroidal core, 40t of 18SWG, tapped at 2, 4, 7, 10, 14, 19, 25, 32 and 40 turns.
NB: Do *not* be tempted to connect x to y as this creates shorted turns which are not permissible when using toroidal cores.

CONSTRUCTION OF THE BALUN

Although now superfluous, the design and the construction details for the dual-ratio balun are included, as it may prove a useful accessory when attempting to match other balanced antennas. It is built into a standard 75 x 50 x 25mm ABS box (see diagrams and the photograph). Three eyes are screwed into a piece of thick (7 or 8mm) plastic in the top half of the box. One eye is for the pulley, and the other two for the dipole legs. The box contains the switched balun, consisting of a quadrifilar winding on a ferrite rod approximately 6cm long, a SPDT miniature toggle switch and a BNC socket with weather shield (the author uses a plastic bottle top). Brass bolts with wing nuts protrude through the back of the box to accept the 'spade' ends of the dipole. Inside the box, the connections are soldered to the heads of the bolts to reduce the risk of corrosion and/or poor contacts.

Fig 1: Circuit of the mini-ATU.
Details:
L1: 25mm diameter, 6 turns / 16SWG tapped at 2, 4 & 6 turns.
L2: T130-2 toroidal core, 40 turns / 18 SWG tapped at 2, 4, 7, 10, 14, 19, 25, 32 & 40 turns.
NB: Do *not* be tempted to connect X to Y as this creates shorted turns which are not permissible when using toroidal cores.

Fig 2: Wiring details of the quadrifilar dual-ratio balun.

Fig 3: Constructional details of the balun.

Fig 4: Details of the antenna.

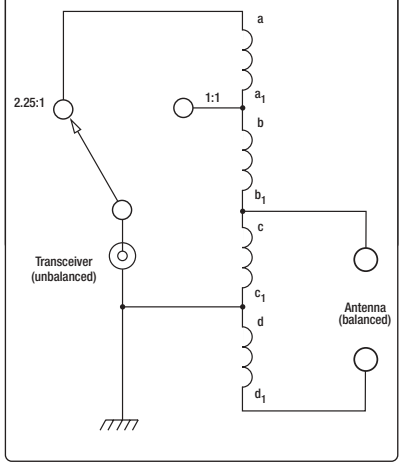
Fig 5: Insulator construction.

Right, top: The mini-ATU.

Right, middle: The switched dual-ratio balun.

Right, bottom: One of the insulators.

FIG 2b © RADCOM 434



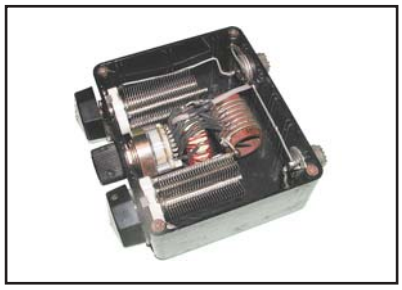
Winding the Balun

Fig 2 shows the circuit diagram of the dual-ratio balun, and **Fig 3** the constructional details. Stretch four 45cm lengths of enamelled 20 or 22SWG copper wire from a vice to remove any kinks. (different colours are ideal). Twist these together about eight times. Wind eight turns onto a 10mm diameter ferrite rod, about 6cm long (perhaps salvaged from a transistor radio?), holding the ends in place with tie-wraps (for example).

With tag-strip fixed to the ends on the windings (not shown), use further enamelled wire to make three links between a_1 and b, b_1 and c, and c_1 and d (make these links as short as possible). All links and joints should be soldered – do not rely on purely mechanical connections.

Construction of the dipole legs

There are two insulators (see the photograph and **Fig 4**) on each leg, made from suitable plastic (test in a microwave oven first!) about 60 x 20 x 5mm, each with a hole at each end to take a small S-hook attached to the small strain-relieving thimbles (**Fig 5**) at the ends of each element. A central brass bolt and wing nut allows a particular element to be connected or not (a plug and socket arrangement, or $^1/_4$in spade connectors could also be used). The lower ends of the 20m and 40m elements are soldered to the heads of the bolts whilst the upper ends of the 40m and 80m elements have 13 – 15cm 'tails' with U-shaped tags to fit under the wing-nuts. The thimbles can be pro-



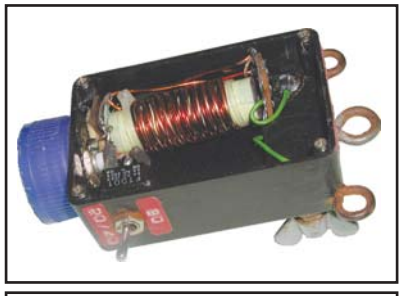


FIG 3 © RADCOM 435

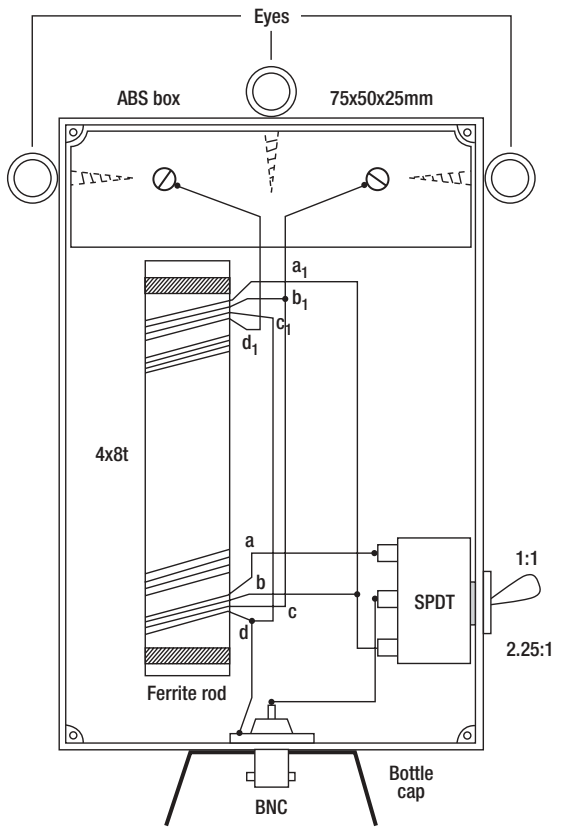
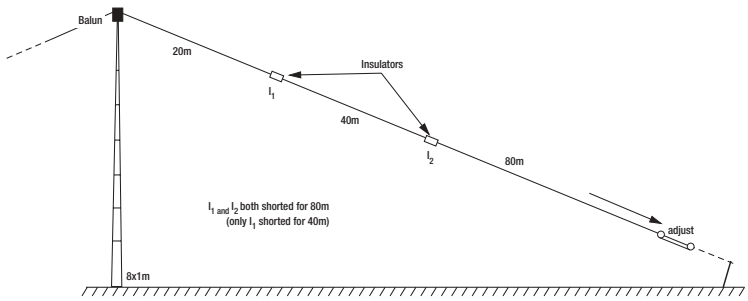


FIG 4 © RADCOM 436



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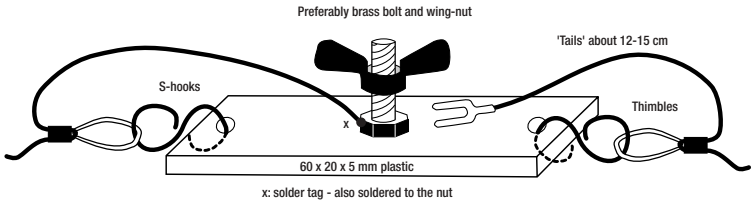

fessional, metal or plastic, or can be otherwise improvised.

Band changing is simple – simply lower the dipole, disconnect the unwanted segment(s) and hoist the aerial up again - two minutes at most!

NEXT TIME...

GM3VLB looks at the numbers behind the design, the nature of the ground and the height of the antenna ends above it. Dimensions are given for the bands in use. ♦

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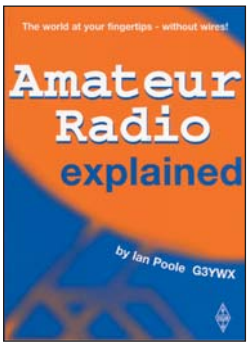

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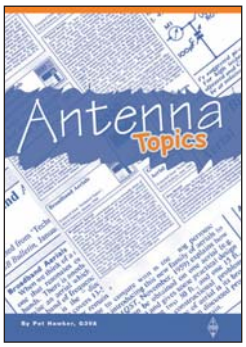

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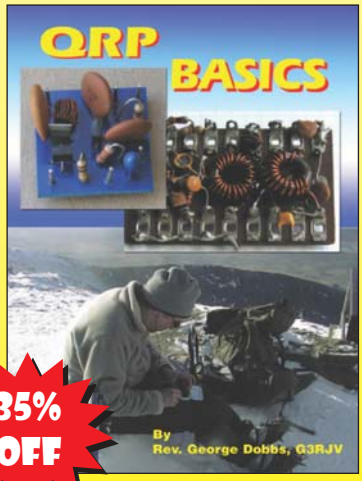

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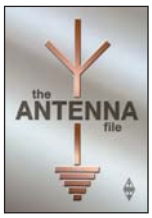

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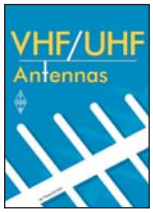

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Members' ads

FOR SALE

40 yrs RSGB History, circuits, antennas, rigs & technical topics, contained in 480 Bulletins/RadComs. Yours, (collected), £25. G3MDM, 01980 862 215 (Salisbury). E-mail: g3mdm@btinternet.com

87 OAP, ill health, Yaesu FRG-100 rcvr, serial 2E570038, mint, NES 10-2 digital speaker serial 10302079 mint, Kenwood HS-6 headphones, mint. H/books and dealers receipts, £230 as one lot, please, collect if possible, will share petrol. 0191 526 7902 (Hetton-le-Hole).

AKD 2001. Yaesu 208R with AC-8 PSU. Trio TS-530S. Heathkit SB-200 linear. KW Ezematch. KW SWR meter. SMC SWR meter. Marconi 'lunch box' portable. Buyer collect. Offers to G3WUZ, 01278 786 330 (Burnham-on-Sea). E-mail: philipg3wuz@tiscali.co.uk

ALINCO DX-70TH gwo c/w mans, £350. Prefer buyer collects, tests and pays cash. Richard, G3RWL, QTHR, 020 8366 4297 (Enfield). E-mail: g3rwl@amsat.org

AR88, £200. BC-348, £150. Tokyo ant coupler, £50. BC-221 freq gen, £25. Telequipment oscilloscope (2 off), £50 each. Roband oscilloscope c/w 3 plug-in units, £65. MFJ-948 Versatuner (new), £75. Meteor 600 freq counter, £35. Miranda freq counter, £40. Telefunken HF rcvr (large), £65. G6SKO 70cm ATV tx, £40. 01773 603 005 (Alfreton, Derbys). E-mail: stanhine@onetel.com

SILENT KEYS

We regret to record the passing of the following radio amateurs:

G0IEJ	Mr J Riley	03/12/04
G1UXZ	Mr P E Sage	23/11/04
G2BFO	Mr D D Silvester	07/01/05
G3EHA	Mr G F Hendriksen	24/12/04
G3FCS	Mr D Greenwood	22/11/04
G3GJZ	Mr H D Rodman	03/01/05
G3HEO	Mr D P Hobbs	14/01/05
G3IY	Mr J Pollard	23/12/04
G3JWY	Mr B Reddington	10/12/04
G3OSS	Mr A A McKenzie	14/01/05
G3PMF	Mr W F Craine	17/01/05
G3RIF	Mr H Harrison	
G4ABS	Mr D Bedford	10/04
G4CUF	Mr A Byers	14/12/04
G4CWN	Mr J D Colclough	10/11/04
G4DGY	Mr D M W Boulton	24/12/04
G4OFL	Mr K R Hawkins	
G4PWJ	Mr A Donnelly	25/11/04
G5WW	Mr P M Carment	04/01/05
G6BZ	Mr M C Bunting	11/04
G6GWI	Mr A H Faulkner	18/12/04
G7LHO	Mr D Oubridge	28/12/04
G8AQT	Mr F W J Neale	18/12/04
G8UYI	Mr D H Rodgers	02

BEST offer sought: RAF serviceman's wireless handbooks dating from the 1970s. Please phone Adrienne for full details on 020 8508 4489.

BIRD electronic organ, single five-octave keyboard plus 13 pedals, valve-generated tones. Free to anyone who collects – it's heavy! Needs attention – circuit diagrams of similar organ available. G3WLY, QTHR, 023 9225 7171 (Waterlooville).

DRAKE R8A comms rcvr, very good cond, £400. Charles, RS192952, 020 8391 1483 (Chessington).

DRAKE TR4C with RV4C, £300. HRO with 6 coils & PSU, £100. Buyer collects. G0JXN, QTHR, 01992 468 204 (Cheshunt). E-mail: g0jxn.jim@ntlworld.com

FT-100, £385. FRG-100, £225. ICR-7000, £420. ICR-7100, £450. All mint. Hygain TH11DX beam brand new, £695. IC-735, £295. IC-735 keyer, £60. CW filter, £50. CTCSS encoder, £25. AOR-1000, £90. Icom CT-17 interface, £60. Inrad mod board for FT-1000MP, unused, £35. FT-847 boxed as new, £725. FT-1000MP boxed as new, £1000. 01953 884 305 or 07970 214 039 (Watton).

FT-101ZD all band & FM, man, good cond, £100. Matching antenna tuner FC-902, man, good cond, £50. Collect and inspect. G0GCM, QTHR, 01512 005 152 (Ellesmere Port). E-mail: g0.gcm@ntlworld.com

G0WWC Silent Key sale. ADI 2m mobile, FRG-9600 VHF/UHF rcvr, Ameritron HF Linear AL-811X, HF/50 Icom IC-736, built in ATU & PSU, Tiny-2 packet controller, Icom IC-207H 2/70 mobile, Icom SP-21 spkr, MFJ Versatuner MkV 2kW, Alinco HF/50 DX-70TH, SMC PSU, 25A, all boxed with mans. Genuine offers please. All funds will go to his family. 0151 734 0565 after 6pm (Liverpool). g0stf@yahoo.co.uk

HALLICRAFTERS S-20R, £120. Hammarlund HQ-170, £225. Marconi Marine Apollo, £295. Collins TCS tcvr, £225. KW-2000A, £150. Codar ATS, £55. T-28, £55. PR-40, £60. RA-17, £80. CT-160 valve tester, £340. TV-7B/U valve tester, £175 PCR comms rcvr, £75. 01274 824 816 (Bradford). E-mail: motan@supanet.com

HEATHKIT capacitor checker, £25. Heathkit audio meter, £25. AEA packet controller, £25. PacCom TNC-220, £25. All with mans. Howes HF SSB rcvr, £20. Howes Xtal calibrator, £20. Grundig reel-to-reel tape recorder, offers? G3KJX, QTHR, 01609 772 702 (Northallerton). E-mail: h3kjx@saga internet.co.uk

HIGH precision frequency reference, Golledge HCD-361SC/ERFN 10MHz 12V units, new and used with Motorola oncore VP GPS module, £135. HCD361SC/ERFN with new Garmin 25 GPS module, £135. Ideal for Brooks Shera-GPS standard, QST July 98, all data supplied. G0MYX, QTHR, 07771 688 836 (Oxford/Swindon). E-mail: robert.stephen@btinternet.com

HOLIDAY / Field Day location. Self catering cottage, elevated position, Isle of Anglesey, sleeps 4 (no pets). Flat clean field plus workshop facilities. Rate £250 per week. 01248 470 606. E-mail: mw0sec@corfe-castle.demon.co.uk

HP-54510A 1GS 250MHz digital oscilloscope as new with all mans and probes, large screen and GPIB interface (cost new £8k), £500. Tektronix 475 200MHz scope with mans and probes, £250. TTI 1GHz spectrum analyser adaptor new, unused, £200. G0MYX, QTHR, 07771 688 836 (Oxford/Swindon). E-mail: robert.stephen@btinternet.com

HUSTLER 5-BTV, 5 days use only, genuine reason for sale, £130. Geoff, G1MQQ, 01484 848 957 (Huddersfield). E-mail: gffstain@aol.com

IC-275H boxed, man, £550. Landwehr 2m m/h preamp, £100. IC-706MkI boxed, man, £375. M-50DTR, £50. Tiny-2 MkII, £30. New 3CX800A7, £100. Mike, G0KAS, 01372 810 612 (Epsom).

ICOM 751A & PSU, exc con. Kenwood TM-24IE 2m. Offers? Dr J Birch, 01724 761 650 (Gainsborough). E-mail: drjohn-abirch@aol.com

ICOM IC-735 HF tcvr plus IC-PS20 PSU, £275 ono. Icom IC-201 all mode 2m tcvr, mains operated, £75 ono. Pakratt 232 MBX, £25. Osker SWR-200 bridge, £10. Prefer buyer collects. G3MBM, QTHR, 01929 425 268 (Dorset). E-mail: john@vs9abm.freeserve.co.uk

ICOM IC-775 DSP, boxed in as new mint cond, £2500. Mirage B-320G 200W VHF amp as new, £225. Diamond HM6 multi-band HF mobile antenna, unused, £90. KAM multimode TNC, £45. Soldier station new unused, £20. G0NMP, 01953 884 305 or 07970 214 039 (Norfolk)

IRCs for sale (new style), 50p each including postage. Richard Everitt, 2 Princess Avenue, March, Cambs, PE15 9SQ. E-mail: g4zfe@g4zfe.com

CONGRATULATIONS

to the following, whom our records show as having reached 70, 60 or 50 years' continuous RSGB membership:

70 years

G8CXL	Mr N K Read

60 years

G0TTK	Mr M A Chatfield

50 years

G3EGC	Mr J V Hoban
G3HBR	Mr B Hummerstone
G3KEL	Mr R Bray

KENPRO KR-600 rotator & thrust bearing, never used outside, inst book, 1st class cond, £150 (amount of free 6W cable). Coax switch 2w, £10. Kenwood TM-255E 2m multi-mode, slight scratch, box, man, mic, £150. Nissei DPS-300GL 30A PSU, £50. Hi-mound HH-808 Morse key, £10. 07885 446 406 (Ilkley). E-mail: dave.legrove@talk21.com

KENWOOD TM-742 tri-bander. 70cm, 2m, 6m, boxed mans, car kit, £525. Kenwood SP-23 speaker, £40. G4ODK, 07818 017 149 daytime.

KENWOOD TS-570DG, £580. MC-60 mic, £85. Watson W-25AM PSU, £60 or £700 for the whole lot. All very little used and in vgc. M0DIW, QTHR, 01522 809 463 (Lincoln).

KENWOOD TS-850SAT, with MC-80 desk mic, as new cond, little used, can be seen working if required. Have manual, but no box. Will give 3 months' guarantee to buyer. Buyer collects, or I will arrange courier service and packing at £20 extra. Price, £570 incl p&p. G0BKD, 01405 817 609 (Moorends/Doncaster). E-mail: barryg0bkd@msn.com

KENWOOD TS-870S vgc, £750. Yaesu FT-817 boxed, £350. Yaesu FT-290 MkII with nicads & charger, £150. Tokyo HT-240 2m to HF tvtr, £120. Carolina Windom CW-20, £55. AEA MM3 Morse Machine, boxed, £60. Kenwood MC-60A base mic, boxed, £65. Icom SM-20 base mic, boxed, £80. All exc cond. M5TAW, 07930 387 120 (Orpington). E-mail: toby_walsh@hotmail.com

MARCONI TF-1041 VTVM, £20. Marconi 100dB step attenuator, £12. Advance sig gen type E model 1, 100kHz – 60MHz, £20. Valves: QQVO6-40A, 813, 6146, 6HF5, all at £15 each. QQVO3-20A, £7. 813 valve socket, £7. Collection preferred or p&p extra. See also my ads in Jan-May 2004.

01772 337 815 (Preston). E-mail: g3azi@btinternet.com

MOONRAKER EVX-6000. Still boxed, never used, cost £300, £250 ono. 2m 12-ele ZL-Special Yagi, £35. MFJ-969 HF+6 never used, boxed, £130. FT-707, FP-707, FC-700, £300. M0CVS, 01629 823 025 (Wirksworth nr Matlock). E-mail: radio ham12@btopenworld.com

MORSE tcvr, spectrum analyser – tuner ideal for Morse & RTTY filters, printer command station for any command and printer, matching font generator and arts – bureau programme (nice features). Six of the best, all for only, £6 per disc. Only 10 left. 01297 23421 (Seaton). E-mail: poisonpen@poisonpen.freeserve.co.uk

MQ-1 mini-beam including rotator, balun, cable, only 12 months old, £325. Bargain, buyer collects. G4EMT, QTHR, 0151 289 5820 (Merseyside). E-mail: g4emt@hotmail.com

RUSSIAN 107 tcvr set with the following: manuals, antenna clamp, small box of fittings, coax cable, carrying harness, bag containing mic/headset-leads, screwdrivers-long wire, collapsible mast in bag, all in wooden case, £120. Buyer arranges collection. C Smith, G8KVU, 024 7659 7411 (Coventry). E-mail: madeley-smith@ntlworld.com

SGC 20W tcvr, handbook, leads, mic, immaculate (no box), £325. Carolina Windom 10-80m unused in packet, cost £89, £40 plus postage. Prefer buyer collects. G0ANX, 01235 868 498 (Wantage). E-mail: shapwick@aol.com

SIGNAL generators VHF Pye type SG3V, UHF pye type SG5U, HF Wayne Kerr type 0200, HF HP type 606A, VHF rcvr type R-1132A, £30 each ono. G0PSI, QTHR, 0115 946 0670 (Long Eaton).

SILENT key clearout or just not needed. I collect QSL cards for their historic interest, preferably from periods before 1970. Please don't throw them away. I can collect or arrange collection. Tony, G4UZN, 01132 693 892 (Leeds). E-mail: g4uzn@qsl.net

SONY ICF-200ID AIR/MF/LW/MW/SW synthesised rcvr. Exc cond, £60. Canon BJC-6200 colour printer & inks, £50. Epson EPL-5500 laser with spare developer cartridge, £75. Printers to collect. Art EPP-2 EPROM programmer, £45. Nikon Coolpix 3M3 camera & lenses etc, £90. G3UYK, QTHR, 01962 820 466 (Winchester). E-mail: g3uyk@kembles.co.uk

SURPLUS microcontrollers Philips P89C5lRD+IA 64KB flash, £5 each (24 for £100). P89C664HFA @£8 each (10 for £70) or 50 for £300. Atmel P8258252 – 24pc and P82L58252 – 12pc at £8 each. All supplied with data and software. G0MYX, QTHR, 07771 688 836 (Oxford/Swindon). E-mail: robert.stephen@btinternet.com

TEN-TEC 516 Argonaut V with TCXO + fan. 1-20W, 35 IF-DSP, all mode & gen-cov. PSK-ready, operator's man, mic, fully boxed, under 2 years old, pristine, a real gem (new rig arrived), £430. LDG Z-11 QRP autotuner, new cond, latest V1.6 software, very fast with memory, fully boxed, £120. Sold together bargain, £530. Alan, G0WAS, QTHR, 01525 841 182 (Maulden, Bedfordshire). E-mail: 402smith@whsmithnet.co.uk

YAESU FT-1500M 2m FM tcvr with DTMF mic, £110. Yaesu FT-2600M 2m FM tcvr, £100. Both boxed as new. G4EDR, 01723 515 675 (Filey). E-mail: n5rph@tiscali.co.uk

YAESU FT-857 all-mode mobile tcvr, boxed, mans, car kit, £550. Kenwood SP-23 speaker, £40. G4ODK, 07818 017 149 daytime.

YAESU G-450C rotator complete with lower mast clamp, controller and 25m control cable, £225 plus carriage. TGM communications MQ-26SR 6-band (6/10/12/15/17/20m) 2-ele hybrid quad antenna, £300 plus carriage. Radio Works Y1.5K plus Yagi current balun, £25 plus carriage. Will sell as a lot for £525 plus carriage. Prefer buyer collects. Peter, M0PGW, QTHR, 0191 284 8618 (Newcastle-Upon-Tyne). E-mail: peterm0pgw@hotmail.com

YAESU VR-5000, 100kHz – 2600MHz all mode rcvr, new boxed, voice synthesiser units fitted. Yaesu filter speaker (cost £885), £400. Mike, G0LNV, 01142 585 937 (Sheffield).

GB CALLS

These callsigns are valid for use from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 – 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Please send operational details of your special event station to the RadCom office at least five weeks before publication. The only QSL Bureau sub-manager for special event station callsigns is as follows: Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntlworld.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

12 Feb	GB0SDD: St Davids Day. (MW0CNA)
10 Mar	GB4YOU: Youlbury Scouts & Guides. Oxford. TLH27P (G0RJX)
	GB4YOU: Youlbury Scouts and Guides. TLH27P (G0REL)
11 Mar	GB2FSW: Falkirk Science Week. LH27 (GM4XQJ)
	GB6RND: Red Nose Day. LH27 (M0MSG)
12 Mar	GB4JYS: James Young High School. LH27 (GM3UCN)
13 Mar	GB4RRR: Rainham Radio Rally. 27 (M0AAK)
14 Mar	GB2HSP: Heathfield School Pinner. Pinner, Middlesex. TLHV27P (G1HKU)
	GB2RMS: Robert May's School. Odiham, Hants. TLHV27 (M0SOX)
16 Mar	GB4ASC: 01.0.. Basingstoke, Hants. LHV27 (M0SOX)
17 Mar	GB2FST: Festival. York. LH2 (G3WVO)
	GB5SPD: Saint Patricks Day. LH (MI0AKU)
18 Mar	GB2AE: Albert Einstein. Winstead, East Yorks. LHV27 (M5EXY)
21 Mar	GB6OP: Operation Plunder. Chatham, Kent. LH2 (G4AKQ)
	GB6OV: Operation Varsity. LH2 (G4AKQ)

WANTED

DISABLED fan of old days seeks QSL cards, magazines etc. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk, IP18 6PQ.

ICOM IC-R9000, preferably in mint cond, with box and accessories. Please e-mail details. Wyn, GW3YGH/VR2AX, 01792 367 790 (Swansea). E-mail: vr2ax@attglobal.net

KENWOOD TS-930S or 940S for spares or repair. Serial number 5M or higher. State price and cond. G0KGD, QTHR, 01948 770 302 (Cheshire) E-mail: vz@firs13.freeserve.co.uk.

MORSE keys wanted please. Early brass keys, especially by Marconi, GPO etc, but all considered. John, G0RDO, 01626 206 090 (Newton Abbot). E-mail: john@morsemad.com

OLD fashioned radio cassette recorder, LW/MW/FM, twin deck, dubbing. Must have 'mechanical' on/off switch. GWO, why? 01953 885 243 (Thetford).

TEN-TEC Argonaut 5 or Delta 2. Also Kenwood TS-571E. Bob, MM3KDZ, QTHR, 01698 322 575 (Hamilton). E-mail: mm3kdz@beeb.net

VALVE voltmeter. Analogue multimeter. Quality instruments please. Suitable for transistor and valve work. 01622 890 244 (Headcorn, Kent).

WARTIME B2 suitcase 'spy' set. I know, it's a pretty optimistic request, but someone might just have one! Thanks. G3XSJ, 01453 845 013 (Gloucestershire). E-mail: ken.brooks@iee.org

YAESU nicad battery packs FNB-20 DC 7.2V 600mAh. I could collect within 100 miles. Alan, G7CDK, 01763 262 443 (Royston). E-mail: aj.flo@virgin.net

RALLIES

TI - Talk-In; **CP** - Carp Park; **£** - admission; **OT** - Opening Time - time for disabled visitors appears first, eg (10.30/11am); **TS** - Trade Stands; **FM** - Flea Market; **CBS** - Car Boot Sale; **B&B** - Bring and Buy; **A** - Auction; **SIG** - Special Interest Groups; **MT** - Morse Tests; **MA** - Foundation Morse Assessments; **LB** - Licensed Bar; **C** - Catering; **DF** - Disabled Facilities; **WIN** - orize draw, raffle; **LEC** - LECtures/seminars; **FAM** - FAMily attractions; **CS** - Camp Site.

5 MARCH 2005

CRYSTAL PALACE R & EC Spring Radio & Electronics Sale – St John's Hall, Sylvan Road, SE19. OT 10.30am, £1 (inc free drink), under-16s free. C, local parking free. Bob, 01737 552 170. [www.members.aol.com/rfcburns]

6 MARCH 2005

TYNE & WEAR REPEATER GROUP Auction – Community Centre, Front Street, Great Lumley, Chester-le-Street. OT 11am, £1. C. Nancy, 0191 477 0036, 07990 760 920, or nancybone2001@yahoo.co.uk

12 MARCH 2005

LAGAN VALLEY ARC Annual Rally – Lagan Valley Hospital, Hillsborough Road, Lisburn. OT 11am. B&B, C, CP, TI on 145.550MHz. Ron, GI4NTO, 028 9260 1941.

13 MARCH 2005

ABERYSTWYTH Amateur Radio & Computer Rally – Penweddig Secondary School, Aberystwyth, next door to Aberystwyth Swimming Pool and Leisure Centre (signposted). OT 10am, £1. HF and VHF demonstrations, hobbies, TS, computers, B&B, clubs, SIG, C, model railway and aircraft, dolls' houses. TI on 145.550MHz. Ray, GW7AGG, 01970 611 432, or ray@clocktower.go-plus.net

BOURNEMOUTH RS 17th Annual Sale – Kinson Community Association Centre, Pelhams Park, Millhams Road, Kinson. OT 10am, £1.50. TI, TS, B&B, SIG, CP, C (light). John, G0HAT, 07719 700 771, johncbales@yahoo.co.uk [www.brswebsite.freeserve.co.uk]

BREDHURST RECEIVING & TRANSMITTING SOCIETY 18th Rainham Radio Rally – Rainham School for Girls, Derwent Way, Rainham, Kent. OT 9.30 / 10am, £2, under 14s free. TS, SIG, C, TI on 145.550MHz via GB4RRR, CP off-road. Mike, 01634 313 905.

WYTHALL RC Radio & Computer Rally – Woodrush Sports Centre, Shawhurst Lane, Hollywood, nr Birmingham, on the A435, 2 miles from jn3, M42. OT 10am, £1.50. TS, C, B&B, CP,TI on 145.550MHz. Chris, G0EYO, 07710 412 819 or g0eyo@blueyonder.co.uk [www.wrcrally.co.uk]

19 MARCH 2005

BRAC Foundation of VERON 30th Annual Dutch National Radio Fleamarket, – Autotron, Rosmalen ('s-Hertogenbosch). Look for signs to the Autotron. OT 9am, 6 Euro. C, TI via PI4SHB on 145.250MHz. pi4shb@amsat.org [www.qsl.net/pi4shb]

SOUTH NORMANTON, ALFRETON & DARC 5th Junction 28 QRP Rally – Village Hall Community Centre, Market Street, S Normanton, nr Alfreton, Derbys. Fully signposted, 5 minutes from M1 jn 28 and the

A38. OT 10am. B&B, SIG, FM, C.

20 MARCH 2005

CAMBRIDGE & DARC Rally – Britten Arena, Wood Green Animal Shelter, on the A1198 Godmanchester, off A14. OT 9.45 / 10am, £2, conc. DF, TI on 145.550MHz, B&B, CP free, C, LB, FAM. Bring own tables. John, G0GKP, 01954 200 072.

NORTHERN AMATEUR RADIO SOCIETIES' ASSOCIATION (NARSA) Norbreck Blackpool Rally – Norbreck Castle Exhibition Centre, Blackpool. Peter, G6CGF, 0151 630 5790, g6cgf.peter@ntlworld.com

31 MARCH 2005

MORSE RC Spring Junk Sale – Five Wents Memorial Hall, Hextable-to-Swanley road. Ken, M1CZA, 020 8306 3544.

3 APRIL 2005

Northern Mobile Rally (Harrogate) – Harrogate Ladies' College, Clarence Drive, Harrogate. B&B, C, DF. Gerald, G0UFI, 07734 478 080. [www.harrogaterally.co.uk]

10 APRIL 2005

CAMBRIDGESHIRE REPEATER GROUP Annual Rally – Bottisham Village College, Bottisham, 6 miles E of Cambridge. Access is via A14 A1303. OT 10am, £1.50. B&B, CBS, TI on 145.550MHz. Paul, G0LUC, 01462 683 574, g0luc@btinternet.com [www.gb3pi.org.uk]

21st Yeovil QRP Convention – Digby Hall, Hound Street, Sherborne, Dorset. On the A30 and adjoining roads, follow the black on white road signs to town centre. The Digby Hall adjoins the central shopping car parks. Do not follow the brown tourist signs to town and abbey. OT 10am. LEC, TS, B&B, C, DF, CP free, TI via GB2LOW on 144.550MHz. George Davis, 01935 425 669, george@mudford.fstnet.co.uk

15 / 16 APRIL 2005

56th International DX Convention – Visalia, California. [www.scdxc.org/visalia]

17 APRIL 2005

LOUGH ERNE ARC 24th Enniskillen Amateur Radio Show – *** New Venue *** - Manor House Hotel, 6 miles from Enniskillen on Kesh road. OT 12 noon. Herbie, 028 6638 7761. [http://uk.geocities.com/enniskillenrally/]

23 APRIL 2005

CORNISH RADIO AMATEUR CLUB International Marconi Day – [www.gb4imd.co.uk]

24 APRIL 2005

ALDRIDGE & BARR BEACON ARC Annual Surplus Radio & Electrical Sale – Anchor Meadow, Middlemore Lane, Aldridge. OT 10.30am, £1. WIN free, CP, C, TI on 145.550MHz. Doug, 01543 571 269. [www.goneq.co.uk]

ANDOVER RAC Spring Boot Sale – The Village Hall, Wildhern (map ref SU351510). OT 10am, £1. TS, C, DF, TI on 145.550MHz. Terry, G8ALR, 01980 629 346, g8alr@ukgateway.net

West London Radio & Electronics Show – Kempton Park racecourse, Sunbury-on-Thames, Middx. OT 10.15. TS, FM, C, LEC, B&B. Paul, M0CJX, 01737 279 108, m0cjx@radiofairs.co.uk [www.radiofairs.co.uk]

2 MAY 2005

DARTMOOR RC Radio Rally – Tavistock College, Tavistock, Devon. OT 10.15 / 10.30am. CP, TS, B&B, C, picnics, FAM, TI on 145.550MHz. Ron, G7LLG, 01822 852 586.

MID-CHESHIRE ARS Rally – Civic Hall, Winsford. OT 9.45 / 10am. CP, C. David, G4XUV, 01606 77787.

8 MAY 2005

Magnum Rally 2005 – Magnum Leisure Centre, Irvine, Ayrshire. OT 10.15 / 10.30am, £3, under-14s free. CP free, B&B, WIN, C, TS, TI on 145.550MHz. Helen, MM0HLN, 07776 385 247, helen@magnumrally.co.uk [www.magnumrally.co.uk]

14 MAY 2005

Radio Amateurs Old Timers' Association (RAOTA) Get-Together – Brunswick Inn, Derby. All members & guests welcome. Notify Ian, G4EAN, 0115 926 2360, (ian@bartg.demon.co.uk) to arrange catering & seating.

15 MAY 2005

MIDLAND ARS Drayton Manor Radio & Computer Rally – Drayton Manor Park, Fazeley, Tamworth, Staffs, on A4091 near jns 9 & 10 of M42. OT 9am. TS in two marquees, FM, SIG, CBS, clubs. Norman, G8BHE, 0121 422 9787 or 07808 078 003, nlgutteridge@aol.co.uk [www.midamradio.com]

20 – 22 MAY 2005

54th Hamvention – Dayton, Ohio. [www.hamvention.com]

5 JUNE 2005

PLYMOUTH RC Rally – G7LUL, 01752 263 222, 07702 456 401, frank@foxonezero.fsnet.co.uk

SPALDING & DARS Annual Rally – Ambrose, M0DJA, 07989 636 520, or John, 07946 302 815. [www.sdars.org.uk]

WEST MANCHESTER RC 9th Red Rose QRP Festival – Les, G4HZJ, 01942 870 634, or g4hzj@ntlworld.com

12 JUNE 2005

36th Elvaston Castle National Radio Rally – Les, G4CWD, 01332 559 965, secretary@elvastonrally.co.uk [www.elvastonrally.co.uk]

19 JUNE 2005

NEWBURY & DARS Car Boot Sale – Kevin, G6FOP, g5xv@ntlworld.com Directions and map on website. [www.nadars.org.uk]

24 – 26 JUNE 2005

Hamtronic Friedrichshafen – [www.messe-friedrichshafen.de]

26 JUNE 2005

SEVERNSIDE TV GROUP West of England Radio Rally – Shaun, G8VPG, 01225 873 098. [www.westrally.org.uk]

RSGB MEMBERS' ADVERTISEMENTS

RSGB members wishing to place an advertisement in this section should use the official form printed in *RadCom* each month and send it to 'Memads', *RadCom*, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. No acknowledgement will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due.

An advertisement longer than 60 words will be charged *pro rata*. **The RSGB believes that it is inappropriate for members trading in whatever way in radio equipment to place members' advertisements. We therefore regret that we are unable to take such advertisements, although we do welcome these in the 'Classified' advertising section of *RadCom*.** The editor reserves the right to refuse any advertisement for any reason. In such matters, the editor's decision is final.

The RSGB accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain.

Please note that because this is a subsidised service to members, no correspondence can be entered into. Members may submit *one* photograph of equipment being sold / wanted at an additional cost of £5.00. This *must* be a .jpg or .gif file and the file name *must* be included on the Order Form. The photograph may be e-mailed to radcom@rsgb.org.uk or sent on a floppy disk or CD.

Licensed members are asked to use their callsigns and QTHR, provided their addresses in the current edition of the *RSGB Yearbook* are correct. RS members will have to provide their names and addresses or telephone numbers. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition. Please do not send Members' Advertisements to Danby Advertising (advertising agents). The closing date for copy is the first day of the month prior to publication, e.g. the deadline for the May issue is 1 April.

Warning: ***Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid. Members' Ads also appear on the members-only website: www.rsgb.org/membersonly/membersads***

The Members' Ads order form is published below. If members do not wish to cut the form out of the magazine, photocopies will be accepted, as will recent copies of the form from previous months. As a last resort, members may also send in their advertisements on separate sheets of paper, but if you choose to do this, you must supply an accurate word count and, of course the correct fee in the normal way.

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Application form for one For Sale, Exchange or Wanted advertisement. Do not mix classifications on this form; separate applications must be made.

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BUSINESS CARDS

The last word

Letters published in 'The Last Word' do not necessarily reflect RSGB policy. 'Last Word' letters may be e-mailed to radcom@rsgb.org.uk Please note that letters submitted for 'The Last Word' may not be acknowledged. The RSGB reserves the right to not publish any letter, with no reason being given. It is a condition of publication that all letters may be edited for grammar, length and / or clarity. Due to the limited space available, please keep letters as short as possible. Additional letters may be published on the RSGB members-only website at www.rsgb.org/membersonly/lastword

Legality of Mobile operation?

From: Geoff R Darby, G7RTC

On the Jeremy Vine Radio 2 programme on 25 January, the case of a girl who was prosecuted for holding an apple as she drove past a police car was discussed. She was stopped by the police car, and the officer issued a £30 fixed penalty ticket, which she refused to pay, in the belief that she had not committed an offence. This fine subsequently ramped up to £60 as a result. She also refused to pay this, so the police set out to bring a prosecution through the courts. She has now been convicted, after the public costs of the case had reached £10k.

The programme tried to ascertain on exactly what grounds this unfortunate girl had been stopped. To this end, a senior police officer was interviewed on the programme, and he kept citing "driving without due care and attention". However, according to her solicitor, who was also interviewed, there was never any question of the charge being anything to do with due care and attention, and the police officer involved in the original car stop admitted in court that he had no reason to say that her driving was impaired in any way. The implication, which kept being stressed, was that it was an offence to have anything other than a steering wheel in your hand, which brings me to how we stand as radio amateurs, when operating mobile.

As far as I understood things, it was not an offence to have an item in one of your hands whilst driving per se, but that using mobile phones without hands-free facilities fitted form a new driving offence on the grounds that fiddling with the buttons and holding it up to your ear represented a potential due care and attention issue. Fair enough. However, I also understood that, largely as a result of lobbying from the RSGB, mobile radios employing fist mics had been allowed.

So my question is, how does the Society see the situation ? If it is indeed an offence to have an object in your hand whilst driving, then why was it necessary to create a special law for mobile phones ? If it's not an offence, and the apple girl's driving was not being compromised, then why was she prosecuted, or even stopped in the first place? If I get stopped for having a mic in my hand, how do I stand? As far as I could make out, it was the Northumbrian force who had brought this prosecution, and I believe that they are well known for their enforcement of driving law, so are they correct, or just being over zealous?

[RSGB General Manager Peter Kirby, G0TWW, responds: "When the new road traffic legislation came into force in 2003, an exemption was placed in the new act which allowed for the operation of mobile radio using a fist mic. The recent prosecution in Northumbria does not change the position."]

Leave 'TT' alone!

[Editor's note: The letter from Andy Talbot, G4JNT ('Another nostalgia trip?', 'The last word', February 2005), as expected, produced a large postbag. The following three letters are a representative sample.]

From: Geoff Gott, G3MUO

Following the recent criticism, I wish to offer my full support for 'Technical Topics'. I have had continuous membership of the RSGB since 1958, and throughout this period Pat Hawker has made a unique and outstanding contribution to amateur radio, achieved by his ability and dedication. In my experience, the series is highly appreciated by both amateurs and professionals, and has constantly held my unreserved respect from being a schoolboy radio amateur to Professor of Digital Communication Engineering at UMIST.

From: Brian Austin, G0GSF

. . . I read Andy Talbot's, G4JNT, comments with some amazement. The "ancient valve circuitry" he refers to happened to illustrate the points Pat was making rather well, I thought.

The "nostalgia trips" to which G4JNT refers are anything but that. They provide, like any reference to history, a most useful and often fascinating glimpse of how radio science and technology have evolved from their fundamental beginnings. Surely anyone who professes a real interest in radio communications must be fascinated by its origins? If not - and especially if they claim to be working at the forefront of its modern technology - they are in danger of re-inventing many wheels, or of falling foul of fundamental principles. Modern terminology may appear to the uninitiated to be completely unconnected with valves and their circuits but even Software Defined Radio depends fundamentally on a solid grounding in the theory that hasn't changed in decades. One need only cite the on-going issue of high speed data on power lines, or PLC, plus a host of other EMC problems, to appreciate that.

Pat Hawker's 'TT' column is the one consistent highpoint of any issue of *RadCom*. He deserves our sincere thanks for maintaining his technical standards while much that is simply trivial threatens to take over around him.

From: Paul Hawkins, G4KHU

. . . I opened my copy of the February *RadCom* and there, on the 'Technical Topics' page, G3VA once again opens with a delve into the past with pictures of receivers now seldom seen, even at rallies. The subject matter he discusses is relevant but the examples are uninspiring. I then got to 'The last word' and saw the letter from G4JNT with similar sentiments being aired. *RadCom* probably should have a page where nostalgia or a 'longer view' could be expressed along with discussions on valve technology or the merits of an HRO, to provide reading matter for those members looking for that sort of subject.

However, I think it is very important that we should have a 'Technical Topics' that is relevant to 2005, vibrant and stimulating, especially to the newer membership in whom we are trying to generate an interest in electronics and radio. That the author should have a e-mail address goes without saying.

Pat Hawker has done an excellent job of keeping us abreast of interesting and new technology over the years, but it must be difficult for someone no longer professionally engaged in electronics to keep up to date with all the new developments going on. One has to recognise when it is time to call it a day and depart with honour.

10m FM and Internet gateways

From: Jim Hicks, MBE, I Eng, FIIE, G4XRU

10 metres FM is a band and mode I have used extensively throughout the ups and downs of two sunspot cycles. The propagation on this area between HF and VHF is

incredibly interesting. In this day and age a clear fully quieting signal from the repeater on the nearby hill does not impress the average person. However, I can assure you that a similar quality FM signal from a station in Florida or a contact with a ham driving to work in Cape Town does, especially when the radio at this end is seen to be a 4W hand0held. It still impresses me!

For some reason our band plan has never recognised that 29.600MHz is used as an FM simplex calling frequency world-wide and that there is simplex use and repeaters with 100kHz negative input shift in 10kHz steps up to 29.690MHz. It's almost as though the planners haven't ever actually worked the band. Crazy you might say, but would you believe the traffic planner at our town hall doesn't actually have a driving licence!

So to my question. Why are we suddenly to have 21 (yes 21!) UK Internet gateways on this same crowded part of the band? Maybe I've missed something about gateways but if you can work the DX directly why do you need a gateway to do it? Or put another way, why use a successful, well established DX band to get in and out of the Internet when we have the wide open, underused acres of space on 70cm with lots of Internet gateway allocated frequencies? That is of course, unless our planners know more than they are telling about the future of UK access to the 70cm band. I've checked the RSGB Datacoms website and, as usual with digital buffs, lots of jargon and stuff about NoVs but no simple explanation to the uninitiated about what is trying to be achieved. Call me an old cynic but could this be a case of "let's get on HF regardless" since dropping CW, a fundamental change which incidentally I support 100%.

Gratitude for goodwill

From: Russell W Barnes, I Eng, MIIE, G4YLI

I wish to extend my sincere thanks to OMEG (Potentiometers and Switches) of East Grinstead, West Sussex. A fault in my Navico AMR-1000 2m transceiver resulted in an irreparable burn-up of the combined on / off switch and volume control pot. Bearing in mind the rate of component-obsolescence these days, my heart began to sink as I scoured the usual sources for a substitute - without success. Inspection of the potentiometer revealed it to be manufactured by the UK firm OMEG, and following a quick Google search and an initial telephone call I was asked to send in the damaged component. I duly sent it off, expecting much tail-chasing, and being directed to various suppliers, distributors and suitable retailers.

Imagine my delight when a week later a brand-new identical potentiometer from OMEG arrived through my letter-box! It is reassuring to know that genuine goodwill still exists, and such actions can only enhance the good standing of this company.

Incidentally, the fault was most probably caused by a solder 'whisker', becoming dislodged through vibration and rattling about the unit. An offending section was discovered during repair.

Path loss

From: David Sumner, G3PVH

The article by Andy Talbot, G4JNT ('Simple Equations for Path Loss', *RadCom* February 2005) fulfilled a long overdue need. However, may I draw the attention of readers to a major pitfall in using the free space path loss equation.

Even if the two stations can see each other, it is no guarantee that free space propagation is possible. The effect of the ground is often to create a reflection that tends to cancel the wanted signal, sometimes resulting in a very large drop in received power. This would even happen if the ground were lossless (a sheet of copper). To avoid the destructive ground reflection, microwave link stations are designed to have a path clearance above the ground of a few metres. At UHF television frequencies, it is common for viewers to be below the height necessary for free space signal levels, even if the transmitter is visible. Similarly with mobile phone users.

The situation is even worse on, say, the 80m band. In this case, using horizontal antennas, the ground reflection virtually eliminates the horizontally polarised signal within 100m of the antenna. Short range communication at these lower frequencies seems to be via extraneous vertical polarisation and, due to the high path loss, it is noticeable that the sky-wave comes into play very close-in, perhaps 5km.

A useful rule of thumb is that in free space the path loss increases 6dB for a doubling of the distance, whereas if the ground is coming into play the path loss increases 12dB for a doubling of distance. To decide when the ground comes into play is not an easy matter to explain in a short letter, but in the amateur context I feel it would often be the safe assumption below 1GHz. Perhaps it explains why Andy's key fob transmitter has less range than he predicts.

An exception to the rule is when using vertical polarization at the lower frequencies, when free space propagation (plus some ground losses) can be assumed. The choice of polarisation, together with the effects of imperfect ground, hills and buildings, adds yet more complexity (or interest?) to the problem. No wonder radio is referred to as an art.

UK mains voltage

From: John Loader, M3LOA

What is UK mains voltage? Is it:

a. 250V
b. 240V
c. 230V
d. anything your supplier wants to give you?

According to EDF energy, the answer is d. and should they give you anything than the normal accepted range for UK voltage which, according to Energywatch is 216 - 253V, it's tough on you if your equipment goes 'phut'.

Our voltage reduced to around 118V (fluctuating) for around 20 minutes which I monitored with my trusty Avo following restoration of power after a cut. G0PFX, who lives around the corner, recorded a minimum of 110V during the 'brown out'. Such a low voltage should not, in itself, damage equipment. In fact I was surprised how much equipment including a very cheap TV shrugged off this lack of power and soldiered on. Even some modern fluorescent bulbs still worked though in rather odd fashions. The real problem was with items that were software controlled and, in my case, two cordless telephones reprogrammed themselves in different ways and ceased to function. Whilst the broadband router also had its software corrupted, at least I could reload that. So beware. But could someone explain how we could get such a voltage please?

The 'poor man's caesium clock'

From: G A Moore, M0ORE

This project by Dave McQue, G4NJU, was described in the January 1999 edition of *RadCom* and has been a very reliable and useful part of my station, using a mechanically defunct VCR to provide the composite video signal. I am now wondering how the changeover to digital transmission from the broadcasters studios / control suites to the transmitters will affect the accuracy of the 15.625kHz line frequency? If I use a Freeview digibox or Sky box to obtain the composite video, will I just be using an oscillator in the box to control the clock or will it still be traceable to the incoming source? Perhaps a member who is familiar with digital broadcasting standards or in the TV repair trade could provide some advice for those of us who built this simple but very effective unit. ♦

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MD-100A8X £116.95 C
Base Mic suitable for SSB & FM transceivers

MD-200A8X £254.95 C
Desk Mic for high fidelity SSB operation

Icom Desk Microphones

SM-6 £69.95 C
Desk Mic for all Icom base stations

SM-20 £144.95 C
600 Ohm 8-pin deluxe base station desk mic

Heil Desk Microphones

HEIL CLASSIC MIC

The Heil Classic mic, an exact replica of the 30's RCA 74B broadcast mic. Inside it has modern technology, two inserts are provided, one for broadcast studio quality and a choice of one other Heil insert (HC-4, HC-5 or HCLiC).

£199.95 B

GM-4 £109.95 B
Goldline Hand Mic with HC-4 insert

GM-5 £109.95 B
Goldline Hand Mic with HC-5 insert

ICM £74.95 B
Hand Mic with studio insert for Icom users

HHSM £129.95 B
Heritage Professional Studio Mic, 50's style

HCLP £209.00 B
Heil Classic Pro Mic RCA design

PR-20 £109.95 B
High Quality Professional Hand Mic

Condenser Desk Microphones

B-1 £109.95 C
Professional Large Diaphragm Condenser Mic

Watson Headsets

WATSON HP-100

Excellent lightweight communication headphones with tailored response ideal for the modern tranceiver or receiver.
*8 Ohms 200-9,000Hz
*Adjustable headband
*3.5mm stereo plug *1/4" stereo adaptor.

£19.95 B

HP-200 £22.95 B
Superb headphones with padded earpieces

WEP-501 £24.95 A
Versatile Earpiece with boom mic

WCT-321 £19.95 B
Clip over earpiece & clip on lapel mic

SAFE-2-WAY £89.95 B
Mobile mic system for the car

Heil Headsets

HEIL PROSET PLUS

Top quality headphones with boom microphones. Choice of mic. elements, HC-5 ideal for "rag chewing" or HC-4 for DX communications. Icom models fitted with IC element. Choice of AD-1 (£16.95) interface leads for most makes of rigs.

£155.95 B

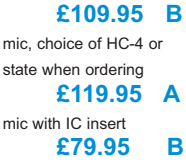
PRO-SET-PLUS-IC **£169.95 B**

PRO-SET £109.95 B
Headset with boom mic, choice of HC-4 or HC-5 insert, please state when ordering

PRO-SET-IC £119.95 A
Headset with boom mic with IC insert

HST £79.95 B
Heil Traveler for mobile use, single earpiece with mic, available for IC-706, Icom 8pin, Kenwood 8pin, Kenwood mod, FT-817.

PRO-SET QUIET PHONES



Latest from Heil, boom mic headset with acoustic noise cancelling headphones to exclude outside noises & improve received sound. Choice of HC-4, HC-5 or Icom elements, Icom el. at addtional cost.

£189.95 B

PSQP-IC **£199.95 B**

QUIET PHONES

Ambient noise reduction headphones, all external noise below 400Hz is gone! 1/8" headphone connector allows use with minidisc, cd or mp3 and 1/4" adaptor allows use with amateur radio transceivers. In-line battery holder uses 1xAA cell.

£89.95 B

bhi DSP Equipment

bhi NES10-2 MkII

NES10-2 Combined speaker and programmable DSP unit. Offers dramatic noise reduction, even reduces annoying hetrodynes. Power On/Off switch with audio bypass, 8 Ohms, 8 filter settings, 3.5mm plug, 12-24V DC.

£99.95 B

NES-5 £79.95 B
DSP Speaker Basic Plug & Go model

NEIM1031 £129.95 B
Noise Eliminating In-Line Module with DSP

1042 £19.95 A
Switch box allowing up to 6 items to connect to one bhi speaker/module.

NEDSP-1061 £89.95 B
Small DSP PCB modulefor retrofitting into rigs

NEDSP-1062 £89.95 A
Amplified DSP module to insert in speaker path

NEDSP-1062-KBD £99.95 A
As NEDSP-1062 but with small keyboard

NCH £34.95 B
ANR Noise Cancelling headphones

SGC DSP Equipment

SGC ADSP-2-EXT

Speaker with built-in ADSP noise filters. 3 modes at touch of one button. 1)no reduction 2)original ADSP 3)New ADSP2 noise reduction.

£69.95 B

ADSP-2-LLK £89.95 C
ADSP2 Low Level (70-11) Audio Power Kit

ADSP-2-HLK £89.95 C
ADSP2 High Level (70-12) Audio Power Kit

Graphic Equalisers

BEHRINGER UB-802A

Dual Mic graphic equaliser with dual **variable 60dB pre-amps** plus 2 x mon/stereo line inputs.Configure to adjust both tx & rx audio and monitor both through phones. Professional quality features low-mid-hi, tape in/out, 1/4" jack and XLR sockets, 48V for condenser mics etc.
Plus FREE AC adaptor.
In/out adaptor sets for 8-pin mics: K-802, Y-802, I802 £19.95

£54.95 B

W2IHY W2-EDGE

The W2IHY is an 8-band graphic equaliser, plus noise gate specifically designed with radio communications in mind. The graphic equaliser covers 8-bands between 50Hz and 3200Hz - the typical range for SSB. This enables you to finely adjust the audio response to improve your mic and match your radio.

£229.95 B

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

OWEST PRICES

CO.UK WWW.JAYCEECOMS.COM

Freephone Orderline 08000 73 73 88

Watson Power Supplies

WATSON W-25XM

*9.7 - 17V DC (13.8v notch) *Input 230V DC or 115V AC *25 Amps peak, 22 Amps cont. *Fan cooled *Dual output terminals *Dual metering volts & current *Over voltage & current protect *Removable AC lead *Illuminated metering *Protection warning light *1.65kg *170w x 180d x 65h mm

£99.95 C

W-3A £22.95 B
Output 3A, 13.8V DC, supply 230V AC

W-5A £29.95 B
Output 5A, 13.8V DC, supply 230V AC

W-10AM £59.95 C
Output 10A, 0-15V DC, supply 230V AC

W-25AM £89.95 C
Output 25A, 0-15V DC, Dual meters

W-30AM £119.95 C
Output 30A, 0-15V DC, Dual meters

W-25SM £79.95 B
Output 22A (25peak), 13.8V DC, supply 230V / 115V AC

PS-122 £21.95 B
Output 2.2A, 13.8V DC, supply 230V AC

Manson Power Supplies

MANSON EP-925

A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver. *Dual analogue meters *Over current protection *Large power terminals for rigs *Quick snap connectors for ancillaries

£99.95 C

Diamond Power Supplies

DIAMOND GSV-3000

*Output voltage: 1 - 15V DC *Output current 30A continuous *Built-in cooling fan *Supply 230V AC 50Hz *Size 250 x 150 x 240mm *Weight 9kg

£149.95 C

GZV-2500 £119.95 C
Output 25A, 5-15V DC, supply 230V AC Switch mode over volts protected. 21 x 11 x 22cm

GZV-4000 £159.95 C
Output 40A, 5-15V DC, supply 230V AC Switch mode over volts protected. 21 x 11 x 30cm

GZV-6000 £299.95 C
Output 60A, 1-15V DC, supply 230V AC Switch mode over volts protected. 21 x 11 x 36cm

Travel DC Supply 1 Amp Output

£9.95 C SMP-1000A
3 - 12V DC out
AC 100 - 240V in

Ideal for travelling around. Stabalised voltage out 3 4.5 5 6 9 & 12V. Lightweight switch mode design. Inc 6 reversable connectors of different sizes.

West Mountain DC Distribution

RIGRUNNER 4008

The *RIGrunner* 8-way 13.8V DC distribution system with Over voltage, Normal and Under voltage indicators. Nine pairs of outputs in four groups - 25A, 10A, 5A and 1A all individually fused. Requires 13.8V DC power source either from battery or mains power supply with current rating up to 40A.

£89.95 B

RR/4012/C £99.95 B
12-way 13.8V DC (25A,10A,5A,1A)

RR/4005/C £59.95 B
5-way 13.8V DC (25A,10A,5A,1A)

Watson Power Meters

WATSON W-220

*1.6 - 200MHz *0-5W / 0-20W / 0-200W (max power 200W) *SO-239 *50 Ohms *Size 190 x 85 x135mm *Weight 790g *Accessories: DC lead for 12V illumination

£49.95 B

W-420 £49.95 B
118-530MHz, 0-5, 0-20, 0-200W, SO-239

W-620 £89.95 B
1.6-530MHz, 0-5, 0-20, 0-200W, SO-239

Avair Power Meters

AVAIR AV-201

Ideal for HF and VHF operation. It features high power handling up to 1kW * 1.8-160MHz * 5W, 20W, 200W, 1kW * Av or PEP

£49.95 B

AV-400 £49.95 B
140-525MHz, 5W, 20W, 200W, 400W

AV-601 £69.95 B
1.8-160MHz(S1), 140-525MHz(S2)

AV-1000 £79.95 B
1.8-160MHz, 430-450MHz, 800-930MHz, 1240-1300MHz. 5W, 20W, 200W, 400W

AVAIR AV-20

*3.5-150MHz **(AV-20)** *Impedance 50 Ohms *Power 0 - 15W / 0 - 150W switched *Measures forward / reflected power + VSWR *Sensitivity 3W for full scale deflection *Accuracy 10% at full scale *Sockets SO-239 *Size 85 x 87 x 95mm *Weight 280g

£29.95 B

AV-40 £29.95 B
144-470MHz, power 0-15W/0-150W switched

MFJ Antenna Analysers

MFJ-269

*Frequency Coverage 1.8 to 470MHz *Antenna Analyser *Frequency Counter *SWR & impedance or SWR Bargraph *VSWR Meter *Signal Generator *LCD readout, analogue meters

£349.95 B

MFJ-259B £259.95 B
1.8-170MHz, Freq Counter, VSWR meter

Watson Frequency Counters

WATSON HUNTER

*10MHz-3GHz *Impedance 50 Ohms *LCD readout *8- digit display *BNC Whip Antenna *Black anodised case *Internal Ni-Cads *AC charger *9V DC 300mA *68 x 80 x 31mm *210g

£49.95 B

FC-130 £59.95 B
1MHz-3GHz, 10 digit readout

SUPER SEARCHER £99.95 B
10MHz-3GHz, 7 digit readout

SUPER HUNTER £149.95 B
10Hz-3GHz, 10 digit readout

Optoelectronics Frequency Counters

OPTOELECTRONICS SCOUT

The Scout automatically stores frequencies as it locks onto them, and logs the number of hits for any one channel. It incorporates both digital filter and auto capture. The Scout can also Reaction Tune various receivers with a suitable optional cable. RT-8200 for AR8200 Series-2 and SAC-8000 for AR8000.

£229.95 B

CUB £129.95 B
Mini Counter 1MHz-2.8GHz, 9 digit readout

MFJ Coax Switches

MFJ-1702C

*2-way *Connectors SO-239 * < 0.2dB loss *SWR < 1.2:1 *Isolation 60dB at 300MHz 50dB at 450MHz

£28.95 A

MFJ-1704 £69.95 B
4-way, Connectors SO-239 or 'N'

MFJ-1700C £89.95 B
6-position antenna swirtch, SO-239

MFJ-1701 £52.95 B
6-way, range 1.8-30MHz, SO-239

Watson Coax Switches

WATSON CX-201

*2-way *Connectors SO-239 *Power 2.5kW *Range DC - 600MHz *Impedance 50 Ohms *Loss 0.1dB

£18.95 A

CS-600 £12.95 A
2-way, Connectors SO-239, Power 2.5kW

MFJ-260C 300W Dummy Load

Every station needs one!

A convenient way of testing your rig and measuring power etc. Just plug into output sock of radio. SO-239 socket. 600MHz **MFJ-260CN** "N" socket **£44.95B**

£37.95 B

Duplexers

DIAMOND MX-72

*1.6MHz - 150MHz 400W PEP *400MHz - 460MHz 250W PEP *Max loss 0.3dB *SO-239 to 2 x PL-259 *Cable length 200mm to plug *45 x 42 x 25mm approx.

£32.95 B

DIAMOND MX-62M £49.95 B
Port1: HF + 6m Port 2: 2m + 70cm

DIAMOND MX-610 £54.95 B
Port 1: HF Port 2: 6m + 2m + 70cm

WATSON WD-25 £24.95 A
Port1:HF+6m+2m Port2:70cm, SO-239 sockets

WATSON WD-24 £22.95 A
As WD-25, SO-239 and dual PL-259

WATSON WD-24N £24.95 A
As WD-25, SO-239, PL-259, N-type

Diamond Triplexers

DIAMOND MX-2000

*1.6 - 60MHz 800W PEP Loss 0.15dB *110 - 170MHz 800W PEP Low 0.2dB *300 - 950MHz 500W PEP Low 0.25dB *SO-239 socket & 3 x PL-259 plugs *Cable length 300mm to plug. *65 x 85 x 23mm approx.

£59.95 B

MX-3000 £56.95 B
Port1:HF+6m+2m Port2:70cm Port3:23cm

Superb DCI Band Pass Filters

Razor Sharp Professional Filtering

DCI-145-2H £119.95 B
144 - 146MHz 68dB @ 136MHz / 55dB @ 155MHz. Less than 1dB loss. 200W. 30 x 8 x 13cm SO-239

DCI-145-2HN £129.95 B
144 - 146MHz 68dB @ 136MHz / 55dB @ 155MHz. Less than 1dB loss. 200W. 30 x 8 x 13cm N socket

DCI-435-10C £139.95 B
430 - 440MHz 47dB @ 415MHz / 50dB @ 455MHz. Less than 1dB loss. 200W. 30 x 8 x 19cm N socket

DCI-145/435-DB £199.95 B
This has similar performance to above 2m and 70cm individual filters. 200W Duplexer inside. N socket. Designed for single coax dual band operation.

Antenna Rotators

CREATE RC5-1

Vert load:	400kg
Horiz. load	800kg
Torque	80kg/m
Stub size	48-63mm
Weight	5kg

£369.95 C

Lower mast clamps needed for mast mounting. MC-2 **£59.95**

Create

RC5-3	3 El tribanders	£449.95C
RC5A-3	4-5 El tribanders	£649.95C

Yaesu

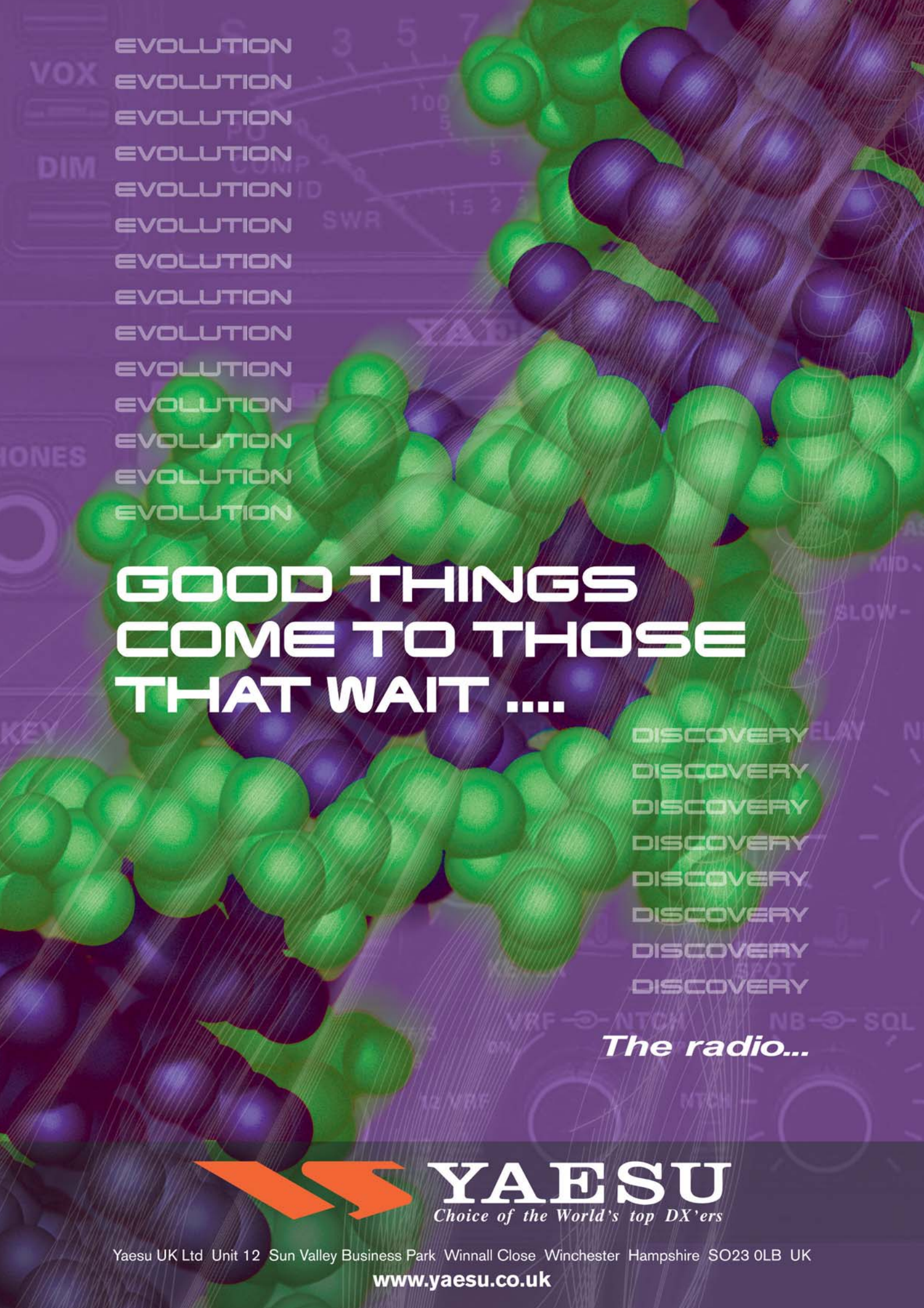
G-450C	VHF/Mini HF beams	£299.00C
G-650C	3 El tribanders	£379.00C
G-1000C	4 El tribanders	£449.00C
G-1000DXC	4 El tribanders	£459.00C
G-2800DXC	HF Monobanders etc.	£999.00C

Hy-Gain

CD-45II	VHF/Mini HF beams	£399.95C
AR-40X	VHF/Mini HF beams	£299.95C
HAM-1VX	HF Tribanders	£549.95C
HAM-VX	4 El tribanders	£929.95C
T-2XX	4 El tribanders	£639.95C
HDR-300AX	Big HF arrays	£1499.95C

NOTE: Antenna sizes are suggestions only. Purchasers must check antenna specifications to decide suitability of rotator. Full specs on www.wsplc.com

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