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The Radio Society of Great Britain Members' Magazine

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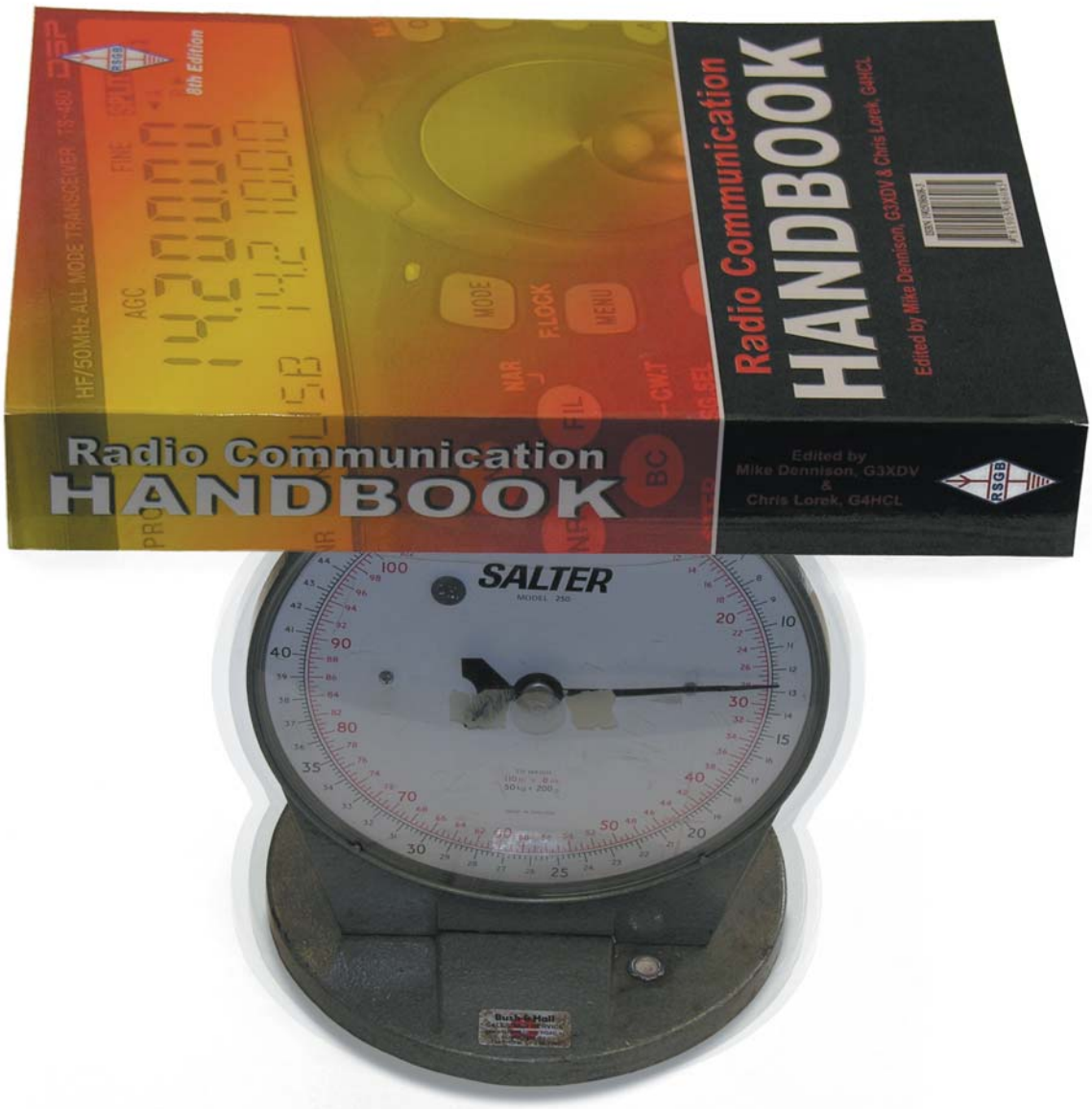

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The new Radio Communication Handbook – it's HUGE

INSIDE

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NEW

YAESU

FT-9000D NOW AVAILABLE

50% DISCOUNT on any Heil Mic when you purchase your FT-9000 from W&S - the UK's largets Yaesu Dealer,
Plus **FREE** entry into our £2000 **Yaesu Competition** with 500:1 win chance.

Watson W-25SM 25 Amps

The switch-mode power supply that does not have the problems of some competitive modes.

RSGB says "Best power supply tested" **£79.95**

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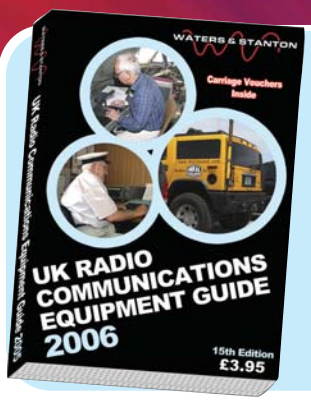

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Ready-made leads for:
Yaesu 2800, 7800 8800, 900,817,857 & 897.
Kenwood 271E, D700E, & G707.
Icom 220H, E208, 2100, 2725, & 706.

Ready to Go! Wired for your transceiver

£39.95 Code WM-S

Goose-neck mic mounts under visor bolts and PTT mounts on gear-change. All hardware included.
***FREE** lead for your radio includes*

PTT Box

Icom HF Transceivers

ICOM IC-756 PRO MkIII

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

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

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

IC-7400 £1279 C
HF/VHF 160m - 2m transceiver 5 - 100W. SSB CW FM AM. 12V DC. Nice big display. Lovely price.

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

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

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

NEW IC-7000 £Phone!
The new IC-7000 is **NOT a replacement** for the IC-706 but is a very much up-market design. It is in a box about the same size as the IC-706 but very much like an IC-756 in concept. This will be **THE mobile rig** that others will have to aspire to!!.

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.

Low Price **£1295 C**

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

TS-2000X £1789 C
Take the TS-2000 and add a superb 23cm module. The best 23cm we know of plus all other bands!

TS-B2000 *Low Price* £995 C
Designed for the 21st century. You get HF - 70cm with PC software for direct PC control. It works great.

TS-570DG *Low Price* £799 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 *Special* £699 C
HF 160m - 6m with remote front panel. Large enough for base use, small enough for mobile. Big display

TS-480HX *Special* £799 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-857D

Our best selling Yaesu HF Rig. Since the price came down from £849 to £579 we can't get enough of them!
160-70cm mobile with up to 100W output. Lovely tuning control from remote head unit . **£579 C**

FT-1000 MKV £2099 C
200W HF Transceiver, with EDSP, Collins filter, auto ATU, 220V AC PSU - One of the finest rigs available.

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

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

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

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

FT-817DSP *Low Price* £559 C

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

Carriage Charges: A=£3, 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* **£215 C

IC-910H £1087 C
2m / 70cm 100W Base station all - modes with option for 23cm module (**UX-910 £359**)

IC-910HX £1235 C
As above but with 23cm module ready fitted and a big saving as well.

IC-2200H £179 C
2m 55W FM mobile with rugged construction and with digital option.

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. **£418 C**

TM-G707E £265 C
Dual Band 2m & 70cm with detachable front

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

TM-271E £187 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 £149 C
*2m FM Mobile transceiver * High power 65W * Capable of VHF wideband receiver

FT-8800E £267 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

Yaesu
ADMS Software

Programme all your radio's functions and memories in a fraction of the time using Windows - - - - - and save to disc!

+ FREE PC RADIO DATA LEAD

Versions available for: FT-857/FT-897, FT-817, FT-8800, FT-8900, FT-7800, FT-2800, FT-60E, VX-7 (needs CT-91), VX-6E, VX-2E, VX110/150, VR-500

State model when ordering **£39.95 A**

Icom
VHF/UHF Handhelds

IC-E90 Special!

The new E-90 offers triple band coverage of 6m, 2m and 70cms. Up to 5W output and rx cover-age from 495kHz - 999MHz makes this a very attractive rig. **£199 B**

NEW IC-V82 Digital Handy NEW
Now in Stock! **£159 B**

Kenwood
VHF/UHF Handhelds

KENWOOD TH-F7E

- 144-146MHz Tx/Rx: FM
- 430-440MHz Tx/Rx: FM

Up to 6W out with Li-ion bat-tery 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. **£237 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-6E NEW

2m / 70cm Handheld Transceiver, Wideband receive including AM Airband. Plus a Built-In Morse Tutor.
In Stock Now! **£189 C**

VX-7R Special Offer £209 C
6m/2m/70cm handheld with huge 132x64 dot matrix display, choose black or silver

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

VX-110 £94 C
2m handheld transceiver with 8-key keypad NiCd & charger

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

Alinco
VHF/UHF Handhelds

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

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

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

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

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HF Linear Amplifiers

NEW LOWER PRICES!

AL-1200XCE £2295.95 C
HF linear amp 10-160m 1.5kW

AL-1500XCE £2595.95 C
HF linear amp 10-160m 1.5kW

AL-800HXCE £2495.95 C
HF linear amp 10-160m 1.5kW

AL-82XCE £2295.95 C
HF linear amp 10-160m 1.5kW

AL-80BXCE £1395.95 C
HF linear amp 10-160m 1.5kW

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

ALS-500MXCE £819.95 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-1KFX £1399.95 C
HF linear amp. 1.8-29.7MHz 500W PEP max, solid state

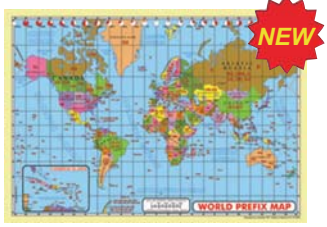
HL-2KFX £2695.95 C
HF +6m linear amp 1.8-29.7MHz + 50MHz 1kW PEP max, solid state

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

WATSON VALUE

NEW STOCK & OFFERS

W&S World Prefix Map



This attractive full colour map for amateurs and SWL's alike is split into regions, each highlighted in a different colour with the ama-teur prefixes in red. On the A2 map there are more details regarding islands.. Both sizes are laminated in flexible plastic.

A2 Size (WPMM-MAP) **£4.99 A**
A3 Size (WPMD-MAP) **£2.99 A**

YAESU FT-60E NEW

**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.*
£169 B

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

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

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

Watson
Mobile Antenna's

ANTENNAS

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

BASES

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

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

Carriage Charges: A=£3, B=£6, C=£10

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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

£69.95 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

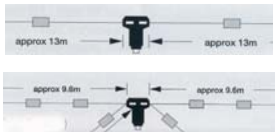
160m - 10m
0.1 - 20W
Full DSP
Diecast Chassis

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

Diamond HF Dipoles

NEW



Compact 1 kW Wire Dipoles

W-735 80/40m 26m long (85.5ft) balun fed wire dipole. Ideal for small gardens. Just drop ends down for fitting into 50ft long plots. **£69.95 B**

W-8010 80/40/20/15/10m 19.8m long (65ft) balun fed wire dipole. Easily fits 50ft plot with ends dropped. **£89.95 B**

High quality Diamond Japanese antennas

Antenna Accessories

Antenna Traps (pairs)

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

German Made High Quality Baluns

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

Remote 4:1 1.5kW Balun

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

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

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

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

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

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

Icom External Auto ATU's

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

Alinco External Auto ATU's

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

Diamond VHF / UHF Ants.

NEW

A144S5	5 el 2m 9.1dbi 0.95m L.	£29.95 C
A144S10	10 el 2m 11.6dbi 2.13m L	£59.95 C
A430S10	10 el 70cm 13.1dbi 1.19mL	£31.95 C
A430S15	15 el 70cm 14.8dbi 2.25m L.	£39.95 C
SB144	Boom for dual 2m Yagis	£19.95 B
SB430	Boom for dual 70cm Yagis	£15.95 B
SS144	Stack transformer 2-way 2m	£69.95 A
SS430	Stack transformer 2-way 70cm	£59.95 A
KB144	Mast stand-off for vert. polarise	£15.95 A
KB430	Mast stand-off for vert. polarise	£14.95 A

High quality Diamond Japanese antennas

SGC Internal Auto ATU's

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

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

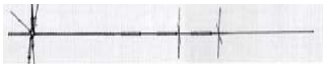
R-6000 £329.95 C
6-band vertical 20m - 6m. No separate radials needed. 1.5kW. Height 5.8m. Great small garden ant.

MA5B
£369.95 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 VERTICAL



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

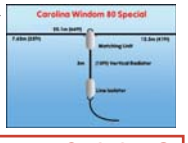
CW-160 £129.95 C
8-band 160m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 265ft long.

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. 66ft long.



G5RV Plus £59.95 C

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

Hustler Base Antennas

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

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

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

Butternut Antennas

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

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

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

Buddipole Products

HF Portable at its Best

W3-BP £179.95 B
40m - 2m adjustable dipole. 250W and max length of 4.65m. Packs down to 65cm approx.

W3-MBP £189.95 B
Sames as W3-BP but packs even smaller.

W3-BS £109.95 B
40m - 2m vertical is half a Buddipole. Ideal for QRP and rucksack - as used by Peter Waters G3OJV.

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

Super Antennas

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

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

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

High Sierra Mobile Whips

HS-1800/PRO
£379.95 C

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

SIDEKICK
£249.95 C

As used by Peter Waters G3OJV/M

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

Carriage Charges: A=£3, B=£6, C=£10

RadCom
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P&P on RSGB orders: £1.75 for 1 item, £3.30 for 2 or more items. Overseas rates on request.

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p56 – Radio Communication Handbook

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

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

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

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

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

HONORARY TREASURER:
Position vacant

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I Rosevear, G3GKC
P Lowrie, MI5JYK
P Brooks, G4NZQ
Details of the Society's volunteer officers can be found in the RSGB Yearbook 2005

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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.

RSGB matters

LETTER FROM THE PRESIDENT

Here, we print an open letter to the membership of the Radio Society of Great Britain from Jeff Smith, MI0AEX, President.

Dear Member,
I hope that you agree with me that over the last few years, the Society has made progress in making amateur radio more accessible to people via the new examination structure and we have introduced more youngsters to it via GB4FUN. With the recent licensing consultation now completed, it is important that the Society looks to the future and encourages more people to become members. The strength of the Society is its membership and if we are to be truly representative, we must ensure growth.

One of the areas that we have looked into is our subscription structure. We wanted to simplify the number of membership categories and encourage growth in the membership from within all age groups. There are many benefits attached to RSGB membership but we view *RadCom* as a "must" for all amateurs because it contains the latest news and developments and introduces other aspects of the hobby that many amateurs may not have considered in the past. Therefore, if we want to retain newcomers' interest and enthusiasm and try to get more youngsters to join, we must ensure that they receive *RadCom* on a regular basis. Therefore, from the 1 January 2006 all young people under the age of 21 who hold an amateur radio licence will enjoy free membership of the Society. We have modernised our subscription structure, and from the New Year all subscriptions will be one price, although there will continue to be discount breaks for various categories. The Society will continue to reward long service and we have retained categories for the retired and disabled. We felt it important to do this even though we are now only one of a few similar organisations to make allowances for the retired and disabled. The new structure also reviews family membership. A summary of the changes follows:

- All licensed members under the age of 21 will receive FREE membership;
- All members who have continuous membership of 50 years or more will receive their membership at a 50% discount;
- All members who have been members for 60 years or more will receive FREE membership;
- All members who are 65 years of age and over will receive their membership at a 20% discount;
- All members who are in the waived category will receive their membership at a 20% discount;
- The Joint Family Member category is now one full paying member and one other adult over the age of 21 years living at the same address. They will receive their membership at twice the full subscription rate less 40% discount. Additional members of the family are free.

Now I come to the "sting" in the tail!
Unfortunately, we have come to the decision that a small increase in subscriptions must be made. We are no different from any other business in the UK in that we face the same monetary pressures on costs and margins and like them, we endeavour to ensure that we control our costs. In addition to normal business operating conditions, the Society has a duty to promote awareness of amateur radio. There are indications that this is beginning to happen with educational establishments and employers starting to recognise the benefits that training in amateur radio can offer. To increase this awareness, we must invest more in marketing the hobby and the following is just an example of some of the work that we wish to undertake in the future:

- Effective from 1 September 2005, Ofcom gave us full responsibility for the amateur radio examinations. This will impose additional reporting requirements and the observance of certain performance levels. This is something that we have wanted to undertake for a long time as it allows us to do more marketing;
- Demand for GB4FUN far exceeds our resource capability, GB4FUN (2) is urgently needed;
- The cost of backup for our regional structure is increasing as we reach more clubs and assist radio amateurs locally.

Therefore, effective from 1 January 2006 the following membership fees will apply. *(Please note that all discounts are rounded up to the nearest 50p).*

Category	Rate at 1/1/06	Old rate
Full membership	£44.00	£42.50
Senior citizens	£35.50	£33.50
50 years membership	£22.00	£21.25
60 years membership	FREE	FREE
Family member	Discontinued	£18.50
Joint family member	£53.00	
Student members – 21-25	FREE	£28.50
Ham club (under 21)	FREE	£18.50
Affiliated societies	£44.00	£42.50

Concessionary rates are subject to conditions.

The decision to increase fees is never an easy one but in the same way that I started this letter I hope that you agree that we are making progress and we need your support to ensure that it continues.

JOIN THE TEAM – WE NEED YOU

The strength of the RSGB is its volunteers. Without volunteers, the work of the Society will grind to a halt. At the present time we have the following vacancies.

Honorary Company Secretary
Applicants must have some experience of company law and be prepared to work up to eight weekends annually.

Honorary Treasurer
Applicants must have an accountancy qualification or have previous experience of holding the position of treasurer with another similar organisation and be prepared and available to attend monthly management meetings held during the working week and up to eight weekend Board meetings annually.

HF Manager
Applicants must be experienced HF operators and have some knowledge of band planning

Chair of the Planning Panel
Applicants must have experience and knowledge of current planning laws and directories, and be able to advise members on planning applications and planning appeals.

Amateur Radio Observation Service Coordinator
Applicants must be experienced and active radio amateurs on all bands. He or she must have some knowledge of radio investigative work and direction finding techniques, be able to mediate in disputes and be willing to be the spokesperson for all AROS activities.

ANNUAL REPORT AND ACCOUNTS

As reported in August *RadCom* (RSGB Matters), the Society's financial year 2004/2005 has been extended by six months and will now end on the 31 December 2005 rather than 30 June 2005. This extension was to facilitate a realignment of the Society's financial year to bring it in line with the Society's calendar year. This change has the effect of moving a number of administrative functions by six months:

The annual report and accounts – which would normally appear in this edition of *RadCom* – will now appear in the April 2006 edition;
The AGM, which normally takes place on the first weekend in December, will now be held on Saturday 6 May 2006 in Belfast (further details will be published in the New Year).

Members familiar with the Society's Memorandum of Association will be aware that under Memorandum 8 the Society's accounts should be audited at least once every financial year. Year, in this instance, has been interpreted as financial year and it is in the best financial interests of the Society to delay the annual audit until the end of that period. Two audits within 18 months would have cost an additional £9,000.

Due to the retirement of the audit partner at KPMG, the Society has reassessed its audit requirements for the future and following advice from KPMG, the directors have appointed a new audit practice specialising in companies in the not-for-profit and charity sector. The new auditor is Sayer Vincent (www.sayervincent.co.uk). The membership will have the opportunity to confirm this appointment at the next AGM.

The change of the financial year has brought up a number of anomalies in the current Memorandum and Articles of Association and Bylaws. The Society's solicitors are currently addressing these and any changes will be placed before the membership at the May 2006 AGM.

DAVOS CONFERENCE

The IARU Region 1 Conference took place in Davos Switzerland between 11-15 September. A full report and pictures of the event will appear in *RadCom* shortly. Minutes of the Formal Planning session and other conference papers can be found on the RSGB website – www.rsgb.org

PATIENCE ON THE AIR PLEASE

The RSGB has received a number of complaints regarding poor behaviour on the air from a member who has undergone a total laryngectomy. People who have had this treatment are left with a robotic speaking voice. The member concerned has been subject to verbal abuse on the air. Having battled against a life threatening illness, to be abused in this way is unfair and against the spirit of amateur radio. The RSGB would like to think that all amateurs would be courteous and well mannered to others, especially those with a disability.

VOLUNTEERS NEEDED

The Radio Society of Great Britain has a number of vacancies for deputy managers in the London Thames Valley area. The positions entail working within the RSGB regional team structure to strengthen relationships between the society and its membership. To find out more about the vacancies, e-mail Paul Berkeley at m0cjx@rsgb.org.

MAJOR NEW BRITISH DIRECTION FINDING CONTEST

The RSGB's Amateur Radio Direction Finding Committee is holding the first British direction finding championship on 13 November this year. The championship includes separate competitions on the 144MHz and 3.5MHz bands and is run in accordance with International Amateur Radio Union rules.

Direction finding is the amateur radio equivalent of orienteering, The objective is to locate transmitters – or foxes, as they are called – using radio techniques and then visit them on foot as quickly as possible.

Participants in the British championship will be expected to pinpoint and visit five transmitters dotted around a large area of forest. More information on the championship can be found on the Amateur Radio Direction Finding Committee's website.

LETTER TO AMERICA

Radio Society of Great Britain member Steve Nichols, G0KYA, is broadcasting a monthly programme about HF propagation on US-based 'This Week in Amateur Radio' – www.twiar.org. This Week in Amateur Radio is a professionally-produced broadcast distributed via satellite in the US and on shortwave station WBCQ. It is also aired on repeaters in North America and is available as a downloadable MP3 podcast.

Steve, a member of the RSGB's Propagation Studies Committee, says that his broadcast forecasts HF conditions for the month ahead, providing details of paths likely to be available on each band. He also talks about aspects of propagation such as grey line, sporadic-E and low-band conditions.
"I will also look at HF events taking place each month, including contests, special events or DXpeditions," Steve said.

Steve – a professional journalist and broadcaster – also contributes other material to This Week in Amateur Radio. He recently presented a five-minute show about Marconi's attempts to span the Atlantic in 1901. The programme featured an interview recorded at the Poldhu ARC in Cornwall, home of the Marconi Centre.

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.

Big Hitters

Mr RJ Benitez	M0DHP
Mr M D Moss	G8NVX
Mr PVF Beardow	G1SHV
Mr R B Catlow	RS193589
Girl Guiding Wiltshire North	

Mr J Craswell	W0VNE	Mr J J Farrell	GI4JOR
Mr I R Milne	VK7IR	Mr D B McCutcheon	GI3OAU
Mr G L Cole	RS35350	Mr WR Pollock	GI3NVW
Mr HA Jarvis	RS27376	Mr J O'Hara	GI0EFW
Mr R Luscombe	RS195516	Mr N E Brown	G8NCK
Mr B Kehoe	RS193643	Mr J M Williams	G8JQB
Mr R J Davis	RS193638	Mr AC Stables	G8FMH
Dr S Herman	RS193618	Mr D J Keston	G8FMC
Mr D S Rogers	RS193485	Mr D Robbins	G8DKF
CM Brown	RS191463	Mr P J Banbury	G8BNK
Mr J Fleet	RS187173	Mr N Waterman	G7RZQ
Mr D L Mann	RS181011	Mr RA Hoggard	G7PUL
Mr R J Ramm	RS171477	Mr E T Cloude	G7FAQ
Mr J R Blythe	RS171047	Mr M G Phillips	G7EUK
Mr H Mulkens	ON4FP	Mr R D Mount	G7DOE
Mr P Smiley	MI0PJS	Mr G J Mitchell	G7BJR
Mr P G Ramsay	M3PRA	Mr D M King	G6KWA
Mr P R Millis	M3KXZ	Mr C B Jones	G6ERZ
Mr R Vaughan	M3GYD	Mr HWD Maude	G4YDG
Mr E Roberts	M1EWH	Miss G Blake	G4WMF
Mr R D Cameron	M1CAO	Mr M L Morgan	G4WLK
Mr T E Thomas	M0VAB	Mr M H Lemin	G4UUB
Mr CPJ Smith	M0SPC	Mr R Kershaw	G4PJE
Mr S G Vanstone	M0SGV	Mr J E Vivian	G4PBN
Mr J C Finnie	M0KGF	Mr E Haskett	G4OZG
Mr J Wieczorek	M0JWT	Mr R Greengrass	G4NRG
Mr G Gash	M0GUD	Mr F R Harrison	G4MJT
Mr R Chick	M0FAK	Mr R Collett	G4LRQ
Mr R N Hannigan	M0DER	Mr A Daulman	G4KQL
Mr R F Henshall	M0CVK	Mr V A Tomkins	G4KEE
Mr J M Dilks	M0CJW	Mr B Firth	G4KCT
878 Squadron ATC, Highworth	M0ATC	Mr M H Parker	G4IUF
Mr G L Villa	I2VGW	Mr B D Clarke	G4ICB
Mr R J Ward	GW5NF	Mr D A Ashton	G4HRV
Mr P W Granby	GW4OKF	Mr J M Butcher	G4GWJ
Mr G A Parsons	GW1RJU	Mr D J Barrott	G4GVN
Mr P J Thomas	GW0GIH	Mr P J Milsom	G4GSA
Mr A Forbes	GM7RJG	Mr CV Redmayne	G4GLW
Mr D A Macpherson	GM7OBM	Mr H S Charlesworth	G4FMQ
Mr M Glendinning GM7GIS		Mr I A Welburn	G4EMA
		Mr M W Viner	G4CJJ
Dr I E Coates	GM1MSS	Mr J Swanson	G4CBD
Mr P Maver	GM0VYL	Mr KG Cooper	G4AQN
Mr C Mackay	GM0KVD	Mr M E Levy	G4ACU
Mr J P Power	GM0KTO	Mr B A Castle	G3ZJX
Dr D A Courtney	GI8PDK	Mr W N Fenton	G3ZJP
Mr ETN White	GI7THH	Mr I Flemming	G3ZDQ
Mr H Warke	GI6GAQ	Mr S Hunt	G3YQ
Miss J Dunne	GI4MJD	Mr AF Hydes	G3XSV

Mr K R Brooks	G3XSJ
Mr RWS Hewett	G3XLU
Mr J A Arscott	G3VSL
Mr M G Foster	G3VOF
Mr E T Clarke	G3UYD
Mr WFM Hahn	G3UOL
Mr S Tudor Jones	G3UMZ
Mr LLN Cobb	G3UI
Mr D W blackford	G3NPB
Mr T M George	G3NJG
Mr KAV Hurrell	G3NBC
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Mr KJ Ottrey	G3ECS
Mr V D Bullett	G3EAO
Mr J Vaughan	G3DQY
Mr RL Knight	G3DPW
Mr GW Alderman	G3BNE
Mr Goyder	G2SZ
Mr C Rickerby	G1NWA
Mr L T Clarke	G1LQB
Mr I C Millar	G1KMS
Mr B Cartledge	G1JYB
Mr GE King	G1HXN
Mr F Mallows	G1GYJ
Mr C Lockwood	G0UER
Mr BAS Koenen	G0MWQ
Mr C M Knaggs	G0LYZ
Mr J A Dodson	G0LSY
Mr RGE Harvey	G0LLT
Mr J A Wells	G0IWB
Mr J Marsh	G0IPK
Mr G R Moore	G0IOF
Mr A S Jordan	G0HAS
Mr M J Holdsworth	G0FOH
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Mr A M Cater	G0EVX
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Mr R Williams	EI7AF
Mr P Maher	EI3AV
Mr M Pikholenko	4Z5PM
Mr D Edwards	2W0YDK
Mr R S Rogers	2M1AHZ
Mr R Foulds	2M0MTO
Mr K R Cullum	2E1HKC
Mrs C E Sanderson	2E1BRG
Mr MJ French	ZI2MF/G3ZXD

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.

Don Beattie, G3BJ

Secretary IARU Region 1
Hares Cottage,
Woolston,
Church Stretton, SY6 6QD

Moving forward

The future of amateur radio was discussed at the International Amateur Radio Union Region 1 conference in Davos and also at an administrative meeting in Zurich in September. Don Beattie reports

September was a busy month for International Amateur Radio Union (IARU) Region 1. The region's general conference took place in Davos, Switzerland, followed immediately by an IARU Administrative Council meeting in Zurich.

The three-yearly IARU Region 1 Conference is open to delegates from all member societies of the region. This year, some 150 delegates came from 47 member societies, with a further nine societies represented by proxy. This was the largest number of societies to be represented at the conference for some years.

The conference was held in the Davos Congress Centre, famous for being the venue of the annual World Economic Forum of heads of state.

The main areas of discussion at the conference were finance, organisation and administration, HF and VHF/UHF/Microwave. Some 71 formal recommendations, arising from nearly 140 submitted papers, were approved at the conference, together with resolutions appointing the chairmen and coordinators of the various specialist committees and working groups for the next three years. The recommendations included:

- A new Region 1 HF bandplan for implementation on 1 January 2006
- A project to map the future direction of amateur radio in the region to be coordinated by Bob Whelan, G3PJT
- Creation of a Spectrum Defence Fund to address threats to amateur frequency allocations
- Preparation for WRC07 – the next World Radio Conference – at which amateur radio matters will be discussed
- Creation of spot frequencies termed "centres of activity" on a number of amateur bands, for emergency traffic
- A new 40m bandplan effective from 2009
- Changes to various contest rules and administration

There were also recommendations for changes to the governance of IARU Region 1, including:

- Changes to the voting rights of member societies to recognise that some societies have ceased to exist, and others do not always pay their IARU Region 1 membership fees
- Possible changes to the Region 1 and IARU constitutions (which will be formally submitted for voting in due course)
- A limit on the number of years an executive committee member can serve
- A reduction in the membership fees paid to IARU by member societies

The conference ran over four days this year, a day shorter than in the past, mainly in response to requests from member societies to compress the programme in order to save costs. The Swiss national society, USKA, worked very hard to ensure that the conference proceeded smoothly. As is always the case in such events, the social interaction between delegates added greatly to the conference's effectiveness and to strengthening the "amateur radio spirit".

Above:
Region 1 executive committee members Hans Blondeel Timmerman, PB2T, and Tafa Diop, 6W1KI, at the Davos Conference

Below:
The IARU Administrative Council. L to R (standing): W6ROD, W4RH, LA2RR, HP1DJ, W4RA, JJ1OEY, G3BJ (sitting): VU2RCR, K1ZZ, W4RI, VE6SH, HL1IFM.

At the final plenary of the conference, a number of RSGB members were elected to hold office in Region 1, including Colin Thomas, G3PSM (chairman, Permanent HF Committee), Martin Harrison, G3USF (HF beacon coordinator) and Bob Whelan, G3PJT (chairman, Radio Regulatory Working Group). A total of 12 candidates stood for the election to the executive committee for the next three years. In the event, the committee remains unchanged with the exception of Abdi Al Shahwarzi, A41JT, who stands down because of work commitments. He is replaced by Nikola Percin, 9A5W.

The decisions made at the conference will now be put into effect through member societies and the Region 1 executive committee. In some cases, the decisions will need to be ratified by a vote of all member societies, and this will take place over the next few months.

The documentation from the conference is available on the Region 1 website (www.iaru-r1.org).

Immediately following the conference, the IARU Administrative Council met for a two-day session. The council is a nine person coordinating body made up of representatives of the three IARU regions, together with the president, vice president and secretary.

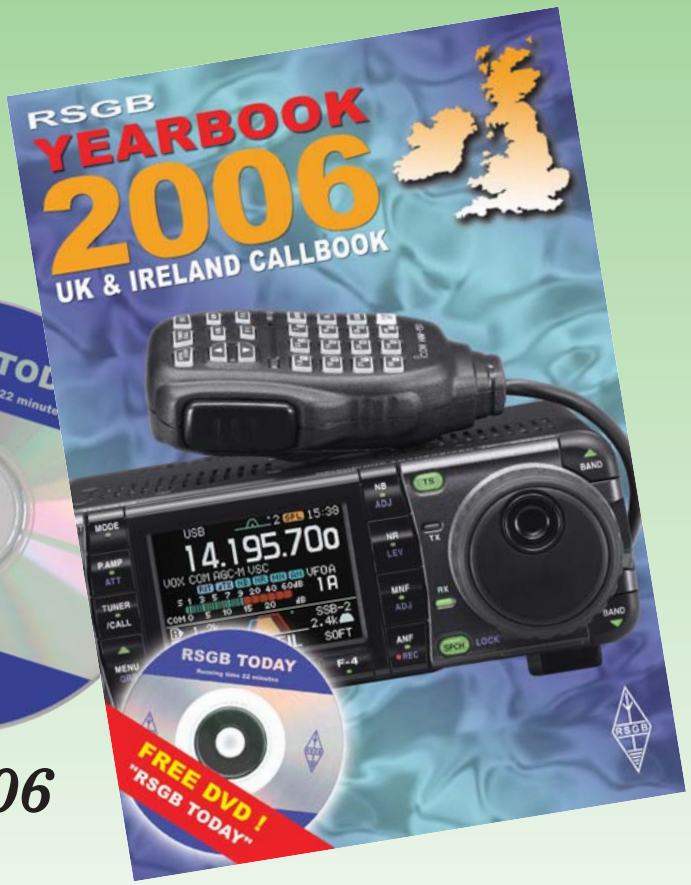
The council addressed a range of issues, including:

- The IARU strategy for the forthcoming World Radio Conference in 2007
- The future direction of IARU. The IARU governance structure has remained virtually unchanged for 20 years, and it is time to review the structure in light of new developments, including changes in the way spectrum is managed, the emergence of regional telecommunications bodies, the increasing significance of standards organisations and the need for effective coordination of IARU global initiatives. A discussion document had been prepared for the meeting, and after extensive discussion it was agreed that this work should be carried forward by an ad-hoc committee appointed by the president
- Improved coordination of global efforts to combat the threat from powerline communication (PLC/BPL)
- An update of the plan for the development of support for amateur radio frequency allocations, in preparation for WRC-07
- The budget for the next three year period
- Attendance at forthcoming ITU meetings of relevance to amateur radio
- Preparation of an international amateur radio emergency communication handbook
- Updating the document which sets out the spectrum requirements of the amateur and amateur satellite services

The work arising from the conference and council meetings will develop over the next year or two, and I will report on progress in future columns. ♦

PHOTO COURTESY W6ROD

Includes FREE DVD: 'RSGB Today'



ONLY £16.14

RSGB Yearbook 2006

Edited by Steve White, G3ZVW

The RSGB Yearbook is the essential publication for all UK radio amateurs. Not only does it contain the only truly up-to-date database of callsigns, names and addresses in the Callsign Directory, it also contains over 192 pages of information about the Society, clubs, licensing and operating. This year's edition is bigger than ever with over 500 pages of fully updated and revised information. The 2006 Yearbook contains much new material including features on Summits on the Air and International Museums Weekend. Also a huge new section "Featured Clubs" has been added which contains 55 mini features devoted to a local clubs across the country from Scotland to Cornwall.

FREE DVD

For the first time included in the 2006 Yearbook is a free DVD. It contains the movie 'RSGB Today', which has been professionally produced for the Society. In 'RSGB Today' you will meet the people behind RadCom, and the other departments at RSGB HQ. You'll see an M3 licence course in Cheshire and the Annual General Meeting. But there's more than just the movie on the DVD. We were unable everyone's input onto the clubs section mentioned above so we have included all the information supplied to us on the DVD that we received from clubs. There is even more on the DVD with a wide selection of amateur radio software.

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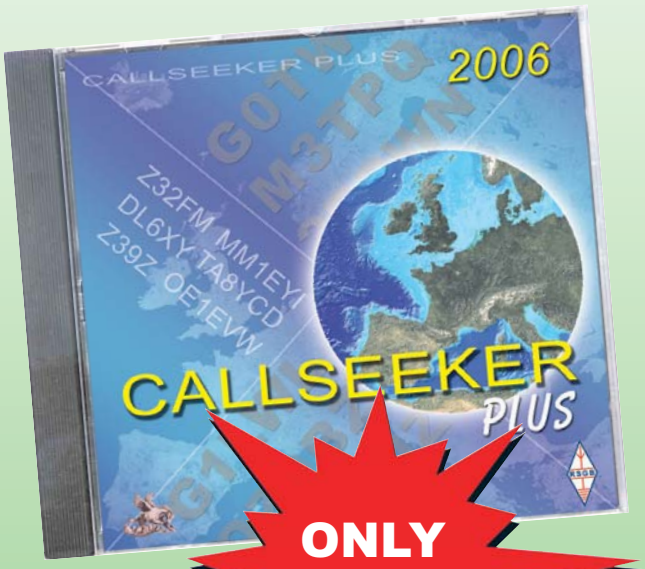
Non members Price £18.99 plus p&p



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Callseeker 2006 is the CD-ROM version of the RSGB Yearbook, but with a lot more besides!
Callseeker uses the highly popular Eurocall interface that is so flexible and easy to use when searching for calls. As well as the most up-to-date listings of United Kingdom and Republic of Ireland amateurs' callsigns, you will also find the callbooks of 18 more European countries: 9A, DL, EA, ES, F, HA, HB9, I, LX, LY, OE, OH, ON, OZ, SM, SP, SV and Z3 across the UK and Europe. You can search by call, name or address and get virtually instant answers to your query, with printing labels for your QSL cards just a step away. Callseeker requires no hard disc installation and runs direct from the CD with no fuss. The 192 pages of the RSGB Yearbook information is supplied in PDF format which means that searches and finding information is easily accomplished. The latest version of Acrobat is supplied along with a wide range of amateur radio software.
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E&OE

Celebrity radio ham pays RSGB HQ a visit

Big Brother star Eugene Sully, G0VIQ, visited the Radio Society of Great Britain's headquarters in Potters Bar on 15 September. He was taken on a tour of headquarters, interviewed for an upcoming article in *RadCom* and introduced to the RSGB's staff.

Eugene is mad about amateur radio. A member of the Crawley Amateur Radio Club, he was often heard extolling the virtues of amateur radio while on Big Brother. He was also spotted a number of times on the show wearing an RSGB T-shirt.

His amateur radio expertise came in useful in one of the Big Brother challenges. The housemates were set the task of communicating a message in Morse code. Eugene – having mastered Morse during his amateur radio training – was able to reel off his CW message with ease. He later helped the other housemates learn Morse.

Although Eugene lost out in the final of Big Brother to 70s dancer Anthony, he did not leave the show empty handed, having been offered the chance to take £50,000 or have the winners' prize fund doubled. Sensibly, he decided to take the money.

He is now planning a career in the media, but is keen to continue his interest in amateur radio and engineering. He has offered to help the RSGB in its initiatives to encourage newcomers to the hobby and plans to keep on attending the Crawley Amateur Radio Club.

Eugene with his RSGB membership certificate

Follow in the footsteps of Phileas Fogg

This year is the 100th anniversary of popular French author and founding father of science fiction Jules Verne. To mark the occasion, French ham Dominique Maillard, F6HIA, has launched the Jules Verne Award.

The award is available to all radio amateurs and short wave listeners who make contact within an 80-day period with the ten countries crossed by Phileas Fogg and Passepartout in Verne's legendary novel 'Around the world in eighty days'.

To qualify for the award, valid contacts must be made on any mode or band to the following countries: England; France; Italy; Egypt; India; Singapore; Hong-Kong; China; Japan; and the USA. Send your application for the award and a certified list of contacts to: Dominique Maillard, 1726 Chemin du Plan, 30650 Rochefort du Gard, France.

Get a Morse ringtone for free

Ringtone programmer and Morse fanatic Andy Booth, M1RGZ, has developed a free-to-use online computer program to generate personalised Morse code ringtones for mobile phones.

Ringtones have become all the rage in recent years, thanks to both the multimedia capabilities of the latest generation of cell phones and the antics of Big Brother star Eugene Sully. But until now there was no simple way of creating Morse ringtones.

Andy's website – morsetones.no-ip.org – makes it easy. You simply enter a message, choose the ringtone's speed and pitch and press a button. A MIDI file will then be generated that you can copy to your mobile phone.

Website for women hams launched

A new website (www.ladiesontheair.proboards37.com) has been set up for women radio amateurs. The brainchild of Jackie Bosworth, M3JTO, the website – called Ladies on the Air – provides female hams with a place to discuss their hobby.

Jackie – who gained her foundation licence in May – launched the website with the aim of encouraging more women to participate in amateur radio.

She said: "After noticing that there aren't too many women in this hobby, I decided to create a forum just for the ladies. It's still in the early days but we already have members from Malaysia and USA!"

Ladies on the Air is open to any woman who is interested in amateur radio. Membership is free. The site includes a discussion area, a hints and tips section, advice on solving amateur radio problems and a place where members can post pictures.

The website will hopefully attract more women to the hobby

Intrepid radio amateur sets off on final adventure

Legendary Italian radio ham Ambrogio Fogar, I2NSF, has died 12 years after an accident during the notorious Paris-to-Beijing car rally left him totally paralysed. Ambrogio was an adventurer extraordinaire, always on the look out for new dare devil challenges to stretch his prodigious physical and mental capacities to the limit.

He circumnavigated the world in a yacht, was adrift for 74 days in the Atlantic on a raft, and made an attempt to reach the North Pole on foot. One of Italy's most colourful characters, he also found time to manage a popular Italian television programme called Jonathan.

Following his accident in the Paris-to-Beijing rally, he became a tireless disabled rights campaigner, making numerous appeals to prevent prohibition of scientific research that could help cure paralysis. His motto was: *"I keep going because I hope that one day I'll be able to walk again, get out of this bed on my own legs, and look at the sky".*

Amateur radio taught at Melton Mowbray school

King Edward VII Secondary School and Technology College in Melton Mowbray is running regular lessons on amateur radio, thanks to the quick thinking of classroom assistant Peter Treadwell, G7PCT. Late in the summer term, Peter heard that the school would be teaching so-called "enrichment" lessons for new Year 10 pupils (14-year-olds) in addition to the normal curriculum.

"I made the suggestion that radio would be a good subject to follow, stressing its curriculum links to physics, maths, humanities and modern foreign languages and electronics," explains Peter. "This was agreed and I found I had two classes twice a week each for the entire academic year!"

During the first term, Peter plans to teach the classes – of 22 and 23 pupils respectively - the Foundation License syllabus, and has registered with the RSGB as a Foundation Licence instructor. "In the second term, we will look at broadcast radio and intend to produce a podcast programme for the school. During the third term I will re-visit the Foundation work in preparation for the exam."

He also intends to use material from the Intermediate syllabus and explore model engineering in the lessons. "The object of these lessons is to give the pupils additional skills and interests that will help them when choosing a career and, of course, from the radio amateur point of view, to make it fun and hopefuly give them a hobby that they will take up," he said.

Peter has also set up an amateur radio club at the school – M0MKE – with the aim of encouraging pupils to develop their interest in radio even further. "The head, deputy head and the assistant head who set up the enrichment programme are very supportive of me, as is my own local club Melton Mowbray Amateur Radio Society, who have supplied me with some equipment as well as advice."

Congratulations to Peter. It is work such as this that ensures that a new generation is introduced to the fun and excitement of amateur radio.

Welsh school pupils make contact with astronauts

Students from Tregaron Secondary School in Wales were able to chat with astronauts orbiting the earth at the end of September, thanks to a joint initiative between the Amateur Radio on the International Space Station organisation and NASA. In the first time the initiative has taken place in Wales, the pupils used amateur radio equipment to ask the astronauts questions as they passed by 400km overhead travelling at 26,000km/h.

Tregaron Secondary School head of science Chris Greenfield was full of praise for the initiative. He said: "This was a fantastic opportunity for pupils to be inspired by the concept of space and added another dimension to science education."

Howard Long of ARISS added: "This was the chance of a lifetime for the students to speak to the astronauts in their working environment. Perhaps it will sow a seed in their hearts to consider space, science and telecommunications as an exciting career path. You never know, we might have the next Helen Sharman or Michael Foale sitting here right with us".

The Radio Society of Great Britain's GB4FUN communications demonstration vehicle – www.gb4fun.org.uk – also attended the event, providing a full backup station with generator in case the main equipment failed.

$211 million grant to rebuild communications post Katrina

The US government will provide $211 million to help rebuild communications links damaged or destroyed by Hurricane Katrina. It is also looking to develop better ways of protecting communications systems from extreme weather. Katrina knocked out wired and cellular telephone service to millions of residents in Louisiana, Mississippi and Alabama. It also damaged police, fire and rescue service radio systems across the region and wiped out 911 emergency service in many areas.

The absence of those vital links made it difficult for public-safety and emergency rescue officials to talk to each other. For weeks, many emergency providers were almost totally reliant on corps of volunteer ham radio operators coordinated by the American Radio Relay League as their only means of messaging the outside world.

In a statement made at a meeting in Atlanta to assess the effects of the storm, Kevin Martin, chairman of US agency the Federal Communications Committee (FDC), said that his agency needs to determine how it can help companies strengthen the nation's communications infrastructure, create more robust and reliable networks, and improve the ability to quickly restore service when disaster strikes.

Martin said he will appoint a panel to recommend ways to improve communication among public-safety agencies during disasters. The FCC will also create a bureau to promote more reliable crisis communications for police, fire and national security agencies.

After the hurricane, various public-safety agencies were often unable to communicate because their radio systems operate on different frequencies. A multi-million-dollar FEMA interoperable radio system specifically designed to interconnect all of agencies together was reported to have failed miserably. [ARRL]

Lancashire Raynet groups called out following hoax bomb

Members of the Fylde Raynet Group were called out at 12.30 on 23 September after a suspected explosive device was found under a car in Blackpool. The Central Lancs, North Lancs and Rossendale Raynet groups were put on standby. Local residents were evacuated while army bomb disposal experts carried out a controlled explosion. Subsequently the device was found to be a hoax. The Raynet groups stood down at 16.30.

Hybrid quad antenna arrays – correction

We have been informed by the author of an error in the bottom right-hand diagram on p89 of the August issue. The distance of the quad-elements to the reflector plate is 32mm and not 16mm as shown.

Club and regional news

1 Scotland South & Western Isles

AYR AMATEUR RADIO GROUP
2 RAF Leuchars open day – Dennis Nutt, GM3YDN
16 Quiz Night – Alex Johnson, GM0DHZ
30 Aspects of Antarctica – Mike Gloistein, GM0HCQ John,01292 443 580, john@numidata.com

PAISLEY (YMCA) ARC
2 Why pop groups use valve amplifiers
16 How does a microwave oven work?
30 What is FM? Jim, GM3UWX

2 Scotland North & Northern Isles

ABERDEEN ARS
3 Junk Sale
10 AGM
17 President's Address plus video 'Secret Life of the Radio Set'
20 Computer Logging and QSL cards
24 Construction 3.5mhz Xmitter/Slow Morse group and On Air
27 Construction group, Morse ans On the Air Ellis, GM4JLZ, 01224 580 594

3 North West

CHESTER & DARS
1 Video night – The secret wireless war
15 Bring and tell night
22 Equipment talk by Geoff Carter
29 Construction competition night Derrick, M1SUM, 0151 356 1572

SOUTH MANCHESTER R & CC
4 Discussion on Technical Topics
11 Members' mini-lectures
18 Bring and Buy book sale
25 Talk: 'An Electronic View of the brain' by Dr Chris Pomfrett, M0EEG Ron, 0161 969 3999

STOCKPORT RS
1 Skills Group/Practical evening
15 'It all dangles on Doppler', a discussion surrounding GPS, time and frequency with Roland Myers, G8LUL David, M1ANT, 0161 456 7832

THORNTON CLEVELEYS ARS
7 Club on air
14 'Forest Fire Fighting in Canada' by Ted Avery, G3WBB
21 'Polymers' by Jack G4BFH Jack, G4BFH, jack.duddington@btinternet.com

WIRRAL & DARC
2 D&W The Egremont Ferry, Wallasey
9 Latest Intruder Developments, G7BBF
16 D&W The Saughall Hotel
23 Friedrichshafen 2005 photos and 2006 plans
30 D&W Chimneys, Hooton Tom, G4BKF, 07050 291 850

4 North East

GREAT LUMLEY AR & ES
2 OTA
9 Talk by Brian Corker on Digital Signal Measurement
16 OTA
23 OTA
30 OTA Nancy, 0191 477 0036, 07990 760 920, nancybone2001@yahoo.co.uk

HALIFAX & DARS
15 Pie and pea supper with speaker Tom, M0TKA, 01484 715 079

HORNSEA ARC
2 RSGB Video
9 Activity Night
16 Club videos by Richard, G4YTV
23 AGM Richard, G4YTV, 01964 562 498, g4ytv@aol.com

KEIGHLEY ARS
24 Visit to Keighley College – space evening Kath, G0OSA, 01535 656 155

NORTH WAKEFIELD RC
3 Visit by RSGB president
10 On the Air
17 Morse eye-spy with prizes Nigel Weals, 0113 253 0558

SHEFFIELD ARC
7 AGM
14 Video Evening; Dxpedition
21 Team Quiz Nick, G4FAL, 0114 255 2893

WAKEFIELD & DARS
1 Pie & Peas Night
8 Surplus Equipment Sale
15 Committee meeting/On the Air
22 Fish and chip night at Tingley Bar Fisheries
29 First Northern Cross Rally planning meeting Dave, G4CLI, 07748 221 855, g4cli@hotmail.com

5 West Midlands

CHELTENHAM ARA
4 Test equipment evening Pat, G3IKR, 01386 792 542

COVENTRY ARS
4 Bangers and Mash Supper
11 Night on the air, Novice class, CW practice
25 Night on the air, Novice class, CW practice John, G8SEQ, 024 7627 3190

GLOUCESTER AR & ES
7 Bring and show junk evening
14 Top band mini-DF hunt
21 Workshop/on air
28 Workshop/on air Tony, 01452 618 930, daytime

MALVERN HILLS RAC
8 'Travels in Sudan with Oxfam' – John Layton, G4AAL Mike, G3TGD, 01905 830 752

MID-WARWICKSHIRE ARS
8 Video evening – Roy, G8XDL
22 Propagation and Suchlike – Rod, G0FBY Bernard, M1AUK, 01926 420 913

STAFFORD & DARS
3 Video Night
10 TBA
17 Fish & Chip Supper
24 Chat & Shack Night
14 Surplus equipment sale
28 Oscilloscopes G4CYG Graeme, G4NVH, 01785 604 534, graeme.boull@ntlworld.com

TELFORD & DARS
9 PSU project completion/testing, planning for club call contest
16 Surplus equipment sale
23 Bring anything you have bought this year and tell us about it.
30 PCB making with G0VXG Mike, G3JKX, 01952 299 677, mjstreetg3jkx@aol.com

6 North Wales

DRAGON ARC
7 AGM Leslie, 01248 470 606

NORTH WALES RS
3 Night before the Rally
5 The Rally Ted, GW0DSJ

WREXHAM & DARS
1 Mervyn Foulkes – Talk: 'The history of cement making in North Wales'
15 Steve MW1STE – Talk on antennas Mark, MW1MDH, markmdh@btopenworld.com

7 South Wales

CARMARTHEN ARS
15 Visit by RSGB regional manager Gareth Price, GW3MPP Martin, GW3XJQ, 01994 453 495

8 Northern Ireland

BANGOR & DARC
2 Annual Surplus Sale Mike, GI4XSF, 02842 772 383

9 London & Thames Valley

AYLESBURY VALE RS
9 'Quiz with Mandy Somers, competing for the G6NB trophy' Roger, G3MEH, 01442 826 651, roger@g3meh.com

CRAY VALLEY RS
3 Surplus Sale
26 M8C in CW CQWW - M3CVN Richard, G7GLW, 07831 715 797, rcains@btinternet.com

CRYSTAL PALACE RADIO & ELECTRONICS CLUB
4 Mini talk followed by a table top sale Nick, 020 8689 2145

HODDESDON RC
8 AGM
22 Test equipment evening Don, G3JNJ, 020 8292 3678

NEWBURY & DARS
23 Software Controlled Radio – Peter, G3LWT Kevin, G6FOP, 01635 826 397, g5xv@ntlworld.com

READING & DARC
10 Junk Sale
24 The anatomy of a mobile handset by Paul Moore, G0OJA Pete, G8FRC, 01189 695 697

SHEFFORD & DARS
3 Debrief/inquest
10 Bryan Talk
17 Amateur Radio Satellites Update by Clive
24 Quiz Night David, G8UOD, 01234 742 757

SILVERTHORN RC
4 Informal meeting
11 Informal meeting
18 Two stroke engines by G4KSE
25 On the air night Les, G0CIB, 07980 275 081

SOUTHGATE ARC
10 Equipment Test Evening, and Radio on the air Mike, M0ASA, 020 8366 0698

STEVENAGE & DARS
1 Building and using a K2 transceiver. Demo and discussion
8 A talk on bell ringing by John, M0JMC
15 What's in the Box? Gary, G0ETA
22 A 'Kenwood Radio' hands on evening by David Wilkins
29 PMR Rado conversations over the years. Converting crystal, synthesised and PC programmable radios. Neil M0ARH and Simon G0EVZ Neil, M0ARH, 01438 217 077

SURREY RADIO CONTACT CLUB
7 Reject power supplies by Pat McGuinness, G4FDN Ray, G4FFY, 020 8644 7589

SUTTON & CHEAM RS
17 Talk 'Pings Bursts and Suchlike' by Nick Read, G7DND John, G0BWV, 020 8644 9945, info@scrs.org.uk

10 South & South East

ANDOVER RAC
1 The biddiepole aerial by Cieman, G0TRT
15 Electronic logging, Derek Thom, G3NKS Nicky, 2E1NAC, 01722 718 457

BASINGSTOKE ARC
7 Club Meeting
27 Foxhunt Frank, M0AEU, barc@2lo.info

CRAWLEY ARC
30 Presentation by WinRadio of their Software Radios John, G3VLH, 01342 714 402

FAREHAM & DARS
2 Natter night and club station operating with G3VEF/G8KGI
9 Radio Navigation Aids by Graham, G0UUS
16 Junk Sale
23 Club Programme Planning for 2006
30 Christmas Quiz Night enquiries@fareham-darc.co.uk

HARROW RC
11 Photo nostalgia evening hosted by Chris, G4AUF
22 Intermediate exam
25 How the RSGB works video Andrew, momar@tekspot.net

HARWELL ARS
8 Moon bounce, Peter, G3LTF Angus, G0UGO, 01235 522 858

HASTINGS E & RC
16 John Peacock 3B9 DXpedition talk Gordon, 01424 431 909, gordon@gsweet.fsnet.co.uk, www.g4cus.freeserve.co.uk

HORNDEAN & DARC
1 Social Evening
22 Talk by Cdr Nicholls (RN ret'd) 'Palmerston's folly' Stuart, G0FYX, 023 9247 2846

HORSHAM ARC
3 Talk – Brighton Electrical Supply by John Narborough David, G4JHI, 01403 252 202

ITCHEN VALLEY RC
11 Surface mount construction – Paul, M1CNK
25 Quiz – Brian, G0UKB Sheila, G0VNI, 023 8081 3827, sheila.williams@ivarc.org.uk

MID-SUSSEX ARS
4 A lecture by Tony, G3NPF
11 Radio night
18 Radio night and table top sale
25 A dodgy night on the box John, G6XTW, 01273 588 556

SOUTHDOWN ARS
7 Table sale and computers with Steve M3EVM
11 Club Dinner at the Castle Eastbourne John, G3DQY, 01424 424 319, vaughdqy@aol.com

SWINDON & DARC
10 Talk: 'Dx Aids' – Ian, G3YBY
24 Talk: 'Introduction to Packet Radio' – Ian, G4DIE, Chris, G1YGY Mike, M5CBS, 01793 826 465

TROWBRIDGE & DARC
2 Judging of Entries for the G2BQY Memorial Constructors Cup
16 Natter Night Ian, G0GRI, 01225 864 698, E/W

WORTHING & DARC
2 Surplus Equipment Sale
9 Track Circuits by 2E0BHF
16 History of fairgrounds by Mr Harris
23 Collectorama – Morse Keys etc
30 Early computers, G8USF Roy, G4GPX, 01903 753 893

11 South West & Channel Islands

APPLEDORE & DARC
21 Radio related talk by G4NCU Brian, M0BRB, brian.jewell@ic24.net

BOURNEMOUTH RS
4 Construction Items
18 John G0HAT – Mystery Objects

David, G4BKE, 01202 697 338, www.brswebsite.freeserve.co.uk

BRISTOL RSGB GROUP

28 'Setting Wpand operating repeaters' eg GB3FH on 6m by G4RKY Martyn, G3RFX, QTHR

CORNISH RADIO AMATEUR CLUB

3 Main Meeting
4 Talk by a visiting speaker and car boot sale in the main hall
14 Computer section. Computers and Music Part 3 by Peter John, G4LJY, 01872 863 849

EXMOUTH ARC

2 Control your radio with a computer, Dean, G0UIL
16 Construction and operating night Mike, G1GZG, 01395 274 172

HOLSWORTHY ARC

2 Magnetic loop build David, 01288 353 561, m3eoq@hotmail.com

PLYMOUTH RC

8 Constructors Cup, bring your projects along
25 Annual dinner at the Lord Louis Frank, G7LUL, frank@foxonezero.fsnet.co.uk

SALTASH & DARC

3 AGM
17 Annual Junk Sale Brian, M0BHG, 01752 824 321

SOUTH BRISTOL ARC

2 Computer and software clinic
9 Start of Xmas raffle Len, G4RZY, 01275 834 282

SOUTH BRISTOL ARC

16 AGM
23 Club evening DX challenge
30 On the air evening. Len, G4RZY, 01275 834 282

SOUTH DORSET RS

8 Hams across the sea by Tony Wormald, M0TRW
18 The history of TARS by Derrick, G3LHJ Carol, 2E1RBH, 01305 820 400, carolonfraggle@tiscali.co.uk

YEOVIL ARC

3 'Microphones and Loudspeakers',G7LNJ
10 Talk by 2E1LGE
17 Talk on 'Submarine Cables' by outside speaker
24 Station on the air Adrian, G4JBH, 07834 922 858, info@yeovil-arc.com

12 East & East Anglia

CAMBRIDGE & DARC

4 Equipment Exchange, What have you?
11 Repeater Group AGM APRS Rob, M0ZPU
18 Early valve manufacture EF50 & EF80 development CD from Ron, G3KBR
25 Using MOSFETs Mark M1MPW Ian, G4AKD, 01954 782 974

CHELMSFORD ARS

1 Rig Testing with Nigel Hull, G6ZVV Martyn, G1EFL, 01245 469 008

DOVER RC

2 Operating and natter night
9 Home made VHF and UHF antennas from junk – Brian, G8ZYZ
16 Operating and natter night
23 Video of Gerry Wells Radio Museum
30 Operating and natter night Brian, G4SAU, g4sau@bcuff.freeserve.co.uk

EAST KENT RADIO SOCIETY

7 Receiving and processing the data from weather satellites – including MET-8 – by Paul, G3VJF
21 100km and 49locks. An illustrated talk by Alan, G7RBB Paul, G3VJF, clubnews@paulnic.com

HARWICH AMATEUR RADIO INTEREST GROUP

9 Talk: 'Loop Antennas' by Arnold, G0NMB Tony, G4EYE, 01255 886 065

HAVERING & DRC

2 Ian Henry – The History of Havering
16 An introduction to HF antenna theory with Dave, G4HHJ, and Chris, G4CMD
30 Look no wires – wireless data, WIMAX, HSDPA, Wifi with Dave 2E0EBV Dave, 2E0EBV, 07956 594 514

HILDERSTONE R & EC

11 AGM followed by a slideshow and talk on building of 'Le Shack'
25 Talk on navigation aids at Manston Ken, G3JIX, 01304 813 175, mick.howland@btinternet.com

LEISTON ARC

1 AGM Paul, M3MIG, 01728 746 044, m3mig@aol.com

LOUGHTON & EPPING FOREST ARS

11 Night on the air HF
25 Talk, review of 2005, by the committee Marc, G0TOC, 020 8502 1645, info@lefars.org.uk

NORFOLK ARC

2 Radio Workshop
9 Ask the panel, Malcolm, G3PDH
16 Radio Workshop
23 3B9C Video (H.F.D/X), Mark G0LGJ
30 Rig clinic, Bob, G8SDU, and Colin, G7UVY Reg, G0VDO, 01603 429 269

SOUTH ESSEX ARS

2 Photo contest
16 AGM Dave, southessex.ars@btinternet.com

13 East Midlands

EAGLE RADIO GROUP

8 Nevil, G3VDV – QRP with the Yaesu 817 from Mallorca Terry, G0SWS, 07979 733 640

LINCOLN SHORT-WAVE CLUB

2 G5FZ on air
9 Club calls
19 Foundation Licence course/exam
23 Construction contest John, G1TSL, 01526 323 153

LOUGHBOROUGH & DARC

1 Vintage book or magazine review. Bring something along
8 Talk 'Low down transformers' Andrew, G7SEG
15 Skittle evening at Hathern
22 Radio disasters open forum
29 Night on the air - committee meeting Chris, G1ETZ, 01509 504 319

MELTON MOWBRAY ARS

18 Environment Agency – Talk by Steve Proffit Phil, G4LWB,phil@croxtonkerr.fsnet.co.uk

RAF WADDINGTON ARC

10 Talk by Dave Aram Mike, M1MSF, 07743 687 829

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

CLUB OF THE MONTH

A friendly atmosphere, lots of fun events and zero membership fees. What more could you want from a radio club? That's why we have made the Mablethorpe-based Eagle Radio Group our November club of the month. The club's chairman, Nevil Brinnen, G3VDV, explains why Eagle has been such a success:

"The Eagle Radio Group has been in operation since December 2001, and from a humble gathering of ten people, the group can now boast a membership of over 40. The word 'membership' is used loosely as we have no annual or meeting fees, and anyone is welcome at our meetings.

"The structure of the group has been kept simple, there being a chairperson and his deputy, a secretary and a training team. We are very fortunate as the Eagle Hotel in Mablethorpe allows us to have our meeting room free of charge; in return for this favour, we hold indoor social gatherings there about five times a year.

"Meetings take place once a month on the second Tuesday. The meetings always start with everyone introducing themselves; any visitors are made to feel at ease and if they express an interest in our hobby are generally referred to a member of the training team. The meetings begin at 20.00 but most people are there a good half hour before for a pre-meeting natter. About 20 minutes is spent on group affairs and news, and after a five-minute break to recharge glasses, we have our monthly talk, which ends at about 22.00.

"Our outdoor events have always been very well attended, and we are fortunate to live in a holiday area with some excellent camp sites. Each year we aim for three camp-outs, during which we engage in contests. The flagship event is the local secondary school summer fete; this year we featured amateur radio and digital modes on our display. The last event of the year is always our Fun Day, when we have a 5Watt QRP contest, the person who works the most stations in one hour being the winner. There is tremendous rivalry in this event, with everyone hoping to draw an hour when conditions are good.

"Good communication plays an important role in keeping the attendance level up. We have a monthly newsletter, a regular activity sked on 2m every Sunday, and the Internet is a wonderful tool for keeping everyone informed. Our secretary updates our website regularly (www.eagleradiogroup.com).

"We have achieved many things in our short existence; we have held training courses in all three levels of licence, with M3s representing over a quarter of our number. We have had the pleasure of GB4FUN visiting one of our special events. But our most important achievement is that we have become a focal point for anyone with an interest in radio to find like-minded people willing to help them join in the fun."

The RSGB's GB4FUN team visits the Eagle Radio Club

RECORD BREAKING CHILD HIKER QUALIFIES AS A RADIO AMATEUR

Twelve-year-old Jimmy Read from Macclesfield has become the latest youngster to complete one of Macclesfield Wireless Society's radio amateur training courses. Jimmy was desperate to become a radio amateur so that he could fully participate in a fast-growing craze, Summits on the Air (SOTA).

The SOTA scheme (www.sota.org.uk) launched in 2002, and challenges hams to climb the significant hills and mountains across the UK and set up temporary amateur radio stations at the summits. Jimmy's dad Tom, M1EYP, is involved in this popular pursuit, and often takes Jimmy along on his hikes.

Jimmy was featured in his local newspaper, the Macclesfield Express, in 1997, when at the age of five years and three days he became the youngest person ever to complete the 19 mile "Beat The Bounds" route.

He has continued to enjoy his walking, and these days travels to areas such as Snowdonia, the Lake District and the Yorkshire Dales most weekends, as well as walking to more local summits like Shining Tor and Bosley Cloud, as he accompanies his dad on SOTA expeditions. Jimmy has so far climbed 135 of the UK hills that qualify for "Marilyn" status and are therefore SOTA summits.

The Macclesfield Wireless Society (www.gx4mws.com) provided a specially adapted training course for Jimmy, led by Foundation Licence tutor Phil Archer, G6AKK. Club members Alan Denny, G0JNJ, and Keith Kelly, G3VKF, also provided training while Delia Archer (Phil's XYL), a teacher at Henbury High School, helped Jimmy with his reading in the formal examination.

Jimmy passed his exam on 15 September, and immediately applied to Ofcom for his amateur radio licence. Another radio amateur, Tim McConnell, 2E0AYV, from Lewes in Sussex, helped Jimmy get his sought-after callsign – M3EYP – to match his dad Tom's M1EYP call.

The Macclesfield Wireless Society, which meets at the Pack Horse Bowling Club, Abbey Road on Monday evenings, is keen to attract new members and can offer tailored training courses for aspiring radio amateurs. The club even offers personal training for students with learning disabilities.

Jimmy, M3EYP, with Macclesfield Wireless Society tutor Phil Archer, G6AKK

GARDEN CENTRE HELPS RADIO GROUP RAISE FUNDS FOR THE BLIND

A Norfolk garden centre has helped save the day for an amateur radio club that needed a venue to stage a marathon stint on the airwaves to raise funds for charity. Bittern DX amateur radio group wanted to take part in the annual Transmission 2005 event in aid of the British Wireless for the Blind Fund (BWBF), but was unable to find anywhere to stage the event.

But Emcy Home and Garden Discount Centre at Kelling, near Holt came to the rescue, offering the radio enthusiasts a prominent spot close to the main entrance for the annual event over the weekend of 24 and 25 September.

Bittern DX club secretary Keith Martin said: "We were so thrilled the garden centre could help us. It meant the event could go ahead as planned and we could raise as much money as possible for the BWBF."

The radio group joined scores of other amateur radio enthusiasts across the country in participating in Transmission 2005. The money raised from the event will be used by the BWBF to distribute specially adapted radios and CD radio cassettes for use by blind and partially sighted people.

The BWBF, which was launched by Winston Churchill in 1929, provides the sets on free permanent loan. To find out more about the BWBF, visit www.blind.org.uk.

MID SUSSEX ARS EXCELS AT FOUNDATION TRAINING

If you want to be certain of passing your Foundation licence first time, Mid Sussex Amateur Radio Society (MSARS) seems like one of the best places to take it. The club has an impressive record of navigating newcomers successfully through the examination. The club's latest course resulted in all nine candidates passing. MSARS's next Foundation course is running in November 2005. Contact lead instructor Chris Saunders, G4ZCS, on e-mail: c.saunders@supanet.com for further details.

WORTHING AND DISTRICT ARC ACTIVATES TWO LOCAL LANDMARKS

Worthing and District Amateur Radio Club activated the Kingston Buci (Shoreham Lighthouse) using the callsign of GB8SL during Lighthouses on the Air 2005. The club reports that conditions were "somewhat erratic" but nevertheless it managed to make 197 contacts in 44 countries using an Icom 7400 transceiver at 100 watts, a beam antenna and 40M dipole.

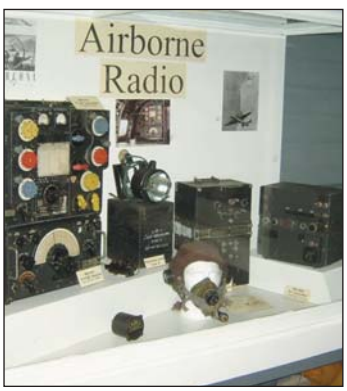
Worthing and District ARC also activated the Martello Tower Museum on 11 September to mark the museum's open day and festival. On the eastern end of Seaford beach, the museum is an "Aladdin's cave" of interesting artefacts from the region's maritime past. It also houses a "huge" display of radio equipment, televisions and sewing machines.

The club set-up for the event was a 40/20m trapped dipole attached to the top of the tower, leading to a 6.5m portable mast pole which also sported a 2m/70cm collinear antenna via a Yaesu FT 100 D transceiver. Unfortunately, band conditions were "horrendous" and only a few contacts were made across Europe with the club call of GX1WOR.

The GB8SL installation with Kingston Buci (Shoreham Lighthouse) in the background

NEW MUSEUM CELEBRATES WORLD WAR II RAF RADIO COMMUNICATIONS

A museum highlighting the important role of RAF radio communications during World War II has been built at the East Kirkley Aviation Heritage Centre. The museum – called the Radio Room – was officially opened on 29 August by actor Richard Todd, OBE, star of the 1950s epic film The Dam Busters.



Built over nine month by extending an existing building, the museum features displays of World War II radio equipment retrieved from the centre's archive in addition to vintage and modern radio equipment.

There is also information about the training RAF radio operators received and details of the equipment they used both in the air and on the ground. Visitors will also be able to try out working RAF equipment, including an AR88 receiver, a Morse key and oscillator for sending Morse and a fully operational radio station comprising a T1154/R1155 vintage set and a slightly more modern Trio TS-530S.

The museum is a collaboration between members of the Lincoln Short Wave Club and brothers Fred and Harold Panton, two Lincolnshire farmers who founded the East Kirkby Aviation Heritage Centre as a memorial to their older brother Christopher, a flight engineer during World War II.

Christopher was killed on his 27th bombing mission over Nurnberg in March 1944, when his Halifax aircraft was shot down by a night fighter. He was just 19 years old when he was killed. Christopher is also remembered in the Radio Room's callsign, GB2CWP, the suffix being the initials of Christopher Whitton Panton.

Deluxe Logbook & Diary 2006

Designed for those requiring more from their Logbook, the RSGB have produced the popular Deluxe Logbook & Diary 2006. Containing far more than a standard Log book this edition has been thoroughly revised and updated. Amongst its many features are Band plans, locator maps, lists of abbreviations & codes and a DXCC prefix guide. As usual a 2006 diary section is included along with notes of events and contests through the year. This wire bound book contains generous 255 x 420 log pages yet folds neatly for storage (overall folded size is 255 x 210mm). This book is also the ideal way to neatly record a whole year of activity and store it in attractive way for years to come. This handy reference guide is in the ideal place for every day use - the logbook of the shack!

A must for every shack this logbook is far more than a standard logbook yet it is the same price!

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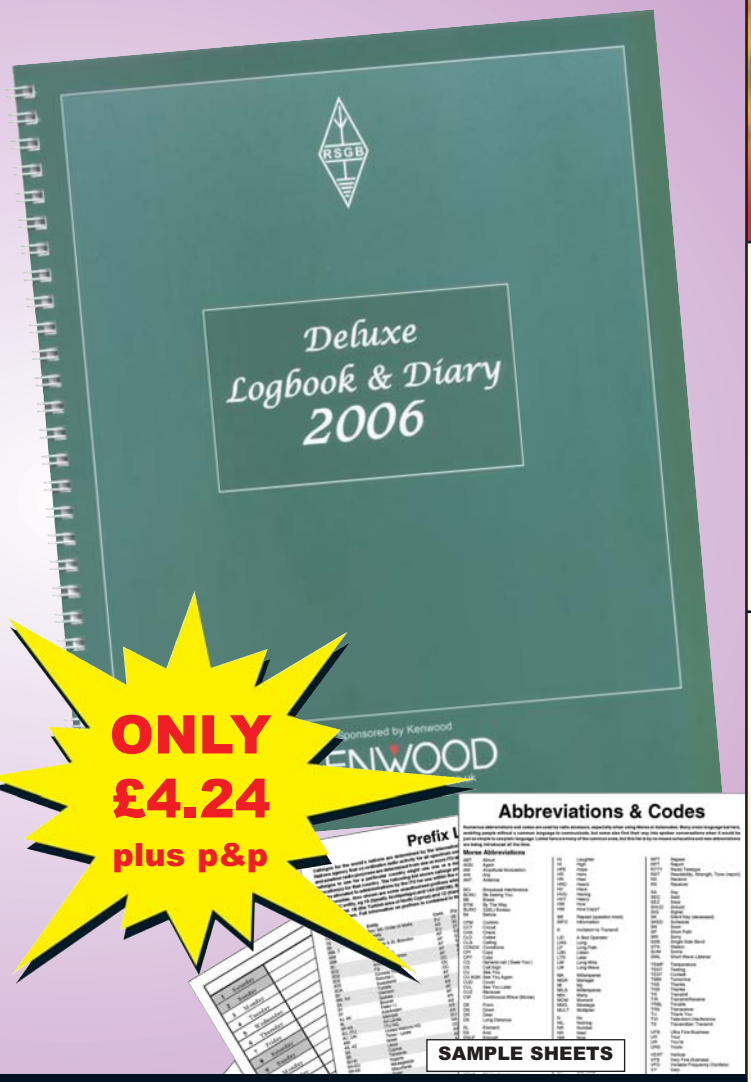

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By Richard Allport

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Size: 240 x 174mm, 464 pages.ISBN: 1-905-08606-7.

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Another all-time best seller, this 300W ATU covers 1.8 - 30MHz and handles wire, coax and balanced feed. It is widely used for base station use. Cross-needle meters make adjustment very easy and precise.

MFJ-914 £56.95 A

Not so widely known, but very useful for all HF solid state radios. Place this in series with your coax feed and it allows you to tune antennas that your internal ATU could not manage - like G5RV on some bands. Great idea.

MFJ-910 £22.95 A

If you are interested in mobile operation you will know that the feed impedance of the antenna is very low - you just the VSWR down low! Put this in series and the VSWR comes way down - just switch for best match 3.5 - 30MHz 200W

MFJ-991 *New Auto ATU* £179.95 B

This ATU is very similar to the MFJ-993 but only handles 150W, does not handle balanced feed and has no antenna switch or LCD display. The bare bones at a great price!

MFJ-1026 £149.95 B

A little know product that could transform your listening pleasure. This is designed to remove electrical noise by phasing it out and it really works! Can fit in-line with transceiver. Radio signals remain whilst local eletrical noise is greatly reduced!

MFJ-417 £49.95 B

A budget Morse tutor that is extremely small and convenient to carry. Sends characters, text and can even simulate QSO's from its data base! Runs from 3 - 35 wpm using internal battery (not supplied). Has headphone socket and volume control. Great buy!!

MFJ-704 £42.95 B

Yet another MFJ item that should be in your shack. A low pass filter cleans up the output of your transceiver and reduces the risk of interference to a wide range of domestic products. A small price to pay for peace and quiet. This one handles up to 1kW with bandpass range of 1.8 - 30MHz.

MFJ-969 £169.95 C

This 300W ATU covers 1.8 - 60MHz and matches long wires, coax and balanced feeder. The cross-needle meter makes adjustment easy and it has a great PEP circuit.

MFJ-901B £72.95 B

If you are looking for a 200W ATU from 1.8 - 30MHz with a tight budget, this is the job. 200W rating and handles wire, coax and balanced feed. Needs and external VSWR meter or you can use the one in your rig.

MFJ-902 £65.95 B

We sell these by the bucket load because they are a great design. This ATU is known as the Travel Tuner and measures just 9- x 60 x 80 (mm). 3.5 - 30MHz 150W. It will handle wire or coax systems. MFJ-902H adds balanced feed. **£99.95**

MFJ-974 £159.95 C

If you are using or want to use balanced feeder, then you are best to get a dedicated balanced tuner for best efficiency. This new unit from MFJ will give you just that. Covering 1.8 - 54MHz it will handle 300W and also tune end fed wires. Lovely build quality, smooth tuning and cross-needle metering.

MFJ-16010 £46.95 B

Our Director, Peter Waters, G3OJV, has used this ATU for years. Basically designed for wire use or coax, it covers 1.8 - 30MHz up to 200W. Its an ideal portable unit and measures just 110 x 83 x 55mm

MFJ-382 £39.95 B

MFJ's amplified speaker is a great way of extending the use of your handheld radio or scanner. It will deliver ip to 1W of good quality audio and can be powered from an internal battery (not supplied) or external 12V supply. A mono to mono lead is included.

MFJ-260C £33.95 B

Every station should have a dummy load and this one 1kW for 10 secs befoe cooling or 100W for ten minutes. 50 Ohms 0 - 600MHz. **MFJ-260CN** is similar but with "N" socket. **£44.95**

MFJ-1704 £59.95 B

Antenna switching is an important part of any station and for low loss results you need a coaxial type. This one is a 4-way design with beautifuly positive movement. SO-239 DC-500MHz, 2kW and up to 60dB isolation.

MFJ-949 £135.95 B

One of the all-time best sellers, this 300W ATU covers 1.8 - 30MHz and handles wire, coax and balanced feed. It also features a built-in dummy load. Cross-needle meters make adjustment very easy and precise.

MFJ-971 £89.95 B

Designed for portable work, this ATU can handle 200W from 1.8 - 30MHz and has a power meter that reads FSD 300W 30W or 6W. Cross needle indicators allow you to prescisely match coax, wire or balanced feeder.

MFJ-904H £109.95 B

The complete travel tuner is all you will ever need for portable or mobile use. 3.5 - 30MHz balanced, wire or coax. And the dual meter makes adjustment a breeze.
180 x 60 x 80 (mm).

MFJ-993 *New Auto ATU* £209.95 C

At last, an auto ATU that is low cost, and handles wire, coax and balanced feeder. Covering 1.8 - 30MHz up to 300W and includes and antenna swich. It learns as it goes and remembers previous settings for speedy tuning. You also get digital and analogue readings and an optional audio indicator for those with poor sight.

MFJ-392B £22.95 A

The headphones are of the classical design with padded earpieces and have great sound-proofing properties. The tailored response is ideal for radio communications and are provided with adaptor to fit 3.5 or 1/4" stereo sockets.

MFJ-418 £69.95 B

Morse code is still probably the most effective and simple way to communicate - and great fun. Now you can learn it easily and quickly by using this decoder. Carry it in your pocket and learn anywhere. has headphone socket. **MFJ-461** is similar but instead, reads morse when you hold it near a loudspeaker. **£84.95**

MFJ-267 £129.95 B

This is one piece of test equipment that should be in every operator's shack. Only into a dummy load can you get accurate transmit power capability. This one handles up to 1.5kW with 3 power ranges and accurate PEP mode. It can even be left in circuit as there is a thru switch to the antenna! What a great idea!

MFJ-269 £269.95 B

This analyzer covers 1.8 - 170 / 415-470MHz and has the same basic specifications as the MFJ-259Z but is not supplied with batteries, power supply or dip loop. However, it has a very wide UHF range that extends its usefulness to adjusting helical antennas etc. Just connect to antenna or coax and see the truth. A great idea!

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Mobiling

Dave Ingram, K4TWJ

E-mail: k4twj@cq-amateur-radio.com

American hams are just as into mobiling as us Brits. Dave Ingram reports on the big antennas that drive US mobileers wild and explains how UK hams can quickly set up a high performance mobiling antenna for their cars

US style

Being the rider rather than the driver has its special benefits for in-motion mobiling in the USA. One can enjoy working QRP, for example, and operating CW with a number of favourite keys. It's the good life for sure!

As everyone will agree, mobiling is a very special interest shared by radio amateurs of all lands. By investigating details of various mobile installations, we can all acquire some useful ideas applicable to our own home portable and mobile stations. Such is the topic of this brief article which, in addition to discussing mobile trends in the USA, includes some helpful notes for perfecting your own mobile station and quick-assembling an extra high performance mobile antenna.

I should begin by pointing out that driving habits are noticeably different in the UK and the US. The US has lower speed limits, but they are necessary because the attention of many US drivers is split between everything from talking on a cell phone and arguing with youngsters on a rear seat to eating sandwiches and drinking coffee. Needless to say, most of these multi-task motorists would not qualify as role model drivers in the UK!

With defensive driving becoming vital, an increasing number of US amateurs are discovering the pleasures of "riders side mobiling" (the ham operates while the spouse drives) and stopped or parked for the evening-style mobiling. One need not actually be behind the steering wheel or in motion to enjoy the benefits of mobiling. Indeed, we consider a mobile setup as the most convenient way to carry a fully assembled and ready-to-operate station everywhere we go. Oh what a joy!

TRENDS IN (US) MOBILING

If there is a single short statement that accurately describes US mobileers, it has to be "big is in": big vehicles, big gasoline bills and big antennas. Indeed, some of the US's most popular vehicles are so large and heavy they only average 14 miles per gallon of fuel (which we Americans describe as "gas"). Ah, but the main topic of interest among US mobileers is antennas – always antennas.

Waning in popularity are those antennas with extra-large loading coils called "BugCatchers". Replacing them are the new multiband and motor-tuned coil types made by companies like High Sierra and Tarheel (and nicknamed "Screwdriver Antennas" because their motors were originally used in electric screwdrivers). Complementing these antennas are transceiver interface units that follow band selections, automatically tune for a low SWR and store related band/motor position data in memory for rapid band changes without operator intervention. Not every mobileer appreciates a heavy antenna, so Outbackers and Hustlers are still frequently used – and with good reason. They are reasonably priced and perform quite well.

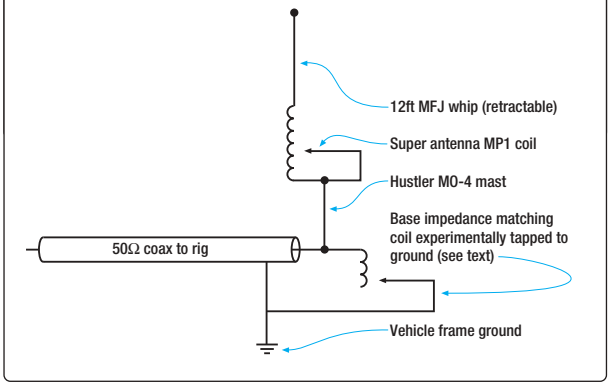
Comparing signal radiating capabilities of antennas and full mobile setups, incidentally, is another popular interest among US amateurs and antenna "shootouts" are frequently held on a regular basis. With a maximum above ground antenna height of 13.5ft and a set power level of 10 or 50 watts, each vehicle transmits from a designated spot while an umpire records readings on field strength meters. Everything is important here: coax cable loss, full vehicle grounding to minimise base losses, base impedance matching, antenna efficiency, etc and winners receive an impressive prize or plaque.

EMPHASIS ON PERFORMANCE

Whether mobiling in the US or the UK, the most important consideration for overall success is always a good antenna and an even better vehicle ground system (which must serve as the vertical whip's ground plane). Reaching that goal may seem like a formidable challenge, but it is actually straightforward. In fact, a high performance antenna and ground system can even be installed on a new or rental automobile in less than 30 minutes. How so?

First attach a trunk lip/boot edge mount like the Diamond K400 via its Allen screws. Then remove the mount and note indentations made by the four screws. Use your pocketknife to remove paint from two of the four indentations so screw tips can contact actual metal. As Peter Dodd, G3LDO, has emphasised in his previous *RadCom* articles, high circulating RF currents are present at the base of a mobile antenna and a good ground connection at that point is most important for minimising losses. Use your ohmmeter to check/ensure good continuity (less than two ohms) between screw

FIG 1 © RADCOM 593



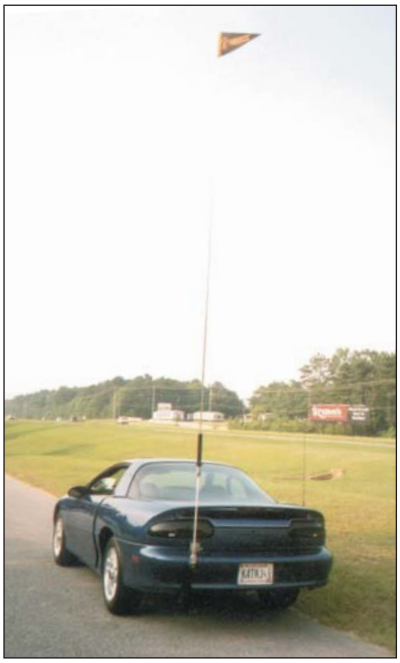


Figure 1
Outline for assembling Tall 'Tenna discussed in text.

Left
Author K4TWJ's custom installation of a Kenwood TS-50 was accomplished by removing the automobile's centre console and replacing it with a home-fabricated stand complete with bungee cord strap for securing transceiver in place. Black leather cover protects rig from view when leaving vehicle unattended.

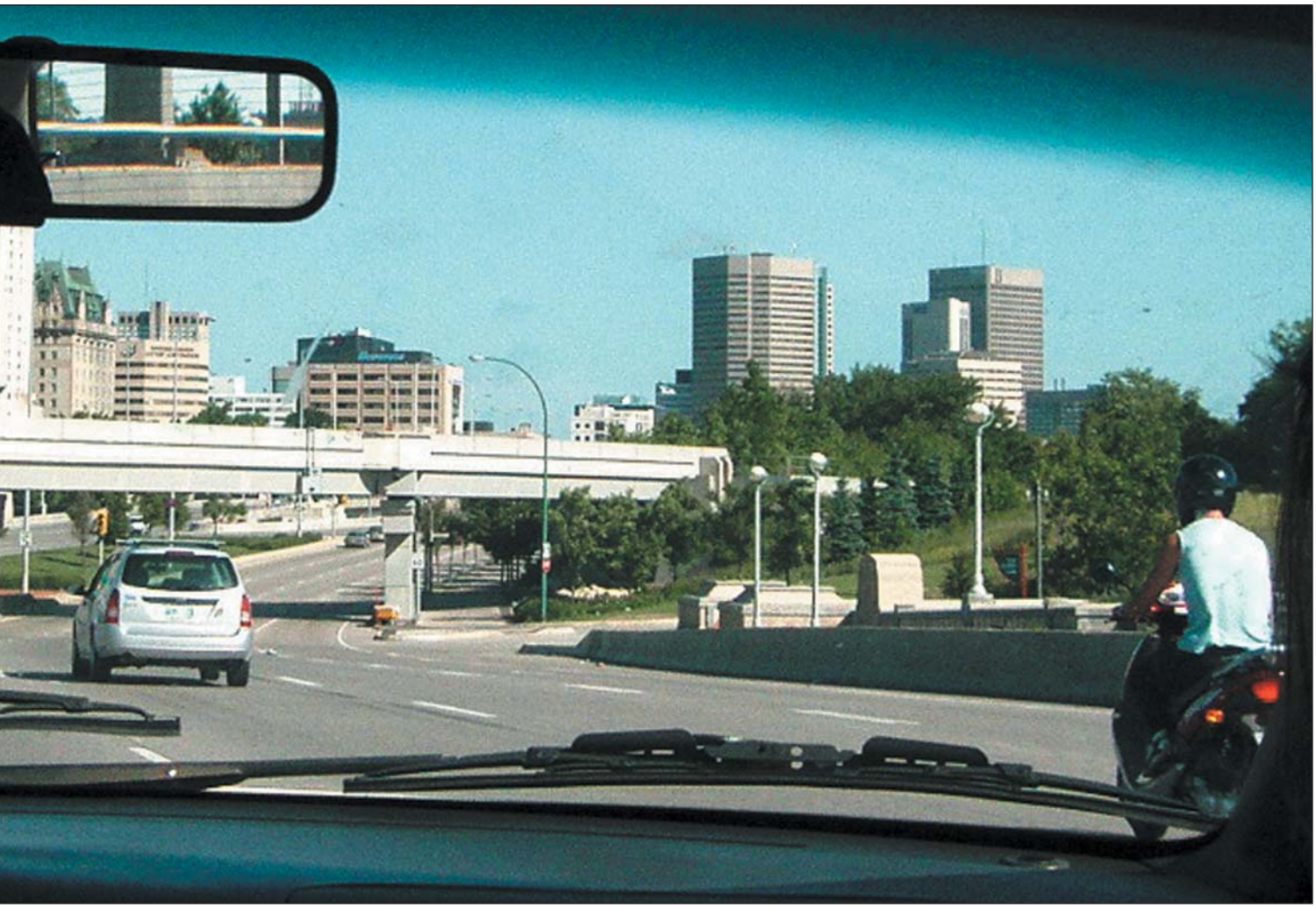
Left
Author K4TWJ's all-American Chevrolet Camaro set for CW Dxing while parked at roadside near Florida state line. Extra tall multiband antenna consists of Hustler MO4 base mast, Super Antennas MP1 coil and MFJ-1956 12-foot retractable top whip plus home made base matching coil. Vibroplex pendant marks antenna top.

Below left
The Tall 'Tenna separated into 22 inch long sections for carrying.

contact points and another section of the vehicle's body or frame (like the trunk/boot latch and its mounting assembly). Reinstall the antenna mount and recheck continuity. If resistance is over two ohms, some vehicle sections may have been insulated by paint during factory assembly. Again, use your ohmmeter to locate insulated vehicle sections, then use some sections of wide copper strap or copper shield/braid removed from old RG-8 (large) coax cable to electrically bond associated vehicle sections together. Before concluding trunk/boot work, recheck continuity between the latch bracket, antenna mount and the antenna cable's shield or the shell of PL-259 you will route to your transceiver.

Proceed to interior wiring as follows. Use an ohmmeter to locate two grounded-to-frame points like a large front seat bolt securing its mounting assembly to the vehicle's floor and a door latch post or accessory DC socket's ground terminal. Do not damage your meter here: check first for possible voltage, and then check resistance (again less than two ohms). Using more coax shield/braid, make a quick-disconnect jumper with clips on each end. Clip one end to the ground-confirmed front seat bolt, then perform an overall system check. Connect one ohmmeter lead to the loose end of the seat clipped jumper and the other ohmmeter lead to the shell of the coax cable's PL-259 (which you routed to your transceiver's planned interior location). You can now measure total resistance from the tip of the seat clipped jumper, through the vehicle's body/frame, through the antenna mount and back through the coax to the meter. Once again, resistance should be less than two ohms. But wait, you say. Since the transceiver will be grounded through its power cable and coax shield, is an interior ground also necessary? Yes, absolutely! It ensures the vehicle's complete body/frame serves as a full ground system, and that results in performance at least 10dB better than most mobile setups. Honest! Try it and see for yourself!

What about composite (non-metal) body vehicles, you ask? Look under the body at the rear. Notice those side rails that look like a frame with holes for a trailer draw bar (or those large metal tie-down loops used for long-distance transport). Fishwire two heavy bolts and oblong washers in the holes, just like installing a draw bar. Use the bolts to secure a thick antenna-mounting plate. Use more coax



shield/braid attached to the plate and taped or slipped into bumper and fender areas to produce a full radial/ground system. Repeat all previously discussed ohmmeter checks, then enjoy a really good mobile signal!

QUICK-ASSEMBLE TALL 'TENNA

As mentioned earlier in this article, operating HF while stopped is becoming quite popular in the US for special pursuits like CW DXing, working QRP and IOTAing. And we have the ideal antenna to meet those needs (see accompanying photos and Figure 1). The antenna screws into your existing mobile mount in a minute's time, stands approximately 15ft tall and collapses into a 22 inch package for easy carrying. Just park your vehicle, swap antennas, and hit the bands with a base station-grade signal!

The antenna consists of a lower mast section (a Hustler MO3 or MO4 is perfect), an adjustable centre-loading coil (like a Super Antennas MP1 from Waters and Stanton; details at www.superantennas.com) and an MFJ-1956 12ft retractable top whip. To that I add a base impedance matching coil of number 12 or 14 wire, 8 turns, 2.5 inches in diameter. One coil end connects to the lower mast right at its mount end. The coil's other end is experimentally tapped to ground for 40, 30, 20 and 17m operation. The base coil is not required for 15, 12 or 10m operation. Likewise, the centre loading coil is replaced with a standard double-female 3/8-24 thread coupling and sections of the top whip are retracted (and marked!) for operation with a full quarter wavelength radiator for 17, 15, 12 and 10m.

The key to using this antenna is pretuning it and marking coil connection points (and whip retraction points) for each band, and an MFJ-259 Antenna Analyser is most desirable here. Start with the lowest band requiring some coil (20m) and the coil fully jumpered or shorted. Resonance and lowest SWR will probably be around 15MHz. Move the loading coil's cover/tap to expose two turns at a time, rechecking resonance until it is near 14.2MHz. SWR will probably be around 1.5:1, so add the base matching coil and move its ground tap a half turn at a time until SWR is near 1:1. The (MP1) centre-loading coil may require retuning while adjusting the base matching coil. When optimised, mark coil settings for later quick recall; then follow a similar tune/tap procedure for 30, 40 and maybe 60m (color coded markers helpful here).

Remember this antenna is extra-tall. Always remove it before driving your automobile. Since you tune the antenna with an MFJ-259 or similar analyser, almost any type of loading coil may be utilised. I like the MP1 because it is akin to a manually-adjustable "screwdriver antenna" coil. It and the MFJ-1956 12ft whip are both fitted with standard 3/8-24 end ferrules. You can also wind your own base coil of any size from one inch to three inches in diameter (because you tap it as required to match impedance/lowest SWR). Fixed value capacitors may be used in lieu of the coil, but I find the coil more efficient. Try this antenna for some real mobile excitement. It is a romper!

CONCLUSION

We trust this brief article enlightened you on mobiling trends across the pond and also inspired your own creative ideas for going mobile. Remember too, emergency preparedness and on-the-spot communications capabilities are most important during these uncertain times and nothing serves that need better than a good mobile setup. Give it a go and may the force of good signals always ride with you! Listen for me (K4TWJ) too: I frequent 30m CW weeknights around 0200UTC and 20m SSB weekends around 2200UTC. 73. ♦

Chris Lorek, G4HCL

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Left:
The system consists of a boom mic, PTT Box and a cable to connect to a transceiver

Below:
The PTT Box

Watson WM-S Mobile Microphone

Enjoy /mobiling while driving safely with this hands-free microphone system from Waters & Stanton. Chris Lorek reports.

Operating mobile whilst driving has been the subject of much discussion in *RadCom* over recent months. It's not the aim of this review to discuss what's right or wrong about /mobile, but instead to give my findings on a recent product, the Watson Mobile Hands-Free mobile mic system.

There's nothing new about a mobile boom mic. Taxi drivers have been using such a device, often simply an existing two-radio radio mic fixed to a metallic boom from something like a desk lamp, since two-way mobile radios were first used (you'll even see an example in the early black-and-white film 'Carry on Cabbie'). Boom mics with remotely mounted push to talk (PTT) toggle switches have also been available on the amateur radio market for over 20 years.

Mobile transceivers have significantly increased in complexity and features since then, often including microphone mounted 'virtual front panel' controls for ease of use on the road. These controls range from simple up/down buttons right up to fully featured keypads.

For this review, I used a 'mid way' arrangement with my Kenwood TM-G707E dual band transceiver, where the standard microphone supplied with the transceiver offers a PTT button, up/down buttons and four further buttons for other controls. These typically control switching to VFO mode and VFO scan initiation (by a short or long press respectively), switching to memory mode and memory channel scan initiation (also by a short or long press respectively), switching to a pre-programmed 'Call' channel or 1750Hz toneburst initiation, and a further user-programmed function.

THE WM-S SYSTEM

The Watson mobile hands-free mic system comprises an interconnected boom mic and PTT box plus associated interconnections, accommodating a wide variety of transceivers. A separate pre-wired plug-in lead to connect the PTT box control unit and your transceiver is supplied. Pre-made leads are available for a Yaesu RJ-11 6-pin modular jack, Kenwood 8-pin modular, Icom 8-pin modular, Yaesu 8-pin round, Kenwood 8-pin round and Icom 8-pin round. Should you change your type of rig in the future, you only need to replace this connecting lead rather than replace the entire microphone system.

The boom mic itself is 23cm long, and the mic element is supplied with a foam shield that both reduces wind noise and protects against stabbing yourself in the face or eye with the mic! A slotted bracket is fitted at the far end; this is designed to be used for fixing to a sun visor mounting using the existing visor fixings. A 3m length of cable is supplied to route from this to the PTT box. This lead is terminated with a jack plug, allowing it to be simply plugged into the mating socket on the lower panel of the PTT box.

The PTT box is a compact 54(h) x 33(w) x 69(d) mm in size, and is fitted with a long latching toggle switch for the PTT itself. Besides this, a pair of up/down buttons are mounted on the top panel on one side of the box. On the other side are four smaller push buttons for other controls. A supplied 1.5m-long lead plugs in between the PTT box and your rig's microphone socket, and the PTT box takes its power from the rig through this lead. It needs power because there is a bunch of electronics inside the PTT box, including an IC, a pair of transistors, five diodes and associated components (all to provide control), a mic preamplifier and a TX indicator – the latter being a red LED which glows to show you when you're in transmit mode. Finally, also on the top panel is a small rotary preset mic gain control, typically being set at the mid-way level when supplied. The PTT box mounts onto your car's gear stick shaft, and a supplied purpose-made thick rubber band is used for mounting to prevent any damage that could be caused using clamps etc.

Left:
The boom mic can be neatly stowed alongside the trim when not needed

Below:
The PTT Box fits onto your gear stick

Above:
The PTT box has a lead to the boom mic and a socket for the connecting lead to your transceiver

Right:
The boom mic, fitted and ready for use

System

INSTALLATION

It took me just two minutes to fit the system in my car as a temporary installation to provide an initial test; it really was a 'plug and play' installation thanks to the pre-wired leads that were supplied. A quick test listening on my handheld radio for monitoring purposes showed that all was well, so I then went about making a more permanent installation.

This I did, although it took me a while to find the 'Torx' driver bit required for my Peugeot sun visor fixings – why don't they just use normal screws? After this, as most people would do, I routed the cable between the boom mic and the PTT box beneath the lining of my car's interior for a reasonably smart appearance. I did the same with the lead between the PTT box and my rig's mic socket, the end result being quite neat.

OPERATION

A test on air with a few other amateurs while I was stationary showed fairly reasonable audio compared with my fist mic, so off I went on the road. But after my very first contact on the move with a work colleague (ie someone who knows my natural voice reasonably well) I had second thoughts. He and a number of others described my audio 'on the move' as very thin and nasal-sounding! A switch to my normal fist microphone brought a reported tremendous improvement. My initial reaction was "Oh dear!". However, a further test with the same 'work colleague' amateur a little later while I was stationary again gave reasonable results. "Strange" I thought. But I soon realised what was happening. While I was stationary I had deliberately moved the mic element itself quite close to my mouth. But whilst I was driving I'd positioned it further away to both allow my head to move around to observe other traffic and so that the boom wouldn't obstruct my field of view too much. With the boom mic in this position, turning the small mic gain control on the PTT box up to maximum gave an immediate improvement. As long as I didn't have my driver's side window wound down, there was hardly any wind noise nor much other background noise.

In use, I typically had the mic boom 'stored' flush with the roof lining above the car window until I needed to use the mic. Then I moved it so that the mic element was reasonably near my mouth. I just needed to be careful to make sure I wasn't moving my head from side to side, eg to check a road junction was clear left and right before proceeding, while I was talking as otherwise there would naturally be some audio fading.

Just as in the past I'd been used to using the microphone-mounted buttons on my fist mic, the up/down buttons and four extra buttons on the PTT box nicely replicated the buttons on my existing Kenwood microphone. The four extra buttons were admittedly rather small and did take a little time getting used to. This is mainly because I sometimes initially pressed the wrong one by mistake while 'feeling' for the right one with my eyes kept on the road. But this form of control was, of course, a lot better than looking down at my transceiver to operate the front panel controls. The PTT box was naturally close at hand on the gear stick lever which in turn is, again, designed by the vehicle manufacturer to be easily operated by the driver.

CONCLUSIONS

The Watson mobile mic system was easy to install, and after getting used to how to operate it to its best advantage, it gave a reasonable performance in mobile use as well as, of course, hand-free mobile operation.

The mic is priced at £39.95 plus delivery, and includes a pre-wired lead to suit specific transceivers. Our thanks go to Waters and Stanton for the loan of the review hand-free microphone system. ♦

ELAD FDM77 software defined radio receiver

If you are looking for an inexpensive software defined radio with an adequate performance, the ELAD FDM77 could be perfect for you. Peter Hart reports.

Software defined radio, known as SDR, is a technology that we are hearing about more and more, and has been the topic of recent articles in *RadCom* and other magazines. It is a term used to describe radios where the key signal processing elements of modulation, demodulation and filtering are performed in software using a digital signal processor (DSP). Underlying the SDR approach is the ability to define, adapt and upgrade these functions by reconfigurable software code external to the processor.

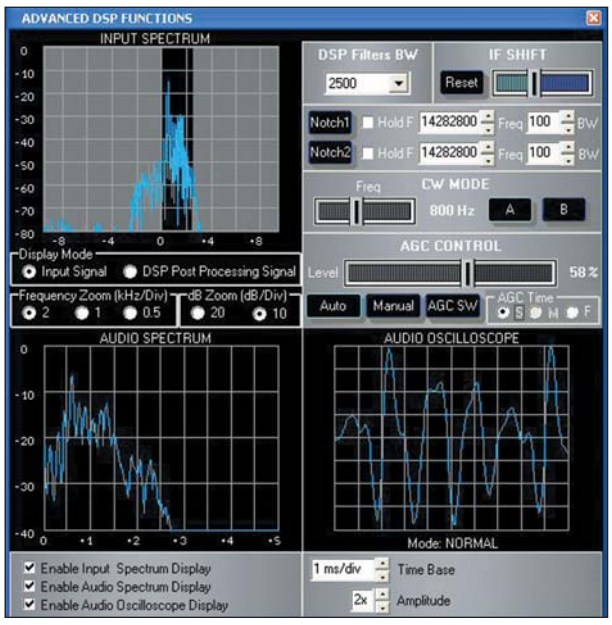
There has been a close affinity between amateur radio receivers/transceivers and the PC now for many years. For over 20 years, radios have sported serial control ports, and more recently software has been available to emulate and display the controls as a virtual front panel on the PC. Some radios have entirely dispensed with front panel controls and are just "black boxes" operating in conjunction with a PC, even in some cases including the radio function on a card within the computer, such as the receivers produced by WiNRADiO. DSP has been used in higher end radios for 10 years or more to perform the key signal processing functions. However, this in itself is not SDR and neither is standard computer control as detailed earlier in this paragraph. SDR requires an architecture configurable under computer control and full access to the DSP code. There is a sizeable group of SDR enthusiasts developing techniques and open source code.

The goal of SDR is to reduce the hardware functions to a minimum and implement as much as possible in software. The Holy Grail is to attach the antenna to one pin of a DSP and perform all functions in software. However, technology is a long way away from this possibility and all current SDR implementations use a down-converter of some description to convert received signals to a low intermediate frequency (IF) for feeding the DSP. Up-converters are used for the transmit signal. The DSP is usually the PC sound card but can be on the radio board if able to be fully programmed from the PC. WiNRADiO and FlexRadio are existing suppliers of SDR products and have now been joined by the Italian company Elad. Elad manufactures a range of products including communications equipment, test equipment and LED items as well as providing expertise and consultancy in RF areas. The company has recently launched the FDM77 software defined radio receiver covering LF to 60MHz and this is available in the UK from appointed agent ML&S, Martin Lynch and Sons.

HARDWARE AND SOFTWARE

The FDM77 package comprises a receiver box, external mains PSU, PC software on a CDROM, cables to connect to the PC and a 34-page manual. The receiver operates from 12V and uses a triple conversion superhet with IFs of 70MHz, 455kHz and 12kHz.

FDM77 running on a laptop PC



The 12kHz IF is then output to the PC soundcard for all further processing and the resulting audio played through the PC speakers or headphone socket. 10kHz and 4kHz bandwidth crystal and ceramic filters are employed in the 70MHz and 455kHz IFs, and a range of bandwidths down to 250Hz are implemented at the 12kHz IF by the PC soundcard. Depending on the bandwidth setting for the DSP, the appropriate filter (10kHz or 4kHz) is selected automatically at the 70MHz and 455kHz IFs. Automatic gain control (AGC) is applied to the first and second IFs locally within the radio hardware and this reduces the demands on dynamic range for the PC soundcard. One out of seven front-end filters is selected depending on the frequency to which the receiver is tuned and there is a switchable preamplifier and input attenuator. The first local oscillator is based on a DDS synthesiser operating on the low side of the first IF.

The radio hardware is contained in a fully shielded extruded aluminium box measuring 20.0(w) x 6.0(h) x 19.0(d) cm and weighs about 1kg. The front panel contains a string of extremely bright blue LEDs indicating signal strength and a couple of status LEDs. The rear panel contains sockets for power and PC interfacing, two antenna connections, the power on/off switch and a high/low level switch for the 12kHz output. Inside the box, the whole assembly is contained on a single printed circuit board.

Apart from the signal path interfaced to the PC sound card, control functions to the receiver box are interfaced via a PC USB port. Although the manual quotes USB 2.0, I had the radio functioning perfectly well on the older USB 1.1 standard. The minimum PC specification required is a 700MHz Intel Pentium or equivalent with 128MB RAM and 50MB free hard disk space but better performance is claimed with higher speed processors. The software supports Windows 2000 or Windows XP platforms only. A 16-bit SoundBlaster compatible soundcard is needed supporting full duplex operation at 48kHz sampling rate, and AGC must not be employed on the soundcard inputs.

I installed the software (v1.14) on two PCs, a Dell laptop using a 1.3GHz Celeron M processor, and a Mesh desktop using an AMD Athlon XP1700+ processor (1.48GHz). Installation was trouble free and is fully and accurately described in the supplied instructions. The main set-up file is 15.9MB in size. A second file of 3.5MB is the virtual cable driver allowing the receiver audio to be rout-

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ed to a separate application such as an RTTY or SSTV decoder which runs at the same time and shares the same sound card. Set-up involves ensuring the correct level of 12kHz feed to the soundcard and adjusting the volume and other settings for the soundcard. A set-up screen assists in getting these levels correct.

The ability to upgrade software is a key feature of SDR and Elad intends to release future upgrades free of charge as downloads from its website.

PRINCIPAL FEATURES

The receiver tunes from 10kHz to 30MHz and from 48MHz to 60MHz with reduced performance below 100kHz and above 55MHz. It covers USB, LSB, CW, AM and FM modes and in addition has a built-in decoder for the digital broadcast DRM standard. It can be used with a 50 ohm antenna feed or with a high impedance short whip antenna and a panel button selects either input.

The main functions of the radio are selectable by mouse from the 'cockpit' display screen in blue, green or orange. Additional windows may be opened to display the advanced functions, the memory screen, keypad for direct frequency entry, the scanning screen, DRM status and main set-up. The frequency is displayed to 1Hz resolution and tuning is in steps of any of the digits, i.e. 1Hz, 10Hz, 100Hz etc plus 5kHz and 9kHz. Tuning can be performed by the simulated rotary knob, by cockpit up/down buttons, keyboard up/down arrows or by clicking above any digit. There are no bands to select but part of the memory could be allocated for this purpose to aid fast navigation. Memory capacity is virtually limitless and many different memories can be set up for different purposes. The memories only store frequency and mode but carry a number of text fields for tagging information such as country, name, power etc, primarily with broadcast stations in mind. The memory contents can be ordered by frequency, mode or any of the text fields for convenience. Settings for bandwidth, AGC etc are not stored in memory and carry over from the last setting or the default setting. When changing modes, the last used bandwidth on that mode is reselected but this information is unfortunately lost on power down. Power-up returns default settings that were not my ideal settings.

Receiver printed circuit board

The main cockpit also provides a

large analogue style S meter and a six-channel graphic equaliser for tailoring the audio frequency response for best sound quality. There are two audio gain slider controls, one for the main listening channel and the other for the virtual cable feed to any following data decoder. The main volume control can also be set using the keyboard page up and down keys.

Using the scan window, a scan may be performed between any two frequencies and the result displayed as a spectral plot of frequency against S meter reading. The mouse pointer can then be moved over the plot and clicked to set the receiver to that frequency.

ADVANCED FEATURES

The advanced feature window controls the functions implemented by the soundcard DSP. This includes a range of DSP channel filters from 10kHz bandwidth down to 250Hz, IF shift, and two IF notches with adjustable bandwidth and centre frequency which can be used independently or together. The AGC speed is selectable fast/slow or switched off with manually adjustable gain and the CW tone is adjustable in two modes of operation.

Comprehensive signal monitoring is available in the advanced feature window including an audio spectrum display, an audio oscilloscope waveform display and an IF input spectrum display. The position of the filtering bandwidth is shown graphically on the IF spectrum together with the position of any enabled notches and their effect on the filtered spectrum.

MEASUREMENTS

Measurements made on the radio are shown in **Table 1**. The current consumption measured 750mA at 12V. Sensitivity figures are generally good and significantly better than the specification. The sensitivity drop at LF is partly due to increased oscillator phase noise at these frequencies. IF rejection was better than 70dB and image rejection about 50dB, except at 50MHz where the first mixer image occurs at 90MHz and was only down by 27dB. Unfortunately, this corresponds to the Band II FM broadcast band and extensive breakthrough was experienced. A low-pass filter in the antenna line would resolve this problem. Rejection of other spurious signals seemed good.

The front-end third-order intercept and intermodulation-free dynamic range was very good for a receiver of this type and the figures held well to within 10kHz or less of the tuned frequency. However, with strong signals, the performance is limited by the IF channel filters and a poor reciprocal mixing result due to synthesiser oscillator phase noise. Phase noise limits the dynamic range in SSB bandwidths (2.5kHz) to around 65dB within 100kHz of the tuned frequency and is still significant 300kHz away. The true performance of the DSP filters cannot be seen as AGC takes full control when signals fall inside the roofing filters in the 70MHz and 455kHz IFs. Hence, strong signals on adjacent frequencies or in the unwanted sideband desensitise the receiver. This is more of a problem on SSB and CW modes where narrower bandwidths are used but not really of any great consequence on broadcast AM. The roofing filters had a very uneven passband with significant differences between USB and LSB.

TABLE 1

ELAD FDM77 MEASURED PERFORMANCE

	SENSITIVITY SSB 10dBs+n:n		INPUT FOR S9	
	PREAMP	PREAMP	PREAMP	PREAMP
FREQUENCY	IN	OUT	IN	OUT
50kHz	32µV (-77dBm)	32µV (-77dBm)	280µV	320µV
200kHz	2.0µV (-101dBm)	4.5µV (-94dBm)	50µV	150µV
500kHz	0.8µV (-109dBm)	2.5µV (-99dBm)	50µV	150µV
1.8 MHz	0.28µV (-118dBm)	0.80µV (-109dBm)	35µV	112µV
3.5 MHz	0.25µV (-119dBm)	0.63µV (-111dBm)	35µV	100µV
7 MHz	0.25µV (-119dBm)	0.63µV (-111dBm)	40µV	112µV
10 MHz	0.32µV (-117dBm)	0.80µV (-109dBm)	35µV	112µV
14 MHz	0.25µV (-119dBm)	0.70µV (-110dBm)	40µV	112µV
18 MHz	0.25µV (-119dBm)	0.70µV (-110dBm)	40µV	112µV
21 MHz	0.35µV (-116dBm)	0.80µV (-109dBm)	45µV	112µV
24 MHz	0.32µV (-117dBm)	0.80µV (-109dBm)	40µV	112µV
28 MHz	0.25µV (-119dBm)	0.70µV (-110dBm)	40µV	130µV
50 MHz	0.28µV (-118dBm)	0.70µV (-110dBm)	35µV	130µV

AM sensitivity preamp in (28MHz): 1.3µV for 10dBs+n:n at 30% mod depth
FM sensitivity preamp in (28MHz): 0.45µV for 12dB SINAD 3kHz pk deviation
AGC threshold: 2.0µV approx
80dB above AGC threshold for +4dB audio output increase
AGC attack time: 1-2ms
AGC decay time: 20ms (fast), 0.3-0.4s (slow)
Inband intermodulation products: -32 to -38dB with slow AGC

	INPUT LEVEL SSB	
S-READING	PREAMP	PREAMP
(7 MHz)	IN	OUT
S3	2.2µV	6.3µV
S5	5.6µV	16µV
S7	14µV	40µV
S9	40µV	112µV
S9+20	400µV	1.12mV
S9+40	4mV	11.2mV

INTERMODULATION (50kHz Tone Spacing)

	PREAMP IN		PREAMP OUT	
	3rd order	2 tone	3rd order	2 tone
Frequency	intercept	dynamic range	intercept	dynamic range
1.8 MHz	+0.5dBm	86dB	+10.5dBm	86dB
3.5 MHz	-1dBm	85dB	+9.5dBm	87dB
7 MHz	+1.5dBm	87dB	+10.5dBm	88dB
14 MHz	+1.5dBm	87dB	+10.5dBm	87dB
21 MHz	+4dBm	87dB	+12dBm	87dB
28 MHz	+3dBm	88dB	+13dBm	89dB
50 MHz	+6.5dBm	90dB	+17.5dBm	92dB

FREQUENCY OFFSET	RECIPROCAL MIXING FOR 3dB NOISE
5 kHz	66dB
10 kHz	66dB
15 kHz	65dB
20 kHz	64dB
30 kHz	64dB
50 kHz	64dB
100 kHz	68dB
200 kHz	73dB
300 kHz	78dB

NOTE
All signal input voltages given as PD across antenna terminal. Unless stated otherwise, all measurements made via the 50Ω antenna socket on USB with receiver preamp switched out and with 2.5kHz DSP filter bandwidth

This can be improved by offsetting the IF shift to give a similar sound on noise for USB and LSB but this setting is not stored on power-down.

ON-THE-AIR PERFORMANCE

Using a PC with keyboard and mouse to control a radio is a somewhat different experience to using a conventional unit. The FDM77 seemed to perform very well, perhaps rather better than the measurements might indicate. AM broadcast was particularly good and VLF time transmissions were well received. I had the radio functioning without problems on PSK31 with DigiPan running with the same sound card. Fast AGC was rather too fast. Slow AGC was OK but had a tendency to over-respond and paralyse on clicks and noise pulses. DRM broadcast stations gave excellent sound quality as might be expected but needed a reasonable signal to noise ratio and took several seconds to synchronise.

There was a noticeable time delay of perhaps 200ms between the received audio from the FDM77 and that from a conventional receiver tuned to the same frequency. The time delay was also noticeable when controls were changed and seemed lower on the faster desktop machine. I had some problems with a stack overflow error crashing the laptop computer with fast sustained tuning. This did not occur with the desktop machine and Elad is investigating possible fixes.

The user interface is well thought out and generally easy to use. An improved graphical user interface 'cockpit' is about to be released with enhanced legibility of selected buttons, probably by the time that this review appears in print. A PC keyboard or mouse can never match a round knob for ease of tuning in my opinion but an external USB interfaced rotary control is available from Griffin Technology (see Websearch). DSP bandwidth, IF shift and some other parameters are returned to default values on power-up. It would be more convenient if the receiver was returned fully to its last used condition. Other features are generally well implemented but the notch filters were very difficult to set accurately.

CONCLUSIONS

The FDM77 is an interesting receiver with an adequate performance for general purpose listening needs. It is significantly cheaper than other similar PC driven designs and fills a gap in the market where there is currently a dearth of general coverage multimode receivers. The price in the UK is currently £449.95 from agent ML&S Martin Lynch & Sons and I would like to thank Elad – and in particular Leo, I3RKE – for the loan of the review item. ♦

WEB SEARCH

Elad	www.eladit.net
Griffin Powermate	www.griffintechnology.com/products/powermate
ML&S	www.hamradio.co.uk

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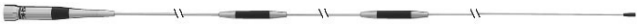

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HMC-6S 7/21/28/50/144/430MHz — *TYPE 1/4λ. 7/21/28/50MHz, 1/2λ. 144MHz, 5/8λ. 430MHz • GAIN 3.5dBi 144MHz, 6.0dBi 430MHz, • MAX POWER INPUT 120W 7/21/28, 150W 50/144/430MHz • CONN. M-P • LENGTH 1800mm • WEIGHT 800g* — **£79.95**

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Maldol HVU-8

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

HVU-8 Specifications

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

Maldol VK5-Jnr.

Compact ground plane antenna covering: 3.5/7/14/21/28mHz. It combines low-loss traps, with newly designed coil-bobbin, that can handle up to 500W on SSB.

Adjustable solid radials give directional and omni-directional patterns. All traps and elements are adjustable to cover all bands and desired centre frequencies.

Only £219.95

Maldol HMC-4

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

Only £69.95

MOONRAKER

Manufacturers of radio communication antennas and associated products

Log Periodic

MLP32 TX & RX 100-1300MHz one feed, S.W.R. 2:1 and below over whole frequency range professional quality (length 1420mm) **£119.95**

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AM-PRO 80 mt *(Length 7' approx)*..... **£19.95**
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SPX-100 'plug n go' multiband 6/10/12/15/17/20/30/40/80mtrs. Band changing is easy via a flylead and socket and adjustable telescopic whip section 1.65m when fully extended..... **£49.95**

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(SO239 fitting)..... **£18.95**
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GF151 Professional glass mount dual band antenna. Freq: 2/70 Gain: 2.9/4.3dB. Length: 31"..... New low price **£29.95**

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(slimline lightweight aluminium construction)

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New co-linear antennas with specially designed tubular vertical coils that now include wide band receive! Remember, all our co-linears come with high quality N-type connections.

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PVC Coated Flexweave high quality (50mtrs) **£37.95**
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MDX Lightening arrestor 1000 watts..... **£24.95**
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ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM
FREQ:10-15-20 Mtrs GAIN:8 dBd
BOOM:4.42m LONGEST ELE:8.46m
POWER:2000 Watts **£329.95**

ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM FREQ:10-12-15-17-20-30 Mtrs GAIN:7.5 dBd BOOM:4.27m LONGEST ELE:10.00m
POWER:2000 Watts..... **£599.95**
40 Mtr RADIAL KIT FOR ABOVE..... **£99.00**

HF Verticals

VR3000 3 BAND VERTICAL
FREQ: 10-15-20 Mtrs
GAIN: 3.5dBi HEIGHT: 3.80m POWER: 2000 Watts (without radials)
POWER: 500 Watts (with optional radials) **£99.95**
OPTIONAL 10-15-20mtr radial kit..... **£39.95**

EVX4000 4 BAND VERTICAL FREQ:10-15-20-40 Mtrs GAIN: 3.5dBi HEIGHT: 6.50m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials)..... **£119.95**
OPTIONAL 10-15-20mtr radial kit..... **£39.95**
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OPTIONAL 40mtr radial kit..... **£14.95**
OPTIONAL 80mtr radial kit..... **£16.95**

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EVX8000 8 BAND VERTICAL FREQ:10-12-15-17-20-30-40 Mtrs (80m optional) GAIN: 3.5dBi HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included)
POWER: 2000 Watts **£319.95**
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(All verticals require grounding if optional radials are not purchased to obtain a good VSWR)

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10mtr RG58 Mil spec PL259 to PL259 lead..... **£10.95**
30mtr RG58 Mil spec PL259 to PL259 lead..... **£24.95**
1mtr RG213 Mil spec PL259 to PL259 lead..... **£4.95**
10mtr RG213 Mil spec PL259 to PL259 lead **£14.95**
30mtr RG213 Mil spec PL259 to PL259 lead **£29.95**
(All other leads and lengths available, ie. BNC to N-type, etc. Please phone for details)

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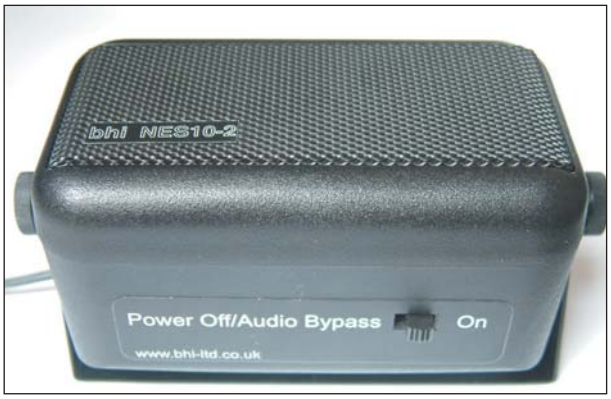
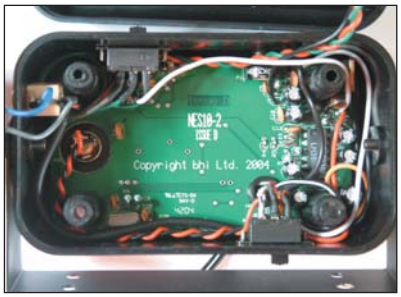
Background control

Want to improve the sound quality of your equipment without spending a fortune? If so, you need a DSP speaker. Steve White takes a look at two.

Just as digital signal processing (DSP) becomes more common in transceivers, DSP loudspeakers too are being found in more and more shacks. They offer the owners of older or less expensive equipment the ability to listen with significantly reduced levels of interference, be that background noise, static crashes or heterodyne. The two models reviewed here are the latest offerings from British company bhi and American company SGC. They are similar to models that have been reviewed before in *RadCom*, but each has been updated and now includes additional facilities. They are similar to one another in many respects: both are about the same size; both rely heavily on digital electronics to reduce noise and heterodynes; both contain audio amplifiers; and they are similar in price.





Right
Inside the bhi is a single PCB located on lugs. The DSP chip and DIP switches are mounted on the back of the board.

Left
Underneath the bhi is a switch that enables it to be used as a straightforward loudspeaker.

DESCRIPTION

The bhi NES 10-2 Mk2

This speaker is housed in a sturdy two-piece black plastic case with rounded corners. Behind the inset metal speaker grille there is a single LED that indicates power (red) and power plus noise cancellation (green). On the top is a slide switch to turn the noise cancellation on/off and a preset potentiometer for setting the audio input level.

On the bottom is a slide switch that turns the unit on/off and also acts as an audio bypass when turned off. On the rear there is the DC power socket and a bank of DIP switches for selecting the level of noise and tone reduction (see **Table 1**). Just below the switches the 2.1m audio input lead emerges. Finally, on the left hand end, there is a 3.5mm headphone socket. The plug-in DC power lead supplied is 1.75m long and bhi offers an optional mains adapter. All the controls are nicely labelled.

Inside the speaker there is a PCB that fills the entire back of the case. This is located on lugs.

Table 1
bhi noise and tone reduction settings

Level	Noise reduction	Tone reduction
1	9dB	4dB
2	11dB	5dB
3	13dB	6dB
4	15dB	8dB
5	17dB	16dB
6	20dB	21dB
7	24dB	25dB
8	35dB	65dB

The SGC ADSP2 Mk2

This speaker is also housed in a sturdy two-piece black plastic case. The corners are angled, the speaker grille extending part way across the angles. Above the grille are three LEDs – a red one to indicate power and two green ones to indicate the level of noise reduction selected. On the top are two press buttons, a black one to cycle through the filter (bandwidth) settings (see **Table 2**) and a red one to cycle through the noise reduction settings (see **Table 3**). On the back there is a 3.5mm headphone socket and a grommet through which the 1m-long power cable and 1.67m-long audio input cable emerge.

Inside, there are two printed circuit boards. These are mainly populated with surface mount devices and are fixed to the case with self-adhesive pads.

Table 2
SGC filter settings.

Level	Stated bandwidth	Measured bandwidth
0	Full	-
1	1800Hz	300-2100Hz
2	500Hz	300-900Hz
3	100Hz	400-600Hz

Table 3
SGC noise reduction settings

Level	Noise reduction
0	None
1	13dB
2	26dB

OPERATION

The bhi NES 10-2 Mk2

The 32-page instruction booklet for the bhi is good. It explains the operation, how to adjust the settings and even how to add ferrite rings onto the leads if you suffer breakthrough from a transmitter. It also contains a list of accessories and other products from bhi.

I have long enough fingernails to be able to slide the DIP switches back and forth that set the noise cancellation level (they are spaced 1/10in apart), but nail biters would have to resort to using a small screwdriver or the tip of a pen. I tried a number of different settings on various modes.

With this speaker, the less aggressive settings are certainly more appropriate for data modes (CW and RTTY), because on the more aggressive settings it felt as though the tones were being sucked away. This was particularly pronounced on the maximum setting (level 8). On phone modes, however (AM, FM and SSB) I was pleasantly surprised just how natural sounding the bhi speaker was. When a strong signal was being received, it really didn't sound as though the audio had

SPECIFICATION

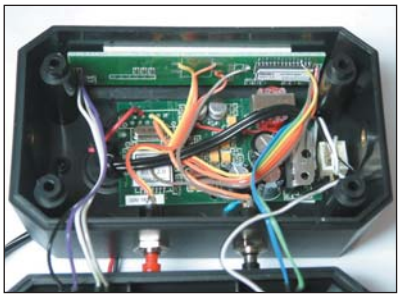
	bhi NES 10-2 Mk2	SGC ADSP2 Mk2
Size	110 x 65 x 55mm	112 x 67 x 55mm
Basic weight *	230g (8oz)	175g (6oz)
DC power	12-24V DC, 500mA	12V DC, 500mA
Audio input	5W max.	100mV-5V rms
Audio power output	2.5W	5W
Noise reduction steps	8	2
Noise reduction levels	9dB-35dB	13dB, 26dB
Selectable bandwidths	None	Full, 1.8kHz, 500Hz, 100Hz
Fused power lead	Yes	No
Headphone socket	3.5mm	3.5mm
Supplied with	Mounting bracket, self tapping screws, stick-on rubber feet,	Mounting bracket, self tapping screws, speed nuts
List price	£99.95	£109.95

* Excluding cables and mounting bracket

Steve White, G3ZVW

Moorcroft, Crewkerne Road, Raymond's Hill,
Axminster, Devon EX13 5SY.

E-mail: g3zvw@talktalk.net



Above
The SGC ADSP2 Mk2.

Above left
Inside the SGC there are two PCBs.

been processed at all. There was hardly a hint of robotic sound, even on more aggressive settings. Except when there were high levels of noise, even weak signals sounded quite natural. The speaker adapted rapidly to new conditions. For example, when opening the squelch of an FM receiver on an unoccupied frequency, the noise was reduced to its final level in about one second. The only real irritation was that at the most aggressive level of noise cancellation (level 8), an open FM channel was silenced to a faint tinkling sound. Reducing this to level 7 resulted in slightly more noise coming through, but the tinkling all but disappeared.

The SGC ADSP2 Mk2

The SGC has far fewer noise reduction levels, but it is easy to cycle through them, and it indicates the current setting on the front panel. In the instruction leaflet, SGC says: "There is no LED indication for the filter level, which can be determined by sound." This is true enough, but the speaker provides an indication for noise reduction and you can also tell this by the sound.

On data modes, the SGC performed extremely well. CW and RTTY did not seem adversely affected by even the most aggressive level of noise reduction and pressing the filter button to reduce the bandwidth helped even more. There was no hint of ringing when CW was passed through even the narrowest bandwidth filter. On telephony modes, the 13dB setting produced a good level of noise reduction without making the audio sound unduly robotic. The 26dB setting did make voices sound unnatural though, and at this setting some audio break-up was noted when interference levels were high. The SGC's ability to remove heterodynes was excellent on both the 13dB and 26dB settings, irrespective of the mode being received.

Adapting to new conditions, eg when opening the squelch on an unoccupied FM channel, was relatively slow. Although the noise was reduced promptly, it often took up to ten seconds before the final level was reached.

I was pleased to note that SGC has added a headphone socket to the ADSP2 Mk2, a useful facility that the original ADSP2 didn't have. The front panel legend is also removable, in case you want to re-fit it the other way up. The reason you might want to do this is that if you hang the speaker under the mounting bracket, you need to mount it upside down because without doing so you can't reach the buttons.

SHORTCOMINGS

The bhi NES 10-2 Mk2

The first shortcoming I identified with the bhi is that the controls and connections are spread across too many surfaces. Consequently, if you want to be able to access all the controls easily, this speaker is best used in its mounting bracket and tilted to an appropriate angle.

The second is that the high quality loudspeaker incorporates a strong magnet that is unshielded. Place it too close to a CRT display and it will cause the CRT problems.

Thirdly, the headphone socket rubs against the mounting bracket when you rotate the speaker in the bracket. Slightly thicker spacers would resolve this problem.

Finally, although this speaker can remove heterodynes, it only does so effectively when the maximum noise cancellation setting is selected. On other settings, heterodynes are reduced by varying degrees, but not removed.

The SGC ADSP2 Mk2

The level of audio input that the SGC requires is quite high. Consequently, it needs to be plugged into the extension speaker socket of a receiver, because the audio level available from the headphone sockets of most commercial equipment is not sufficient.

Three of the shortcomings I mentioned in my review of the ADSP2 Mk1 (see *RadCom* November 2003) are still valid: there is no fuse in the power lead; the unit needs to be permanently powered; and it defaults to no noise reduction when powered on.

In addition, the controls and indicators are not labelled, the speaker lacks bass response, which makes the audio sound thin, especially when listening to music, and the only comment I can make about the instructions is that they could be much better.

CONCLUSIONS

After extensive testing, although the bhi scored higher than the SGC, I came to the conclusion that it is a 'horses for courses' situation. If you are specifically interested in data modes, the SGC would definitely be the right choice because it has selectable bandwidths and handles Morse and RTTY extremely well. For telephony modes (SSB, AM and FM), the bhi offers much better audio quality. It adapted much faster to new conditions and even at high levels of noise reduction the audio didn't sound robotic. I would like to thank bhi for the loan of the NES 10-2 and Waters & Stanton for the loan of the SGC ADSP2. ♦

THE VERDICT

	bhi NES 10-2 Mk2	SGC ADSP2 Mk2
Quality of construction	****	***
Sound quality (DSP off)	*****	**
DSP performance		
datamodes (CW, RTTY)	***	*****
telephony (FM, AM, SSB)	*****	***
Heterodyne reduction	***	*****
Time to adapt to new conditions	****	**
Instructions	****	*
Facilities	****	****
Magnetic emission	*	****
Ease of use	***	****
Overall approval rating	72%	66%

* = Bad, ** = Poor, *** = Fair, **** = Good, ***** = Excellent

Radio amateurs turned heroes in the wake of Hurricane Katrina. Their work in coordinating search and rescue operations saved countless lives and reminded the world of the importance of our often unsung hobby. Dave Ingram reports.

The strongest link

Hurricane after hurricane battered the southern US coastline during August 2004 and after extensive study, severe storm forecasters issued a prediction for an even more active and deadly hurricane season during 2005. Their worst fears were realised on 29 August 2005 when Hurricane Katrina slammed into the Gulf Coast and devastated the world-famous city of New Orleans and the nearby coastal resort cities of Gulfport and Biloxi, Mississippi. Many people heeded early warnings and evacuated to safer ground before Katrina hit, but thousands stayed – and survived with only the clothes on their backs. As Katrina hit with its 140+ mph winds and massive tidal surges, cars were tossed around like toys and homes were crushed like matchboxes. Food markets, automobile gas stations and banks were destroyed in a flash. Electrical power systems, telephone networks and city water-processing plants ceased to work. In Biloxi, an ocean front casino was lifted from its foundation and dropped atop a nearby hotel while surging waters pushed automobiles through storefronts and buildings. As of 15 September 2005, more than 800 people had been reported killed and total damage was estimated at $125 billion. It was the largest natural disaster in American history.

Levees protecting New Orleans from nearby Lake Pontchatrain broke, flooding the city with water that could not be pumped out until the levees (and pumps) were repaired. After a few days without electrical power, clean water, food, law enforcement and other vital requirements for safe life, the city was not fit for life – floodwaters became contaminated by highly toxic chemicals, gasoline, lead, sewage, etc. The possibility of widespread sickness and disease became a serious threat. A mandatory city-wide evacuation, enforced by US military troops headquartered in New Orleans's famous French Quarters (the only area that was not underwater), was necessary. Meanwhile, evacuees from New Orleans, Gulfport and Biloxi (plus associated areas) became scattered and lost in over 20 states. Countless families were separated, many being rescued from floodwaters and moved into shelters hundreds of miles apart. The largest search and rescue mission in US history thus became necessary.

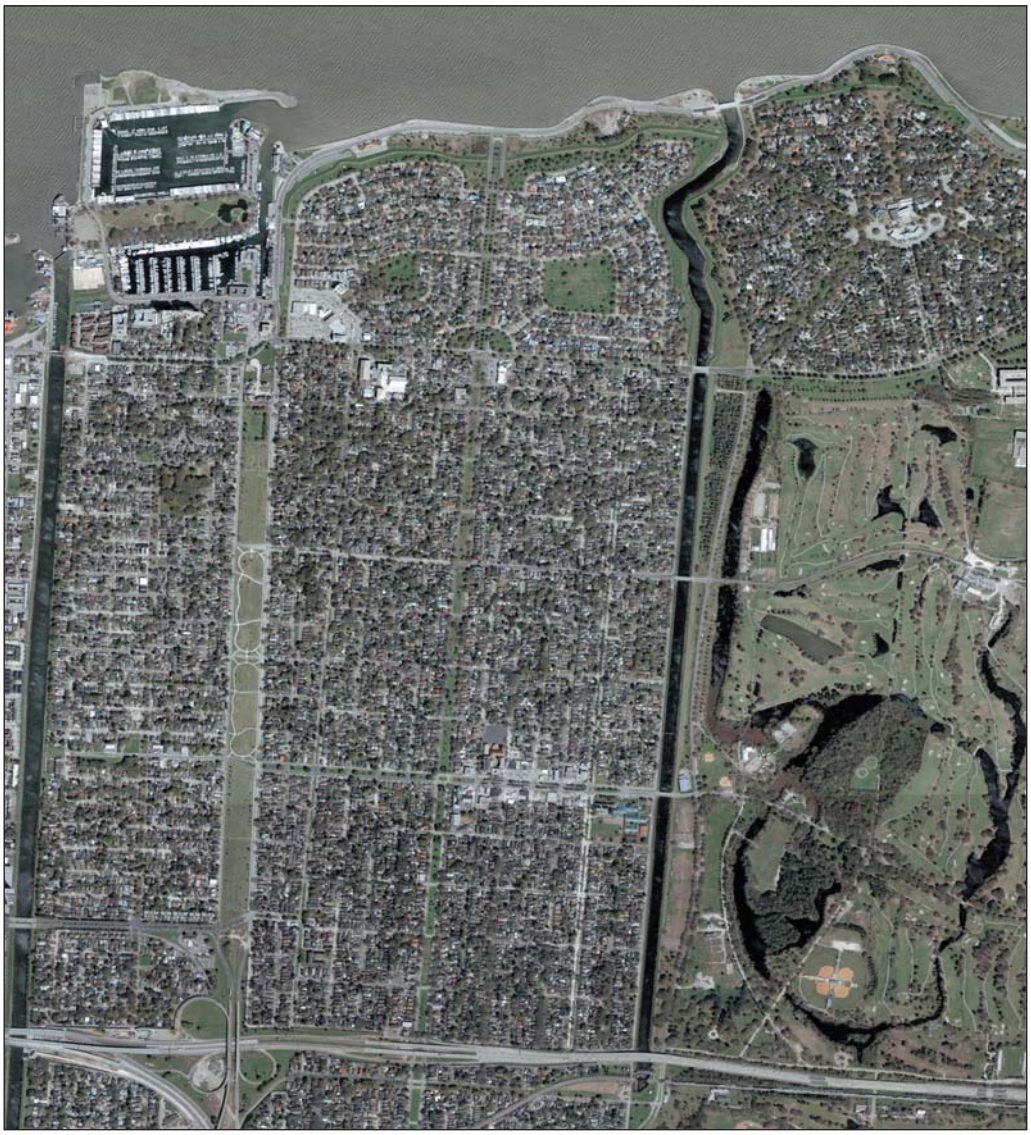


PHOTO: DIGITALGLOBE

Satellite image of New Orleans before Katrina struck

As an eye opening reference here, communication systems dependent on infrastructure like telephones, 911 centers and the Internet (those charging fees for every minute's use) were the first to fail in the storm. All the while, the free service of amateur radio continued working reliably and at full efficiency. As numerous newspapers in the US reported, it took a major crisis for average Americans to realise the unique capabilities and benefits of amateur radio. It also vividly illustrated how valuable ham radio operators continue to be to every country. Even the best built wireline and cellular service systems cannot equal the wireless capabilities of ham radio.

THE CALL AND THE RESPONSE

Even before calls for assistance went out, amateurs from all areas of the US were volunteering in large numbers to join the Hurricane Katrina relief efforts. Deployment sites where volunteers gathered to form large pools of experienced and highly skilled communicators were set up under Red Cross and Salvation Army auspices from Texas to Alabama. All amateur radio groups joined forces to help in this disaster: ARRL, ARES, RACES and more. Volunteers were quickly assigned to in-field sites where their mission was to assist with communications between more than 200 shelters and passing health and welfare traffic. As each amateur arrived at a site, he/she was greeted

Dave Ingram, K4TWJ

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PHOTO: DIGITALGLOBE

New Orleans post Katrina. Huge swathes of the historic city lie under water.

by a myriad of health and welfare traffic plus emergency and priority messages to be transmitted. In many cases and for several days, amateur radio was a site's only means of communication with the outside world. Realising the huge importance of amateur radio in the recovery effort, the Federal Emergency Management Association (FEMA) issued the following statement: "Amateur radio is the prime means of communication in this disaster and radio amateurs should receive anything they need to continue their work". As many groups and organisations also proclaimed through the mission, "amateur radio got through when all other means of communication failed."

Amateur radio manufacturers and suppliers also joined the Katrina relief efforts. Three major manufacturers donated VHF and UHF mobile and handheld transceivers, while Heil Sound offered communication headsets for the transceivers. VHF equipment was used for local area communications between shelters and amateurs assisting in identifying and reuniting families. HF equipment was used in communicating between interstate shelters and feeding stations plus relaying both emergency and health and welfare information nationwide over emergency networks.

The Salvation Army Team Emergency Radio Network (SATERN) was continuously active on 14.265MHz, with net controls changing every few hours. Emergency traffic was also passed in high volume by ARES nets on 7.285MHz and 3.873MHz. The SATERN net was involved in numerous rescue efforts and passed thousands of messages related to locating and reconnecting missing family members. Just listening on14.265MHz made one proud to be a radio amateur. The work was most impressive!

A MASSIVE OPERATION

As the Red Cross and Salvation Army provided personal care to evacuees and distributed over 25,000 meals a day, radio amateurs handled their associated emergency communications. At the same time, other radio amateurs were assisting state Emergency Operation Centers (EOCs), the US Coast Guard, the Federal Emergency Management Association (FEMA) and the Department of Homeland Security. When necessary, temporary VHF/FM repeaters operating on batteries were set up for coverage between shelters in adjacent geographical areas.

TALES OF VALOUR

Every disaster generates its own unique stories of heroism in the face of adversity, and this held true for Hurricane Katrina. While there were only a few reported rescues involving numerous people, there were numerous reports of rescues involving a few people each. One of the larger rescues resulted when Hurricane Watch Net manager K5MP received an e-mail from a lady in Chicago describing a desperate cell phone call from her son. He and 200 other students were trapped on the second floor of a dormitory at Xavier University in New Orleans, waters were rising and no one knew they were there. K5MP contacted the Coast Guard in Miami. Simultaneously the same request for help went out over the Maritime Mobile Service Net on 14.300MHz, again with the request relayed to the Coast Guard. As a result, all 200 students were rescued. For more information on the Hurricane Watch Net and its mission, check out www.hwn.org.

Many smaller rescues were performed with the assistance of SATERN net operators – some at home, some in the field. In one case, SATERN manager WA0SLB received a call (on 14.265MHz) from KE4WRH

seeking assistance with rescuing two men trapped in their attic near Gulfport, Mississippi. WA0SLB contacted WA4BZY who contacted the Salvation Army. The charity in turn responded by contacting the Mississippi State Patrol and authorities rescued the two men.

Another SATERN network-related case occurred after a report was received of a family of five trapped in an attic in Diamond Head, Louisiana. The family had used a cell phone to call out, but no additional details were available before the phone network went dead. AG4ZG checked the calling address and confirmed it came from the storm stricken area. He then contacted the Coast Guard station in Clearwater, Florida – during the subsequent operation, not only were the family of five rescued but so too were two other groups of people. In another unrelated incident, a member of a15-strong group of people stranded on a rooftop amidst flood waters in New Orleans somehow managed to make a brief cell phone call to a relative in Baton Rouge, Louisiana. That person, in turn, telephoned an amateur radio operator in Oklahoma who, in turn, contacted a Tulsa (OK) repeater organisation. A member of the Tulsa repeater organisation relayed a request for help on the SATERN net and a net member contacted emergency field personnel who rescued the 15 people and carried them to a Red Cross shelter.

In another case, an XYL operator in Connecticut learned of a woman trapped for four days without food and water. She relayed a rescue message to an emergency operations centre in Louisiana that dispatched the fire department. A day later, the XYL received a thank you message from the rescued lady's mother. WA0SLB reported that overall the SATERN net handled more than 12,000 health and welfare inquiries and assisted in relaying a countless number of rescue messages.

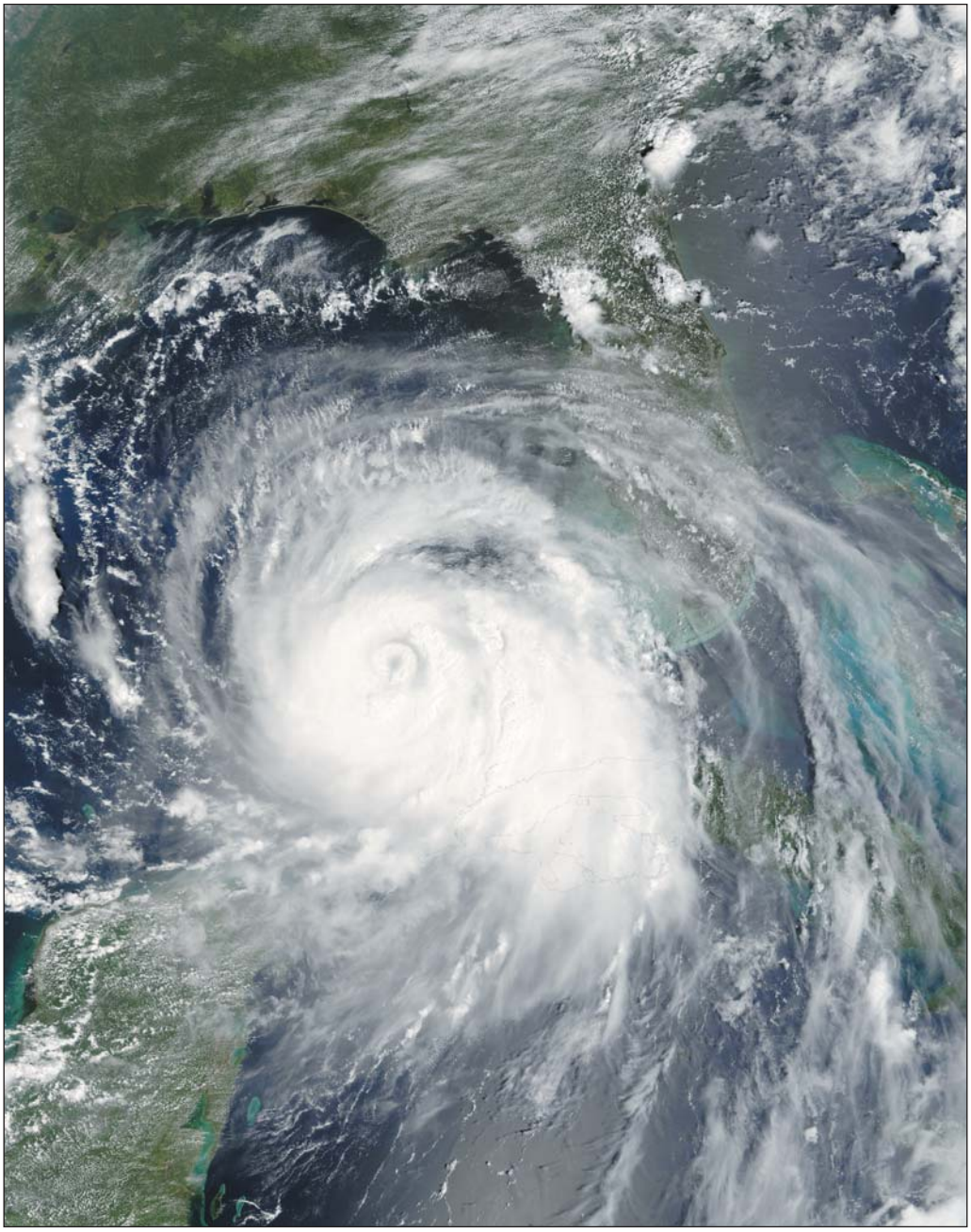

PHOTO: NASA

Katrina was one of the most powerful hurricanes to strike the US mainland in recent times.

ADDITIONAL NOTES

Both during and after the time Katrina's fury was unleashed on the Southern US coastline, numerous compliments for amateur radio and amateur radio operators appeared in newspapers and on television newscasts throughout the US. The Associated Press reported: "No amount of preparation can insulate people from a disaster of this magnitude. Even the best built communication networks cannot withstand 140mph winds, 20ft of water and no power. Yet amidst the chaos, amateur radio stayed up and running."

Another report stated: "It took a major crisis for the average American to realise the unique capabilities and benefits of amateur radio. It vividly illustrated how valuable amateur radio operators continue to be in this country."

In light of amateur radio's work in the Katrina disaster, the (US) Corporation for National and Community Service provided the American Radio Relay League with a $100,000 grant. The grant's purpose is to reimburse as many radio amateurs as possible for some of their expenses incurred helping in both this and future disasters.

Finally, two world-famous manufacturers of amateur radio accessories, Vibroplex and MFJ, were exposed to Katrina's wrath and survived without significant damage. The Vibroplex Company, a familiar name in keys and bugs, is based in Mobile, Alabama. A large part of that city was flooded, but Vibroplex was located in an elevated area and stayed dry. MFJ and its associated companies of Hy-Gain, Ameritron, Mirage and Vectronics produce everything from antennas and tuners to linear amplifiers and kits. The companies are located in the central Mississippi city of Starkville, where wind gusts exceeded 55mph, but their buildings were not damaged by winds or falling trees.

In conclusion, Hurricane Katrina's damage to the southern US coast was extreme and early estimates forecast that the rebuilding process will take up to five years. We learn from every disaster, however. Faced with similar circumstances during future times, we are confident any radio amateur would proudly do his/her part in assisting emergency communications. Truly ours is the world's greatest hobby. May it continue so forever. ♦

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Power Range: 3 - 200W PEP
Antenna Matching: Better than 2:1
< 4 seconds initially (typical)
< .01 seconds from memory
Antennas: Any
8 Ft. (> 3.3MHz)
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Weather Protected
9 Ft. Cable Supplied
(For 500W, see Cat. # 54-15)

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Specifications
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Power Range: 3 - 100W PEP
Antenna Matching: Better than 2:1
< 4 seconds initially (typical)
< .01 seconds from memory
Antennas: Any
8 Ft. (> 3.3MHz)
28 Ft. (< 3.3MHz)
Transceivers: Any, up to 100W
Enclosure: Sealed ABS Plastic
Waterproof
Weather Protected
9 Ft. Cable Supplied

Cat. # 54-22 SG-239

The SG-239 is a no-frills Smartuner which delivers the performance and reliability essential in an antenna coupler.

Specifications
Frequency Range: 1.8 - 30MHz
Power Range: 1.5 - 200W PEP
Antenna Matching: Better than 2:1
< 4 seconds initially (typical)
< .01 seconds from memory
Antennas: Any
40 Ft. (> 3.3MHz)
100 Ft. (< 3.3MHz)
Transceivers: Any, up to 200W
Enclosure: Aluminum Housing
Not Weather Protected
No Cables Supplied

Cat. # 54-25 MAC-200

Switch between multiple antennas manually or automatically with the MAC-200, controlled by a built-in Smartuner. Monitor power and SWR with convenient front panel meters.

Specifications
Frequency Range: 1.8 - 60MHz
Power Range: 1.5 - 200W PEP
Antenna Matching: Better than 2:1
< 4 seconds initially (typical)
< .01 seconds from memory
Antennas: Any, up to 5 outputs
40 Ft. (> 3.3MHz)
100 Ft. (< 3.3MHz)
Transceiver: Any, up to 200W
Enclosure: Extruded Metal
Not Weather Protected
No Cables Supplied

SGC reserves the right to change specifications

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UT-20 23cms Unit . £369.95
DRU-3A Rec Unit ... £99.95
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MC-60 Desk Mic ... £117.95
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SO-3 TCXO £109.95

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PS-52T 23A PSU .. £229.95
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100W Base HF. 1.8-30MHz. DSP ATU.

VS-3 Voice Unit ... £45.95
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MC-60 Desk Mic ... £117.95
MB-430 Bracket £44.95
PS-53T 23A PSU .. £229.95
SO-2 TCXO £122.95

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MC-58DM DTMF £44.95
PG-4X Ext Cable £61.95
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VS-3 Voice Unit £45.95

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MLS-100 Spkr £29.95
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CT-17 CI-V Conv £99.95
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call for the latest price

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Inc. SP-21 & SM20

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CS-208 Cloan SW £329.95
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Butternut HF-6V
Bands: 80/40/30/20/15/10
Height (Adj): 26 ft (7.9 m)
Weight: 12 lbs (5.4 kg)
Impedance: Nom 50 ohms
VSWR: 1.5:1 or less
£299.95

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Hustler 5-BTV
5 Bands - 80-10m
Height 7.64m - Weight 7.7kg
SWR 1.15:1 - Power 1kW
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Hustler 4-BTV 4 Band Vert	£159.95
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X300 Base 2/70	£99.95
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X-7 - 20/15/10 7el Yagi	£669.95
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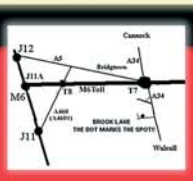

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Tune - Approx SWR Rating of 10:1

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1-5 seconds Tune - 2 Pos Ant switch

£169.95 ***New****

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

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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.

MAX PUNCH £165.95

You can also enjoy the "MAX PUNCH" option that features the HC-4 with the OBP and the HC-5 (w/o OBP). The TONE switch is used to select which element is operational.

HAND MIKE £57.95

W4RT Electronics Microphone with One BIG Punch Speech Compressor included.

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

One-Board-Filter

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

OBF £229.95

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

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

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

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

One-Touch-Tune

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

OTT-817 £54.95

It requires no external power and works with both manual and automatic tuners.

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W4RT OTT-FT100/857/897	£54.95
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ATX Walk--about PL-259

£47.95

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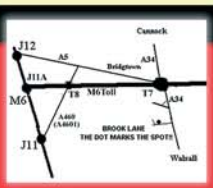

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Newcomers' news

A recent newcomer to the hobby has set up an internet forum for female amateur radio enthusiasts, reports Steve Hartley

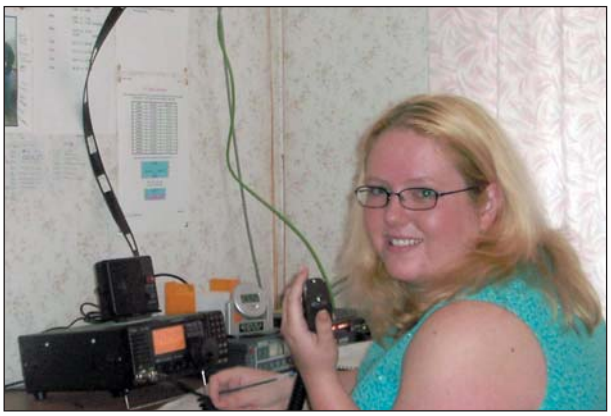
It is always good to receive input from readers and we have some fine examples this month.

Jackie Bosworth, M3JTO, responded to my request in the August column for input from lady newcomers. I will let her take up the tale: "My name is Jackie and I have been licensed since May 2005. Before April, I had never even heard of amateur radio until my partner Steve, M3JTI, mentioned that he would like to take the Foundation exam. He said that it may be a good way to stay in touch, so I thought I would give it a go and see what it was all about.

"We took our Foundation exams at the North Wakefield Radio Club (see Websearch below). Everyone was very friendly and supportive and made us feel really at home. We both passed and now we enjoy QSOs on our ICOM IC718 and using the Wakefield Club shack. We are both going to take our Intermediate exams in November and then go straight on to do our Advanced.

"After noticing that there aren't too many women in this hobby, I decided to create a forum just for the ladies (see Websearch below). It's still in the early days and we only have a few members but we already have members from Malaysia and USA! I'm really glad that I became interested in amateur radio now."

Excellent news all round Jackie, good luck with the next steps.



Jackie Bosworth at the controls

Josh Baxter, M3HBM, is up for more backpacking (see Josh puts Snowdon on the air)

BANDWIDTH

In the August column, I said that membership of the RSGB Tutors e-mail group (see Websearch below) was "worth the bandwidth". Vic Ludlow, G3JLZ, wrote to say that he was disappointed to see my misuse of the word "bandwidth". As Vic quite rightly pointed out, bandwidth refers to a system's frequency response curve, and has nothing to do with data transfers.

I replied to Vic by saying that I realise the use of the term in this context is technically incorrect but it is widely used to refer to e-mail traffic. I think it stems from the days before broadband when lots of mail meant long download times. Does anyone else use the term in this way, or have I lost the plot?

JOSH PUTS SNOWDON ON THE AIR

Josh Baxter, M3HBM, gained his Foundation Licence at the age of eight with the help of John Beech, G8SEQ, at the Coventry Amateur Radio Society. A year on, Josh and his granddad Brian Leathley-Andrew, G8GMU, made a trip to the top of Mount Snowdon with the intention of doing some HF and VHF operating in the summer sunshine. Unfortunately, the day was not kind to them, the weather was foul and they were not allowed to take their lead-acid battery on the mountain train.

Undeterred by either setback, they made the trip to the summit with a Yaesu VX150 hand held and made some "big signal" contacts into Lancashire and Yorkshire during their short stay. Josh is keen to return in better weather but his granddad is wondering if this is the youngest activation of this summit. I wouldn't be surprised, but perhaps readers know otherwise?

ADVANCED BOOK HAS ADVANCED

Alan Sheard, M3TTD/2E0TTD, was puzzled by the reference to the second edition of the Advanced textbook in Murray Ward's fine question and answer freeware programme *QADV*. Both Murray and I confirmed that the book has indeed been updated and is available through the *RSGB Bookshop*. However, I thought if Alan did not know of it, others might have missed the update too.

The second edition came out earlier this year and if you compare the new with the old, you should very quickly see that it has changed for the better. The chapters have been re-ordered to give a more logical progression, a couple of errors have been corrected, some diagrams have been redrawn and quite a lot of the text has been rewritten to update or clarify the content. Within its 100 pages is everything you need to know for the Advanced exam, although other good books are available.

Murray Ward, G3KZB, continues to update his freeware and has done a fine job in keeping his page referencing in line with the second edition. The *QADV* software is available for free download (see Websearch below) or Murray will provide copies in return for a couple of blank disks and postage to Hartley, Green Lane, Milford, Godalming, Surrey, GU8 5BG.

100% SUCCESS FOR NORFOLK

David Palmer, G7URP, wrote to thank me for the advice and guidance I offered in helping the Norfolk Amateur Radio Club (NARC) to run its first round of Advanced classes. That was pleasing but the news that all 12 candidates had passed their exams was even more pleasing.

Eleven club members were involved in either planning the course or in the actual training. While this stretched their resources, the results were very worthwhile. It sets a high standard for the next course, due after their next Intermediate and Foundation courses in October and November. Visit the club's website for more details (see Websearch below) or e-mail David, the NARC chairman at chairman@norfolkamateurradio.org ♦

WEB SEARCH

Norfolk Amateur Radio Club	http://www.norfolkamateurradio.org/
Murray Ward's QADV	http://freespace.virgin.net/murray.g3kzb/
North Wakefield Radio Club	www.g4nok.org
Ladies forum	www.ladiesontheair.proboards37.com

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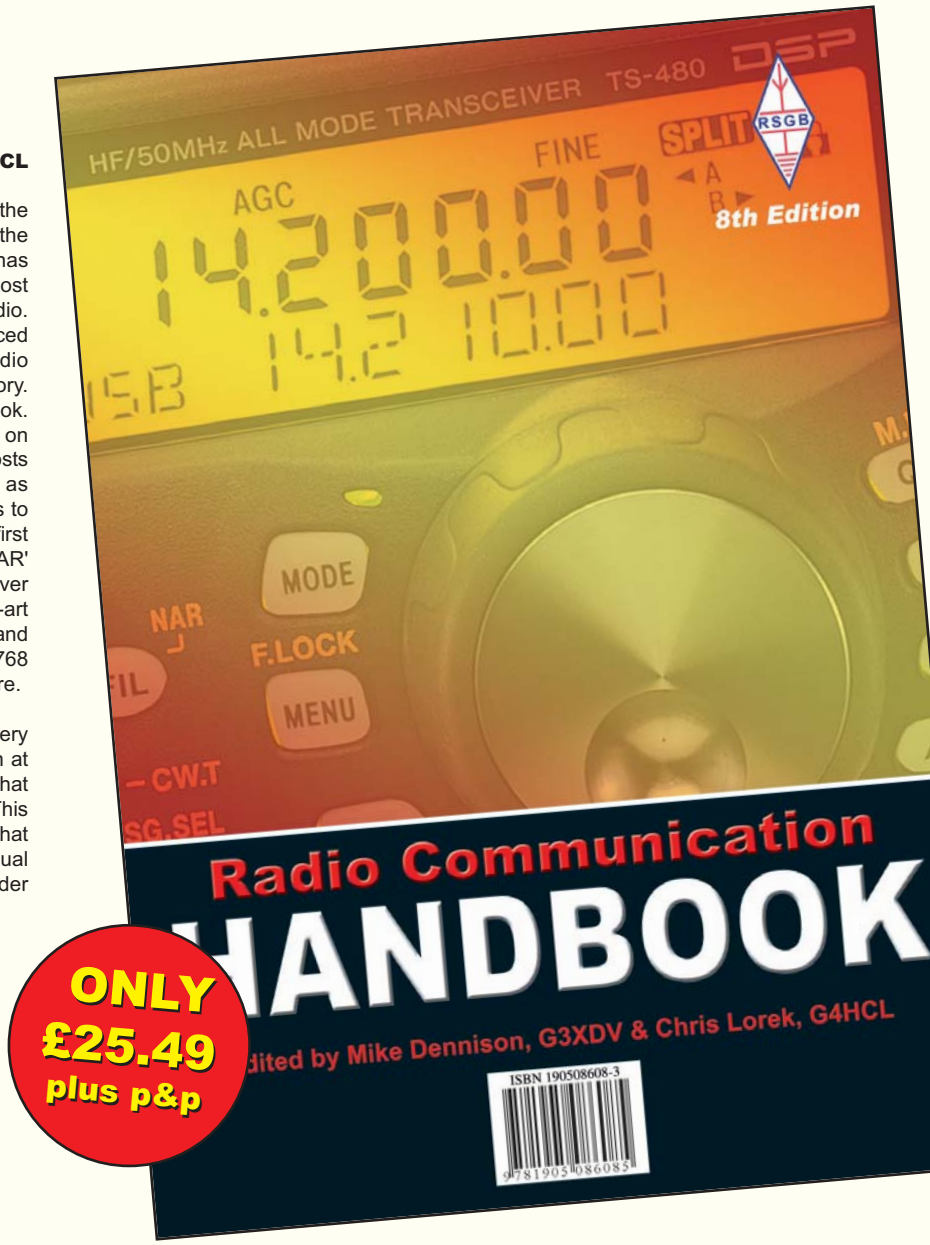

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By Don Field, G3XTT

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

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Work ethic

HF operators are doing an admirable job of maintaining a decent rate of new contacts in spite of "abysmal" conditions. Don Field reports.

As I write this, K7C is active from Kure Island with around 33,000 contacts in the log and four days to go. Propagation has not been particularly favourable to the UK although I know that contacts have been made on 20, 30 and 40m. The team was a little late starting up due to difficulties getting all the equipment ashore through a heavy swell, with the boat having to anchor something like five miles offshore. There were also some teething problems with the DXA server, due to the very high hit rate which caused the system to overload and crash at frequent intervals. But when it is working it is certainly a neat idea, with the real-time map display of stations being worked and other useful information such as bands and mode in use at any given time.

A number of well-known US amateurs have been affected by the recent hurricanes. AA5AU, one of the best-known RTTY operators, for example, lost his towers as a result of Katrina, and W5UE's house was flooded, ruining the blank QSL cards for stations he manages including HC8L and HC8N. New cards will be printed soon. We extend our sympathies to these folk, of course.

COUNTRIES WORKED, 2005
(starting 1/1/05, sorted this month by Mixed totals)

CALL	CW	SSB	DATA	MIXED
G4PTJ	205	184	0	228
G0KBL	206	0	0	206
G3TBK	193	109	76	200
G3JFS	168	126	147	194
GM0EGI	156	105	0	193
GM4FAM	180	91	0	193
G4OBK	172	88	78	186
G0RTN	171	83	0	184
M0AWX	102	150	25	183
G4WFQ	163	40	60	181
G4KFT	177	0	0	177
G3LHJ	154	66	86	167
M0BKV	97	134	49	165
GM4KGK	161	8	13	161
G4WXZ	119	118	0	160
M5GUS	0	158	0	158
G3HQT	155	0	0	155
G3YVH	109	89	0	151
G3YMC (qrp)	146	0	0	146
MM3AWD	129	137	65	146
MU0FAL	130	95	0	142
G1VDP	0	141	0	141
GM0TGE	63	112	0	132
G3YJQ	94	26	91	126
GU0SUP	0	0	121	121
G4RQI	110	41	31	120
M0BVE	114	0	0	114
G4NXG/M	0	109	0	109
MM0BQI	51	57	79	108
G0LGJ/M	0	102	0	102
G4FVK	72	81	0	102
M0CNP	36	65	73	102
M3NCG	0	102	0	102
M5LRO	24	78	7	100
G1UGH	0	96	0	96
G6CSY	0	52	68	87
G3WP	82	0	0	82
G4IDL	80	0	0	80
G4DDL	66	33	7	70
2E0TEC	19	38	69	69
G6HOU	2	39	46	66

A view of the antenna field on Kure island (K7C)

Ann, WA1S, operating K7C (Kure Island)

A view of the K7C (Kure Island) operating site during construction

DX NEWS

Ian ZD8I (G8WVW) on **Ascension Island** writes with an update (see my August column). He says he is still very active, though tends to call people rather than call CQ, to avoid the howling packs of callers. He is active most late afternoon/evenings on 20, 17 or 15m and occasionally early mornings on 40m and also flicks regularly through the UK and US 60m allocations. He will be active in the CQWW Phone contest as last year. Ian says he is particularly pleased to work UK stations and has 446 logged, 26 of which have been Foundation class licence holders. He comments: "UK propagation has been poor on all bands of late and to work so many low power stations is fantastic".

Al, 4L5A, reports that he will be dismantling the D4B contest station, which has been such a loud signal on all bands in recent years. This will certainly mean **Cape Verde** becomes more difficult to work once again.

Joel, 4S7PAG, will be active from 28 November to 16 December from **Sri Lanka** (AS-003). During his stay he will take a short trip to Barberyn Island (AS-171) between 9 and 11 December. QSL via F5PAC either direct or bureau. He has a Web page (see Websearch).

The **Thai** Telecommunications Commission has authorised the use of the WARC bands and low bands (80 and 160) until 31 December from the RAST club station (HS0AC) using the special callsign HS0T to commemorate the birth of a son to Crown Prince Maha Vajiralongkorn and Princess Srirasmi on 29 April 2005. The King has named the baby prince Teepangkorn Rasmichoti. QSL via HS6NDK.

A five man team from Europe plans to activate XU7TAS from Koh Tas Island, **Cambodia** for a few days in November. I do not have any specific dates for this one.

The French team from the Clipperton DX Club that put on A52FH (2000) and A52CDX (2004) are heading back to **Bhutan**. F2VX, F9DK, G0LMX and F5LMJ plan to be there from 18 November to 3 December. This will not be a DXpedition but rather a "ham radio project" to help promote the growth of amateur radio in Bhutan. To continue their project with the Bhutan telecom authority, they will donate one or two radios to the new club stations in the eastern part of the country. QSL via F9DK either direct or via the bureau.

Derek, G3KHZ, and his wife Joyce were due to spend a couple weeks on the D'Entrecasteaux Islands, OC-116, **Papua New Guinea**, P2, starting 22 or 23 October. Derek will be CW only, 40 through 10, with 100 watts.

Steve, G4JVG, *RadCom*'s last editor, is now living in Sabah, **East Malaysia** (IOTA OC-088), and has received a five-year licence with the callsign 9M6DXX. Steve is not very active yet as he is staying in a rented apartment while having a house built. However, he may occasionally get on the air from club stations as 9M6DXX or on IOTA mini-DXpeditions from Sabah's Coastal Islands group (OC-133) as 9M6DXX/P.

Members of the Korea Amateur Radio League (KARL) will be celebrating their 50th anniversary by going on a DXpedition to the **Temotu Province** in the Solomon Islands, between 5 and 11 November. Six operators will have two stations active on all HF bands and modes. The callsign H40HL has been requested (not confirmed yet) for their activity from Nendo Island (OC-100). They will use the callsign H44HL (also not confirmed) in the Solomon Islands (OC-047) before and after the H40 operation. There is a website with further details. QSL via HL1XP.

VK5AUQ and VK5ZZM planned to be active from 16 October to 14 November, all bands and modes. They will go to **Kangaroo Island** (OC-139) in the 28 to 30 October timeframe. QSL via PA9KW direct only. W6NRJ and N6KD will be active from the **Bahamas** (C6) during the first week of December. Activity will be on 12 through 80.

J3/SP9PT and J3/SP9BQJ will be active from **Grenada** from 26 October to 8 November. They may obtain regular J3 callsigns on arrival on the island. They expect to be on 40-10 (possibly 160 and 80), all modes. QSL to their home callsigns.

Look for special event station TO5S to be active from Les Saintes Islands (NA-114), **Martinique** from 2 to 10 November. Activity will be on all bands and modes. This station will be put on by a large team of French operators and the QSL manager is F1BCS.

Members of the Low Land DXpedition Team (LLDXT) plan to go to Paramaribo, **Surinam** from 23 November to 14 December. PA3EWP, PA2R and others will be on all bands and modes, and will be active in the CQWW CW and ARRL 10m contests. Ronald will be using PZ5WP and Rob will be active as PZ5PA while they save PZ5C for the two contests. More details and online logs will become available on the LLDXT website. QSL via PA7FM.

I have been asked by a few folk recently about which Region 1 countries now have extended 40m privileges. This is a moving feast, but you might like to look at the web page referenced in Websearch for the latest news. It might also be worth noting that ON3 foundation licensees from Belgium may now be heard on the HF bands. Listen for ON3 (OO3, OQ3, OS3 etc for special occasions). They have full HF privileges with 10 watts output except for the 10m band.

CQWW CW CONTEST

Apart from operations already mentioned, some of the others expected in the CQWW CW Contest include: 5J1W (Colombia) by US ops; 6W1RW by F6BEE (SOAB); 6Y/KH5H by W ops (M2); 9M2/E21EIC; 9M6NA (Labuan Island OC-133) by JE1JKL; 9Y4AA by N6TJ (SOAB); C6AWS by W6SJ (SOAB); CN2R by W7EJ (80m); CT3 by CT1BOH (SOAB); FP/K8DD (MS or M2); FS/K7ZUM (SOAB); GD6IA by DL2OBF (SOAB); HC8N (M2): HS0ZGH by G4UZN (SOAB); IH9P (M2); KP2/K3MD (SOAB); OH0Z by OH5DX (SOAB); P40W by W2GD (SOAB); PJ2T (MM?); PJ5NA by K1NA (SOAB); R1MVI by UA2FF; TZ5A by Voodoo Contest Group (MM); V26K by AA3B (SOAB LP); VK9AA by DL1VJ (Cocos Keeling, SOAB); WP3C (40m).

CORRESPONDENCE AND TABLES

This month I have given the name of the DXCC country for each new prefix that appears. I don't do this every time, for reasons of space, but I realise it is helpful for those of you who aren't necessarily familiar with all international prefixes and don't want to have to look every one up in a list.

Phil, GU0SUP, has been doing well on RTTY, especially in the CQWW RTTY contest, with 7X (Algeria), KH6 (Hawaii), HI (Dominican Republic), PJ2 (Netherlands Antilles) and VP9 (Bermuda) on 40m, plus HB0 (Liechtenstein) and VP9 on 80m. Damian, M0BKV. also mentions the same contest, with ZL2AMI (New Zealand) in the middle of Saturday afternoon on 20m as a particularly surprising one. On 20 SSB he made contacts recently with 9N7JO (Nepal) and BY50CRA (China). Derrick, G3LHJ, reports ST0RM (Sudan) and J20VB (Djibouti) on 20 CW and a new one on PSK31 by way of HZ1YB. Peter, G3HQT, says: "This month I've been making a few 'improvements' to my helical vertical system. One significant change is that Radio 4 on long wave, which I use as a steady signal baseline, went from S9+32 on the S-meter to S9+63. I make no similar claims for HF!" Whatever the case, Peter reports contacts, all at the 100 watt level, with AP2IA (Pakistan) on 17, F5PTM/6W (Senegal), 9N7JO and HS0ZEA (Thailand) on 20, HP1/WN6K (Panama) on 30 and A6/ON5NT (UAE) on 80. George, G4PTJ, notes that his scores are well down on the equivalent period in 2002 (Mixed total 228 as against 271, for example), a reflection of where we are in the sunspot cycle.

Colin, MU0FAL, says: "My most satisfying contact was a school club station in Yorkshire, MX0SSW. The operator informed me he had a small group of 12-13 year olds listening. In an attempt to get the youngsters interested, I mentioned that my grandparents were evacuated to Halifax in the Second World War. The teacher responded that the children were fascinated and could I tell them a little more. This resulted in a short history lesson on 20m about the Islands. Stan, G0KBL, calculates that he has heard probably 240 countries this year, all of which would probably have been workable with a beam and linear. However, he says: "It could be quite boring to break up every pile-up after a few calls." It's certainly true that many of those who have excellent HF stations soon turn to a new challenge, maybe 160m DXing or QRP (low power) although I'm not convinced that even the "big guns" in the UK have had it their way recent-

ly. Propagation has been such that southern European stations with 100 watts and a wet noodle for an aerial have often been able to walk all over us. Anyway, Stan's log is by no means shabby and includes recent contacts with HI3/KB2MS on 17, A43JA (Oman) on 20 and A92GR (Bahrain) on 15, all SSB. Mark, M0DXR, mentions that the FT5XO (Kerguelen Island) DXpedition video is now available.

Peter, G3JFS, says new ones are becoming very elusive but he did manage 9R2DX (Zaire) on 15 SSB, KL7J (Alaska) 17 CW, F5PTM/6W 20 SSB and PZ5RA (Surinam) on 20 RTTY. Carl, 2E0TEC, reports that A45WD (Oman) was a nice surprise on 20 RTTY. His CW is also improving and he worked a handful of new European countries. Gus, M5GUS, used his TS570D and G5RV to pull in 4J5A (Azerbaijan), 7Z1SJ (Saudi Arabia), TR8FC (Gabon), YN1BB (Nicaragua), 6Y5CI (Jamaica), ST2M (Sudan), 5Z4DZ (Kenya), A61AJ (UAE) and R1ANF (South Shetland) on 20m plus S01MZ (Western Sahara) on 40m, all SSB.

Graeme, G6CSY, wonders what happened to propagation, but answered his own question by reference to some of the propagation websites, which reported the massive solar activity during the month, causing severe HF blackouts. Graeme did the sensible thing by spending time replacing co-ax feeders and doing other antenna maintenance before the onset of winter weather. However, a later note from him records some success during the CQWW RTTY contest, with ZL2AMI, 7X0RY and HC8N (Galapagos) on 40, VP9/K9JY on 20 and 9M2CNC (W. Malaysia) and A61AJ on 15.

David Whitaker, BRS25429, passed on the web pages for the solar news, with the headline "Solar Minimum Explodes". Well worth a read.

Alan G4NXG/M managed to work 9R2DX for DXCC Entity #299 on 20. He was hoping to catch K7C (Kure) to finally reach the 300 mark on that band. Remember, Alan has achieved this entirely from his car! Terry, G1UGH, caught some special prefixes during the month by way of CQ0GIL (Gil Eannes Hospital Ship), 4N15ARDF (ARDF championships in Yugoslavia), R1000K and EO60AKU, all on 20m. This is a useful reminder that there can be stations of interest on the bands even when propagation is poor; they don't have to be far away but of fascination for other reasons such as an unusual location or a special event. Most issue commemorative QSL cards and prefixes like these count for various prefix awards. If you want to know where any of them are located, the prefixes still follow the usual rules, fitting in with ITU allocations, so you can look them in any of the standard lists such as the RSGB Prefix Guide or the Yearbook.

Norman, GM4KGK, says: "Conditions for the past fortnight can only be described as truly abysmal". His contacts include: ET3TK (Ethiopia) and V59SWK/L (Namibia, the /L indicates a lighthouse operation) on 15, J20VB on 17, CP4BT (Bolivia), ST/ZS5ADU (Sudan) and TI8/DL4MO (Costa Rica) on 20, plus 9N7JO and HP1/WN6K on 30. VK2IA was also worked (and heard several times) on 30 at about 0800Z with a very good signal. All these were on CW.

Chris, G1VDP, has been getting frustrated trying to work the K7C Kure Island DXpedition. His other problem is that his rotator has died on him. The good news is that his shack now sports a shiny new FT-1000 MkV Field. Recent DX includes S01MZ on 40, HS1CKC (Thailand), 3DA0TM

HF F-Layer, Propagation Predictions for October 2005

Compiled by - Gwyn Williams, G4FKH

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** EUROPE								
Moscow	996....68889	8.8634798789	..877788....	...88997....	...9999.....	...8999.....	....5.....	.....
*** ASIA								
Yakutsk	5554	6.3..1.67737	...76.....	...7.....	...5.....	.....	.....	.....
Tokyo	.....12222.	...523776 44.	...753662...	...63.....	...4.....	.....	.....	.....
Singapore	11111	687566	.....2885.22	.....686....	...24783....	...2577.....	...2565.....	....34.....
Hyderabad	1222	5.....67666	5.....68744.	..31.488....	...87887....	...8888.....	...899.....	....88.....
Tel Aviv	887....28888	8.93..288878	..786689....	...99998....	...6887.....	....55.....	.....	.....
*** OCEANIA								
Wellington	.....332...	...388987...	...799985...	...69997....	....676.....	....563.....	.....	.....
Well (NZ) (LP)	.....	.....	..1.....	.....	.....	.....	.....	.....
Perth	.....	.....26534.	.....673.1.	.....176....	....3786....	...3577.....	...678.....	...567.....
Sydney	.....	.....57742..	.....8871...	....4883....	...3898.....	...3887.....	...688.....	....7.....
Melbourne (LP)	.....	...3.....	...54.....	...25.....	....7.....	....6.....	.....	.....
Honolulu	...1...1....	...53226....	...656474...	.....4....	.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....	.....	.....	.....	.....
W. Samoa	.....1....	...56556....	...799872...	....797.....	....575.....	.....6.....	.....	.....
*** AFRICA								
Mauritius	2.....112	7.....36666	5.....76434	.....71...	.....35....	.....32....	.....	.....
Johannesburg	88.....588	99.....8999	983....69988	6.53115886.4	...55568....	...56677....	...78888....	...5778.....
Ibadan	242.....222	888.....7878	9996...39867	7.89656689...	...999998...	...99999....	...99999....	....999.....
Nairobi	2.....1	77.....6666	771....57777	..72..2773.3	..676578....	...77778....	...87784....	...7867.....
Canary Isles	8883....6888	99982..38999	8878634788 88	...6777886..	....77867...	.....8.....	.....7.....	.....4.....
*** S. AMERICA								
Buenos Aires	6656.....5	8889.....78	5529.....34	...8.....	...875453...	...67666....	....7665....	.....554....
Rio de Janeiro	222.....2	6657.....156	4428.....332	...7.....	...886675...	....86674...	....7566....	....6345....
Lima	1..1.....	5426.....13	11.4.....	.....	.....7653...	.....766....	.....665....	.....54.....
Caracas	111.....1	6666.....46	52.73....222	....62..2...	.....544....	.....655....	.....886....	.....66.....
*** N. AMERICA								
Guatemala	11.1.....	54172.....3	...52.....	.....2.....	.....22.....	.....	.....4.....	.....
New Orleans	2221.....	66.61.....16	2..7.....	.....42.1...	.....884...	.....88....	.....87....	.....7.....
Washington	6664.....15	88.84....178	5...32..26.4	.....7667...	.....7775...	.....88....	.....63....	.....
Quebec	8887.....78	87.87....788	....42..36..	.....6567...	.....8987...	.....99....	.....88....	.....
Anchorage	3771.....	85.763357667	....2...5...	.....	.....	.....	.....	.....
Vancouver	111.....	42.31.....2	.....	.....	.....	.....	.....	.....
San Francisco	11.1.....	32.32.....	.....	.....	.....6....	.....3....	.....	.....
San Fran (LP)	.....	.....	.....	.....	.....5....	.....5....	.....	.....

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

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at http://members.aol.com/g4fkhgwyn The page is updated monthly. The provisional mean sunspot number for September 2005 issued by the Sunspot Data Centre, Brussels, was 22.1. The daily maximum / minimum numbers were 50 on 13 September, and 7 on 30 September respectively. The predicted smoothed sunspot numbers for November, December and January are respectively: (SIDC classical method - Waldmeier's standard) 29, 28, 27 (combined method) 25, 23, 21. 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.

QTH CORNER

9M6DXX	S Telenius-Lowe, WDT 527, 88905 Kota Kinabalu, Sabah, Malaysia.
HL1XP	Jeon Seong-Tae, 58-1 Nonhyeon-Dong Gangnam-Gu, Seoul, Korea, 135-815, Repbublic of Korea
K7C	Kure DXpedition 2005, c/o K4TSJ, P.O. Box 1, Watkinsville, GA 30677, USA
PA7FM	Dennis Robbemond, Loggerhof 11, 3181 NS Rozenburg, The Netherlands
VK4AAR	Alan Roocroft, 376 Old Toowoomba Rd, Placid Hills 4343, Australia.

(Swaziland), VR2XMT (Hong Kong) and KG4OX (Guantanamo Bay) on 20, 5N8NDP (Nigeria) on 17 and 7Q7CE (Malawi) on 10, all SSB. Incidentally, there often seems to be confusion over the KG4 prefix. It's actually quite simple. Those with a two-letter suffix are Guantanamo Bay, whereas those with a three-letter suffix are mainland USA.

Finally, my apologies to Chris, M5LRO, whose August report went astray, probably because his was the only one which arrived here by snail mail. Chris had been enjoying some good openings into the Far East, with DX such as 9V1UV (Singapore), 9M2MT, 4S7RO (Sri Lanka), BV50CRA (Taiwan) and HS0/IK4MRK on 20. On 15, he caught TO0R (Reunion Island), S9SS (Sao Tome) and TN4AU (Nicaragua).

CCF/OHDXF MEETING

The 11th Contest Club Finland CF and OH DX Foundation contest and DX Meeting will be held from 20 to 22 January 2006. The meeting concept will be the same as last January; a cruise on the Baltic Sea from Helsinki via the Aland Islands to Stockholm and back to Helsinki. More details of special cruise packages, agenda, registration etc will be available on the web page. A number of UK amateurs including myself have already booked to attend and these events are always great fun.

SILENT KEY

One of the rare ones has become rarer with the passing of Ron Macfarlane, 7Q7RM. Ron became a silent key on Saturday 17 September. John Lord, 7Q7JL, says Ron, along with Les, 7Q7LA, was responsible for getting the 7Q licences reissued in 1990, after the absence of 7Q on the air for 16 years. Ron gave many people the chance for their very first ZD6 when it was Nyasaland, and later when it became Malawi. He was the most active of the 7Q stations on 6m.

I should also record the passing of Hugh Cassidy, WA6AUD. Older DXers will recall "Cass" as the editor of the West Coast DX Bulletin, where he invented a world inhabited by the Palos Verdes Sundancers, the Old Timer, full of words of wisdom about DXing, and the "Local QRPer", always ready to learn. Cass also, so far as I am aware, coined the terms "Big Gun" and "Little Pistol" as well as the immortal phrase "DX is!" He was a Second World War veteran, and had been involved over the years in many activities in addition to amateur radio. A real character who will be sorely missed.

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 **January** issue by **19 November**. ♦

WEB SEARCH

4S7PAG	www.qsl.net/f5pac/4s
7MHz privileges	home.planet.nl/~pa3ebt/IARU-R1/7_mhz_early.htm
CCF/OHDXF event	www.qsl.net/ccf
LLDXT	www.lldxt.nl
Solar news	science.nasa.gov/headlines/y2005/15sep_solarminexplodes.htm?friend
Temotu by HL ops	kdxc.net/h40hl_2005/

VHF/UHF

Norman Fitch provides his monthly report on activities taking place on the VHF and UHF bands

SOLAR AND GEOMAGNETIC DATA

Solar activity continues to decline steadily. In the 30 days to 5 September, the daily average 10.7cm solar flux was 85.4 units (about 5% lower that last month) with the maximum of 112 occurring on 23 August and the minimum of 74 on 3 September. Eleven new sunspot regions were recorded. Geomagnetic activity was quite lively in high latitudes but at the mid-latitude observatory at Fredericksburg, the A-index was in single figures for 19 days. It rose to a storm level of 72 on 24 August with the K-index reaching 8, resulting in auroral activity.

PHOTO: VK7MO

Rex Moncur, VK7MO, who operated from Cocos-Keeling Island as VK9CMO on 2m EME. He is standing beside the long Yagi antenna he used on the DXpedition.

MOONBOUNCE

Joe Taylor, K1JT, posted the following on the Moon-Net website: "I am pleased to announce the beta release of WSJT version 5.8.0. This is a major revision of WSJT, with many new features. Further enhancements are still to come, building on the all-new multi-threaded foundation code of version 5.8.0. WSJT 5.8.0 has the following capabilities that distinguish it from all earlier versions:

- Multi-threaded architecture for better sharing of CPU among tasks
- Built-in real-time waterfall display, usable in all WSJT modes
- DF of signal selectable directly from the waterfall display
- Selectable sound card
- Improved control of T/R timing
- Immediate decoding available after meteor "pings" in FSK441 mode or signal enhancements in JT6M mode
- No need to re-enter station parameters after a version upgrade
- 16-bit audio for better dynamic range
- Transmitted as well as received information saved in the cumulative file DECODED.CUM
- Optional logging of QSOs (for contests, etc.) in file WSJT.LOG
- Continuously updated solar and lunar coordinates and doppler information provided in file C:\azel.dat, usable by other programs
- User interface coded in the "Python" language (see below for more programmer information)

"Many other program enhancements are still to come:

- Correction for inaccurate sound-card sample rates
- Improvements to decoders for all WSJT modes
- Non-saturating measurements of signal level in JT65 mode
- Open source policy for nearly all program code
- Relatively easy to port program to Linux or Macintosh

"Version 5.8.0 is stable and very usable. A few familiar features present in version 4.x have not yet been implemented (for example, CWID and EME Echo mode). With many thousand lines of new code, it is likely that there are some new bugs."

Shortly after this release, a bug was discovered and corrected and version 5.8.1 can be downloaded from Joe's website – see 'Web search'. The correct file WSJT581.EXE has a length of 3377870 bytes. If you downloaded a file that has a different length, go back and download it again. In a note for programmers, Joe writes: "Like all of us, I am not getting any younger. A time will surely come when I am unable to continue development of the WSJT program, or even to make sure that it will still work with the next generation of personal computers.

"For these reasons, I very much want to encourage others who might be interested in becoming involved with future development of the program. I intend to release nearly all of the source code for WSJT under the GPL General Public License. (One piece of WSJT code has been licensed under a non-disclosure agreement; however, linking to the object code for this function will still be available to anyone.)

"The user interface of the new WSJT is coded in the open-source language Python. The code makes use of Tkinter and a number of other freely available Python modules. Python was chosen because it is freely available, easy to learn and to program, creates attractive GUIs and interfaces readily with compiled highly efficient languages such as Fortran and C.

"The audio I/O routines of WSJT 5.8.1 use PortAudio, a library of sound-card routines that can be used with Windows, Linux, Macintosh, and probably other platforms as well. The DSP functions and most of the heavy-duty computations are coded in Fortran, as well as some in C. These are standardised, highly portable languages, so the new WSJT code will be relatively easy to port to another platform when/if that becomes desirable. If you are interested in WSJT programming issues, please communicate with me and watch for further announcements."

Commenting on v5.8.1, Joop, PA0JMV, writes: "The protocol engines in the software are basically the same, so people with versions 4.9.8 and 5.8.1 can perfectly work together. I have been thoroughly testing all versions during a lot of EME QSOs, FSK441 QSOs and JT6M, and the new version works just great now. Most QSO partners did not even know I was running newer versions.

"However I can really recommend to upgrade to the latest version 5.8.1 and to read the README file on Joe's page. The new version has many enhancements that make DXing even more interesting and more operator-interactive. It is not the PC doing all work. It is down to the experience of the operator more then ever now. Thanks a lot to Joe for the numerous hours he spent in developing this package."

On 23cm on 23 August, Howard Ling, G4CCH (IO93), completed with C31TLT (RO/O) for initial (#) number 206. The August activity weekend (AW) on 27/28 brought him some of the best activity for many months. On the 27th, he completed on CW with OK1KIR, EI/DL1YMK (#207), OZ4MM, ES5PC (#208), WA6PY and NA4N. Next day brought CW QSOs with K9SLQ, ZS6AXT, ES6RQ, RW1AW, ES5PC, VE6TA, SM2CEW, ON7UN, OK1DFC, K0YW, K2UYH, N2UO and W7UPF with F2TU worked on SSB. ES5PC controls his remote station *via* the Internet. On 3 September, he completed with ZS6AXT,

40, Eskdale Gardens, Purley, Surrey CR8 1EZ.

E-mail: g3fpk@compuserve.com

SM6CKU and K9SLQ and next day with IW2FZR and N2UO all on CW. He copied CU8AO (HM49) working DJ9YW in their JT65c session but nothing from the Azores station on CW which runs 80-100W to a 4.7m dish from Flores Island in the Azores.

G4YTL now uses four 5-wavelength I0JXX cross-polarised Yagis on 2m which, used with Spectran on WSJT, enables him to see immediately which polarity is best. David is now up to 310 initials, CW and WSJT, the most recent new ones being VK9CMO (NH87) on the Cocos Keeling Islands on 20 August and back on June 28 J3/K5AND. Dave Avery, VK2AWD, reports that Rex Moncur, VK7MO, completed 67 QSOs on 2m and three on 70cm as VK9CMO before leaving for Christmas Island from where he is QRV as VK9XMO (OH29) at the time of editing.

Joe Kraft, DL8HCZ, reminds us that the results of this year's European Worldwide EME Contest are available on the *Dubus* website as a .pdf file – see 'Web search' for the direct link. Rainer Allraun, DF6NA, mentions that next year's EME Conference is *not* just for 432MHz and above EME-ers and that 2m and 6m operators will be very welcome to attend. Have a look at the website – see 'Web search'.

Jay Liebmann, K5JL, wrote the guest editorial in the September issue of the *432 and above EME News*, edited by Al Katz, K2UYH. He discusses the vexed topic of the use of loggers and the Internet while actually attempting EME QSOs and writes: "I must admit that talking to someone on a logger at the same time that you work them ruins some of the magic of EME for me." He goes on to say: "Any QSO made while using any electronic assistance, such as telephone, logger or Internet should be considered null and void."

The final leg of this year's ARRL International EME Competition is over the weekend of 12-13 November and is for the 50-1296MHz bands. The full rules are on the ARRL's website – see 'Web search'.

Due to the low declination, London latitude stations will only see about 24 hours of Moon time. The declination varies from -2.03° to +11.07° and the 144/432MHz sky temperature ranges from 275/23K to 340/25K. The signal degradation referred to perigee varies from -0.18dB to -0.53dB and the Sun offset at Saturday midnight is +141°.

BAND REPORTS

50MHZ

Ken Punshon, G4APJ (IO83), worked HA1YA for a new country on 10 August and in an aurora on the 31st, he contacted GM7PBB. In that aurora, Bryn Llewellyn, G4DEZ (JO03), worked a lot of DX and has made auroral, auroral-E and Es contacts in the same evening some times. On 13 August, he contacted GMs in an aurora and worked into TF on Au-E. In the morning of the 24th, there was auroral propagation to GM, LA, SM, OZ, ES and OH with Es in the afternoon when he worked stations in HA, LZ, YL and 9A. In all, he contacted 33 HAs while they had their special August QRP permits.

Ted Collins, G4UPS (IO81), contacted 34 of the HAs, mostly on CW and copied a beacon signing HA8BS on 50.060.8MHz CW sending its callsign twice followed by 'KN06OP erp 5 watts ant 5/4 vert asl 91m'; he heard it for the first time on 25 August at 0822. August days with little or no activity were 12, 14, 17-24, 26 and 29. The best days were 13, 25, 27 and 30 with lots of countries and grids worked. During August, Ted heard 23 beacons including CN8MC, OY6SMC and TF3SIX.

Bob Harrison, G8HGN (JO01), enjoyed a good Es opening to HA on 16 August and HA3UU (JN96) was an all-time new grid. On the 28th, the band was open to Italy during a contest and another six grids for 2005 were worked. The band was open again on the 30th and LY3UM (KO24) was a new 2005 country and grid. During the evening, he had Es QSOs with Scandinavian stations and in the aurora next evening he heard GM4NFC (IO75) and GI6ATZ (IO74).

Kevin Jackson, M0XLT (IO83), sums up August as an excellent month for Es propagation, especially towards the end when openings lasted for hours. Some of the highlights included: HB0/PE1MSZ/M (JN47) on the 10th; TF3EE (HP94) and TF8GX (HP84) via Au-E on the 13th; OH0JFP (KP00) on the 26th; HV0A (JN61), SQ9DDH/9 (KO00) and OE50IPC (JN87) in an 11-hour opening on the 27th; and EH9IB (IM85) in a nine-hour event on the 28th. He also worked a lot of the HA stations.

Steve Inman, 2E0KBJ/P (IO93WV), added 24 more grids and four new countries during 16 Es openings. ODX in a 2-hour event on 10 August was SV1EN (KM18). On the 27th, there were two openings in which he worked stations in 14 countries including HA, LY and UX. From 1700 on 2 September there was an aurora for about 25 minutes when he worked into IO68 and IO97 grids. GM4VVX was QRV in the UKAC on 23 August but Clive only made three contacts, two with locals, the other with OH3BSL (KP10). On the 25th, he reports Es all over Europe from 0700 for seven hours. John Armstrong's, GW3EJR, latest grid additions are IG9/I2AND (JM18), F4DVO/P (JN18), IQ8BI/7 (JM99), CT1HZE (IM57), YU7AV (KN05), EH7BYM (IM66), HA3UU (JN96) and HA8IB (KN07), which will bring his total to 321 next time the table appears in the December issue.

70MHZ

G4YTL reports that the OZ stations have been very active in all the recent auroras. GM4VVX found conditions quiet in August until the Trophy Contest on the 21st when Clive operated portable from IO87UB, 310m ASL. He worked all the five stations he heard in the first 30 minutes then nothing but MS pings for the rest of the event. On the 14th he contacted GM4ISM (IO85) in an aurora. On the 28th he had a cross-band 4/6m QSO with CT1HZE (IM57). In the UKAC on the 30th portable operation resulted in just two QSOs and in an aurora next day he worked MM0DQP (IO88), a new grid recently activated on the band. In another aurora on 2 September, he worked OZ2LD* (JO45) and MM5AJW* (IO88), another new operator in this grid.

144MHZ

Ian Carter, G0GRI (IO81), using 50W to a collinear antenna 100m ASL, was QRV in the Trophy Contest on 4 September and his ODX was TM8MB

METEOR SCATTER

Using the FSK441 data mode on 2m, Brian Oughton, G4AEZ, operating club station G8VYK (JO01), completed with TK5EP (JN41) on 12 August for a new country. Others worked were LA0BY/P (JP51), SM/DJ8MS (JO96) and LA/OH9TT (JP66). Other new grids worked were OH6HFX (KP14), ES4Q (KO39) and HB3YIT (JN46). On 4m SSB, David Hilton-Jones, G4YTL (IO92) completed with OZ3ZW (JO54), OZ1DOQ (JO55), OZ2M (JO65) and S59MA (JN76) and recommends that more people try SSB MS as there are often long reflections.

Clive O'Hennessy, GM4VVX (IO78), writes: "Had fun with this FSK stuff. Some QSOs so easy it seemed wrong sitting drinking coffee whilst the PC did the work. Lots easier than trying to find and decode pings with the tape recorder before the end of the transmit period." His Perseids completions on 2m were with OH6PA, OH3JR, SM3JLA, OH1CS, PE1AHX, SP6GWB, GB2LB (IN79), RU1AA (KP40), F1EBK, F4DXX, OK1CDJ, RX1AS, OK1PTC, LY2BUU, SK2AT, SP8RHP, IV3DXW, F4CYZ and DL3LST bringing three new grids. There seemed fewer pings than in previous years and he only heard one burst over 30s.

Gordon Wyatt, GW8ASA (IO81), heard club station LZ9X (KN32AS) calling CQ on FSK441 mode on 8 August so went to the QSY frequency to send 26 reports. Later he received 'GW8ASA LZ9X R27 R27' then confirmed with 'ASA RRRRRRRR' several times. In a subsequent contact on the ON4KST chat room, Savi Dimitrov, LZ1UK, who was the operator, confirmed that the QSO was properly completed. The QRB (distance) is 2424km, not quite a record, but Gordon wonders if this is an IARU Region 1 GW/LZ 'first' on MS.

This QSO was reported in the 12 August edition of Radio Bulgaria's hour-long DX Program for radio amateurs, which is transmitted on Fridays from 2100UTC on 5800 and 7500kHz and beamed to Western Europe. There are more broadcasts at other times on other frequencies. Dimiter Petrov, LZ1AF, is the DX Editor and the e-mail address is English@bnr.bg if you need more information. There is also a website – see 'Web search'.

ANNUAL VHF/UHF TABLE - JAN TO DEC 2005

	50MHz		70MHz		144MHz		430MHz		1296MHz		Total
Callsign	Grid	Ctr	Grid	Ctr	Grid	Ctr	Grid	Ctr	Grid	Ctr	Points
G4DEZ	377	79	44	18	224	37	46	12	19	6	862
MU0FAL	251	69	4	5	24	11	-	-	-	-	364
2E0KBJ/P	243	45	-	-	44	11	6	1	-	-	350
M0XLT	215	46	-	-	10	4	1	1	-	-	277
G8HGN	82	29	-	-	70	15	29	9	-	-	234
G4OBK	84	48	25	9	33	17	1	1	-	-	218
G6TTL	104	36	-	-	36	10	16	7	-	-	209
G8RWG	93	34	-	-	47	12	-	-	-	-	186
G8VYK	19	11	-	-	97	31	8	4	-	-	170
G6HOU	79	47	-	-	28	9	-	-	-	-	163
G4APJ	70	26	-	-	17	6	17	6	-	-	142
G3YDY	-	-	-	-	50	12	39	11	-	-	112
M5FUN	-	-	-	-	67	15	-	-	-	-	82
G3FIJ	4	1	8	2	17	5	9	2	-	-	48

The grids are the first four characters, eg IO91, and the countries are the current DXCC entities plus IT9. Do not count EME QSOs this year. The next deadline is 8 November.

(JN35) at 903km. G4DEZ worked JN14 and JN24 for new grids and 18 countries in this event, ODX being SP4SAS (JO93) at well over 1300km. Bryn comments on the increasing use of 'chat room advertising' by some stations. He monitored this 'chat' all day and night and estimates that 25% of the participants adopted this technique. He states that a lot of the Eastern European groups were passing full locators in their texts, something that's not allowed in HF contests. He suggests that contesting on VHF and above in the UK is losing support, perhaps because some groups believe that the use of Internet schedules is not amateur radio. Any comments?

In the aurora on 31 August, G8VYK contacted OZ4VW (JO45) and EI3GE (IO63) but had to go QRT before it really got going. 2E0KBJ/P enjoyed the better conditions that started on 2 September lasting into the contest weekend, which brought Steve seven new grids and three new countries. For GM4VVX, the band was quiet until the aurora on 24 August when Clive called CQ for an hour from 0900 before working some OZ*, PA, ON* and DL* stations. The big one was on the 31st from 1500 when he completed lots of mainly SSB QSOs with stations in DL, ON, PE, GM, OZ, ES, OH, ON, EI, SP, OK and LA. Operating portable from IO87VB in the Trophy Contest, he reported that activity seemed up for a while. PI9A (JO33) was his first Dutch station in any contest. On the Sunday morning, F6KIF/P (JN29) was his first French station in a contest.

FINAL MISCELLANY

Thanks to the UK Six Metre Group for the August issue of *Six News*, which as usual is full of excellent articles and reports for 6m enthusiasts. Peter Ebsworth, LB0K (JP20), correctly points out that Foula Island – see page 59 in the September *RadCom* – is situated 20 miles *west* of mainland Shetland and not east as G4ODA wrote. Apologies for the non-appearance of the Locator Square Table last month due too much space taken up by the photographs. The deadline for copy for the January issue is **8 November** and for February it's again *very* early – **6 December**. My telephone answering and fax machine is on 020 8763 9457 and my CompuServe ID is g3fpk ♦

WEB SEARCH

Radio Bulgaria	www.bnr.bg
WSJT v5.8.1	http://pulsar.princeton.edu/~joe/K1JT/
EU WW EME contest	www.marsport.demon.co.uk/EME2005results.pdf
2006 EME Conference	www.eme2006.com/
ARRL (EME rules)	www.arrl.org

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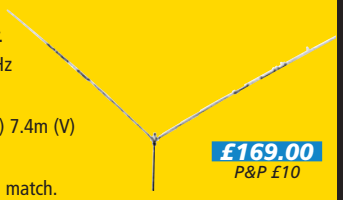

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CHS-14	20m (14MHz)	L: 0.95m W: 151g 250W PEP	**£29.95**	P&P £8.00
CHS-21	15m (21MHz)	L: 0.95m W: 150g 300W PEP	**£29.95**	P&P £8.00
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It's good to chat

It is perfectly legal to use the WWW Converse text-based-chat system to set up skeds during contests, writes Tim Kirby. Plus, UK hams put in a good performance at CQ WW Contests 2004

After the recent 144MHz Trophy, there was some discussion about the legality, or otherwise, of using the WWW Converse system to make skeds with European stations during the contest. My initial reaction was that this was fine for multi-op stations, but couldn't be right for single operator stations. I checked the VHF Contests Committee's General Rules and found that Cluster Access is open in all contests, whether single operator or not. And WWW Converse access is specifically mentioned as being allowed for all contestants.

Skeds during regular contests, at HF or VHF, are not always so useful. With skeds arranged days or hours in advance, you can never be sure that the sked partner will turn up, so you could find yourself wasting lots of time on a contact that never turns up! On the other hand, you stand a much better chance with a sked that is setup instantaneously - you know the guy is going to be on! You still might not complete the contact - which could waste time - but on the other hand, if nothing much else is coming through, it could be a great opportunity to make a lot of points.

So setting up skeds is ok according to the rules. Whether you agree or disagree, you might as well use the rules to your advantage - that's one of the tenets of contesting. You might think that this only applies to big stations. But not so. If you're a smaller station, in the low power category, you might find it worthwhile to try to set up a sked with a GM station, for example, or a DL. Try and stretch the limits of what you can work. This is what it's all about. I know from my Backpackers experience on 2m that even with 3w and a Morse key, I can virtually always work experienced operators such as GM4AFF and GM4ZUK/P over a 500-600km path. Good points for low power in poor conditions. Give it a go!

G6ZXN/P operated by Ian Carter during a recent 432MHz contest

CONTEST CALENDAR

HF Contests

Date	Time	Contest	Mode	Bands	Exchange
12-Nov	2000-2300	RSGB Club Calls	SSB	1.8	RS+Serial+Club info
12/13-Nov	0000-2359	Worked All Europe	RTTY	3.5-28	RST+SN+QTC
12/13-Nov	1200-1200	OK/OM	CW	1.8-28	RST+SN
19/20-Nov	1200-1200	LZ DX	CW/SSB	3.5-28	RST+ITU Zone (eg 27)
19/20-Nov	2100-0100	RSGB 2nd 1.8MHz	CW	1.8	RST+Serial+District
26/27-Nov	0000-2359	CQ WW CW	CW	1.8-28	RST+CQ Zone (eg 14

VHF Contests

Date	Time	Contest	Mode	Bands	Exchange
01-Nov	2000-2230*	RSGB 144MHz activity & Club Championship	ALL	144	RST+SN+Locator
05/06-Nov	1400-1400	RSGB 144MHz CW	CW	144	RST+SN+Locator
08-Nov	2000-2230*	RSGB 432MHz activity	ALL	432	RST+SN+Locator
15-Nov	2000-2230*	RSGB 1.3GHz/2.3GHz activity	ALL	1.3G/2.3G	RST+SN+Locator
22-Nov	2000-2230*	RSGB 50MHz activity	ALL	50	RST+SN+Locator
29-Nov	2000-2230*	RSGB 70MHz activity	ALL	70	RST+SN+Locator

* Local

Finally, some of you may not be sure what the WWW Converse is. Well, it's essentially a network on the internet for radio amateurs that allows realtime (text based) chat. Specifically, for VHF enthusiasts, there are the 14345 and 14346 channels (so named after the VHF net frequencies on 20m). 14345 is used for DX on 50MHz and up and 14346 for WSJT. If you want to know how to connect to the WWW Converse, I suggest going to www.meteorscatter.net /traf.htm and following the details at the bottom of the page. You can use the default Telnet client which comes with Windows, or specific clients intended for amateur radio, such as DX Telnet (www.qsl.net/wd4ngb/telnet.htm)

CQ WW CONTESTS 2004

Thanks to Roger, G3SXW, for summarising the UK entries who made it to the Top 10 boxes in their categories. In the SSB contest, those stations are:

Single-Op, All-Band

GI1W	1st Europe (6th World)
GW4BLE	2nd Europe
M6T	5th Europe
GM7V	6th Europe

Single-Band, 28 MHz

G0AEV	5th Europe

Single-Band, 7 MHz

MI0LLL	6th Europe

Multi-Multi

MD4K	5th Europe

Particular congratulations to GI1W operated by Robert, GI0KOW, for an outstanding achievement in being placed first in Europe and to Steve, GW4BLE, for being just behind in second place.

On CW, the stations are:

World

1st Multi-Multi 5U5Z (ops G0MTN, G3PJT, G3SXW, G4BWP, G4PIQ, K5VT, KC7V, N7NG)

Europe

All Band	2nd	GI1W
14MHz	6th	G3TXF
3.5MHz	6th	G0IVZ
LP 14MHz	2nd	G6M
Multi-Two	6th	GJ2A
Multi-Multi	3rd	GM5A

Congratulations to the team at 5U5Z for achieving the highly prized World 1st Multi-Multi placing and to everyone else listed.

Of course, space does not permit inclusion of everyone who entered, but thanks to everyone who flew the flag for UK contesting and we look forward to another bumper and successful entry this year. ♦

Affiliated Societies

Our apologies for the

Individual Listing

Posn	Callsign	Checked
1=+	G4BUO	3520
1=+	G4BWP	3520
3c	G4STV	3310
4=	G3NLY	3290
4=	G3RCV	3290
6	G3ORY	3260
7	G4TSH/P	3180
8	G4ERW	3130
9	G3VHB	3100
10=	G3NKC	2890
10=	G3TBK	2890
10=	G6UW	2890
10=	G3SJJ	2890
13	G8VHI	2880
14	G4EOF	2800
15	G4CZB	2780
16	G4PIQ	2690
17	G4DBL	2590
18=	G0MTN	2550
18=	G0TPH	2550
18=	G3NAS	2550
21	G3KLH	2520
22	GW0GEI	2490
23	M0DHO	2430
25=	G0VJG	2330
25=	G3SJX	2330
27	G0VDZ	2320
28	G3VZT	2300
29	G4EZT	2290
30	G3MXH	2250
31=	G3UFY	2210
31=	M0TDG/P	2210
33=	G3RXQ	2200
33=	G4LRP	2200
35	G4TPO/P	2180
36	MM0MWW	2170
37=	G3VLX	2140
37=	G3WHK	2140
37=	G4MRS	2140
40	G0GDU	2130
41	G0ODQ	2110
42=	G3SVL	2060
42=	G4WFR/P	2060
44	G4MZX	2050
45	G3RFX	2020
46=c	2E0ATY	2010
46=	G3KNU	2010
48	GW8IZR	1980
49=	G3LVP	1960
49=	G4CWH	1960
51	G3RVM	1930
52=	G3GJW	1890
52=	GM3WUX	1890
54	GM4AFF	1850
55=	G4KZD	1840
55=	G6BOX	1840
57	G3NVO	1830
58	G3SWC	1800
59	G4EBK	1780
60	G3XTT	1770
61	M0DDT	1750
62	G3NPF	1740
63	G3RSD	1710
64	M0WLF	1700
65	G3NKS	1660
66	G3LIK	1650
67	M0AJT	1630
68	G4WBV	1620
69=	G3YEC	1600
69=	G4FBS	1600
71	G0VQR	1580
72=	G3LUW	1540
72=	G4NVH	1540
74=	G0LHZ	1510
74=	GM3JKS	1510
76	G3KKQ	1490
77=	G3ZBE	1480
77=	G4IUF	1480
79	G0HDV	1470
80=	G4ZUL	1460
80=	M0BBB	1460
82=	G3ZGC	1440
82=	G4EYE	1440
82=	G7TWC	1440
85	G0LZL	1430
86	G4RFR	1420
87	G4FNL	1400
88=	G8JXV	1380
88=	M0MCX	1380
90	G3RWL	1340
91	G3SNU	1330
92	MM5DWW	1310
93	G3SHF	1290
94	G3MEH	1250
95=	GW4BLE	1240
95=	M0CGE	1240
97	G4FCN	1230
98=	G0VFW	1210
98=	G3SET	1210
100	G4RCD	1160
101	G4DDX	1150
102=	G0KDS	1140
102=	G8RZA	1140
104	G0TQJ/P	1130
105=	G0IIQ	1120
105=	M0COP	1120
107	G4FON	1110
108=	G0WHO	1100
108=	G3YAJ	1100
108=	G4LPD	1100
111	G4JRY	1090
112=	G3VYI	1080
112=	G3WRR	1080
112=	MM0CPS	1080
115	G4UEL	1070

Contest SSB, 2005.

truncation of this listing last month. We have pleasure in reproducing it here in full.

116	G3VER	1040
117=	G0WLF	1030
117=	G3SVD	1030
119	M0GJH	1030
120	G3TRF	1010
121	M0CUL	1000
122=	G3LHJ	980
122=	GW3GUX	980
124	MW0BER	980
125	G0VYR	970
126=	G0EYR	960
126=	G0JSH	960
128	G4WEY	940
129	G4DFI	920
130	G0THY	900
131	G4RSW	870
132=	G2BKZ	850
132=	G3YYZ	850
134	G0RXA	830
135=	G3UEG	820
135=	M0JAK	820
137	G3VTS	810
138=	2E0RGO	800
138=	G3VYE	800
140	M0ACL	790
141=	G4NKT	780
141=	G8PQ	780
143	G3TWG	770
144=	G7BRZ	760
144=	GJ4CBQ	760
146=	G0IOR	750
146=	G0MRH	750
148=	G0VBT	750
148=	G4SLE	750
150	G3WQG	740
151	G4TPH	720
152	G0WAL	710
153=	G0YYY	700
153=	G3TXF	700
153=	G3WWT	700
156	G0LMD	690
157=	G4BJM	650
157=c	MJ3JBQ	650
159=	G3KKJ	630
159=	G8XLH	630
161	G0PSE	610
162	G4PDQ	600
163=	G0ICJ	580
163=	G0UAI	580
163=	M5AGL	580
166=	G2BOF	570
166=	G3OOK	570
168	G0EYO	550
169=	G0JLF	540
169=	G3NDJ	540
169=	M0DEY	540
172=	2E0MJD	520
172=	G3BIT	520
172=	G3WNI	520
175	G1KWF	510
176=	G0KPZ	500
176=	G3EAO	500
176=	M0TIF	500
179	G0WWD	490
180=	G8FMH	480
180=	MM0WPM	480
182	G3OZY	470
183=	G0AOJ	460
183=	G3WQK	460
183=	M0SRS	460
186=	GW3NJW	450
186=	M1ECY	450
188	G6PMT	440
189	G0IBN	430
190	G4VUD	420
191	M5AEX	390
192=	G0OKF	380
192=	GM3YBQ	380
192=	M0DCG	380
195	G7HCL	350
196	MM0SJH	340
197	G1IQZ	330
198	M3XIS	320
199	G3SZS	310
200	M0MBO	300
201	M3ZGC	280
202=	G0GID	260
202=	M0BZK	260
202=	M0PHL/P	260
205=	G4LHI	250
205=	M0SSR	250
205=	M3FIF	250
208	G4ZGP	240
209=	G1BHR	230
209=	M0MRR	230
211	2E0FKG	220
212	2E1GUA	200
213	M3FRZ	180
214	G0XAH	170
215=	G4KTI	160
215=	M0FRS	160
217=	G3HEJ	150
217=	M0AEJ	150
219	M3NXC	130
220	2M0AYZ	110
221=	M0EWW	90
221=	M0RPM	90
223	M0MXX	80
224	M0TEZ	70
225	M0BZF	60
226=	2E0FUH	50
226=	G0JUS	50
226=	G3JUL	50
229	G1VDP	40
230	M3UKX	10

+ RSGB Lichfield Trophy
c Certificate of merit

Clubs Section

Pos	Club/Team	Stn 1	Stn 2	Stn 3	Total
1+	Cray Valley RS 'A'	G4BUO	G3RCV	G4DBL	9400
2c	Lichfield ARS 'A'	G3NLY	G3VHB	G3NKC	9280
3c	De Montfort University ARS 'A'	G3ORY	G8VHI/P	G4EOF	8940
4	Martlesham DX & CG	G4BWP	G4PIQ	G4MRS	8350
5	Sutton & Cheam RS 'A'	G4ERW	G3WHK	G4CWH	7230
6=	Echelford ARS 'A'	G4TSH/P	G0VDZ	G3KKQ	6990
6=	Hadley Wood CG 'A'	G4STV	G4KZD	G6BOX	6990
8	Grimsby ARS 'A'	G3TBK	G0GDU	G4EBK	6800
9	Cambridge University WS	G6UW	M0TDG/P	M0BBB	6560
10	Cray Valley RS 'B'	G0VJG	G3VLX	2E0ATY	6480
11	Newbury & DARS 'A'	G3KLH	G3RVM	G3NVO	6280
12	Horsham ARC 'A'	G4LRP	G4TPO/P	G3SWC	6180
13	Lichfield ARS 'B'	G3NAS	G3SJJ		5840
14	Reading & DARC 'A'	M0DHO	G3XTT	G0LHZ	5710
15	Addiscombe ARC 'A'	G3SJX	G3UFY	G3WRR	5620
16	Chesham & DARS 'A'	G3RXQ	G0ODQ	G3MEH	5560
17	Dragon ARC 'A'	GW0GEI	GW8IZR	MW0BER	5450
18=	Bristol CG 'A'	G3RFX	M0WLF	G4WBV	5340
18=	Stratford-upon-Avon & DRS 'A'	G4EZT	G3MXH	G3VYE	5340
20	Horndean & DARC 'A'	G4WFR/P	G3LIK	G4FBS	5310
21	GM DX Group	GM3WUX	GM4AFF	GM3JKS	5250
22	Northampton RC	G4CZB	G4MZX	G1BHR	5060
23	Wythall RC 'A'	G0MTN	M0MCX	M0COP	5050
24	Scunthorpe Steel ARS 'A'	G3KNU	G0HDV	G4JRY	4570
25	Grimsby ARS 'B'	G3RSD	M0AJT	G4LPD	4440
26	Cheltenham ARA 'A'	G3LVP	G3NKS	2E0RGO	4420
27	De Montfort University ARS 'B'	G0TPH	G3ZBE		4030
28	Hadley Wood CG 'B'	G7TWC	G3RWL	G8RZA	3920
29	Cray Valley RS 'C'	G3GJW	G0WLF	G4DFI	3840
30	Orkney ARC	MM0MWW	MM5DWW	MM0SJH	3820
31	Harwell ARS	M0DDT	M0CUL	G0THY	3650
32	Newbury & DARS 'B'	G3ZGC	G4FON	G3SVD	3580
33	Stockport RS 'A'	G0LZL	G3SHF	G0RXA	3550
34	Torbay ARS 'A'	G3SNU	G4FCN	G3LHJ	3540
35	Harwich AR Interest Group	G4EYE	M0CGE	G3YYZ	3530
36	Horsham ARC 'B'	G3NPF	M0GJH	M0DEY	3310
37	RNARS Colchester	G3YEC	G3YAJ	G3OOK	3270
38	Southdown ARS 'A'	G3SVL	G0UAI	G3WQK	3100
39	Flight Refuelling ARS 'A'	G4RFR	G4WEY	G0WAL	3070
40	Farnborough & DRS 'A'	G4UEL	G0VYR	G0YYY	2740
41	Worthing & DARC	G4FNL	G4SLE	G3NDJ	2690
42	Grimsby ARS 'C'	G0IIQ	G7BRZ	G0IOR	2630
43	Stevenage & DARS 'A'	G4DDX	G2BKZ	2E0MJD	2520
44	St Leonards ARS	G4NVH	G4RSW	M0EWW	2500
45	Bristol CG 'B'	G0KDS	G4NKT	G0JLF	2460
46	RAFARS Devon	G3LUW	G8PQ		2320
47	Norfolk ARC	G3VZT			2300
48	Echelford ARS 'B'	G0JSH	G3WWT	G3EAO	2160
49	Taunton & DARC	G0EYR	G0PSE	G3WNI	2090
50	RAFARS Cosford	G0TQJ/P	G0VBT		1880
51=	Cheltenham ARA 'B'	G3VTS	G4PDQ	G3SZS	1720
51=	Huntingdon ARC 'A'	G8XLH	M5AGL	G1KWF	1720
53	Itchen Valley ARC	M0ACL	G0LMD	2E0FKG	1700
54	Contest Cambria	GW4BLE	GW3NJW		1690
55	Chelmsford ARS	G4ZUL	2E1GUA		1660
56	Basingstoke ARC	G4RCD	G8FMH		1640
57	Reading & DARC 'B'	G0VQY			1580
58	Maidenhead & DARC	G3TWG	G3WQG		1510
59	Ripon & DARS	G4IUF			1480
60	Torbay ARS 'B'	G3BIT	G0WWD	G4VUD	1430
61	Scarborough ARS	G0WHO	G4ZGP	M0MXX	1420
62	Jersey ARS	GJ4CBQ	MJ3JBQ		1410
63	Reigate ATS	G8JXV			1380
64	Wythall RC 'B'	G0ICJ	G0EYO	M0AEJ	1280
65=	Chesham & DARS 'B'	G0VFW			1210
65=	RAFARS Waddington	G3SET			1210
67	Cockenzie & Port Seaton ARC	MM0CPS	2M0AYZ		1190
68	Milton Keynes ARS 'A'	M0TIF	M5AEX	M0BZK	1150
69	RNARS Portsmouth	G3KKJ	G3OZY		1100
70	Addiscombe ARC 'B'	G3VYI			1080
71	Maidstone ARS	G3TRF	G0JUS		1060
72	Verulam ARC	G3VER			1040
73	Newbury & DARS 'C'	G4TPH	M3ZGC		1000
74	Dragon ARC 'B'	GW3GUX			980
75	Huntingdon ARC 'B'	M0SRS	G4LHI	M0MRR	940
76	Scunthorpe Steel ARS 'B'	G0AOJ	G0OKF		840
77=	Harlow & DARS	G3UEG			820
77=	Horndean & DARC 'B'	M0JAK			820
79	Stevenage & DARS 'B'	M1ECY	G7HCL		800
80	Stockport RS 'B'	M0DCG	G1IQZ	M0TEZ	780
81	Stratford-upon-Avon & DRS 'B'	G0MRH			750
82	Three As CG	G3TXF			700
83	Mid Beds CA	G4BJM			650
84	Sutton & Cheam RS 'B'	G2BOF			570
85	Southdown ARS 'B'	M0PHL/P	M0SSR		510
86	Cray Valley RS 'D'	G0KPZ			500
87	Echelford ARS 'C'	G6PMT	G3JUL		490
88=	Colchester Radio Amateurs	M3XIS	G4KTI		480
88=	RNARS Inverness	MM0WPM			480
90	Milton Keynes ARS 'B'	M0MBO	M0RPM	M0BZF	450
91	RNARS London	G0IBN			430
92=	Bolsover ARS	M3FIF	M3NXC		380
92=	Glenrothes & DARC	GM3YBQ			380
94	Farnborough & DRS 'B'	M0FRS	G3HEJ		310
95	Flight Refuelling ARS 'B'	G0GID			260
96	Horsham ARC 'C'	M3FRZ			180
97	Huntingdon ARC 'C'	G0XAH			170
98=	Stockport RS 'C'	2E0FUH			50
98=	Wythall RC 'C'	G1VDP	M3UKX		50

* = Flight Refuelling ARS Trophy
c = Certificate of Merit

October 2004 UHF/SHF Contest Results

This was not a weekend that many operators will want to remember – other than to say that next year can't possibly be as bad. It was wet and windy with some distinctly average conditions to go along with the weather. Many operators complained of deep QSB on signals – G5B did wonder whether it was due to not having guyed off the towers in the strong winds though! The Colchester Group packed up early on Sunday morning after receiving a severe weather warning.

In spite of all this, there was some fleeting decent DX around – GW4DGU heard OK1KIR on 70cm at 1300km, along with a number of German stations, but wasn't able to make the QSOs and was rather jealous of the fact that things may have been QRM limited at their end!

Congratulations to the South Birmingham RS for fielding many bands and winning the Open section conclusively from the Colchester Contest Group who won the three bands on which they were active. In the Single Operator Fixed Section, John Quarmby, G3XDY, was again dominant, having the top UK score on all six bands from 432MHz to 10GHz, leaving Neil Whiting, G4BRK, to take second place again.

Andy Cook, G4PIQ.

Single Operator Fixed Section Overall Results

Pos	Call	Loc	432 MHz	1.3 GHz	2.3 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	Total
1*	G3XDY	020B	647	1000	1000	1000	1000	1000	0	5647
2*	G4BRK	91DP	215	669	433	380	298	691	0	2685
3*	PE1EWR	11SL	1000	194	103	0	0	0	0	1297
4	GW4DGU	71SV	331	143	0	0	0	0	0	474
5	G3MEH	91QS	0	385	37	0	0	0	0	422
6	G4LDR	91EC	44	67	7	2	147	108	0	374
7	G3YDY	01FQ	370	0	0	0	0	0	0	370
8	G4CZB	92MF	73	0	0	0	0	0	0	73
9	M5ADF	91TO	14	6	0	0	0	0	0	20
10	M0WTD	91VJ	1	0	0	0	0	0	0	1

Open Section Overall Results

Pos	Group	Loc	432 MHz	1.3 GHz	2.3 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	Total
1*	South Birmingham RS	82QL	86	176	249	1000	1000	1000	1000	4511
2*	Colchester CG	01PU	1000	1000	1000	0	0	0	0	3000
3	Five Bells CG	03CE	0	616	992	0	0	0	0	1607
4	M0BPQ/P	91WP	0	46	0	0	0	0	0	46
5	G0OIW/P	91MP	15	0	0	0	0	0	0	15

432 MHz Single Operator Fixed

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	PE1EWR	18781	1000	69	11SL	120	2 x 21Y	DF0YY	623
2*	G3XDY	12147	647	30	020B	250	28Y	OK2KKW	827
3*	G3YDY	6947	370	20	01FQ	100	19Y	DL0GTH	729
4	GW4DGU	6218	331	15	71SV	400	2 x 5.7WL Y	ON4SHF/P	658
5	G4BRK	4040	215	14	91DP	40	21Y	PA6C	577
6	G4CZB	1368	73	6	92MF	10	18Y	PA6NL	348
7	G4LDR	822	44	3	91EC	75	17Y	PA6NL	409
8	M5ADF	263	14	3	91TO	25	21Y	G8OHM/P	182
9	M0WTD	15	1	1	91VJ			G8IYS	15

432 MHz Open

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	M1CRO/P	86120	1000	217	01PU	400	4 x 21Y	F1USF/P	837
2*	G8OHM/P	7430	86	45	82QL	350	4 x 19Y	DF2VJ	0
3	G0OIW/P	1297	15	12	91MP	5	6Y	F8BRK	274

1296 MHz Single Operator Fixed

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	19846	1000	59	020B	200	8 x 23Y	OK2KKW	827
2*	G4BRK	13272	669	34	91DP	250	35Y	DF9IC	799
3	G3MEH	7631	385	29	91QS	50	4 x 44Y	DJ5BV	548
4*	PE1EWR	3841	194	19	11SL	10	2 x 25QLY	DK9IP	464
5	GW4DGU	2832	143	9	71SV	60	17.4WL Y	PA0EHG	622
6	G4LDR	1332	67	5	91EC	10	55QLY	PA0EHG	445
7	M5ADF	117	6	2	91TO	10	23Y	G4BRK	92

1296 MHz Open

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	M1CRO/P	24219	1000	85	01PU	300	8x23Y+4x23Y	DH5NAH	674
2*	G5B	14910	616	43	03CE	300	16 x 23Y	DF0OL	612
3	G8OHM/P	4260	176	27	82QL	150	8 x 23Y	GM4LBV	468
4	M0BPQ/P	1105	46	3	91WP	8	23Y	DJ5BV	511

2320 MHz Single Operator Fixed

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	9183	1000	33	020B	120	0.8m	DL3IAS	585
2*	G4BRK	3977	433	13	91DP	30	0.8m	PI4GN	601
3*	PE1EWR	946	103	6	11SL	7	25Y	PA6C	266
4	G3MEH	338	37	3	91QS	10	2 x 67Y	M1CRO/P	133
5	G4LDR	61	7	1	91EC	35	66QLY	G4BRK	61

2320 MHz Open

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	M1CRO/P	7183	1000	32	01PU	40	2 x 25Y	DG1KJG	422
2*	G5B	7123	992	22	03CE	40	1.6m	DF0OL	612
3	G3OHM/P	1789	249	11	82QL	70	1.2m	PA6NL	463

3400 MHz Single Operator Fixed

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	2916	1000	10	020B	15	0.6m	DL3IAS	585
2*	G4BRK	1107	380	4	91DP	6	0.6m	PA6NL	403
3	G4LDR	97	2	2	91EC	0.25	0.9m	G3XDY	223

3400 MHz Open

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G8IFT/P	1117	1000	6	82QL	35	1.2m	PA6NL	463

5700 MHz Single Operator Fixed

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	4091	1000	15	020B	15	0.6m	DK2MN	416
2*	G4BRK	1218	298	5	91DP	4	0.8m	PA6NL	403
3	G4LDR	600	147	4	91EC	15	0.9m	G3XDY	223

5700 MHz Open

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G8IFT/P	1524	1000	10	82QL	15	1.2m	PA6NL	463

10368 MHz Single Operator Fixed

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	6129	1000	23	020B	10	0.6m	DH8AG	435
2*	G4BRK	4233	691	15	91DP	10	0.8m	D5BV	618
3	G4LDR	661	108	5	91EC	8	0.9m	G3XDY	223

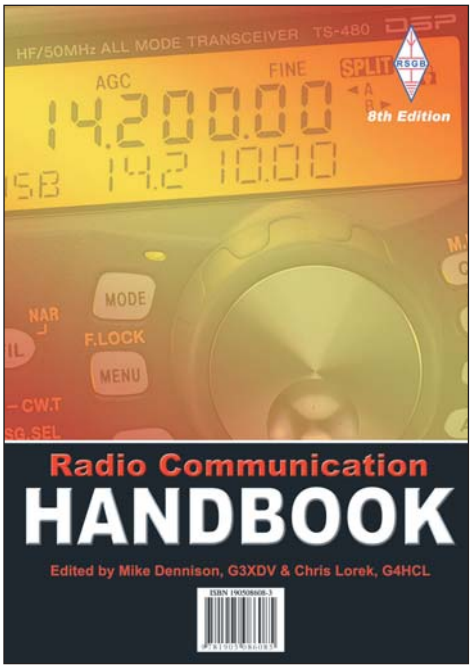
10368 MHz Open

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3OHM/P	2153	1000	14	82QL	15	1.2m	PA6NL	463

24000 MHz Open

Pos	Callsign	Score	Norm	QSO	Loc	Pwr	Ant	Best DX	km
1*	G8IFT/P	22	1000	1	82QL	0.3	0.3m	G4MAP/P	44

Book review



RADIO COMMUNICATION HANDBOOK – 8th edition
Reviewed by RSGB Staff

Well, it had to happen sometime! The covers are off and the adverts are mushrooming! Surely you have heard the news? There's no keeping it a secret any longer – the all-new *Radio Communication Handbook* is available!

"But it hasn't changed since the transistor replaced the valve," I hear you say, somewhat uncharitably. Well, I can assure you in no uncertain terms that it really *has* changed and, as the estate agent always says, "a close look is advised".

It is still the bulky tome that it always was, and about the same size as before, but there the resemblance ends. Just riffle through the pages and you will immediately sense that you have not seen this book before – saying earlier that it is 'all-new' is not the usual hyperbole of marketing managers. We mean it!

There are 26 sections, two appendices and an index. The list of contributors is different, indicating that most of the chapters have been re-written. As the Preface tell us, "The main editorial change between the 7th edition and this one is to recognise that computers play a major part in most radio amateurs' workshops and shacks. The world-wide-web is a much more stable publishing environment nowadays, so web addresses are frequently quoted in the Reference sections as sources of further information. A new chapter describes the software and computer-based information resources that are now available to assist the constructor, and several chapters include the use of computer programs in the design and analysis of circuits and antennas."

The first seven chapters are more or less as you remember them, at least as far as the subject headings are concerned – 'Principles', 'Passive Components', 'Semiconductors and Valves', 'Building Blocks 1: Oscillators', 'Building Blocks 2: Amplifiers, Mixers etc', 'HF Receivers', and 'HF Transmitters and Transceivers'.

Here we have the first major departure. Chapter 8 is devoted entirely to 'PIC-A-STAR', the original 20-part *RadCom* serial, describing the brainchild of Peter Rhodes, G3XJP. This is a complete transceiver project, based around PIC technology and giving state-of-the-art performance. It is the first time that the project has been published *in toto* since part 20 appeared in the March 2004 issue of *RadCom*.

Chapter 9 takes a new look at 'VHF/UHF Receivers, Transmitters and Transceivers'.

Chapter 10 joins the new material brigade, with 24 pages devoted to 'LF, the 136kHz Band'. This contains everything you need to get started on the LF band.

Fifty more pages cover 'Practical Microwave Receivers and Transmitters' again, giving you the low-down on microwave equipment.

Chapter 12 explains 'Propagation'. Not an easy subject to understand, this chapter gives as clear an explanation as I have seen. Grey-line propagation is covered, and the HF Beacon Network is explained briefly. A comprehensive set of references enables the reader to venture further into the subject, depending on his / her inclination.

Readers will immediately notice a completely revised chapter on 'Antenna Basics and Construction'. It looks different and invites a perusal, which will be well rewarded.

Inextricably linked to the last chapter and the following chapter, is 'Transmission Lines'. Everything is here, from a tutorial on using the Smith Chart to fitting a plug on a coaxial cable.

A large chapter on 'Practical HF Antennas' follows. This, too, is new. Fifty pages packed with ideas for antennas large and small, balanced and unbalanced, horizontal and vertical, mobile and fixed. Yagis, Quads, Double-Ds, V-beams, Rhombics, Long Wires – the list is too long to complete, but they are all there with plenty of details.

Now comes the equivalent new chapter on 'Practical VHF / UHF Antennas'. Ideas and designs abound – Yagis Loop Yagis and Long Yagis, Quads and Quagis, Skeleton Slots, Stacking, Log-Periodic, Axial-, Normal-Mode and Quadrifilar Helices, HB9CV, and many mobile designs. Lack of space prevents a complete list.

To complete the frequency spectrum, we now have 'Practical Microwave Antennas', in which the microwave fraternity will find many designs with which to experiment.

A short chapter, 'Morse Code', follows Because of the role of CW with the slow-speeds used on LF, a description of QRSS and DFCW is included.

Chapter 19 on 'Data Communications' takes the reader though RTTY, AmTOR, PSK31, Hellschreiber, MT63, MFSK16, HF ARQ modes, Packet and the AX.25 Level 2 link layer protocol, the AX.25 format, TCP/IP, DX Clusters and satellite communications.

'Imaging Techniques' is the title of Chapter 20, covering Slow-Scan TV and FAX, Fast-Scan TV and some of the specialised equipment necessary for the latter mode.

Chapter 21, 'Satellites and Space', gives information on the different types of artificial satellite orbits, details on how to track them and the equipment you will need. It then gives a complete list of satellites, before covering Moonbounce.

A short chapter about 'Computers in the Shack' describes the many tasks which computers can fulfil in the amateur radio shack.

A useful chapter on 'Electromagnetic Compatibility' gives plenty of information on the subject, both from the angle of interference caused by the transmitter, and interference caused to reception. Spurious emissions and interference suppression are covered, and the reader is referred to the network of EMC coordinators to discuss particular problems.

While not wishing to denigrate the work put into chapters 24 to 26, the lack of space simply precludes detailed descriptions. Their titles adequately describe their contents – 'Power Supplies', 'Measurement and Test Equipment', 'Construction and Workshop Practice'.

Two Appendices follow, the first being a useful data reference, the second containing artwork for printed circuit boards.

It has been said before, but it is quite relevant here: if you only ever buy one book on amateur radio, this should be the one. If that's not enough, the whole book is on the CD-ROM, which is supplied with the *Handbook*.

I rest my case.

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One of the very popular amplifiers world wide is certainly the DX-2. For all the features and specs see our WEB site. Using two military type Svetlana GU-74B tube in parallel with a total plate dissipation of 1600 Watts. This unique amplifier runs cool even at its full output of 1500 Watts CW, 2000 Watts PEP. This Emtron DX-2 two tube amplifier is completely different from any other similar amp on the market. Its unique dual bias system will completely balance the two tubes, and in the event, that one tube becomes faulty, the amp will quite happily operate with one tube only, by simply isolating the faulty tube by an internal switch. This switch and the unique dual bias is mainly used at the factory site to balance the tubes, and can also be used by HI FI signal "freaks" to get the amplifier into class A operation.
Weight: 27Kg (60lb)
Dimension: 430w x 190h x 430dmm, (17"w x 7.5"h x 17d)

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SWL

Festivities to be aware of for Trafalgar Day ♦ Does VHF SWLing exist? ♦ Band reports ♦ CQ WW SWL Challenge – the results for 2004 and the rules for 2005

Listeners are probably spending time listening for the crop of special event stations that are active to celebrate the 200th Anniversary of the Battle of Trafalgar. The major activity in England is GB200T operating from the National Maritime Museum in Greenwich, London which is being run by the Cray Valley Radio Society. In Wales, the Barry Amateur Radio Society is active as GB200HNT from HMS Cambria. Additional activity from England is in the form of GB200RN from HMS Collingwood, Portsmouth, GB2OOV from HMS Belfast of the River Thames in London and GB4BOT, being tun by the Trewellard Amateur Radio Society from Pendeen, Penzance. Further afield, ZB2TRA is active from Gibraltar, and Mike, GM0HCQ/MM will be active from Trafalgar on 21 October – Trafalgar Day.

From small beginnings, the celebrations have mushroomed into a major event. Cray Valley Radio Society has organised an award scheme similar to those they organised for M2000A and GB50 but, additionally, they have arranged for the 'Trafalgar Award', which is available to any SWL (and licensed amateur) who hears (works) GB200T and one of either GB200HNT, GB200RN, GB2OOV, GB4BOT or ZB2TRA. See 'Web Search' for details about the awards and Trafalgar activity in general.

VHF SWLing

Thanks to Tom Read, M1EYP (**http://tomread.co.uk**), for these thoughts about SOTA and VHF SWLing.

Does SWLing exist in the VHF (or even the UHF and SHF) part of the spectrum? Do current SWLs listen on these frequencies? On the one hand, SWL equals 'Short Wave Listener' which implies HF, ie 1.8 to 30MHz. Then again, 'SWLs' tend to have a wider range of monitoring interests, including amateur, broadcast, television, satellite, airband, marine band, etc and hence may well own scanners to cover the frequencies above the HF spectrum.

Summits On The Air (SOTA), arguably the fastest-growing programme in amateur radio over the past three years, offers a significant opportunity for amateur SWLing on VHF / UHF frequencies. Many of the summit operations are on 2m, both FM and SSB, and can be heard at great distances from the mountains or hills being activated. However, would an active award-chasing SWL consider monitoring on VHF as opposed to HF, or is that just 'scanning', and seen as a different hobby?

SOTA does have an SWL section, but it has only attracted interest from a handful of SWLs so far, unlike the Activator and Chaser sections which have attracted hundreds. For any 'purist' HF-only SWLs, there is still lots of SOTA activity to be heard, mainly on the 5MHz (NoV) and 7MHz (CW and SSB) bands, and occasionally on 14MHz and 28MHz. There are no single band / mode endorsements or rules in SOTA, so SWL logs can contain a mixture of 40m CW, 2m FM, 60m SSB, etc – all equally valid. Several of the more prominent SOTA activators now have specially-designed SOTA QSL cards too, and will QSL SWL reports.

Like the Activator and Chaser sections, the SWL section has certificates at 100, 250 and 500 points, and a trophy available at 1000 points: SWL Shack Sloth! The SOTA website now includes a feature known as SOTAwatch, with both a diary of upcoming activity, and real-time live spotting of activity in progress.

Further details on SOTA are available from the official website – see 'Web Search'.

BAND REPORTS

Summer will be over by the time you read this – where did it go? Conditions have been pretty poor, too, haven't they. Robert Small, BRS8841, hopes for better now that autumn is approaching. I have just returned from a holiday in Wales, and managed only one new DXCC entity – 7Q7HB on 21MHz. I will add my /GW scores to the annual table when there is space – but I heard about 220 band-countries in spasmodic listening – during afternoons and evenings.

Robert says that early August was particularly bad as he really struggled to hear KD6WW/VY0, but he finally made it when his signals came briefly up out of the noise. He has logged nothing new for two months, but did manage to log some good DX stations and a few new Islands for IOTA.

Robert starts his reports on LF where he logged 9G5OO (SSB), and C91CW (CW) on 80m. He logged only 5N8NDP and YV5SSB on 40m. One good piece of DX heard on 30m was T88BH. 20m had been the best band for DX, mostly early and late in the day. His highlights were 4Z17I, 7Z1SJ, ST/ZS5ADU, FG1GW, CU4T, R1MVC, D70YT/5 (AS-081), D70LW/2 (AS-105), SU8IOTA AF099, R0K (AS-174), TR8FC, P40QX, 3V1WSC, ZL1BOS, TF3XEN, TC0SV (AS-099) and KD6WW/VY0. The only DX heard on 17m was C93DY. 15m had been poor again, with the best being 9R2CV (Zaire) from AF-100.

CQ WW SWL CHALLENGE

It's that time of year again! The rules are included here. Last year's entry was the lowest ever. It may well be time to bring the Challenge to a close. It has been running for many years and has given a great number of SWLs an enormous amount of pleasure. I will see what entries are like this year before making a firm decision.

Last year's results are reproduced here, too. Congratulations to Jean-Jacques Yerganian, ONL383, who showed once again what a fine SWL he is, by winning both the SSB and CW legs of the Challenge. ♦

CQ WW SWL CHALLENGE 2004 - RESULTS

SSB
Single Operator

SWL	Mults	28	21	14	7	3.5	1.8	SCORE
1	ONL383	576	115	120	121	100	70	50	1,027,584
2	GW-5218	546	120	109	122	83	58	54	900,900
3	BRS46566	537	126	111	105	86	62	47	855,441
4	BRS8841	432	85	89	74	75	56	53	521,856
5	RS95258	381	71	73	83	57	51	46	399,669
6	DE0RFE	388	88	76	76	62	44	42	398,864
7	DO5HCS	366	65	68	77	69	53	34	328,302
8	F-14846	319	68	53	67	56	43	32	279,125
9	DH2URF	242	21	50	46	55	40	30	123,420
10	ZL-001	167	21	33	62	31	20	0	122,077
11	G7RSK	234	26	46	46	48	40	28	119,340
12	DE2MIR	49	0	38	7	4	0	0	6,125
13	DM4WL	28	28	0	0	0	0	0	2,912

Multi-multi No entries in 2004
Multi-single No entries in 2004

CW
Single operator

SWL	Mults	28	21	14	7	3.5	1.8	SCORE
1	ONL383	491	77	106	105	114	82	57	813,587
2	BRS8841	361	43	67	58	81	68	44	368,581
3	SP7-003-24	342	93	67	65	53	32	32	308,142
4	DH2URF	319	15	63	64	80	57	40	255,185
5	DE7MTP	203	32	43	48	30	38	12	76,125
6	DM4WL	36	36	0	0	0	0	0	3,564
7	F5NLX	67	4	13	14	18	2	0	2,479
8	DE3EME	14	9	0	0	5	0	0	1,092
9	DE2MIR	18	0	0	0	18	0	0	468

Multi-multi No entries in 2004
Multi-single No entries in 2004

CQWW SWL CHALLENGE – RULES 2005

The aim of the challenge is to log as many DXCC entities as possible.
SSB: in the 48 hours from 0000UTC on 29 October 2005.
CW: in the 48 hours from 0000UTC on 26 November 2005.
The same rules apply to both the SSB and CW Challenges.
Please read the rules carefully.

1. SWLs may listen at any time during the 48-hour periods.
2. Only one station from each DXCC entity may be logged on each of the main amateur bands (28, 21, 14, 3.5 and 1.8MHz).
3. There are three sections:
   A – Single operator
   NOTE: SWLs entering section A must include a declaration that only one listener used the station, only one receiver was in use, and no use was made of the Packet Cluster or the DX Summit.
   B – Multi-operator, multi-receiver
   C – Multi-operator, single receiver
   NOTE: Any single-operator SWL with access to Packet Cluster or DX Summit MUST enter section C.
4. Points will be scored as follows:
   (a) Countries in the SWL's own continent score 1 point on each band. Countries outside the SWL's own continent score 5 points on each band.
   (b) The final score will be the total of the DXCC entities heard on the six bands multiplied by the total number of points from each of the six bands (for example, a total of 400 DXCC entities x 900 points = a score of 360,000).
5. Entries must show (a) date; (b) time UTC: (c) callsign of station heard. The callsign of the station being worked is not required: (d) RS(T) of station heard at SWL's QTH. No station may be logged whose RS(T) is less than 33(9). Separate log sheets MUST be provided for each band.
6. A DXCC entity multiplier check sheet must be provided. Only DXCC entities shown on the official DXCC list will count as multipliers. Each entry must have a cover sheet giving the claimed score.
7. Any entry not complying with these rules may be omitted from the results listings. Any entry which is poorly presented or is not within the spirit of the challenge will be omitted from the results listings.
8. Logs should be sent to Bob Treacher, BRS32525, 93 Elibank Road, Eltham, London SE9 1QJ, England.
9. Logs can must be postmarked no later than:
   SSB Challenge: 25 November 2005 CW Challenge: 23 December 2005
10. Entrants wishing to receive a copy of the Results Booklet must send £1, $1 or 2 IRCs.

WEB SEARCH

Trafalgar activity	www.gb200t.com
SOTA	www.sota.org.uk

Microwave

How linear is the new Mitsubishi RA18H1213G RF MOSFET 1.3GHz band power amplifier module? Sam presents some measurements on his amplifier after reviewing summer conditions on the microwave bands

VHF National Field Day (VHF NFD), held on the weekend of 2/3 July, included the ever-popular 1.3GHz section. Conditions on this band were good to very good on the Saturday, declining to average on the Sunday. Since this contest coincided with the IARU Region 1 multi-band event, there was lots of activity from continental Europe, not only on 1.3GHz but also on many of the higher bands. For VHF NFD-only participants, limited to 1.3GHz and below, many good opportunities were missed on those higher bands. Home station operators, not participating in VHF NFD, were able to take advantage of the good conditions.

Regular contributor John Quarmby, G3XDY (JO02), commented that the weekend of VHF NFD was blessed with good tropospheric conditions, although the Spanish stations didn't seem to make it to Ipswich on 1.3GHz, but tropospheric conditions moved round to the east on Sunday and gave a good haul of DX, including three new squares on 9cm, two new ones on 6cm, and one on 3cm.

John reports contacts with the following stations on 1.3GHz during VHF NFD: SK7MW (JO65) at 861km, DK6AS (JO52), DK0FLT (JN59), DL0GTH (JO50), OZ1ALS/P(JO44), DK0SF/P (JN49), DH9NFM (JO50), DK2AN (JO51), DL0TUD (JO60) at 836km and DF0YY (JO62). On 2.3GHz he contacted the following: DL3YEE (JO42), DF0OL (JO40), DL0GTH (JO50), DK0SF/P (JN49) and DL0MWW (JO41) all at over 500km.

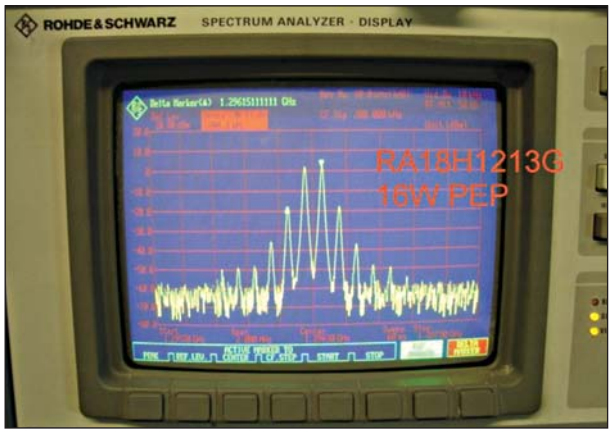
The Colchester Contest Group, operating as G0VHF/P from their Walton-on-the-Naze site in Essex (JO01) during VHF NFD, used their 300W and 311-element antenna array to good effect on 1.3GHz, working 149 stations in 45 locator squares. Their best contact on the band was DL0TUD (JO60) at 829km. Once again, Spanish stations didn't make it into the log on 1.3GHz

Another VHF NFD 1.3GHz report comes from Grant, G8UBN, on behalf of the de Montfort University ARS. Grant reports the group had some good weather, which led to some nice contacts into mainland Europe, especially early on Sunday morning. They worked 57 stations which included 15 DL, 14 PA, three ON and two F. Sadly nothing from OZ this year, and no sign of the EA reported by others. Best contact was DF5GZ/P (JN47) at 708km

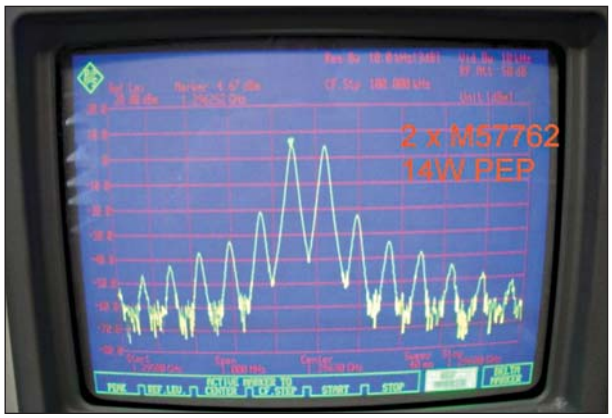
The August 24 and 47GHz Cumulative contest, organised by the UK Microwave Group, was well-supported, especially the 24GHz section. G3PHO estimates there were at least 15 UK stations and one French station active during the contest. Martyn, G3UKV and Dave, G8VZT, operated portable on 24GHz from Pen y Gadair Fawr (IO81) in Wales. They worked Ian, G8KQW/P on Butser Hill (IO90) at 184km, which may be one of the longest all-overland 24GHz contacts ever reported in the UK.

G8KQW reports he managed nine contacts on 24GHz plus three contacts on 47GHz with the best on this band being G3PHO/P at 55km. Roy, G3FYX, operated from the same portable site and worked all the same stations as Ian except the two GW portables, this possibly being due to his lower transmit power.

Chris Whitmarsh, G0FDZ, was part of the Cray Valley Radio Society expedition team that travelled to the Isles of Scilly for the July IOTA HF event. Once again he took equipment for 10GHz, following last year's successful operation. The team arrived on Monday 25 July, and was operational on the evening of 26 from IN69UW. Chris reports poor weather all week with rain at least once on every day of the week sometimes much more. Indifferent conditions with no tropospheric scatter or ducting and little rainscatter made operation difficult. Poor conditions on 144MHz made VHF talkback impractical. However, the team used the ON4KST chat facility, using a GPRS connection on their mobile phone, to good effect. Ralph Bird, G4ALY (IO70), was their nearest 10GHz operator, at 160km, and they worked several times including once on SSB. However, on some evenings, 10GHz conditions were so poor that no stations could be worked. Despite that, Chris worked Brian, G4NNS (IO91), on Wednesday 27th on CW, 339 at 365km. After much perseverance over several evenings and mornings, on Saturday 30th, Chris worked Dave, G0RRJ (IO91), on CW, 319 at 36km and John, G4EAT (JO01) on CW, 319 at 524km. The team wished to thank G4ALY for his invaluable help during the entire week of operation. Chris says they were very pleased to work all stations and, in spite of the low number of 10GHz contacts, they judged the event a great success and will return next year when it is hoped that propagation will be better (it can't be worse surely). Incidentally, the IOTA event was quite successful as well!



RA18H1213G at 16W PEP output. Note the low level of 5th and higher IMD.
X = 200kHz/div,
Y = 10dB/div.



2 x M57762 amplifier at 14W PEP output. The 5th and higher-order IMD fall less rapidly than the RA18H1213G.
X = 10dB/div,
Y = 100kHz/div.

Brian, G4NNS, whose 3.7m moonbounce dish antenna was shown in the July Microwave column, has now added 3400/3456MHz capability. Following his first echo tests on 5 August, he was rewarded with a 539 contact on 3456MHz with Al Ward, W5LUA, Dallas, Texas, on 8 August. This was followed by a contact on 3400MHz with LX1DB the following day. The contact with W5LUA may be the first 3.4GHz EME contact from the UK.

Peter, G3LTF, and Simon, G3LQR, both listened-in to the contact with Willi, LX1DB, using their own moonbounce systems. Both have been working towards their own first moonbounce contacts on the 3.4GHz band. Peter had good SSB copy whilst Simon just had time to hear the final stages of the contact after working hard to get his system ready in time.

Brian was running 40W from his transverter and solid-state amplifier, both installed at the dish feed-point. G8ACE and M0FWZ assisted Brian to get the new 3.4GHz EME station operational. Linear polarisation was

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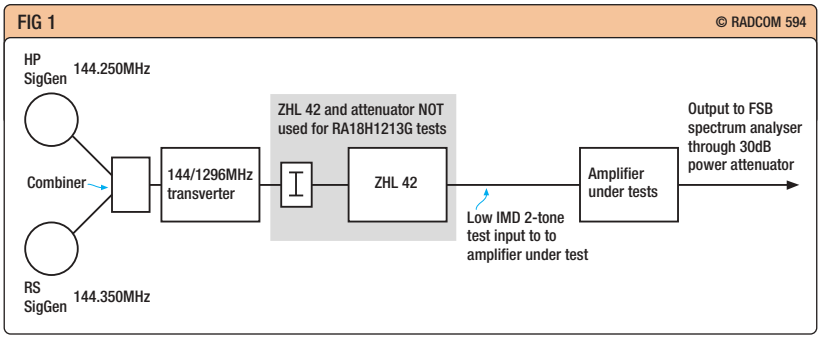

Fig 1
Test set-up to measure the IMD performance of the 1.3GHz power amplifiers.

used both by Brian and by Willi. It is not known if Al also used linear polarisation.

SOLID-STATE POWER AMPLIFIER LINEARITY

RF MOSFET power amplifier technology is rapidly replacing the older silicon bipolar amplifier technology. Nowhere is this more true than on the 1.3GHz band, where the Mitsubishi M57762 bipolar amplifier module has reigned supreme amongst solid-state amplifiers for nearly 20 years but is now regarded as obsolescent if not already obsolete.

My original M57762 amplifier produced a saturated output of 18W from a 13.4V supply. Linearity was poor above about 10W, although it was common practice to run at least 15W on SSB. Other builders have reported over 20W output, at saturation, when used with a 14V supply.

Designs using multiple M57762 modules are still in regular use with measured outputs approaching 200W. Indeed, such amplifiers with eight modules have frequently been used to make CW and JT44/65 moonbounce contacts on 1296MHz.

The newer Mitsubishi RA18H1213G module uses Enhancement Mode RF Metal Oxide Semiconductor Field Effect Transistor (MOSFET) technology to produce in excess of 20W output using a 12.5V supply, with over 40W output being claimed by several amplifier builders with detailed attention to grounding and RF connection integrity . Of particular interest is that the use of RF MOSFET technology should produce better linearity than the older bipolar amplifier technology. A second benefit is the higher gain of the module compared with the M57762, requiring typically just 50mW of drive for rated output.

Shortly after the RA18H1213G module became available in the UK, in late 2003, I bought one in order to measure its performance in a practical amplifier. I quickly found that it could produce more output than my single M57762, but efficiency was apparently low, measuring just 17% on my prototype. Maximum (saturated) output was measured to be about 25W, with 22W available at 1dB compression. Due to its low efficiency, a large heatsink was needed to dissipate the heat generated by the amplifier module. Having no further need for the amplifier it was returned to the shelf.

Recently I designed and built a new 1.3GHz transverter module and my requirements called for a very linear 13W output to drive the following output amplifier. Previous linearity measurements on my single M57762 indicated it wouldn't meet my requirements, but would the RA18H1213G?

I decided to measure the intermodulation distortion (IMD) of my RA18H1213G amplifier, using the transverter as the driver with two-tone excitation at 144MHz provided by two signal generators. I used a Rohde and Schwarz FSB spectrum analyser to measure the level of intermodulation at third and higher orders.

After much attention to drive levels, my transverter was found to produce a very low level of third-order (and higher) IMD with each of the two third-order IMD being 46dB below either of the two wanted output signals (tones) at 20mW PEP output.

Fig 1 shows the test configuration used for making the IMD measurements.

With the RA18H1213G biased to 4A quiescent current from a 13.4V supply, 20mW PEP drive produced 16W PEP output with third-order IMD at -22dBc. As expected, the third-order IMD fell in line with decreasing drive level.

The first photograph shows the RA18H1213G amplifier output spectrum at 16W output.

For comparison, the same measurement was made on a dual (push-pull) M57762 amplifier, since the single M57762 was known to be unacceptable. The dual-amplifier requires approximately 1W drive for 35W PEP output. As the bare transverter could not provide this much drive, a Minicircuit Labs ZHL42 broadband, high-linearity amplifier was connected between the transverter and the dual M57762 to increase the drive.

At 1W PEP output, the ZHL 42 gave a third-order IMD of -32dBc. Whilst marginal, the third-order IMD was judged just acceptable for the tests. The drive was then connected to the dual M57762 amplifier to give 28W PEP output. When measured on the spectrum analyser the third-order IMD was an appalling -12dBc, with very high levels of higher-order IMD extending to at least the 13th order. When the drive was reduced to produce 14W PEP output, the dual M57762 amplifier produced a more credible -23dBc third-order IMD, but the higher-order IMD products were still significant, even at this output power. The output spectrum of the dual M57762 amplifier at 14W PEP output is shown in the second photograph.

From these tests, I decided that the RA18H1213G was acceptable as the output amplifier in my new transverter. These results are for my own Mitsubishi amplifiers. Changes in supply voltage, bias etc. may mean that other amplifiers produce different results. I do not claim these to be the definitive results for either the RA18H1213G or the M57762.

INPUT TO THE 'MICROWAVE' COLUMN

Thanks to all this month's contributors. My deadline for the January 2006 issue is 2 December 2005. Please send your input to the address at the top of the page. ♦

FORTHCOMING MICROWAVE EVENTS

Martlesham (Adastral Park) Microwave Round Table – 12 / 13 November 2005. Details from John Quarmby, G3XDY – G3XDY@btinternet.com

12th International EME Conference 2006. 25 – 27 August 2006, Würzburg, Germany. Details at www.eme2006.de

WEB SEARCH

G4NNS	http://myweb.tiscali.co.uk/g4nns/
Colchester Contest Group	www.m1cro.org.uk/
Mitsubishi module	http://tinyurl.com/8ferq

Trevor Brown, G8CJS

E-mail: chairman@batc.org.uk

ATV

Efforts to relax the rules on airborne amateur radio in the UK ♦ A new 13cm ATV repeater to join those already at the Bradford site ♦ Another successful 'Westrally'

In previous 'ATV' columns, we have covered many projects involving airborne ATV such as the Dutch ATV Balloon hunt and more recently the pictures of a chair lifted by met balloon to the edge of space. These activities have either taken place outside the UK or used frequencies outside the amateur allocations to comply with UK regulations.

To this end, we have a newly-formed amateur radio group called SOAR (**S**pace **O**bservation with **A**mateur **R**adio) which is aiming to get the regulations surrounding airborne experiments changed. Project SOAR intends using meteorological balloons to carry amateur radio experiments to altitudes in excess of 90,000ft. Planned payloads will include cross-band repeaters, ATV and APRS, to name just a few. Each flight will be tracked from the ground and then recovered upon landing.

Project SOAR is currently communicating with the CAA and Ofcom in an attempt to get the conditions relaxed. The group is actively seeking change that will allow experiments of this nature in balloons and other non-commercial craft.

If the conditions surrounding airborne vehicles are relaxed, it will enable the group to provide payload space to other groups for experiments. It is envisaged that strong links will be made with schools and educational establishments with the inclusion of 'SOARSATs'. These are small ping-pong-ball-sized experiments similar to those already in use in the USA.

Currently, the UK is the only country in the world where experiments like this are prohibited. A project of this kind has great potential and will help the amateur radio community cement more links with educators. It seems a real shame that old-fashioned thinking is restricting such an exciting and important project.

The project leader, Peter Badham, G0WXJ, is keen to hear from any UK-based groups or individuals who are interested in becoming part of the project. Contact details and further information is available on their website.

GB3YV

The Yorkshire ATV Group which runs the ATV repeaters GB3YT on 23cm, and GB3YX on 3cm, at a site near Bradford, have just completed installation of equipment for a 13cm repeater, GB3YV. The licence for YV has been held up in the Ofcom backlog of ATV repeater applications but, at the time of writing, the application has reached the final stages of the procedure and the repeater will hopefully be on air by the time you read this. The transmit power amplifier and receiver filter/downconverter are built into waterproof diecast boxes and mounted on the mast close to the Alford slot antennas to minimise feeder loss. The transmit driver and sound subcarrier oscillator are rack-mounted in the repeater building and drive the masthead power amplifier via a length of LDF4-50 cable. The group has conducted several attended transmit tests since the equipment was installed and the results have been very encouraging, with good reports from users of the existing two repeaters. When fully operational, GB3YV will be linked to YT and YX to allow cross-band and multi-band contacts. This arrangement of interconnected repeaters has been in use for some time at YT and YX and has proved very popular with users, both for cross-band contacts and for the way that it provides 'look through' to assist setting up a station. The three-band version will no doubt be even more popular!

WESTRALLY

'Westrally', organised by the Severnside TV Group was held on 26 June at the *Cheese & Grain* hall in Frome, Somerset. About 1300 people turned up, and a good time was had by all. The numbers were down on last year, but many thought the 2004 event was overcrowded.

The proceeds of this rally go to funding the two ATV repeaters, GB3ZZ and GB3XG. ♦

Above
The GB3YV transmitter.

Left
Installing GB3YV.

Below
The outside activity at the Severnside TV Group's 'Westrally', held in June this year.

PHOTO: G8VPG

WEB SEARCH

SOAR	www.eham.org.uk.
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Roger Balister, G3KMA

La Quinta, Mimbridge, Chobham, Woking, Surrey GU24 8AR

E-mail: g3kma@dsl.pipex.com

Those who dare win

It is becoming ever harder to activate new IOTAs but – as Roger Balister reports – this has not stopped some intrepid hams from going to extraordinary lengths to operate from rare islands

Not ranked perhaps as the Most Wanted DXCC countries but a C9, an SU, an R0, a 9Q and a VY0 have combined to bring spurts of life to the doldrums-stricken HF bands over the last two months. Between them, they activated five new IOTAs, quite a bonanza given that the list of still unnumbered IOTAs is now tapering off. We were back almost to the days when it was high risk for any IOTA aficionado to take time off for a holiday! The pile-ups were huge but, with signals not always strong, some of the openings for less well-equipped stations were all too short.

Almost every new IOTA activation nowadays involves a long journey, a specially hired boat (or helicopter!), a deep pocket and not insignificant risks to personal health and safety. The five operations that have just taken place epitomise this. The first, C93DY, was put on at the end of July from Chiloane Island in Mozambique's Sofala District by a group of Ukrainian amateurs. Ill luck struck when their equipment was held over by a baggage-handlers' strike in South Africa – only to reach them after the island operation was over. All was not lost as they managed to borrow equipment, sufficient for two stations running barefoot, from a local amateur. With this, they succeeded during five days operation to give out AF-098 in 7,000 QSOs with some 150 DXCC countries.

In early August, the IOTA Programme saw the first of the four Egyptian groups put on the air. This was a real local triumph as the authorities had not previously, despite many requests, given permission for an island operation. For five days, a few hours at a time, Said, SU1SK, managed to air SU8IOTA from White Rock at the entrance to Matruh Bay in the Matruh Region group. The islands listed in the Directory were not easy to land on, so, for the three days before the operation, Said scoured the coastline for another valid island and was fortunate to find one in White Rock.

The final score from AF-099 was 2,000 contacts with the promise of another operation to come. All being well, by the time you read this, there will have been activity from another Egyptian team (SU8GFTN from Giftun Island in the Red Sea Coast North group).

The third of the African groups to be activated, later in August, was the Bas-Congo Province group in the Democratic Republic of Congo. Joe, I2YDX, and Amateur Radio Association of Congo president Cyprien, 9Q1KS, made a daring visit to Ntompo Island at the entrance to the Congo River.

For understandable reasons of personal safety, no advance publicity was given to the IOTA community, nor was the operation prolonged more than necessary. In the 40 hours on the island, 9R2DX and 9R2CV gave out 1,800 AF-100 QSOs to those lucky enough to be around to catch them. Thankfully, everything went well and they returned home safely. This is not an operation to be attempted by the faint-hearted or the under-prepared. They had to have a two-man military guard throughout!

Earlier in August, a group of experienced Russian operators made a foray to Shalaurova Island in the Chukchi Sea Coast West group, the last unnumbered Russian IOTA group in the Directory. Travel was by helicopter, the normal form of transport in the Russian Arctic. Needless to say, this island was as remote as any in the far Far East! R0K was active for five days and despite being confined mainly to 20m they succeeded in making close on 10,000 AS-174 contacts in that time. That is good going, given that there were often periods of fade-out at that 70° latitude!

Our fifth New One was in a similarly high latitude, this time northern Canada. The three-day operation in early September took Bruce, KD6WW/VY0, and Mike, K9AJ/VY0, to Chantry Island in the Nunavut (Kitikmeot Region) West group. This duo – whose photo appeared on page 58 of July 2005's *RadCom* – hatched their plans for NA-227 at this year's Visalia Convention in April. Mike also planned to be at the RSGB HF Convention in October, so by the time you read this, you may have heard all about the operation there. ♦

Above:
Joe, 9R2DX (I2YDX), operating from Ntompo Island AF-100 at the mouth of the Congo River. Life's hard for mosquitoes!

Left:
The Ukrainian C93DY team on Chiloane Island, AF-098 – an expedition in memory of Victor, UT8LL, a regular attendee at the RSGB HF Convention.

ADDITIONS TO IOTA DIRECTORY - 40TH ANNIVERSARY EDITION

AF-098	C9	Sofala District group (Mozambique)
AF-099	SU	Matruh Region group (Egypt)
AF-100	9Q	Bas-Congo Province group (Congo, Democratic Republic of)
AS-174	R0K	Chukchi Sea Coast West group (Russian Federation - Asia)
EU-189	GM, MM	Isle of Rockall (Scotland)
NA-227	VY0	Nunavut (Kitikmeot Region) West group (Canada)

WEB SEARCH

RSGB IOTA Programme	www.rsgbiota.org
IOTA Manager's website	www.g3kma.dsl.pipex.com
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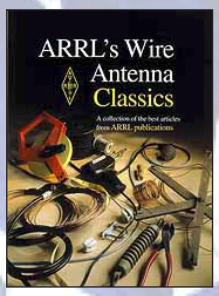

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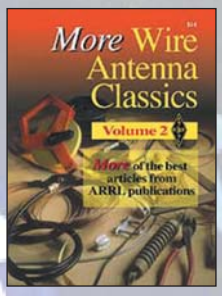

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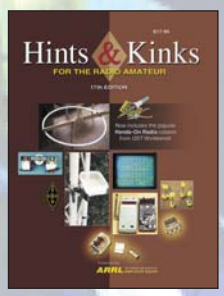

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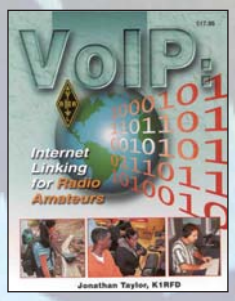

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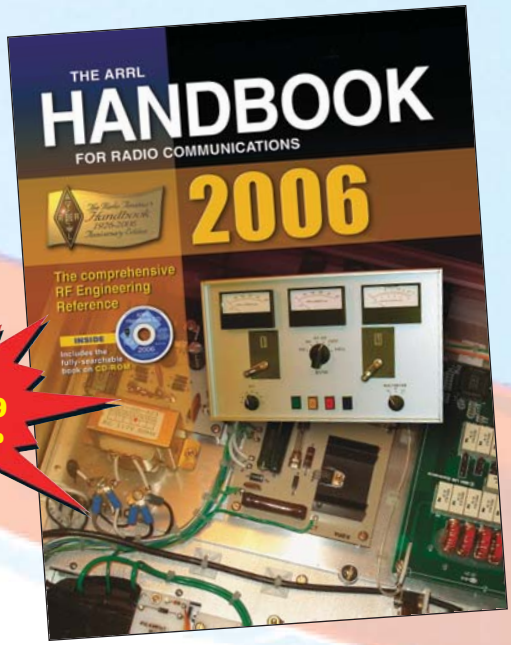

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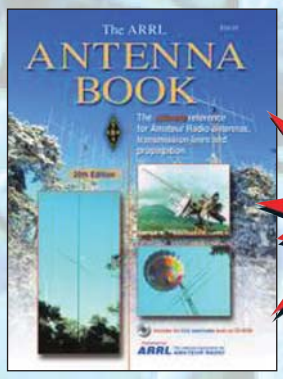

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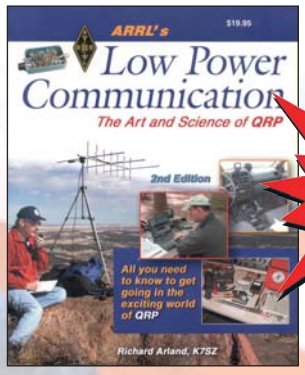

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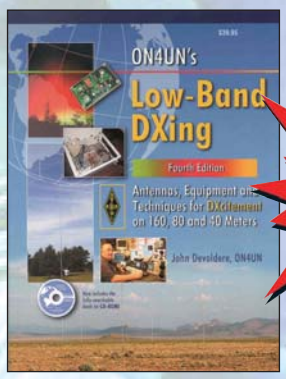

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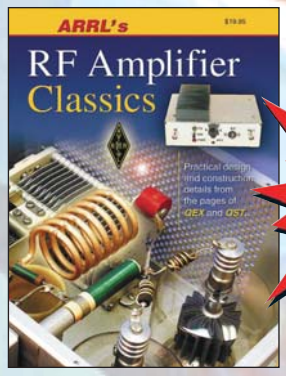

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Northern Ireland repeaters

Details of the repeater network in Northern Ireland ♦ Electronic repeater applications

Many amateurs on the UK mainland have little knowledge of the repeater network in Northern Ireland. John McCullagh, GI4BWM, the recently-appointed Chairman of the Repeater Management Committee of the RSGB has written an overview.

"The first 2m repeater with the appropriate callsign GB3NI, became operational in the province during 1978. It was built by the NI Repeater Group, formed the previous year with the aim of building a repeater network in Northern Ireland.

"A suitable site was found on the hills to the east of Belfast; site-sharing arrangements were negotiated and a licence was applied for. While the site was being arranged, the repeater hardware was built. This consisted of a Storno 600-series base station with control logic by G3RKL. As always, finding suitable filters for single-aerial working was a challenge, but they were eventually obtained from a local engineering firm which had excellent metalworking facilities and happened to have an amateur as a senior manager.

"Other Groups were soon formed, and GB3WT was established in west Tyrone with GB3LY on the north coast near Limavady. UHF repeaters were not forgotten, with two 70cm units operational – GB3UL co-sited with GB3NI and GB3OM on the site of GB3WT. Much more recently, in March 2004, GB3PK went on the air on the Antrim coast near the spectacular setting of Torr Head. This is one of the closest points to Scotland and GM stations can regularly be heard using the repeater. GB3PK was a club project for the Marconi Radio Group based in Ballycastle. Some of Marconi's first tests were made between Ballycastle and Rathlin Island hence the name of the local club.

"In 2000 the Amateur Repeater Group of Northern Ireland was formed with interests initially in ATV. ARGONI have now established a 23cm TV repeater, GB3TX, on the hills above Carrickfergus on the west side of Belfast Lough and have also recently been granted an NoV for a 6m repeater, callsign GB3TY which, hopefully, will be on the air in the very near future.

"The network has been of great use in the more difficult times keeping mobile stations informed as to the places to avoid and get home safely. Thankfully in recent years apart from occasional incidents, things have been relatively peaceful, but operating repeaters in the Northern Ireland environment is not always straightforward. The amateur bands, especially at VHF, are still beleaguered by severe interference. Paradoxically this is much worse now than at the height of the 'Troubles'. Negotiations continue to have interference levels reduced, but it is still very much an ongoing issue. In the early days of the network, access to sites was not easy because of the unrest and, in fact, at times it was positively dangerous. Despite all this, the repeater scene has continued to function effectively and in recent times has grown significantly."

GB3WT, West Tyrone, Northern Ireland

ELECTRONIC REPEATER APPLICATIONS – REMINDER

Here is a reminder to new and existing repeater keepers that the process of applying for repeaters has never been easier with the new MS *Excel* web-held application form, e1. The form is found on the RMC's Internet site RMCWEB at **www.rmc.rsgb.org** from the 'Documents' tab. The form, which is under 250KB in size, is easily downloaded and can be saved to your computer for completion. Ideally, save it to new filename with the callsign of your proposal.

It should be stressed that *all* parts of the form should be filled in, or delays will be created when the RMC gets back to you to fill in the gaps. However the information requested is straightforward and in easy sections relating to the various parts of the application – for example the proposed site, the closedown details, and technical parameters.

Once the form has been filled in, an associated Site Clearance Form and Summary Sheet are automatically created, but you can complete your submission by attaching scanned attachments, namely your evidence of permission to use the site, and a copy of the proposed Keeper Licence Validation Document.

The complete package will be vetted by the RMC and the Proposals Manager will ensure any associated coverage maps are included and website entries are updated for the application. It will then go to the RSGB and Ofcom. In parallel with this, the proposed Keeper will still physically sign the Site Clearance Form to ensure that he/she is happy with what is being requested in his/her name. Further discussions will be required before that stage can be made electronic also.

Apart from the physical signing of the Site Clearance Form, all the rest is done electronically, and cuts out the delays of the postal system where a number of applications have become lost over the years because of postal losses or incorrect postal addresses being used.

Anyone who is unable or unwilling to use the new web-based facility can still apply the old way, however. There has been little use made of the new process so far, as the usual summer lull in applications has meant there has been only one proposal between June and September; however early feedback has been positive.

REPEATER PROPOSAL STATUS AS OF 26 SEPTEMBER 2005

The latest clearance status can be obtained from the RMC website. Please note that, even though an application may have cleared, it is beyond the control of the RMC as to when the keeper will bring the repeater into service. ♦

SPECIAL ANNOUNCEMENT

The Repeater Management Committee is acutely aware that Ofcom clearances are typically taking many months to process. It is taking all possible measures to reduce this time, and asks the repeater community to bear with it. All enquiries should be channelled via RMC local area managers, details of whom can be found on the RMC website (see 'Web Search').

OUTSTANDING VOICE REPEATER PROPOSALS: JUNE 2005

Callsign	Type	Proposed Keeper
GB3HA	New 2m, Hexham, Northumberland	G0NEE
GB3NF	New 2m, Nottingham	M1FJB
GB3TO	2m modification, Northampton	G6NYH
GB3RC	New 2m, Alveston, Gloucester	GW4TQD
GB3DX	2m modification, Birmingham	G4LCH

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Morse shorthand

The use of abbreviations is just as common in Morse code as in texting. Dave Lawley reports on the etymology of some of the most popular Morse shorthand phrases

The piece last time about the speed of Morse versus text messaging was based on the assumption that the messages were in plain language. SMSers are proud of their cool abbreviations, but radio hams have been doing something very similar for many years. Listen to a CW QSO (two abbreviations already!) and you'll hear all sorts of things like "TKS", "RCVD", "73" and "GN" – not only are we faster than the texters, but just like them we speed up our messages even more by use of abbreviations.

The experienced CW operator takes abbreviations of all sorts in his stride, but the newcomer who has perhaps struggled to master the 26 letters and 10 digits may not be prepared for the shorthand so often employed in regular QSOs. Few amateurs know all the abbreviations, and many of them have few practical uses in amateur communications but there are some that it is essential to know.

Not only are there several categories of abbreviation, but a typical CW QSO will also include punctuation and prosigns. The best approach when confronted by an unrecognised combination of dits and dahs is not to dwell on it – because that will guarantee that the following characters are also missed – but to put it out of your mind and carry on copying. There is a lot of redundancy in most messages, and the sense of it will usually be clear even if occasional characters, or indeed whole phrases, have been missed out. There is also the possibility, of course, that the unrecognised combination wasn't some smart use of a rare abbreviation at all, but a mistake on the part of the sender! Few if any Morse operators send perfect code 100% of the time and even keyboard senders have been known to send garbage in the presence of a strong RF field.

Look at any listing of the Morse code and as well as the letters and figures, there is usually a listing of punctuation and prosigns. In my view the only two punctuation codes that you really need are the oblique stroke / dah-di-di-dah-dit and the question mark ? di-di-dah-dah-di-dit. The former is part of every portable and mobile callsign, while ? gets used in all sorts of situations. You'll sometimes come across the full stop di-dah-di-dah-di-dah and the comma dah-dah-di-di-dah-dah, which is sometimes also used as an exclamation mark.

A Morse prosign (short for *procedural symbol*) is a special character used to convey a particular meaning. In addition to learning the letters, figures and some punctuation, it is as well to be able to recognise some of the more common prosigns. Prosigns are formed by running two letters together, and when written down they are always shown with a horizontal bar across the top, to indicate that the two letters are sent without an intervening space. The common prosigns should be learned just like any other character.

The end of message prosign $\overline{AR}$ is heard on the bands much more often than its companion, the start of message $\overline{CT}$. $\overline{VA}$ means end of work, and in signing off a contact you quite often hear a $\overline{VA}$ followed by a 'dit dit' as a final goodbye. The long break, $\overline{BT}$, is often used as a separator between sentences or passages of a QSO over, and is much more widely used than the full stop by amateurs. $\overline{SN}$ means 'understood' but seems to be used all over the place, while a prosign that I wish would be more widely understood is $\overline{AS}$, meaning 'wait'. If you come up on a frequency which is in use or tune up carelessly, you may hear a quick di-dah-di-di-dit and this means that you should QRX.

This brings us to the next set of abbreviations, the Q-codes. Perhaps some amateurs making regular use of "QSO", "QTH", "QRM" today do not realise that these codes came from the days of wireless telegraphy and had quite specific meanings. The Q-codes were the British contribution to the history of Morse communication and were introduced in 1912. The original meaning of QRZ? was "Are my signals weak?" and a reply of QRZ would mean "Your signals are weak". This one has changed its meaning completely, but more often the strict question/answer usage has been dropped while the sense has remained. QTH? originally meant "what is your location in latitude and longitude" but these days QTH is simply taken as a universal abbreviation for location or address.

Many common amateur abbreviations go back well into the 19th century, including of course 73 which means best wishes or best regards. I'm sure I'm not the only one to be faintly irritated when I hear a phone operator say "best 73" – does he really mean to say "best best wishes"? Another very common abbreviation is ES to mean "and". This goes back to landline Morse code, which used dit di-di-dit for ampersand. When French was the international language of diplomacy, DE was adopted to mean from, but is only used when sending callsigns, for example F1AA DE G4BUO. This is the only time DE is used: in the middle of a message if I wanted to abbreviate the word "from" I would use FM not DE.

The final category of abbreviations includes the ones that bear most resemblance to some of the shortcuts now used in text messages. We don't send L8R for 'later', but we do send LTR which has fewer dots and dashes. There are plenty of abbreviations of this sort in use on the amateur bands, and just like in SMS messages the meaning can normally be worked out. There isn't room here for a full list here, but given that YDA means "yesterday" it's not hard to work out what TDA and TMW stand for. Here are some more that are in common use: AGN – "again"; CFM – "confirm"; CUL – "see you later"; CNDX – "conditions"; PSE – "please"; SRI – "sorry".

A couple of abbreviations have more than one meaning, depending on context, for example UR can either mean "your" or "you are". On the other hand there are two abbreviations which are both commonly used to mean "thanks" – TNX and TKS. A further abbreviation often heard when a DX or contest station is working a pileup is TU, which simply stands for "thank you". And there's an illustration of perhaps the most ubiquitous amateur abbreviation derived from telegraphy days, which has now passed completely into the vocabulary of all amateurs – "DX" was originally the Morse abbreviation for "distance". ♦

Peter Dodd, G3LDO

37 The Ridings, East Preston, W Sussex BN16 2TW.

E-mail g3ldo@ukonline.co.uk

Antennas

Using the multiband doublet, centre-fed via a slotted-line and simple ATU ♦ *Excel* yields some of its secrets

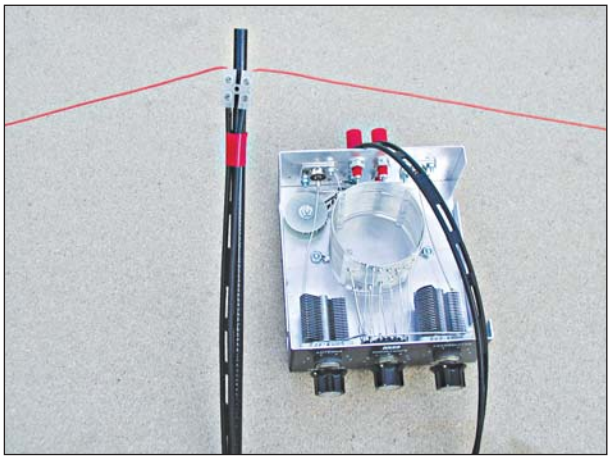
Earlier on this year, I volunteered support of an amateur radio station for the East Preston Festival. This entailed setting up an HF station and providing a temporary multiband HF antenna. My antenna of choice was the multiband doublet which, to my mind, provides the most flexible and practical solution. The main advantage of this antenna is that the doublet length is not at all critical, a major advantage when planning an antenna for a location that you have never seen. In practice, it seems that a 20m centre fed length works very well for all bands all HF bands 40m to 10m.

The antenna is best supported at the centre where the radiation is the greatest. Telescopic fibreglass poles are available, which were originally made for fishermen and (I think) called roach poles. These poles are very light and the one I used is called a Kenley Popular Telepole. It weighs only 500g and is only 1.2m long when telescoped and will open to a 6m long tapered pole when fully extended. (I took the top section out of mine because it was too thin and flexible, so it is probably now only 5m long when extended).

I used plastic clothes pegs as end insulators with holes drilled in them to fix the ends of the elements. The pegs also double as clips for fixing the ends of the antennas to small branches of trees or any other suitable fixture. The performance of the antenna is improved by placing it as high as possible such as on the roof of a building.

The doublet can be made from 2mm plastic covered insulated wire fed in the centre, using 300Ω slotted-line feeder. The centre insulator on my antenna comprises a terminal block using screw connectors. This is fixed to the top of the support pole with plastic tape as shown in the photograph.

You might ask why not use coaxial cable as used in most centre-fed antenna arrangements? The answer is that slotted-line is very convenient for running through gaps in doors or windows that might be encountered in a location not seen before. I would recommend using the black 300Ω slotted-line feeder rather than the lightweight clear plastic 300Ω line.



Construction of the portable multi-band doublet, and the method of feeding usimg the MFJ-901B

An essential item, when using such an antenna, is a suitable ATU with provision for feeding a balanced antenna. Originally I tried to make a small ATU that would handle 100W but found obtaining just the right sized components rather expensive and difficult to locate. I then found at [1] a suitably small moderately priced unit, the MFJ-901B, which is quite small (135 x 150 x 60mm) and weighs only 600g. As you can see from the photograph, in spite of its small size, it uses a large low-loss air-spaced inductor. The ATU is an unbalanced T-network and requires a balun to provide the necessary balance to feed this antenna. This balun can be seen in the top left hand side of the ATU and is a mere 25mm OD toroid and really does not look man enough for the job. Furthermore, this method of feeding balanced lines is not regarded with favour by some authorities.

In 2003 I operated from Marrakech as CN2PD [2]. I used the antenna and ATU described above and, after working through a pileup for over two hours, found that the balun was just slightly above ambient temperature so it obviously was not that inefficient.

HOW I LEARNED TO LOVE EXCEL

I briefly mentioned the amateur radio station for the East Preston Festival, which was to demonstrate amateur radio and was organised by Frank James, G0LOF. The venue for this event was the East Preston Conservative Hall.

After the amateur radio demonstration was over, the Conservative Hall, normally used for events such as flower arranging, keep fit classes or meetings of the various residents' associations, was transformed into what looked like mission control at Houston. Around 18 computers (plus an instructor's computer complete with a large projection screen) were all linked together via Ethernet to broadband Internet. This was the weekly meeting of the East Preston Silver Surfers Computer Club, also organised by Frank.

The reason for the strange title of this club is that a condition of membership is that you have to be over 55 years of age. In due course, the members showed up, mostly sporting a flash memory necklace containing homework or other bits of software.

The club runs courses mainly on applications and, for the last three weeks, the subject has been *Excel*, the very application I was having difficulties with, described in the July 'Antennas'. I now have a much greater understanding of *Excel* but am not yet at the stage where I could write a program to convert the 3-meter voltage readings into impedance... ♦

REFERENCES

[1] Obtainable from Waters & Stanton PLC, Tel: 01702 206 835.
[2] 'One-Man Holiday DXpeditions', *RadCom* July 2004.

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E-mail: g3zvw@talktalk.net

Whatever next

Is a DAB / DRM scrap imminent at VHF? ♦ A successor to the FT-1000 series – the FT-2000 ♦ The Next Generation transceiver – is it almost here?

The Yaesu FT-2000

The subject of Digital Radio Mondiale (DRM) has been covered in *RadCom* on a number of occasions. Primarily, it was developed as a replacement for amplitude-modulated transmissions on long-wave, medium-wave and short-wave. The BBC and RTL Group (Luxembourg) are big supporters of DRM and, at the recent Internationale Funkausstellung (International Radio Exhibition) in Berlin, new DRM receivers from Morphy Richards and Roberts Radio were exhibited. Dutch manufacturer Sangean also demonstrated a receiver for digital short-wave. These receivers could be in the shops by the end of 2005. At the show, Peter Senger of Deutsche Welle outlined an aggressive schedule for phasing out AM broadcasts. When a 'critical mass' of listeners has been reached, analogue short-wave will be "shut down very quickly," he said.

But the DRM standard isn't static; it is developing, and its advocates foresee it being adopted at frequencies up to 120MHz. A couple of years ago, it looked as though Digital Audio Broadcasting (DAB) would have a clear run at replacing analogue FM, but enhancements to the current DRM standard will provide features that DAB doesn't have and this could result in DRM Plus establishing itself as a serious alternative at VHF. For example, DRM Plus could bring high-quality stereo broadcasts or even Dolby Surround 5.1. Consequently, it is now being suggested that we should prepare ourselves for a battle of the VHF broadcasting standards.

FT-1000 SERIES – IS THE END NIGH?

After well over a decade and four different models, it seems to me that the era of the Yaesu FT-1000 will soon draw to a close. However, the reason for this is not the introduction of the FT-9000 series, because that is in another league. Instead, it is the recent unveiling at the Ham Radio exhibition in Tokyo of a prototype FT-2000.

This new transceiver is expected to come in two variants, a 100W model with internal power supply and a 200W model with external power supply. They will feature many of the features of the FT-1000 series, but with IF DSP, roofing filters in the first IF, a video output for a spectrum scope (provide your own computer type display) and coverage of 6m.

Don't expect any to arrive in the shops too soon (after all we've been waiting over a year for the FT-9000 to arrive).

THE NEXT GENERATION TRANSCEIVER

Soon after the October issue of *RadCom* was distributed, I received an e-mail from David Wilkins of Kenwood. He clarified the subject of mobile rigs in DIN slots in cars, saying "Although heat is certainly an issue (your snip from our own car hi-fi website was cheeky but true!), I would, in reply, mention that car radios don't have fans. Many (but by no means all) modern rigs do have cooling fans and I'd be concerned that any mobile in-dash installation could be properly ventilated. But the main worry I have is RF getting into the wiring loom… How far away from the dashboard airbag trigger would a rig be? Where is the control box for the car's ABS, traction control or engine management computer and how RF-proof is it? Even a perfectly matched antenna won't stop RF leakage from the coax feeder and the plugs on the back of a rig, so I'd personally rather keep the RF generating part of the radio in the boot and take advantage of remote heads to make the dash fittings as simple as possible. Geoff Darby, G7RTC, also e-mailed and took up *exactly* the same subjects, so thanks to both of you.

Meanwhile, the Next Generation Transceiver discussion topic has crossed the Atlantic. Scott E Robbins, W4PA, the Amateur Radio Product Manager of Ten-Tec Incorporated, has sent a detailed response to the wish list of the delegates who attended 'Whatever Next Live' at Stevenage in February. He said, "I read the Stevenage article with great interest – it appears that the modern transceiver sought by the majority of respondents is exactly what Ten-Tec is offering with the Orion HF transceiver. Right down to the IF frequencies, the above describes the Ten-Tec Orion. The Orion, like every top-of-the-line transceiver Ten-Tec has produced since the 1970s, is a ham-band-only receiver. We've known for decades that a general-coverage receiver in an amateur radio transceiver is a compromise under any circumstances and the best possible receiver arrangement is using a low-IF, ham-bands-only design. The IFs desired for the 'next generation' are exactly the IFs we use in the Orion now: 9MHz and 455kHz, followed by DSP at 14kHz. By mating the best analogue design with DSP processing at the third IF, we have unparalleled receiver performance in the Orion – no transceiver matches it according to every independent review that has been published to date.

"High IP3 numbers are important, but the Stevenage document focuses on the wrong numbers – namely, IP3 at 20kHz spacing as quoted in the article. One competitor's transceiver has a claimed spec of +30dBm IP3. That's a claimed number, at 20kHz spacing – 20kHz spacing essentially being a meaningless number for real-world receiver performance. 5kHz spacing is a much more realistic measure of actual on-air performance, and the claimed +30dBm for the competitor's radio falls to a miserable -18.8dBm at 5kHz spacing according to the ARRL review done for *QST*. The Orion, by contrast, maintains a high IP3 to 5kHz spacing and beyond. +22dBm at 5kHz spacing on 14MHz, according to the ARRL review – nearly a 40dB difference between it and the transceiver at -18.8dBm cited as an example. In essence these two transceivers are not even close in real world receiver performance."

More from Scott next month. ♦

WEB SEARCH

DRM Plus	http://www.deutsches-drm-forum.de/IFA_Symp_BBC.pdf
and	http://tinyurl.com/czw9f
Yaesu FT-2000	www.eham.net/articles/11758
and	www.onjapan.net/2005/hamfair/index4.html

Ian White, GM3SEK

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In practice

DRILLING THROUGH ROUND TUBING

Q: ***I would like to try building some long Yagi antennas. How can I drill accurately through a round boom? Also, how can I keep all the elements in line, and not end up with something that looks like a corkscrew?***

A: The best advice I can offer is: don't use round tubing for the boom – use square tubing instead. The only real advantages of round booms are a slightly lower wind resistance per unit weight, and a significantly lower cost for commercial manufacturers. Set against this, square booms are much easier for home constructors. They are easier to drill, with automatic alignment of elements and better support against the elements rocking in the wind. Square tubing is also self-aligning in mast clamps and U-bolts. And although square tubing is available in fewer sizes than round, in practice it is very easy to splice and telescope sections together using simple flat shims.

An element mounting almost always involves two holes drilled exactly through the centre-line of the boom. The holes for all elements must also be exactly in line, so that the elements will all lie in the same horizontal plane. This creates a number of problems, all of which are much worse for round tubing. It is difficult to find and mark the centre-line accurately, and also the top of the tube is convex, so ordinary twist drills have a strong tendency to skid off and break. So what you need is some way to support the drill bit, and guide it exactly through the centre-line of the tube.

If I haven't convinced you to use square tubing instead, here are some answers for cross-drilling through round tubing. These are about the simplest solutions that will actually *work*, without breaking large numbers of drill bits. I've also tried to think of the simplest method that can be used with an ordinary hand-held electric drill, or at most a basic pillar drill. (A small pillar drill can be very cheap, these days. If you don't already have one, it's worth considering in your letter to Santa.) If you have access to more advanced machine tools, then of course there are lots of better ways... and you won't be needing this advice.

About the simplest kind of drilling jig is a channel to locate the tubing, with a guide block on top which locates and supports the drill bit (**Fig 1**). The whole thing can be made from wood, and with a little thought and planning you can reduce the number of precision operations required to just one. You will need the following materials:

- A strong, flat piece of wood for a base plate.
- A strip of planed softwood or hardwood for the two sides. The thickness should be the same as the diameter of the tubing, or just a little larger.
- A substantial chunk of *hardwood* or similar for the guide block.
- Some wood-screws and PVA wood glue.

The sequence of construction is as shown in Fig 1:

1. Glue one side strip to the base plate. (Clamp the pieces firmly while the glue sets.) We'll call this the 'fixed' side strip.
2. Drill a hole through the guide block, of the correct diameter for your element mounting, and accurately at right-angles to the bottom face. This is the only precision operation involved, and it really requires a well adjusted drill press (or if drilling by hand, be prepared to throw away a lot of scrap pieces before one comes out right).
3. Drill a pair of holes in the guide block for wood-screws to attach the block to the fixed side strip, so that the hole drilled in step 2 will pass exactly through the centre-line of the tube as shown in Fig 1. Make these screw holes slightly over-size, so that you'll be able to position the guide block precisely in steps 4-6.
4. This is the trial-and-error part. Loosely assemble the whole jig with a scrap piece of tubing, and adjust the positioning of the guide block until you can drill exactly through the centre of the tube. How can you tell? Remove the tube, turn it end-for-end and slide it back into the jig; if the jig is accurately aligned, the drill bit will slip easily through all the existing holes.
5. Slip the drill bit through the guide block, through your 'good' pair of holes in the tube, and into the hole in the base plate. The drill bit will pin the tube in place against the base plate and the fixed side strip, so you can easily remove the guide block and replace it accurately. Now that you know where the guide block needs to be, drill through into the fixed side strip for the wood-screws that will hold the block down.
6. Smear the remaining joint areas with glue, and carefully reassemble the whole jig using the drill bit and the tube to align all the parts. Use washers under the wood-screws to allow some movement of the guide block before tightening the screws down.

The second side strip needs nothing but the glue to hold it in place – simply push it in to fit snugly against the tube. You'll have plenty of time to make adjustments before leaving the whole thing to set overnight.

Congratulations! You now have a 'good-enough' drilling jig for round tubing. It won't be a precision job, but it's certainly good enough for Yagi construction.

If you already have a pillar drill, another option is the drill guide available from Axminster Tools (see photo). It has a flat base with a 90° V-groove, so you can use it either to drill holes at right-angles into a flat surface, or to cross-drill accurately through the centre of a round tube or rod. The drill is guided by a steel bush; the kit

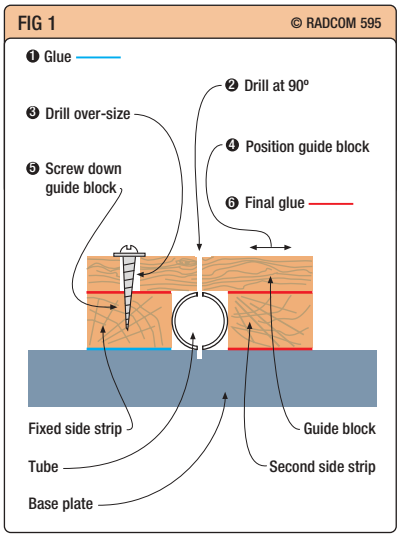
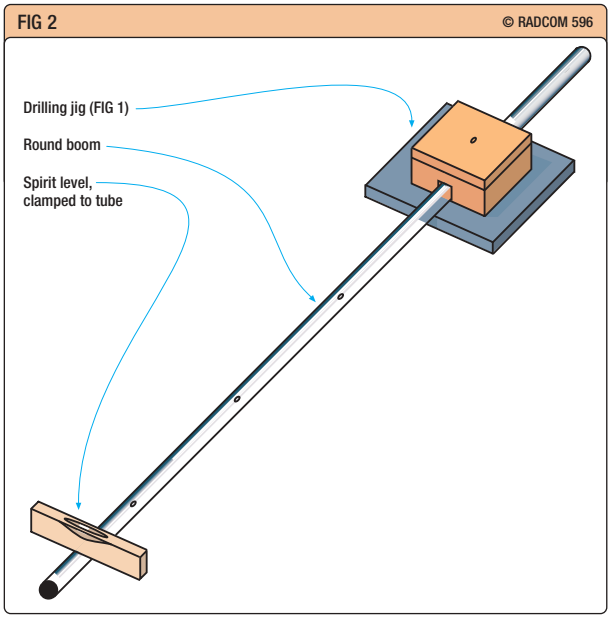


Fig 1
A home-made drilling jig for round tubing. Circled numbers refer to assembly instructions.

Fig 2
Use a spirit-level to help drill all the holes in line.

Fig 3
Distributed self-capacitance increases the apparent inductance. It can be approximated as a single shunt capacitor.



♦ Drilling through round tubing ♦ Can inductance vary with frequency? ♦ Superglue tips ♦ November's gardening tip

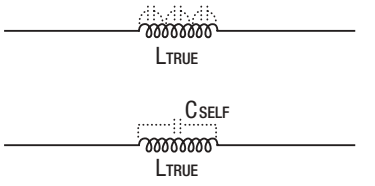
includes six bushes with a range of internal diameters, and also a scriber or centre-punch that fits accurately into one of the bushes. To use this guide, you would need to slip it onto the drill bit, shuffle the tube on the drill table until the bit runs freely, and then switch on and run the drill through... but you've probably noticed the drawback, which is that you don't have enough hands to hold everything safely. A jig like Fig 1 gives much better support for both the tubing and the drill point, and if you're using a pillar drill the jig can be clamped safely to the drill table. However, the Axminster drill guide can be used to drill an accurate hole through the guide block in step 2 above, and it will also make later parts of this job much easier (see below). At £6.94, it might well be worth a try [1].

Let's turn now to the second question: how to make sure that all your pairs of element mounting holes are accurately in line. One way is to slip a second drill bit through an existing hole, and rotate the boom until it lines up exactly with the drill bit in the jig. But unless you're careful it is easy to make errors of a degree or two, which will be very noticeable when the Yagi is in the air. A more accurate method is to clamp a spirit-level across the tube (Fig 2) and make sure the bubble is centred, every time before you drill. If you're using a drilling jig like Fig 1, that will accurately line up all the holes.

Most Yagis use more than one section of boom, so begin by drilling all the element holes in each section separately. At the joints where two boom sections telescope together, only drill through the *outside* section with a pair of small pilot holes. When you come to assemble the whole Yagi, rotate the joints to line up all of the elements by eye, and then run the pilot drill right through each joint. Finally, drill out the pilot holes to full size and connect the boom sections together. This part of the job will probably have to be done outside, with a hand-held electric drill, so here's the second place where the Axminster drill guide could be very useful.

Well, now you know how it *can* be done... but hasn't this persuaded you to use square tubing instead?

FIG 3 © RADCOM 597



Drill guide from Axminster Tools.

CAN INDUCTANCE VARY WITH FREQUENCY?

Q: ***My R – X impedance analyser shows that the inductance of a coil seems to increase with frequency. Is this a fault?***

A: Probably not. This question is almost as old as radio itself, but is only now coming to the attention of most amateurs. What's new is that many more of us now have test instruments that can make quick and simple measurements of inductance and capacitance at the actual RF operating frequency. But maybe it's not so simple after all...

The inductance of a coil is created by magnetic coupling between each turn and all the other turns. However, in any practical inductor there is also coupling between the electric fields of different parts of the coil, which results in 'self-capacitance'. Inductance is independent of frequency, but at higher frequencies the self-capacitance will begin to affect the *apparent* inductance – which is all that a test instrument can actually measure.

To see what's happening, we can approximate the self-capacitance as a single capacitor in parallel with the inductance (**Fig 3**). Then the apparent inductance is given by:

$$1/X_{L,\,APP} = 1/X_{L,\,TRUE} + 1/X_{C,\,SELF}$$

$$1/(2\pi fL_{APP}) = 1/(2\pi fL_{TRUE}) - 2\pi fC_{SELF}$$

At low frequencies, the reactance of the self-capacitance ($X_{C,\,SELF}$) is very large, so the measured value, L_{APP}, is very close to the actual inductance, L_{TRUE}. But as the frequency increases, $X_{C,\,SELF}$ becomes smaller and has a noticeable shunting effect. This makes the *apparent* inductance increase with frequency, up to the point where L_{TRUE} and C_{SELF} become parallel resonant and the apparent inductance shoots up to infinity.

Above that self-resonant frequency, f_R, self-capacitance dominates and the 'inductor' will appear to be capacitive. A properly functioning R-X impedance analyser will faithfully report all of this, along with generally smaller effects caused by resistive losses.

For frequencies up to about 80% of the self-resonant frequency, f_R, and for inductors with low resistive losses, a useful approximation to extract the value of L_{TRUE} from the measured value L_{APP} is:

$$L_{TRUE} = [1 - (f/f_R)^2]L_{APP}$$

SUPERGLUE TIPS

These are follow-ups from the December 2004 column on adhesives, and are specifically about cyanoacrylates or 'superglue'.

From Richard, G3RWL: "When you buy superglue there is always more than you need, and it tends to go off before you can use it all (typically six months to a year). The solution is to stopper the bottle tightly and keep it in the fridge; it'll remain usable for several years.

"When superglue is getting somewhat old, the setting time is longer, sometimes minutes. To speed it up, put it under water (remember that it works on the exclusion of air). This isn't always convenient, but if you can hold the joined pieces together, a dip into a washing-up bowl full of water for half a minute usually does the trick."

From Peter, GM8GAX: "If you make a mistake when using superglue, the bond can easily be released by applying a little heat. Heat to approximately 150 – 180°C and you will be able to separate the joint quite easily. Clean off the surfaces and start again. Obviously this tip applies mostly to glued joints between metal components, as many thermoplastic components can't withstand the temperatures involved."

GARDENING TIP

In the tradition of 'Gardeners' Question Time', here's a seasonal tip for all you antenna growers.

Late October or early November is a good time to give your lawn a last cut, and to plant some radials for your new low-band vertical. If you cut the grass really short, and peg the radials down onto the surface, then by springtime they'll already be disappearing under the new season's growth. ♦

REFERENCE

[1] Axminster Tools (0800 371822) order code APTCUDG. Follow the links from the 'In Practice' website.

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TT

Facts sacred – comment free ♦ Small loops – final, final words ♦ Mobile phone risks ♦ Passive squarer for H-mode mixer

FACTS SACRED - COMMENT FREE

A great editor once wrote in his newspaper that "facts are sacred, comment is free" – advice that is sometimes lost in modern journalism. Too often most of us tend to take the easy course and accept that much of technical journalism is "scribbling on the back of advertisements." This reflects the fact that even a hint of adverse criticism can raise the hackles of firms and of some readers. It is easier, but in my view wrong, to take the line of praising new ideas and products unreservedly, anything for a quiet life. But there are times when even the most complacent of we hacks accept that we have a duty to our readers to attempt to tell it as we believe it to be, come what may.

When, back in 1958, I penned the first 'Technical Topics', I set out my stall as follows: "To keep abreast of current technical progress and practice in the amateur radio field has never been an easy task. New ideas and circuits are constantly being introduced, and old ones revived. Some have a short life, others are absorbed into the main stream of amateur practice...

"All we can hope to do is to survey a few ideas from the technical press, a few hints and tips that have come to our notice, with perhaps an occasional comment thrown in for good measure."

Of these rather pious aims, the one that has from time to time caused problems is "the occasional comment thrown in for good measure." Such a case occurred recently with my comments on the SD-1000 software-defined receiver.

In a letter to the Editor (forwarded to me) about 'Buying Overseas – *Caveat Emptor*' (in August), Gerald Youngblood, K5SDR (ex AC5OG), owner of FlexRadio Systems that markets the pioneering SDR-1000, writes *inter alia*: "I must say I am shocked and speechless that such baseless and harmful comments would be published in any amateur radio magazine, anywhere in the world. I have never seen anything even remotely similar in *QST* in my almost 40 years as a ham. The article contains only pure speculation with regard to FlexRadio and the SDR-1000. To my knowledge and his admission, writer has no experience whatsoever either with the company or the radio. The facts are that the SDR-1000 has been shipping for over two years, is in the hands of almost 700 customers worldwide, and *every* customer has received the support they requested. There has not been a single radio returned to the company that has not been repaired (other than for lightning damage)..."

He refers only to the short item in the August 'TT' with no reference to the much longer piece (nearly a page and a half) in the June 'TT', based solidly on the detailed six-page *QST* (April) product review by Steve Ford, WB8IMY, quoting his belief that the marketing of the SDR-1000 "opens a new chapter in amateur radio" and that "For the first time in ham history you can purchase 'off the shelf' an HF and 6m transceiver that uses software to define its functionality – a *software- defined radio*". But WB8IMY made it clear in a generally favourable review that there were important caveats, for example: "The SDR-1000 may mark the beginning of a new generation of amateur radio, but the pioneers who take it up may need a bit of a frontier spirit." I wonder what K5SDR made of the *QST* review and whether WB8IMY's caveats have been addressed?

WB8IMY put the performance as at least comparable to a traditional transceiver in its $1300 price class. The $1300 price range assumes that the potential user already possesses a high grade PC and suitable sound card and facilities, for example, to download the 100-page on-line instruction manual, etc. If, as a frequent user might find desirable, a dedicated PC is used then the total cost of installing and operating an SDR-1000 would be much higher than the cost of the kit alone. It was clear that WB8IMY had not found the SDR-1000 easy to install and get working and he stressed that a user would require considerable knowledge of computing. One might add that only a tiny minority of amateurs would have the ability to repair or possibly modify the circuit boards.

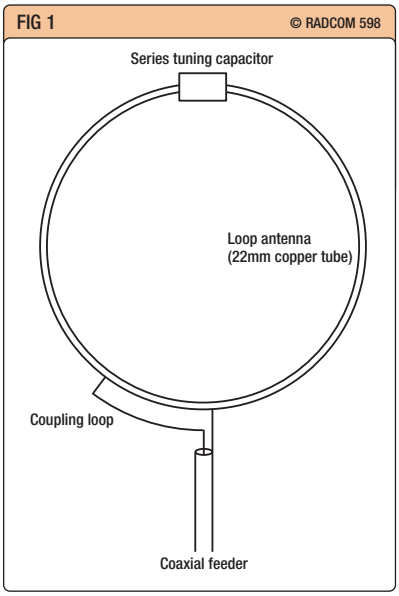
Following the publication of the June 'TT', I became aware that not every one of the 25 or so UK amateurs who had already purchased this transceiver was happy with the design of the RF firmware with its mixture of highly-sensitive analogue devices in close proximity to digital switching units etc. There can be (have been) problems with sending boards with SMD devices back to the States for repair. For example, if the board is lost in transport or is non-repairable (eg lightning damage), as far as I can tell there appear to be no facilities for replacing a single board, thus requiring the purchase of the complete set of three boards. Hence it may be advisable to take out insurance to cover the value of the three boards rather than the single board returned to FlexRadio. Only the very experienced would be capable of repairing the boards themselves or getting it done locally or finding a local source of the necessary components.

I had no knowledge of how most early UK users of the SDR-1000 felt about their purchases, although aware of problems that had arisen for one purchaser whose technical expertise I respect. So, in the August item, I sought further information without pin-pointing the actual problems of which I had learned.

Apart from the missive from K5SDR, the Editor has subsequently received e-mails from Peter Buck, G3LWT, and Klaus Lohmann, DK7XL. Both write enthusiastically

Fig 1
Arrangement of the loop antenna reported by G3NOQ.

Fig 2
Predicted and measured field strengths (5W RF power) of the loop antenna.



in favour of their SDR-1000 units, although both admit to having experienced faults that they had overcome themselves. G3LWT writes (abridged): "I am wholeheartedly in favour of this unit which has rekindled my enthusiasm for amateur radio construction and operation... I agree with you about *Caveat Emptor*, particularly for items not sold as complete working units. The reason these units are not fully assembled when shipped to the EU is simple – avoidance of the swingeing import duty costs. The current version vies with the very best transceivers at *vastly less cost.* Hardware has been frozen for some time, and the owner is not forced constantly to change the software unless he wishes to do. Gerald Youngblood has provided excellent backup... I would hate to see your comments misinterpreted – let's not discourage experimentation. Perhaps you should have added that such ventures are really for experienced constructors."

DK7XL, who wrote an article on it for *CQ-DL*, is another SDR-1000 enthusiast. He claims *inter alia* "Since working with the SDR-1000, ie experimenting with the hardware and dozens of upgrades in software, I discovered again the excitement of amateur radio and I enjoy being part of a community that is paving new roads to wireless community... The radio is not off-the shelf equipment that can be operated without going into technical details. FlexRadio is offering hardware from a bare system up to a complete set of additional equipment (100W PA, ATU, PC, etc). I have not heard from anyone who complained not to receive spare parts or getting warranty service if necessary... Your comments regarding the SDR-1000 cannot be justified nor are they fair... It is true that when FlexRadio advertises 'The radio that keeps getting better', FlexRadio is establishing a totally different relationship with the users/customers, exceeding everything that could be addressed when asking for 'after-sales-service' or warranty."

So there you are. Regrettably, today a divide exists between the digital and RF engineer, whereas the latter has been ignored by the former's ascendancy with all its serious repercussion on equipment design *vis-à-vis* RF parameters. I still believe my comments were justified and that the SDR-1000 is not a 'fit and forget' purchase for the majority of amateurs, nor does the basic firmware, in the form of the mixture of highly sensitive analogue and digital switching circuits without isolation/screening, represent the final word in high-performance software-defined radio. My judgment may be wrong, of course. All credit to FlexRadio for getting it on the market – and good luck to those experimentally-minded, analogue-RF expert and computer-wise amateurs who remain happy with their purchases. For others, I can only repeat *caveat emptor* – advice that extends to all serious purchases of new equipment, whatever the source.

SMALL LOOPS – FINAL, FINAL WORDS?

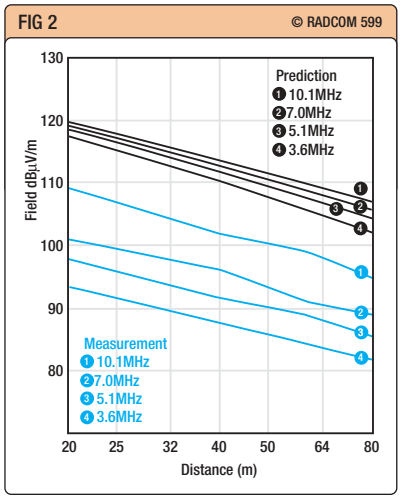
A difficult task faces any columnist not prepared to accept uncritically claims made for novel ideas even when made by those for whom he has great respect. I have made myself unpopular in some quarters by consistently showing scepticism of the radiation efficiency claims made on behalf of very small loop transmitting antennas, including the CFL and more recently the small loops described by Professor Mike Underhill, G3LHZ and his student Marc Harper.

The small transmitting loop has, for several decades, established its place as a very useful transportable and space-limited antenna in amateur radio and in military and professional communications, particularly in regard to near-vertical incidence systems (NVIS) over distances up to a few hundred miles. But even with extremely low loss tubing, vacuum-variable or other very high-*Q* tuning capacitors and effective matching to 50Ω feeders, the radiation efficiency (as shown by traditional methods such as Chu-Wheeler or professional *NEC* simulation) has long been considered low, especially for small loops at the low-frequency end of their ranges.

Some six years ago, G3LHZ, in a letter to the IEE's *Electronic Letters* and followed by comments in 'TT', and then at a professional IEE Conference on Antennas & Propagation in 2000, claimed that Chu-Wheeler had got it wrong, that *NEC* could not be applied to small loops and that the radiation efficiency of a small loop can exceed 90% throughout its frequency range. Despite the scepticism shown in a series of comments in 'TT' and expressed at the 2000 professional conference, G3LHZ has stuck to his claims, on the basis that they are based on real measurements rather than traditional formulæ, or computer simulations. He repeated his claims most recently in a two-part article 'New truths about small tuned loops in a real environment' (*RadCom,* August & September 2004), in which he concluded *inter alia:* "The small tuned loop continues to be seriously underestimated by those who prefer old theory and 'simulation' to 'real measurements'. Typical (intrinsic) efficiencies of transmitting loops of 80% to 90% or more are confirmed by proposed extensions to old EM theory".

Subsequently, a number of members (including VE2CV, G3UUR, G0GSF, etc) again disputed these claims, advancing a number of reasons why the measurements made by G3LHZ greatly exaggerate the radiated efficiency of his loops. Subsequent correspondence makes it clear that G3LHZ remains convinced that he is right and established theory is wrong.

One of the professional antenna engineers who has been concerned throughout the controversy is Alan Boswell, G3NOQ, a professional antenna engineer who chaired the session at which Professor Underhill presented his ideas (IEE 2000 International Conference on Antennas & Propagation). Together with colleagues Andrew J Tyler and Adam White (BAe Systems Advanced Technology Centre) he has investigated under rigorous conditions the 'Performance of a Small Loop Antenna in the 3 – 10MHz Band', to check once again whether there are any serious flaws in established the-



ory or in the use of *NEC* simulations.

The resulting paper has now appeared in *IEEE Antennas and Propagation* magazine, Vol 47, No 2, dated April 2005 (published July 2005); G3NOQ wrote the paper, did the theory and suggested what needed to be done. His colleague Andy Tyler, G1GKN, made the loop antenna, got it working, arranged the equipment, and supervised the apprentice Adam White, who made the measurements.

No reference is made in the paper to the work or theories of G3LHZ, presumably to avoid any professional disputation. Nevertheless it represents a further, and surely entirely convincing endorsement of the classical theory of small transmitting loops. The paper includes reference to the two-part article 'Performance of Electrically-Small Transmitting Loop Antennas', by J S Belrose, VE2CV (*RadCom,* June/July *2004*), and to a 1983 Racal Antennas publication (6559-1) reporting the performance of a square loop of 1.2m sides.

The tested antenna (**Fig 1)** was a circular loop of 1m diameter fabricated from 22mm- diameter copper tubing with a gamma coupling loop formed from a length of insulated stranded power wire of 1.5mm square cross-section, close to the loop, and connected to it by a clip at a point approximately one-eighth to one-quarter of the way round the loop. The position of the connection, together with the spacing between the loop and the coupling wire, gave the adjustments necessary to match the antenna at any frequency in its operating range after the series tuning capacitor had been adjusted to the required frequency. Inductance of the main loop was calculated to be 2.45µH, requiring a capacitance of 800pF for resonance at 3.6MHz, the reactance then being 55Ω.

The input impedance to the coupling loop was measured with a Hewlett-Packard network analyser type 8753C. The field measurements were made with the transmitting and receiving antennas placed 1.5m above ground, and orientated to lie in the same vertical plane. CW carrier power was generated with an Icom transceiver, with the power input to the antenna monitored by a Bird 'Thruline' wattmeter, Model 43, adjusted to show 5W forward power and negligible reverse power. Measurements were made at distances between 20m and 80m from the antenna at the four frequencies, see **Fig 2**.

The new paper once again confirms that the classical theory for loops is accurate when properly used. It also confirms that their 1m loop did not breach the Chu bandwidth limit. The results also lend support to the accuracy of modelling by computer codes such as *NEC* adding: "Computer analysis of small loops over lossy ground has been carried out extensively by Belrose" (see above).

Table 1 shows the measured radiation efficiency, and the measured and predicted radiation resistance for the 1m loop antenna. The final paragraph in the paper's conclusions reads as follows: "The radiation-efficiency results described here are believed to be typical of loop antennas of similar dimensions in the HF band. As an example, a Racal Antennas HF loop – a square loop of 1.2m on the side – has a quoted gain of -16dBi at 4MHz and -9dBi at 7MHz. Although loop antennas of 1 – 2m^2 area do not appear, on present evidence, to possess good radiation efficiency at the low end of the HF band, this does not necessarily rule them out as effective components in practical applications. Successful communications links are often maintained with a radiated power of 1W or less at frequencies of 3 – 6MHz, especially for links of up to 300km where NVIS is used. Loops have to be judged against the performance of the available alternatives, taking into account the constraints imposed by mobile use on small vehicles. That is why small HF loops and half-loops enjoy a steady level of usage in the land-mobile, and other categories of radio systems, and this is likely to continue."

And that, as far as 'TT' is concerned, must surely be the final word on small transmitting loop efficiencies. There is still room for experimental work on small loops having two or more turns, on fabricating capacitors as well as elements that offer the lowest possible RF ohmic resistance etc.

Table 1

Measured radiation efficiency and the measured and predicted radiation resistance for the 1m loop antenna.

Frequency (MHz)	Radiation Efficiency (%) Measured	Radiation Measured	Resistance in mΩ From Equation*
3.6	0.25	0.42	0.36
5.1	0.84	2.4	1.6
7.0	2.3	6.0	5.7
10.1	18	40	25

*$R_r \simeq 20k_0^4A^2\ \Omega$, where A is the loop area and $k_0 = 2\pi/\lambda$ where λ is the free-space wavelength.

MOBILE PHONE RISKS

As one of the very small minority that neither possesses nor drives any form of motor vehicle, I hesitate to return to the controversy surrounding the use of mobile phones as recently debated in *RadCom* by David Taylor, G4EBT (June 2005), and Mike Grierson, G3TSO (August 2005). However, there is a duty to readers to report, if only briefly, the latest authoritative research findings brought to my notice by Dr G L Manning, G4GLM.

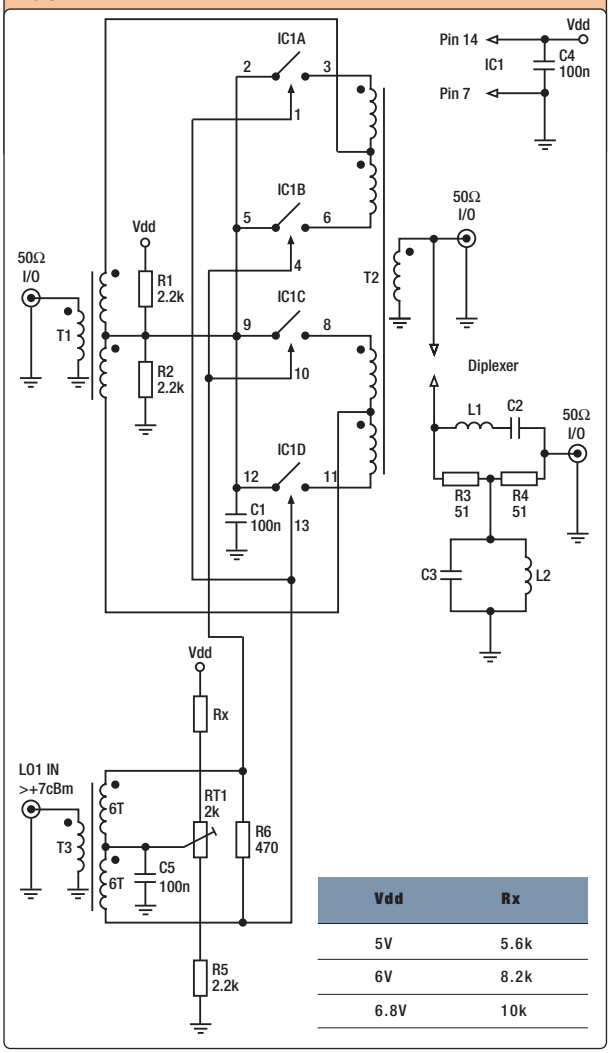
These are published in a four-page feature article 'Don't Phone and Drive – it Quadruples Your Risk of Crashing', by Suzanne P McEvoy (leading a team of six) in *BMJ* [British Medical Journal], 20 – 27 August 2005. Those involved represent: The George Institute for International Health, University of Sydney, Australia; the Insurance Institute for Highway Safety, Arlington, VA, USA; and the Injury Research Centre, University of Western Australia.

The article describes in detail the methodology used and results based on interviews with 456 drivers aged over 17 years who owned or used mobile phones and had been involved in road crashes necessitating hospital attendance between April 2002 and July 2004, plus company records of mobile phone use.

A summary of results indicates that "The driver's use of a mobile phone up to 10 minutes before a crash was associated with a four-fold increased likelihood of crashing (odds ratio 4.1, 95% confidence interval 2.2 to 7.7, P < 0.001). Risk was caused irrespective of whether or not a hands-free device was used (hands-free – 3.8, 1.8 to 8.0, P < 0.001); hand-held – 4.9, 1.6 to 15.5, P < 0.003). Increased risk was similar in men and women, and drivers aged over or under 30 years. A third (n - 21) of calls before crashes and on trips during the previous week were reportedly on hand-held phones. The conclusions: When drivers use a mobile phone there is an increased likelihood of a crash resulting in injury. Using a hands-free phone is not any safer".

The introduction notes that, because of concerns about risks of potential crashes, use of hand-held phones while driving is illegal in most countries in the European Union, all Australian states, and parts of Canada and the United States. "Most research on the safety of drivers' use of mobile phones has been experimental in design, involving volunteers, and has found that phone use affects reaction time, variability of lane position and speed, following distance, and situational awareness in simulated or instrumented driving tasks. Distractions are associated with conversations using both hands-free and hand-held phones. Studies have also reported effects of physical distraction from handling phones… Important questions remained about whether phone use affects the risk of more serious crashes involving personal injuries and whether the risk differs for hands-free versus hand-

FIG 3 © RADCOM 600



Vdd	Rx
5V	5.6k
6V	8.2k
6.8V	10k

Fig 3
The I7SWX two-transformer H-mode mixer as used with a passive transformer squarer. Balance adjustment is done checking for the highest null of the LO signal at the mixer IF output. When using a 1:1:1 (1:4 CT) CT transformer the 470Ω resistor (R6) should be 200 to 220Ω. The basic two-transformer H-Mode mixer circuit was shown and discussed in 'TT' April 2003 and in Technical Topics Scrapbook 2000-2004, p168.

Table 2
I7SWX's Measurements on the mixer shown in Fig 3.

RF in at 0dBm	2MHz	7MHz	14MHz	21MHz	30MHz	50MHz
Conversion loss dB for downconversion at 9MHz	-5.5	-5	-5	-5.5	-6	-7
Conversion loss dB for upconversion (RF + LO)	-5.5	-6	-7	-7.5	-8	-15
LO null dB at IF	-53	-50	-53	-56	-51	-26
RF in null dB @ IF	-41	-44	-30	-35	-37	-35

Data shown above are referred to an IF output at 9MHz (IF = LO – RF)
Upconversion data are IFup = RF + LO (eg 14MHz + 23MHz = 34MHz)

held phones. We studied drivers involved in injury crashes in Perth; since 1 July 2001, it has been illegal to use a hand-held phone when driving in Western Australia."

The authors point out that their findings reflect those already reported, providing a list of 11 references to other investigations into the hazards of using mobile phones while driving.

The possibility of another, possibly greater, driving hazard appears to be opened up by the success of tests in Helsinki of Digital Video Broadcast – Handset (DVB-H). The trial, in which 500 people were involved, used modified Nokia 7710 multimedia handsets, showed they could receive sharp, steady Finnish broadcast TV pictures while on the move: see 'Mobile TV Gets Good Reception', by Barry Fox (*New Scientist*, 3 September, 2005, pp22 / 23). Battery life at present limits viewing time to a maximum of around three hours. Clearly, the system, using the digital COFDM broadcast mode, is intended for passengers in cars or public service vehicles, but one can foresee the great temptation for some drivers to take quick looks at the high spots of sports programmes, such as the culminating moments of the recent Test matches between England and Australia, etc.

PASSIVE SQUARER FOR H-MODE MIXER

GW4HBZ in 'Unnecessarily Good' in the August 'The Last Word', suggested that too much attention has been given to high-performance mixers and oscillator phase-noise. This was on the grounds that he found old receivers perfectly adequate, even on 7MHz. G3RZP responded in the September issue, but there is a further point that I would make. GW4HBZ wrote: "I have operated on 7MHz, unaware of the massive broadcast signals slightly higher in frequency. There is so much noise and interference on that crowded band that any receiver imperfections don't show themselves unless the equipment is particularly poor." GW4HBZ should ask himself why the band appears to have so much noise and interference – and does the noise disappear at those times of the day when the massive broadcast signals are not there? 7MHz is not inherently a noisy part of the spectrum compared to 3.5 or 1.8MHz. As we have stressed, the effects of intermodulation products and transmitted noise sidebands, etc is to produce an artificially-high noise floor and make the band *sound* noisy and full of spurious signals, obliterating weak DX signals.

One of the most important contributions made by 'TT' to high-performance mixers has been the first publication of the various forms of the H-mode mixer as developed originally by Colin Horabin, G3SBI, with subsequent contributions by Gian Moda, I7SWX (F5GVU). The H-mode mixer with fast-bus switches, together with G3SBI's development of the twin-tank low-phase-noise oscillator, truly represents the state-of-the-art. Both G3SBI and I7SWX continue to develop variations. I7SWX has also described, in 'TT' and elsewhere, simpler versions that can be incorporated in existing transceivers.

To summarise his most recent contribution: "During a 2004 visit to my friend Bill Carver, W7AAZ, I learned that Paul Kiciak, N2PK (of N2PK Vector Network Analyser fame), was working on an idea to simplify the squarer of the H-Mode Mixer using only a transformer in place of the 74AC86 or LVDS squarer to gate the FST3125. As I have still not seen anything published by N2PK on this, one weekend recently I spent a productive five minutes unable to resist checking out the idea of driving directly the FST3125 gates directly from the oscillator using a simple passive component such as a transformer. **Fig 3** shows my final tested solution. As always nothing is perfect and we have to compromise, but the results still provide a lot.

"The squarer is formed by transformer T3 and an adjustable bias circuit, formed by two resistors and a trimpot. T3 secondary is centre-tapped and drives directly the two groups of two FST3125 switches. The switches of the FST3125 do not switch at exactly Vdd/2 but somewhere around +1.5V. The use of adjustable bias helps to find the most suitable voltage for both groups of gates. I used a 4T:6T:6T transformer on a balun ferrite core No 43 (2402) to be sure that there is enough drive for the gates. A minimum of around +7dBm seems valid although I tested it up to +10dBm. A 50Ω local oscillator input termination is provided by the 470Ω loading resistor. Similar results, with a little higher drive, are given by a home-brew transformer with 1:1:1 ratios (three 4-turn windings). Commercial transformers should be better but costly.

"With a spectrum analyser or general coverage receiver, look for the LO signal at the mixer IF output and adjust the bias for the deepest possible null. I used a 1-turn trimmer (RT1) and found the adjustment a little tricky; a multi-turn trimpot might be better, but would require more space and would be more expensive if purchased new.

Table 2 shows my findings."

I7SWX has provided further details of his measurement set-up and a number of possible variations to Fig 3, but I hope that these notes provide at least an outline of this recent development. ♦

CORRECTION

'TT' September, Fig 8. Earth connection to the HC02 IC should be Pin 7 not Pin 2 and there should be a 'chassis connection' to the 0V line.

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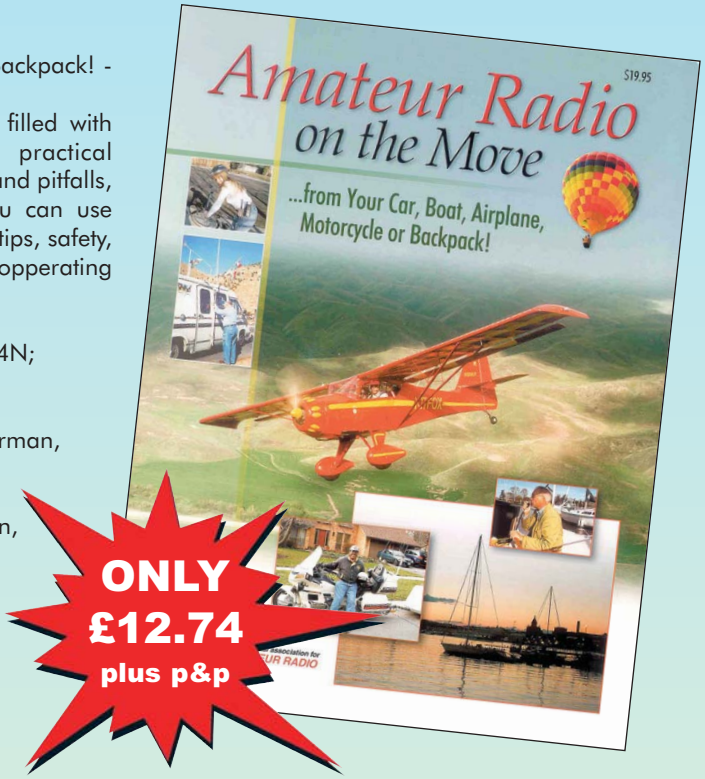

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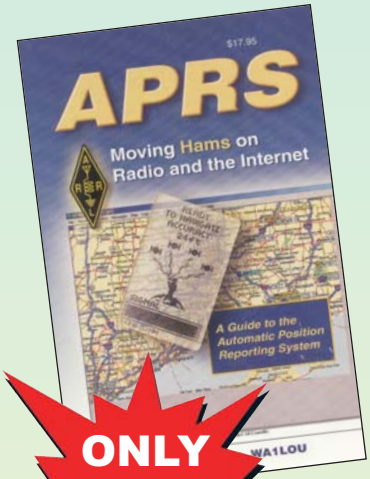

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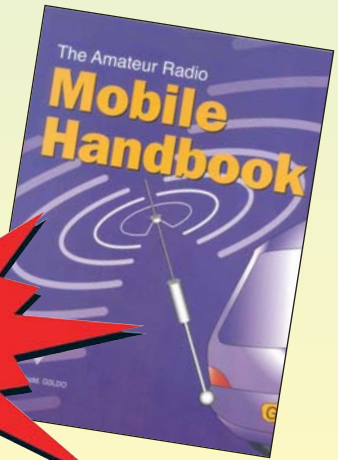

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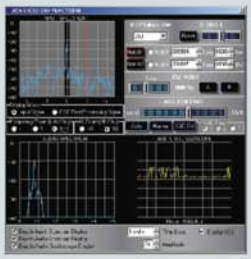

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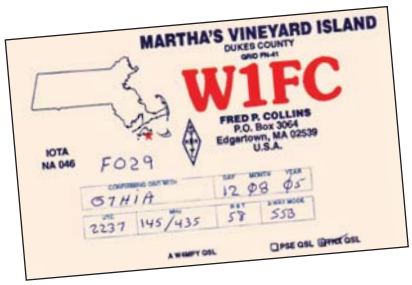
Using precession to maximise range



Amongst other absorbing satellite information, John illustrates how to make use of the satellite immediately after the acquisition of signal to get the maximum DX range

If you stand on a mountain you can see further. The same goes for satellites; the higher they are above the Earth, the larger the radio coverage. *FO-29* is in an elliptical orbit, with a maximum altitude of 1,300km, and a minimum of 800km. Stations at the furthest edges of the footprint have the greatest DX range (see **Fig 1**) so, depending on the satellite's position in its orbit this could be between 6,000 and 11,000km. Each station will see the satellite at just a few degrees above its horizon, so there is no need for antenna elevation. Also, at these extreme ranges, Doppler shift is at its minimum so less re-tuning is needed to stay on frequency. How does it work in practice? Recent evening passes of *FO-29* have produced some good contacts for me into the east coast of North America including Frank, W1FC, on Martha's Vineyard Island (see QSL card), Mark, VEPWP, in Ontario (FN25), and Joe, K3SZH, in Pennsylvania (FN10).

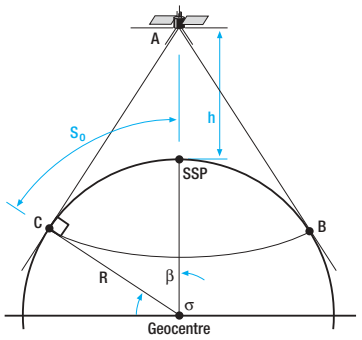
The orbital plane in which the satellite travels, precesses; ie in addition to the rotation of the Earth, the satellite's orbit is changing its position in space as well. Consequently, little by little, the highest point of the orbit will change to be over different parts of the globe. When the highest point occurs somewhere towards the Caspian Sea there will be a two- or three-minute window for contacts into VU (India). It's worth a try; there are VU stations actively looking for satellite contacts into Europe so good luck and let me know if you make it.

20th AMSAT-UK COLLOQUIUM

The University of Surrey was once again the venue for the AMSAT-UK Colloquium, the premier event in the amateur radio satellite calendar. Attending as a day visitor, I had a lot to pack in.

It was a pleasure to meet up with old friends, make some new ones, and be inspired by all the new things happening on the satellite scene. Delegates from the UK and overseas were treated to a packed program of lectures and demonstrations including live weather satellite reception by GEO members. There were models of

FIG 1 © RADCOM 000



Cross-section of the satellite coverage cone. (Source: *The Radio Amateur's Satellite Handbook*, by Martin Davidoff, K2UBC.) Maximum communication distance is 2So, such that $2So = 2R\beta = 2R\cos^{-1}[R/(R+h)]$, with the angle β in radians, and using the same units (miles or km) for R and h.

a *CubeSat* from engineering students at Delft University; unlike other *CubeSat*s, this one will have a voice transponder. Dave Bowman, G0MRF, and Howard Long, G6LVB, gave a joint presentation of their mode UV transponder (435MHz /145MHz) and a unique DSP system. The quality of the construction was excellent and the demonstration hardware and software ran faultlessly throughout the weekend. The DSP was christened STELLA (Satellite Transponder with Equalising Level Limiting), and is designed to deal with antisocial stations running excessive uplink power which activates the satellites AGC and reduces everyone else's signals into the satellite. STELLA defeats these alligators (big mouth and small ears), by using DSP techniques to locate the offending signals and apply a selective deep notch filter. The entire DSP process is done in software, and so can be easily modified in orbit by the command stations to meet changing circumstances.

SATELLITE NEWS

For up-to-date satellite news and hints and tips on satellite working visit the Southgate ARS website. The item 'Getting Started on the *ISS* Repeater' is particularly good, with simple and practical tips to get you working through the *ISS* with a hand-held. Thanks to Trevor, M5AKA, for this one.

ENHANCE THE YAESU FT-847 FOR WEAK SIGNAL RECEPTION

The FT-847 is the main rig at GB2NSC and, during a maintenance evening at the station, Robert, G8ATE, and I were checking the receive performance. Robert suggested we have a look at the 'hidden menu' to check and adjust the factory settings for receiver gain. I was impressed with the results and made a note of the procedure to try on my own 847. The procedure I am going to describe comes with the usual health warning. I don't know if it's approved by Yaesu, so proceed at your own risk. The method involves accessing a hidden menu, selecting receiver gain, adjusting, and exciting. Here it is, step by step. During the procedure, don't touch any other controls.

Set the main VFO for the 70cm band and select USB. Switch off the radio, plug in the fist microphone. Hold down the three mic buttons DWN, FST, UP. With all the buttons held down turn on the rig. Check that you are still in the 70cm band and USB, switch on the pre-amp. On the right of the display, you will see the word MENU. Turn the SUB TUNE knob until the menu option RX-GAIN appears. Look at the right-hand end of the frequency display where you will now see some half-height numbers. That's the current factory setting for receiver gain. Note it down in case you want to go back to it later. Use the MENU/VFO CH knob to increase the gain. You will hear the noise come up, take it up slowly until the first two segments on the S meter are showing. I went from 40 to 80. Press MENU to save the setting, and exit. Repeat for 2m. You can repeat the procedure to return to the default values or increase the gain further. That evening, I made contacts on *FO-29* and *VU-52* and was pleased with the improvement. ♦

FURTHER READING

The Radio Amateur's Satellite Handbook, by Martin Davidoff, K2UBC. (Available from RSGB Shop)

WEB SEARCH

Southgate ARS	
	www.southgate.org/news/jul2005iss_repeater_guide.htm
Delft University's *CubeSat*	www.delfiC.nl
Group for Earth Observation	www.geo-web.org.uk

John S (Jack) Belrose, VE2CV

17 Rue des Montagnais, Secteur Aylmer, Gatineau, QC, Canada J9J 1G1.

E-mail: john.belrose@crc.ca

Performance of antennas

FIG 1 © RADCOM 601

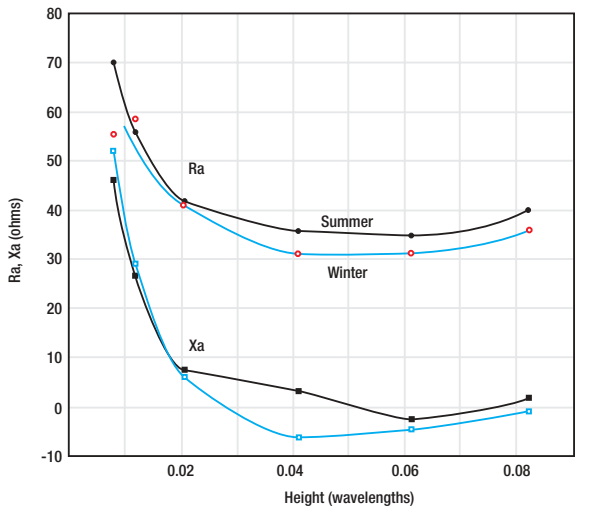


Fig 1
Input impedance of a 4MHz horizontal dipole versus height of the dipole (h/λ). The solid symbols are the measured values in summer, the open symbols the winter values (ground frozen and covered with snow).

FIG 2 © RADCOM 602

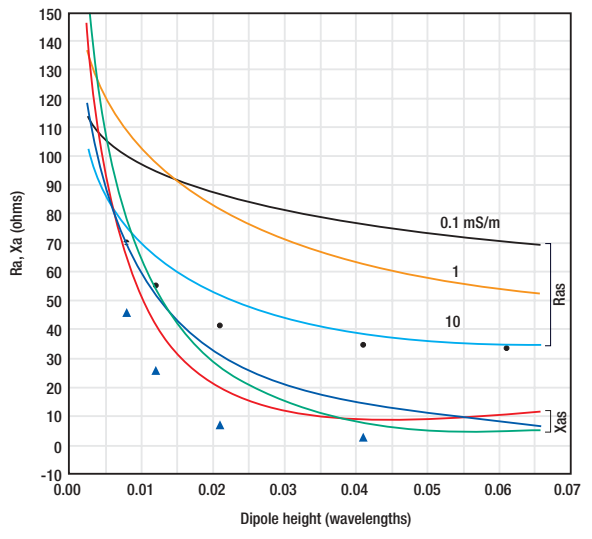


Fig 2
Comparison between measured dipole impedances, summer values, and theoretical impedances, according to *NEC 3*, versus dipole height (h/λ). The ground conductivities are in mS/m.

While impedance, which can be easily measured, is of academic and practical interest, from an operational point of view (communicating) one is concerned with the radiation efficiency of antennas in their operating environments, and with space-wave gain (the vertical radiation pattern (VRP) in the direction of maximum gain). For a horizontal doublet antenna suspended at heights less than λ/4, the launch angle is 90°, giving maximum gain overhead – a 'cloud-warmer' antenna, as Doug DeMaw, W1CP (now a silent key), used to tell me. For a PEC ground, the radiated field strength (gain) and the dipole's radiation resistance approach zero, as the height of the doublet approaches zero. This is because the doublet sees a perfect image of itself in the ground plane, and currents on the doublet and on its image are opposite, and so the radiated fields (doublet and its image) cancel as the height of the doublet approaches zero. For a doublet over finitely conducting ground, the doublet sees an imperfect image of itself in the ground plane, and so fields resulting from currents on the doublet and its image do not exactly cancel, but the imperfectly conducting ground introduces loss, the measured resistive component of the antenna increasing.

In the mid-1980s, my colleagues and I carried out a very detailed study (by measurement and simulation) of the radiation characteristics of dipole antennas at low and very low heights [1]. We measured impedance, and NVIS gain (signals received at a remote field site 100km distant).

A measurement of the characteristics of dipoles at very low heights is of practical interest:

- to assess the practicality of laying an insulated dipole on the ground, or supported by very short posts, wooden stakes or trees, for emergency communications;
- to answer the question 'can a measurement of dipole impedance combined with a validated numerical electromagnetic code (NEC) provide a means for estimating the effective ground conductivity of a field site?'.

ELECTRICAL PROPERTIES OF THE GROUND

The electrical characteristics of the surface of the earth are determined by the nature of the soil, by its general geological structure, by the moisture content, and by the frequency. Various authors are not consistent as to the conductivity (σ in mS/m) and in particular the relative dielectric constant (ε_r) values that are used on HF for so-called good, average and poor ground. **Table 1** below shows parameters recommended by the CCIR (now ITU Radio Communications), and values proposed by George Hagn, SRI International (based on his very extensive measurements). George was a colleague, but is now a silent key. In the calculations presented below, the author has used the Hagn values. For conductivities other than the standard reference values, I have plotted a smoothed curve relating conductivity

Table 1
Values of conductivity and dielectric constant proposed by the ITU (RC) and by George Hagn, SRI International.

	ITU (RC)		Hagn, SRI Inter	
	σ (mS/m)	ε_r	σ (mS/m)	ε_r
Wet Ground	10	30	50	42
Average Ground	3	15	3	13
Medium Dry	1	15		
Very Dry Ground	0.1	3	0.15	4
Sea Water	5000	70		

In 'TT', February 2005, Pat Hawker, G3VA, discussed in some detail the performance of doublet antennas at low heights over ground, comments based on his own experience, and on correspondence received from readers – but only impedance was discussed. Certainly the influence of the ground can be seen very clearly, since the doublet's resistive component increases with decreasing height, rather than decreasing as it does for perfect electrical conducting ground (PEC ground)

close to ground

to dielectric constant, and the values I use for dielectric constant are taken from this curve. I am not sure about the validity of this relation, but this gives me a systematic relation between gain and conductivity, otherwise there would be discontinuities in the curve.

HORIZONTAL DIPOLES AND DOUBLETS

A 'half-wave dipole' is, in my view, a resonant dipole; the input reactance (Xa) is zero or low. Because of end-effects, the resonant length is always shorter than a half-wavelength, and, since operational dipoles are always located above real ground, and often supported by a conducting tower or towers, it has long been known that the presence of a finitely-conducting ground and the dipole's supporting structure can have a significant effect on the antenna's dimensions, impedance and radiation characteristics [1, 2, 3].

As noted at the outset, transportable antennas, and antennas used by amateurs in radio, are frequently operated at relatively low heights above the ground, and drooping dipoles are frequently used because a drooping dipole requires only one support pole. I have extensively studied the performance characteristics of drooping dipoles [4], but further discussion on that subject matter is outside the scope of this article.

To begin, I will overview a series experiments, the purpose of which was to examine whether the impedance of a dipole at a low height can give us an estimate of the ground conductivity of the site. The dipole length was shortened so that it was approximately resonant at a height of about 0.05λ (h/λ = 0.05) but, for our purpose here, we could have made the measurements for any dipole length.

Fig 1 shows the measured impedance of a 4MHz dipole at very low heights, and on **Fig 2** the measured values (summer values) are compared with theory (*NEC-3*) for three conductivities (σ = 0.1, 1, and 10mS/m). Clearly, a comparison between theory and measurement can provide an estimate of the ground conductivity of the field site. A conductivity of about 10mS/m is reasonably in accord with the measured data.

Fig 3 shows the NVIS gain versus dipole height, measured by my colleagues and I (solid circles), for a 4MHz dipole over sandy ground (propagation distance 100km). The measured gain is referenced to a dipole at 9m (h/λ = 0.12). The gain (in dBi) of the reference dipole at this height was calculated (*NEC-3*). Hence it is not surprising that the measured gain at that height agrees with the gain of the reference dipole, but the agreement between measured and predicted gains for other heights should be noted. On Fig 3, the continuous curve has been calculated using *NEC-4D* for sandy ground (σ = 1mS/m, ε = 9.5).

Continuing, as noted above, I have been particularly concerned with dipole antennas at low (electrical) heights, even with insulated dipoles lying on the ground. Dipoles lying on the ground are of particular interest for military tactical communications, or for emergency communications. **Fig 4** shows the gain versus dipole height (according to *NEC-3*) for three conductivities (0.1, 1 and 10mS/m). Note that, for very poor ground, the NVIS gain decreases only slowly with decrease in antenna height. While the dipole is a poor radiator at all heights for very poor ground, the gain at near zero height is only 3dB less than at higher heights – and so, for emergency communication, one could certainly use a dipole at a very low height. *Note*: if an antenna at a very low height must be used, paralleled dipoles can be used [1] fed in phase and, since the efficiency is very poor, the spacing between the adjacent antenna elements can be small. The gain is doubled each time the number of elements in the antenna array is doubled (two dipoles: 3dB increase in gain; four dipoles: 6 dB; eight dipoles: 9 dB). Also see, for example, our experiments with paralleled Beverage arrays [5].

FIG 3 © RADCOM 603

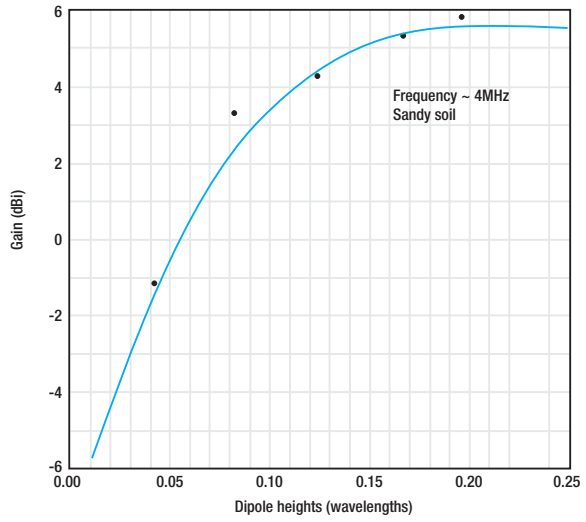


Fig 3
Experimental measurement of near-vertical incidence sky-wave (NVIS) gain (dBi) compared with predicted values (*NEC-4D*) for a 4MHz horizontal half-wave dipole versus dipole height (hλ). Ground conductivity at the test site has been estimated (σ = 1 mS/m, ε = 9.5).

FIG 4 © RADCOM 604

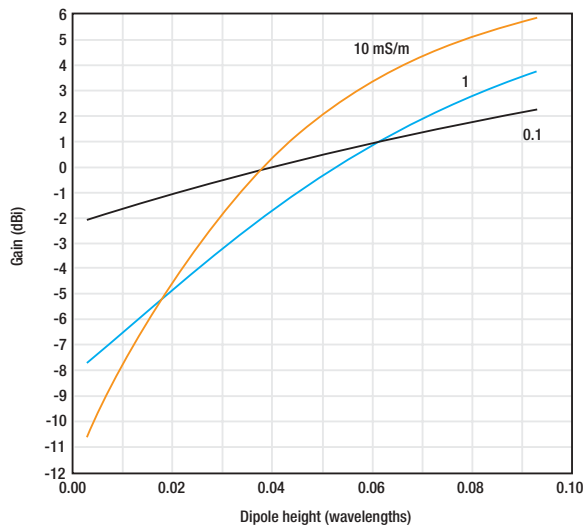


Fig 4
Theoretical NVIS gains, according to *NEC 3*, for a horizontal dipole versus height of the dipole (h/λ) for three conductivities as marked (mS/m).

FIG 5 © RADCOM 605

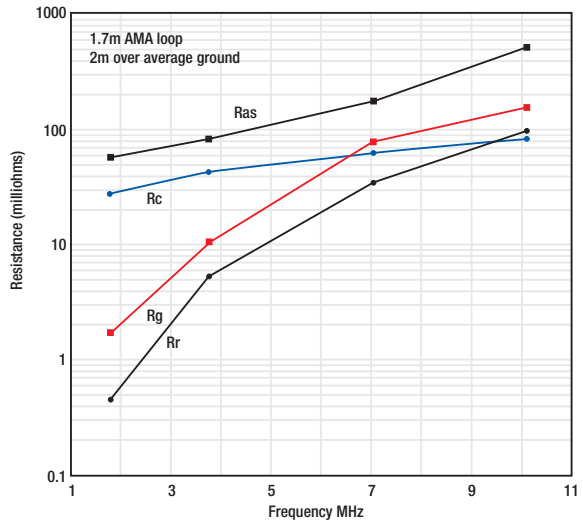


Fig 5
Detailed analysis to graph resistance parameters, based on a detailed numerical analysis (*NEC-4D*) and measurement (loop bandwith) to determine total antenna system resistance Ras.

FIG 6 © RADCOM 606

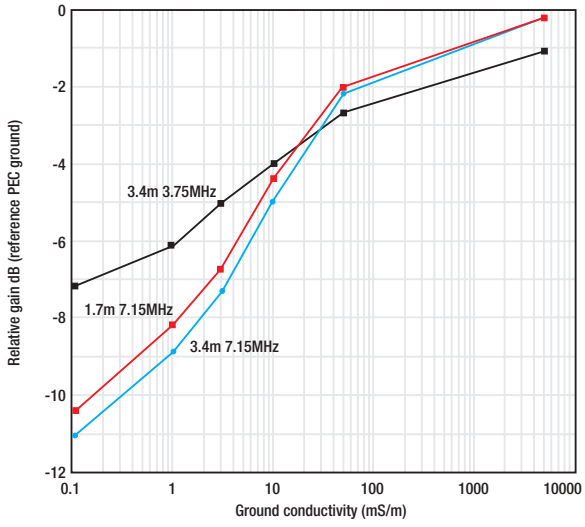


Fig 6
Relative ground-wave gain (dB), referenced to field strength for a PEC ground, for two frequencies (3.75 and 7.15MHz) and two loop sizes (3.4m and 1.7m diameter). For 'average' ground, Hagn's value 3mS/m, the gain is 5 – 7dB less than for a PEC ground.

VERTICAL SMALL TRANSMITTING LOOPS

If the ground conductivity is poor, it is in general better, depending on requirements such as launch angle and practical height for the antenna, to employ horizontal rather than vertical polarisation [3]. For top-band frequencies (160m and 80m, and perhaps even for 40m), compact loops are usually orientated vertically (vertical polarisation) at rather low heights over ground (2m to the base of the loop), since required heights for low-angle radiation for horizontal polarization may not be practical [6].

Dave Gordon-Smith, G3UUR (reference 'TT' December 2004), has (apparently) said that "he [G3UUR] would not trust even the latest professional version of NEC (*NEC-4D*) which, for small transmitting loops over average ground, shows no induced ground loss, yet experimental results (??) show an extra 10dB compared with conductor loss." Certainly, the use of NEC to predict the performance of electrically-small loops has been questioned (see Appendix).

We *should* expect a ground-induced loss resistance, since the radiation resistance of an electrically-small loop is very very small, and precautions are usually taken to reduce conductor loss, and so even a small induced ground-loss resistance could have a significant effect on radiation efficiency. The total antenna system resistance, Ras, for the loop can be inferred from the measured bandwidth (BW) – see particularly my 'Feedback' [6]; but identifying the component values that contribute to this total resistance is not straightforward.

Fig 5 shows my detailed analysis for an AMA 1.7m loop over average ground. The parameters plotted (see below) are based on a detailed *NEC-4D* analysis and measured bandwidths (to determine Ras). An additional small loss resistance (particularly small for the 1.7m loop), attributed to a loss resistance (not shown) of the tuning capacitor is included in the analysis, so that Ras (computed) equals Ras (measured).

Looking at the graph, one can clearly see that:

- the radiation efficiency increases dramatically with increase in the electrical size of the loop, notice the decreasing difference (on a log-scale) between Rr and Ras with increase in frequency; the radiation efficiency predicted for 3.75MHz is 6.5 %, measured value (by me) 5.3 %;
- the conductor loss resistance, Rc, is an important parameter (this parameter is the principle loss for the lowest frequencies); and
- the ground-induced loss resistance, Rg, is very small at the low end of the band, and Rg increases with increase in frequency.

An important parameter, also not graphed, is the ratio [Rr (over ground) / Rr (free space)]. This ratio changes with frequency, values at 1.8, 3.75, 7.05 and 10.1MHz are 2.2, 1.33, 0.62 and 0.34. This perhaps unexpected effect (values less than one) is undoubtedly due to coupling between the loop and its image in the ground plane, and in part is dependent on the location of the tuning capacitor. For perimeter / wavelength sizes less than about 0.05, it does not matter whether we place the tuning capacitor at the bottom or top of the loop, source at bottom of loop, the computed total resistance, Ras, and the vertical radiation pattern, VRP, are unchanged. As the loop size increases, with increase in frequency, tuning at the top results in a smaller value for Ras compared with tuning at the bottom, and the VRP changes (increasing directivity toward the horizon with increasing frequency).

Finally, **Fig 6** shows relative values for ground-wave field strength (dB) versus ground conductivity; 'relative' since gain difference is shown referenced to the field strength over a PEC ground, for two frequencies (3.75 and 7.15MHz) and two sizes of AMA loops (3.4m and 1.7m diameter). For 7.15MHz, curves are shown for both loop sizes (3.4 and 1.7m). Here these curves are closely the same, since relative ground-wave gain is plotted for the loops referenced to a PEC ground. Clearly the electrical properties of poor ground

"The electrical characteristics of the surface of the earth are determined by the nature of the soil, by its general geological structure, by the moisture content, and by the frequency"

introduce a significant decrease in radiated ground-wave field strength, but interpreting this change to due to a 'a ground-induced loss resistance' is not straightforward, since an important parameter (discussed above) is the change in coupling between current on the loop and current on its image in the ground, which is a strong function of ground conductivity.

CONCLUDING REMARKS

Finitely-conducting ground has a strong influence on the performance of antennas. The ground beneath the antenna influences the physical dimensions for resonance of the doublet antenna, the impedance of the antenna and, for antennas close to ground, induced loss resistance reduces the gain of the antenna. The ground in the vicinity of the antenna, and particularly for DX, the ground in front of the antenna, determines the antenna's gain and the VRP.

For perfectly-conducting ground, the voltage reflection coefficient for horizontally-polarised waves is -1 for all angles of incidence. A horizontal current element thus has a reflected image in which the current flows in the opposite sense and ground reinforcement occurs at angles of elevation for which the path difference between direct and reflected waves is one-half a wavelength. The dominant parameter determining the pattern is the mean height of the active part of the antenna above ground. If the ground is not perfectly conducting, the reflection coefficient at small launch angles has a smaller value, but the phase remains near to 180°, so the pattern is scarcely changed. The actual reflection coefficient may lead to a loss of gain, usually less than 3dB, but even here the directive gain remains 3dB higher that it would if ground reinforcement were absent. The launch angle depends on the height of the antenna and the antenna type used. For a horizontal dipole at heights of 0.2, 0.4, 0.5, 1, 2, and 3λ, the launch angle changes from 90°, 40°, 30°, 14°, 7°, to 4.7°, respectively.

For vertical polarization, the effects are more complex. For highly-conducting ground, the reflection coefficient is approximately unity. A vertical current element above the ground has a reflected image in which the current flows in the same sense, so ground reinforcement occurs at low launch angles. When the conductivity is finite, the phase of the complex reflection coefficient changes by 180° at small launch angles. Over sea, this happens at launch angles of a faction of a degree above the horizon, and the formation of the low angle maximum is scarcely affected. Over land, the phase change occurs at launch angles around 15°, and the reflection coefficient falls to a low value in the region of the change. The angle at which this occurs is called the Brewster angle. Antenna performance is seriously affected, particularly as the minimum reflection coefficient occurs at angles which are comparable with the most probable angle of arrival of HF sky-waves propagated over long distance paths. For propagation over very long paths, the optimum launch angles are <15°. A further consideration is that a vertical monopole or other type of GP antenna (for example a half-loop) must be fed against a buried radial wire ground system or against an elevated radial wire ground system, or counterpoise, and currents on the system affect the performance of the antenna. The small loop, although its radiation efficiency may be low, has the distinct advantage of requiring no ground system.

It is clear that measured radiation efficiency based on ground-wave is only part of the story. The performance of small loops needs to be studied by numerical modelling. While there are several computational electromagnetic codes that are useful for predicting antenna performance, for wire antennas I use *EZNEC Pro*. NEC has been with us for 30 years. I have been concerned with validating NEC for 25 years. Certainly, in my view, NEC can be used to predict antenna performance commensurable with measurement precision. ♦

APPENDIX – Modelling Electrical Small Loops

Jerry Burke (private communications 2003) has cautioned me on the use of NEC to predict the performance of very small loops over ground. And indeed there is a problem with *NEC-4D* for high conductivity ground (sea water), since the gain predicted can exceed that for PEC ground (impossible).

I have, however, been numerically-modelling small loops and comparing with measured field strengths for 20-years. Let me summarise my views: For small loop antennas over ground, I conclude that the errors increase with increase in ground conductivity, with decrease in antenna height (close coupling to ground), and with decrease in electrical size. For normal grounds (very dry to very good) *NEC-4D* and *NEC-2* predict almost identical gains that are in accord with available experimental measurement (ground-wave field strength and NVIS gain) but, for very high conductivity ground, the gains predicted by *NEC-4* can be too high. For small loops over high-conductivity ground, it may be better to use the 'reflection coefficient' Green's function in NEC, since it has machine precision. For the Sommerfeld ground solutions, the field values are obtained by table look-up and interpolation. Whereas the Green's function without ground has machine precision, over ground the Green's function errors are multiplied when the matrix for the loop becomes ill-conditioned (current on the loop almost, but not quite, uniform). However, for practical modelling purposes, NEC-2 *gives solutions that are reasonable in my view for all grounds (including 'sea water ground')*. The curves of Fig 5 have been computed using *NEC-2*.

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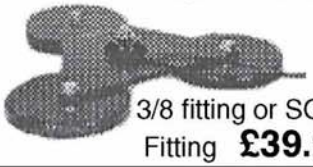

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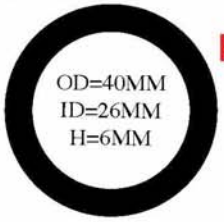

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David Sumner, G3PVH

20 Woodlands Way, Southwater, Horsham, W Sussex RH13 7HZ.

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Radio propagation at the Battle of Arnhem

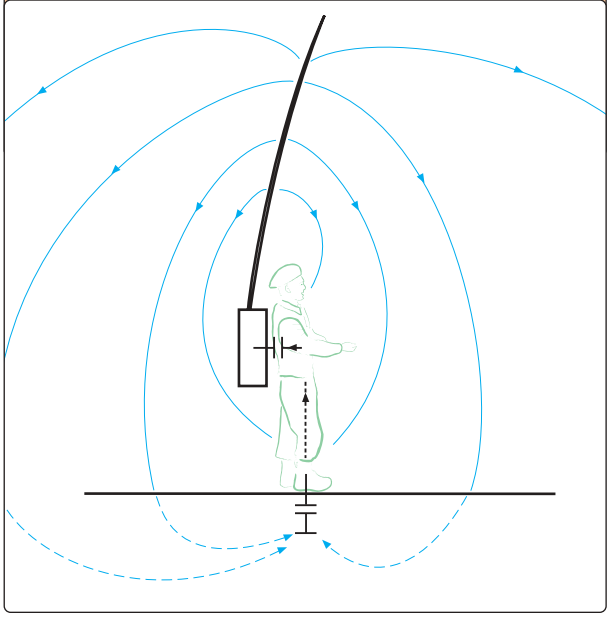
Radio communication at Arnhem was described by Tom Robinson, G0SBW, in *RadCom*, February 2005. He described some on-site tests made with modern equipment and also with one of the radios used by the British infantry, the WS68P. In both cases, the transmitter power was 0.25W. He found that the longer paths involved at Arnhem were difficult, signals over the 5.5km path between the bridge and the 1st Airborne Division HQ at the Hartenstein Hotel being only occasionally audible. As I am interested in aerials and propagation, I decided to calculate the likely results over such a path. I quickly came across a large unknown factor – the ground losses associated with a portable MF whip aerial. So I carried out some aerial measurements and propagation tests to investigate further

[Note: The RSGB Technical Committee (after considering this article) appreciated that there may be concerns about the validity of the methods described and assertions made, but the reviewers believed that the article would still be worth publishing as an 'unreviewed but controversial' article. *M5ACN – Technical Editor]*

Fig 1
Field lines surrounding a portable transmitter.

Fig 2
Parallel-plate capacitor using the soil as dielectric.

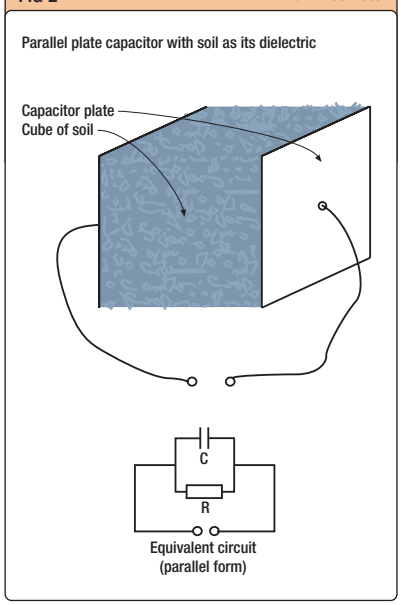
FIG 1 © RADCOM 607



The 68 Set was used with a plain 3m whip and did not have an earth connection, relying on the mass of metal of the equipment itself (**Fig 1**). The electric field lines of the whip would terminate mainly on the ground, but also on the equipment and the operator. The ground is very important in this process because it will intercept a large proportion of the field lines and will carry much of the current. Unfortunately, the ground is often a very poor material from the electrical point of view.

A cube of soil, if placed between two plates (**Fig 2**), has resistance and capacitance in parallel. In the MF range, the current flows mainly in the resistive part and at the upper HF range it flows mainly in the capacitive part. As we are using a frequency of 2MHz, the resistance is the item of interest. The resistance of such a cube defines the resistivity of the soil, expressed in ohms per metre cube or ohm-metres (Ωm). Good soil can have a resistivity of 10Ωm, and poor soil 1000Ωm or more. Sea water is very good, but fresh water and desert are both very poor. In my case, I guessed my wet, heavy, clay soil to be average soil with a resistivity of perhaps 100Ωm. But what is the effect of ground resistivity on the aerial input resistance? My tests seem to indicate that the aerial loss resistance is roughly equal to the ground resistivity. In other words, in my case about 100Ω.

FIG 2 © RADCOM 608



MEASURING THE AERIAL RESISTANCE

Anyone who has used a regenerative receiver will have noticed how the amount of regeneration required is affected by the aerial, and this is the basis of my measurements using the resonance method. We are trying to measure a resistance of a few ohms in series with the very small whip capacitance, which amounts to about 1,600Ω of reactance. It is hard to measure a small resistance such as this in series with a large reactance by using a bridge. The original idea

FIG 3 © RADCOM 609

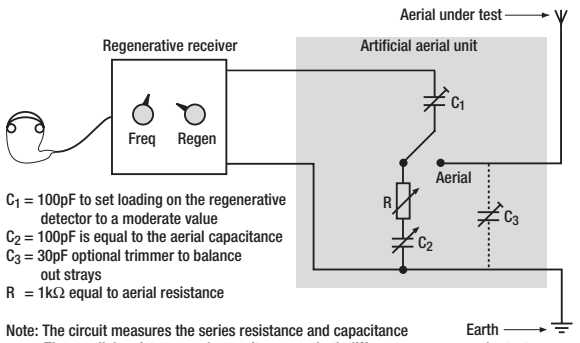


Fig 3
Set-up for aerial resistance measurement.

Fig 4
Field strength graph.

for my measurement technique came from M G Scroggie in his *Radio Laboratory Handbook* [1]. He used a negative resistance oscillator, but any controllable oscillator can be used.

We connect the aerial to a regenerative detector (**Fig 3**) and adjust the feedback until it is on the threshold of oscillation. Then we substitute an artificial aerial (AA), consisting of a variable capacitor and a variable resistor. We adjust these components until the receiver is again at the same frequency and on the edge of oscillation. We can then read the values of the resistance and capacitance of the aerial. In practice, a degree of skill and delicacy is necessary to obtain good results and the method is only an approximate one.

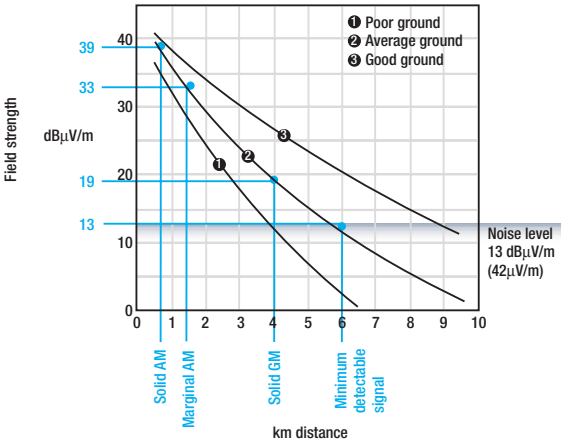
RESULTS FOR THE AERIAL RESISTANCE

The 68 Set was carried by the operator, or placed on the ground. To simulate something similar, I placed my equipment in a metal tray to which the earth terminal of the transmitter was connected. The tray was then placed on the ground.

The result for a 3m whip was about 100Ω of resistance in series with 38pF. Nothing I could do with ground planes had much effect. A sheet of aluminium foil of 3m x 0.5m reduced the resistance from 100 to 80Ω, approximately. The purpose of the ground plane is to screen the soil from the electric field, so it must be big and solid to have any effect. With the whip placed on a vehicle roof, I obtained a resistance of 70Ω. A small number of radials is not likely to have much effect.

We can calculate that, due to the high aerial/earth resistance, the losses of the 68 Set parallel tuned matching circuit will be only around 1dB, and a loading coil would, in this case, be of little benefit.

FIG 4 © RADCOM 610



Theoretical curve of field strength versus distance for 250μW radiated
(Based on Terman [4])

THE EFFICIENCY OF THE WHIP AERIAL

Even without the matching circuit or loading coil losses, a whip aerial has very poor efficiency if the electric field is able to terminate on the earth. The ground resistance will then be hundreds of times greater than the radiation resistance and, assuming an input resistance of 100Ω, it is easy to calculate the loss in my case as being about 29dB. If a large ground screen can be used, as in the case of mobile operation, the losses may be lower. Tests in the USA by Malaga [2], indicated a combined aerial loss, including matching network loss, for two bumper-mounted 9ft whips (transmitting and receiving) of 66.65dB at 3.195MHz. This equates to -33.3dB each.

THE TRANSMITTER ERP

A short aerial has a slightly wider vertical lobe than a quarter-wave monopole, compared with which it has a gain of approximately -0.2dB, which can be ignored.

The 68 Set transmitter carrier power is 0.25W, or –6dBW. When the aerial is connected, the Effective Radiated Power (ERP) in dBW is given by the transmitter power, minus the matching network loss and minus the aerial loss, ie
ERP = -6 -1 -29
ERP = -36dBW (±3dB approx).

This is a very small transmitted power and is equal to 250μW (the power needed for a sensitive pair of earphones). As we are using AM, the sideband power is only 125μW.

THE RECEIVER

The receiver of the 68 Set is a superhet, probably sensitive enough to hear aerial noise and interference, which will be the limiting factor rather than the receiver's internal noise. Within the definition of 'interference', we can include unwanted signals, ionospheric noise, static crashes and man-made noise from electrical sparking.

For an incoming signal to be heard, it must compete with the background noise. I made some measurements using a stepped attenuator and found that, for CW, reliable copy requires the carrier to be about 6dB above the minimum detectable signal (MDS). By using the stepped attenuator on broadcast stations, I found that AM was just readable when the carrier power was about 20dB greater than the MDS. This also means that the wanted field strength must be 20dB greater than the interfering field strength.

The noise level is a very variable and indeterminate factor. CCIR Report 322-3 [3], is the official guide, but is not particularly useful. I expected a noise level of about 3μV/m (10dBμV/m).

THE PATH AT ARNHEM

It is usually thought that Holland has wet, marshy terrain. Parts of the country were once continuously drained by wind pumps and there was, after all, the story about the little boy with his finger in the dyke. The radio equipment was therefore tested in advance in marshy conditions in the UK. I do not know if it was salt or fresh water marsh. However, the Arnhem area did not look marshy from the air, and photographs of the ground during the battle indicate that it was parched dry and possibly poorly conductive, raising the aerial resistance and increasing the path loss.

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RESULTS OVER AVERAGE GROUND	
Estimated range for solid AM reception (km)	0.7
Estimated range for marginal AM reception (km)	1.5
Range for reliable CW reception (km)	4 (very roughly)
Limit of audibility (km)	6

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The area around the bridge was also built up. The results of tests by Malaga [2] in Lexington, Mass, show that, in a suburban area with average soil, signal strengths are typically about 10dB weaker than in open country. This is due to the presence of buildings, which make a suburban area similar to the case of 'poor' ground. In my own tests, there were well-spaced buildings, which seemed to have little effect (but I found a wooded radio path to be poor at this frequency).

A PROPAGATION TEST

A small CW transistor (BFY51) transmitter with a power output of 0.5W was coupled to a 2m whip aerial using a parallel tuned circuit. The voltage at the base of the whip was typically 80V, similar to that expected with the 68 Set. A receiving vehicle travelled away from the transmitter until the limit of range was reached for each mode. The transmitter was for CW only, so I had to estimate when the signal would be strong enough for AM. I could use the strength of various broadcast stations, in conjunction with the BFO, as a guide.

I obtained the results shown in the box at the top of this page.

It is interesting that the signal is subject to cyclical variations in strength as the vehicle is moving, in a somewhat similar way to VHF, but much slower. These effects are discussed in [2].

The theoretical curves, based on [4], for *good, average* and *poor* ground are shown in **Fig 4**, for an ERP of 250µW. On to these plots I have marked the ranges that I obtained in tests over average ground along a main road with occasional buildings and power lines. My tests were not an exact replica of the conditions at Arnhem, but were carried out as a rough check on my calculations. The agreement with the curve for average ground is good if I assume a noise level of 13dBµV/m (4.5µV/m), a little higher than expected. In particular, my test points seem to fit the slope of the curve to surprising accuracy for a subjective test.

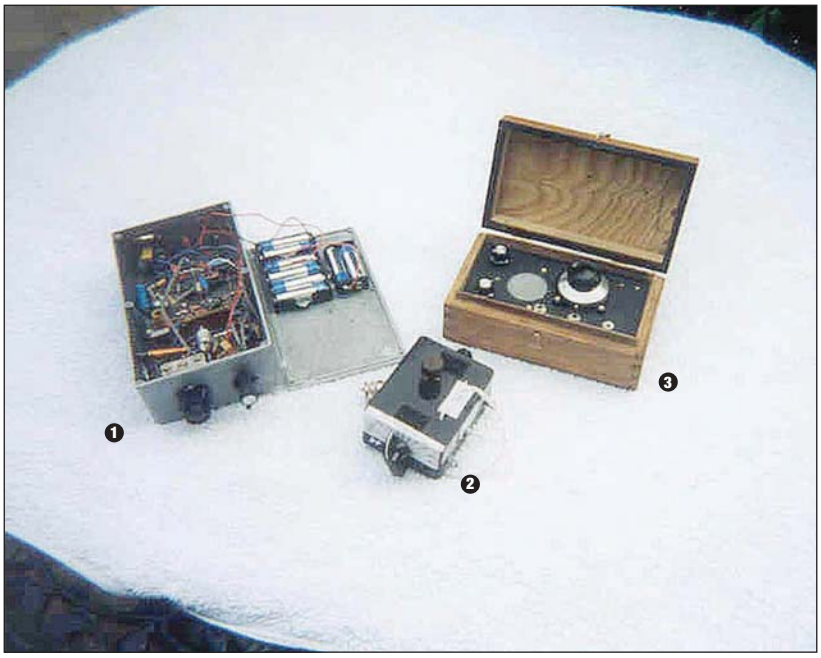
SUMMARY

The resistance associated with a pedestrian whip has not, so far as I am aware, been previously measured. It seems to be numerically similar to the ground resistivity. Over average ground, I obtained figures of around 100Ω at 2MHz, causing very poor aerial efficiency. My propagation tests seem to fit the theoretical curves.

The combination of high aerial / earth losses, small transmitter power, a dry and built-up path, the use of AM, the necessity for 'netting' following the impact of dropping the set by parachute and the noise and stress of battle would probably have made communication to 5.5km very difficult. A wire aerial at one end of the link would have given a large improvement, but I do not know if this was done.

Radio communication at Arnhem seems to have been a failure. However, we must not point the finger of blame at anyone because we just do not know the constraints under which people were working. We can only be thankful that today we are free to pursue our hobby, and to enjoy radio communication with all countries.

Note: Since writing the article I came across an excellent description [5] of the Australian radio A510, which was electrically similar to the WS68, but with a better receiver and crystal control. Tests in Malaya achieved a range of 2.4 km whip-to-whip at 6MHz, which was found to be more efficient than 2MHz as a result of decreased aerial/earth losses. ♦



The equipment used for some of the tests.

1 Low power transmitter with the battery pack in the lid

2 Artificial aerial

3 Regenerative receiver

REFERENCES

[1] M G Scroggie, *Radio Laboratory Handbook*, second edition, pp227 – 33, Iliffe.
[2] A Malaga, 'An Empirical Path Loss Model for HF/VHF Propagation in Urban Areas', *Radio Science*, Vol. 16, No 3, pp355 – 64, May-June 1981.
[3] International Telecommunications Union, 1968, 'Characteristics and Applications of Atmospheric Radio Noise Data', *CCIR Report 322-3*. Comité Consultatif International Des Radiocommunications, Geneva, Switzerland.
[4] F E Terman, *Radio Engineering*, second Edition, McGraw Hill, 1937.
[5] The website of the late Colin MacKinnon, VK2DYM: www.qsl.net/vk2dym/radio/A510.htm.

Members' ads

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2 x 5.1m x 75mm x 3mm gauge 1 with internal spigot, brand new, £50. Butternut QPK counterpoise new, £60. 1 pair $6^1/_2$in stand-off wall mounts, £5. Buyer to collect. G8RDK, 01903 200 930 (Worthing).

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G0DKA	Mr D G Mackay	16/08/05
G2ACZ	Mr G Whitehead	03/09/05
G3ARU	Mr H J Smith	27/07/05
G3BRV	Mr R Bennison	28/08/05
G3DAF	Mr A Godfrey	27/08/05
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N1YQW	Mr A D McLeod	
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	GB4GUY: Guy Faulks. Welwick, East Yorkshire. TLHV27P (M5EXY)
6 Nov	GB2ACR: Air Cadets Rochester. Rochester, Kent. TLH27 (G4EVY)
13 Nov	GB0BPF: Bradford Peace Festival. Bradford, West Yorkshire. LHV2 (G0PFH)
18 Nov	GB2KRC: Kilve Radio Communications. Kilve, Somerset. TLH2 (G4JBH)
19 Nov	GB4RN: Royal Navy. Waterlooville, Hants. (G3LIK)
25 Nov	GB2LRC: Leeson Radio Communications. Swanage, Dorset. TLH27 (G4JBH)
26 Nov	GB5RSR: Ribble Steam Railway. Preston, Lancs. LH2 (G1PIE)

RALLIES

TI - Talk-In; **CP** - Car Park; **£** - admission; **OT** - Opening Time - time for disabled visitors appears first, eg (10.30/ 11am); **TS** - Trade Stands; **FM** - Flea Market; **CBS** - Car Boot Sale; **B&B** - Bring and Buy; **A** - Auction; **SIG** - Special Interest Groups; **MT** - Morse Tests; **MA** - Foundation Morse Assessments; **LB** - Licensed Bar; **C** - Catering; **DF** - Disabled Facilities; **WIN** - prize draw, raffle; **LEC** - LECtures/ seminars; **FAM** - FAMily attractions; **CS** - Camp Site.

5 / 6 NOVEMBER 2005

NORTH WALES RS 19th North Wales Radio, Electronics & Computer Show – North Wales Conference Centre, Llandudno. OT 10am both days; £3 per day, or £5 for two-day ticket. Under 14s free if holding a callsign or if accompanied. B&B, DF, TI on 145.550MHz from 8.45am. Jenny, MW0BET, 01492 549 413. [www.nwrs.org.uk]

13 NOVEMBER 2005

West London Radio & Electronics Show – Kempton Park racecourse, Sunbury-on-Thames, Middx. Paul, M0CJX, 01737 279 108, m0cjx@radiofairs.co.uk [www.radiofairs.co.uk]

20 NOVEMBER 2005

MIDLAND AMATEUR RADIO SOCIETY Birmingham 16th Radio & Computer Rally – New venue – Alderbrook School, Blossomfield Road, Solihull, approx 3 miles from M42 jns 4 or 5. OT 10am, £1, TS, clubs, SIG, CP free, FM, TI. Peter, G6DRN, 0121 443 1189.

26 NOVEMBER 2005

Reddish Rally – St Mary's Parish Hall, Reddish Road & Broadstone Hall Road South, Reddish. OT 10am, £1. C, TI. John, G4ILA, 0161 477 6702, john@mckae.freeserve.co.uk

27 NOVEMBER 2005

WEST MANCHESTER RC Red Rose Winter Rally – Lowton Civic Centre, just off the A580 East Lancs Road. OT 10am. CP free, B&B, RSGB bookstall, TS, Component suppliers, SIG, LB, C, TI on 145.550MHz. Steve, 01942 895 198. [www.wmrc.org.uk]

3 DECEMBER 2005

Martin Lynch & Sons' Christmas Hog Roast & Boot Fair – Guildford Street, Chertsey. sales@hamradio.co.uk [www.hamradio.co.uk]

Northern Ireland Morse Proficiency Tests – Greystoke Community Centre, Antrim. Advanced booking (>10days prior to test) necessary. John, GI3YRL, 028 9336 7208, jbranagh@supanet.com or Jim, GI0DVU, 028 9266 2270, jim.henry@ntlworld.com

4 DECEMBER 2005

BISHOP AUCKLAND RAC Rally – Spennymoor Leisure Centre. OT 10 / 10.30am, £1.50, accompanied under-14s free. B&B, C, LB, DF, FAM, TI on 144.550MHz. Mark, G0GFG, 01388 745 353, or Brian, G7OCK, 01388 762 678.

22 JANUARY 2006
OLDHAM ARC Rally – Oldham Sports Centre, Lord Street, in the centre of Oldham. OT 10.30 / 11am. TS, B&B, TI on 145.550MHz via GB4ORC starting 7.30am. Full details and maps on website. [www.oarc.org.uk]

29 JANUARY 2006
Horncastle Radio Rally – Horncastle Youth Centre. OT 10.30am, £1. C with the famous Horncastle bacon butties, WIN. Tony, G3ZPU, 01507 527 835, tony@radioman.e7even.com

5 FEBRUARY 2006
SOUTH ESSEX ARS Mobile Radio Rally – Ken G0BBN, 01842 861 089, hendryken@aol.com [www.southessex.ars.btinternet.co.uk]

12 FEBRUARY 2006
WAKEFIELD & DRS Northern Cross Mobile Rally 2006 – John, G7JTH, 01924 251 822.

18 / 19 FEBRUARY 2006
World Thinking Day on the Air – Liz, 023 8025 4599, liz@guides-on-the-air.co.uk

26 FEBRUARY 2006
SWANSEA ARS Amateur Radio & Computer Show – Roger, GW4HSH, 01792 404 422.

5 MARCH 2006
CAMBRIDGE & DARC Rally – John, G0GKP, 01954 200 072, j.bonner@ntlworld.com

12 MARCH 2006
ABERYSTWYTH & DARS Rally – Ray, GW7AGG, 01970 611 432, ray@clocktower.go-plus.net

BOURNEMOUTH RS 18th Annual Sale – John, G0HAT, 07719 700 771, johncbales@yahoo.co.uk [www.brswebsite.freeserve.co.uk]

19 MARCH 2006
NORTHERN AMATEUR RADIO SOCIETIES' ASSOCIATION (NARSA) Norbreck Blackpool Rally – Peter, G6CGF, 0151 630 5790, g6cgf.peter@ntlworld.com

1 APRIL 2006
GMDX Convention 2006 – Robert, GM3YTS, gm3yts@btinternet.com

23 APRIL 2006
West London Radio & Electronics Show – Paul, M0CJX, 01737 279 108, m0cjx@radiofairs.co.uk [www.radiofairs.co.uk]

19 – 21 MAY 2006
55th Hamvention – Dayton, Ohio. [www.hamvention.com]

18 JUNE 2006
NEWBURY DARS Car Boot Sale – Kevin, G6FOP, g5xv@ntlworld.com [www.nadars.org.uk]

23 – 25 JUNE 2006
Hamtronic Friedrichshafen – [www.messe-friedrichshafen.de]

25 JUNE 2006
West of England Radio Rally – Shaun, G8VPG, 01225 873 098, rallymanager@westrally.org.uk [www.westrally.org.uk]

13 AUGUST 2006
FLIGHT REFUELLING ARS Hamfest – Mike, M0MJS, 01202 883 479, hamfest@frars.org.uk [www.frars.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.

RSGB MEMBERS' ADS ORDER FORM

Application form for one For Sale, Exchange or Wanted advertisement. Do not mix classifications on this form; separate applications must be made.

Please ensure you read and understand the conditions of acceptance of these subsidised Members' Advertisements, printed at the top of the Members' Ads page of *Radcom*

☐ I enclose a cheque/PO for £ ☐☐.☐☐ p

☐ Please charge to my credit card

Number ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Expiry date ☐☐☐☐ Issue number (Switch only) ☐☐

Signed _____ Date _____

Section: ☐ FOR SALE ☐ EXCHANGE ☐ WANTED

RATES: UP TO 20 WORDS £5.50; 21-40, £6.50; 41-60, £7.50.
PHOTO (jpg or gif only) ADD £5.00

Free entries

Photo file name (if applicable) _____.jpg/gif

Town _____

E-mail _____

Phone _____

2005 RSGB ELECTIONS

This is your chance to help shape the future direction of the Radio Society of Great Britain by voting in the 2005 RSGB elections. We have five candidates vying for two positions on the Board. Read their biographies and personal statements and choose the two that you rate the highest by ticking the appropriate box in the supplied ballot paper (p95) and send it off to HQ in the supplied official envelope. We have also published the personal statements and CVs of our regional managers (p97-99), all of whom have been elected unopposed. Don't forget to get your ballot paper to us in the supplied envelope by noon on Monday 28 November. Counting of votes will take place on 30 November and the winners will be announced shortly thereafter.

Board election

Leslie Butterfields, G0CIB

Leslie Butterfields, G0CIB

(Candidate for election as board member)

Date of Birth: 10/04/1963

Curriculum Vitae

I obtained the class B licence in early 1980's G6GAE and later the A licence G0CIB. Served as treasurer and then auditor for the Silverthorne Radio Club. Interests include experimenting with antennas, propagation and HF operating. After a considerable time working 'on the bench' decided to get the bits of paper and went to Middlesex University (aged 26) under the mature student scheme and gained a BSc Hons. Completed 13 years service with the Inns Court and City Yeomanry (R Signals V) achieving Radio Sgt. Member of the QRP club, RSARS and IEE.

Personal Statement

What are the important issues facing the hobby today? The future of the licence is undoubtedly top of the agenda at the moment so is the unique status of the hobby which must be protected. The reason is quite simply not only the educational and self training aspects but also as a national asset as shown by recent world wide events. The influx of new blood (be it old or young) both at club and national level is essential for any organisation for its continued existence. As the hobby has changed and will continue to do so with its many different facets the ideas must come from the grassroots up. These core ideas would receive my full consideration.

Nominated by

Name & Callsign	Town	Known for (years)
Robert Snary G4OBE	Enfield	22
Roy Chapman G0LNG	Frinton on Sea	25
Malcolm Smith G0DPT	Chingford	15
Tom Dawson M5AJK	Enfield	10
R P Hurley G0CGH	Bishop's Stortford	20
F H Hatt G3CPH	Enfield	25
David Keith Agar G0HYI	Chigwell	24
B J Godfrey G0OVC	Romford	3
Peter Hone G4KSE	Walthamstow	25
E Dyer G4CPT	Enfield	20

Board election

Roy Clarke, G8AYD

(Candidate for election as board member)

Date of Birth: 25/02/1944

Curriculum Vitae

First licenced in 1963 as G6AEF/T, a television only licence, I have also held G8AYD (current), M0RLY, PA9TX, ON8IC and G8AYD/LX. I was chairman of the Ashton-u-Lyne ARS, and one of the founding committee members and business manager of the Northern Radio Societies Association, now NARSA. I taught the RAE for many years, and am a registered instructor. I was RSGB Regional Manager for the West Midlands for over 3 years, and am a corresponding member of the EMC committee. Professionally, I am a consultant specialising in consumer electronics, and previously headed R&D labs for a multinational electronics company.

Personal Statement

If elected to the Board, I will use my professional, business and amateur radio skills to promote the aims of the Society, and help raise the profile of amateur radio in general. Experience gained lecturing and teaching, on club committees and also during my successful term as regional manager for the West Midlands, will help to focus on the real work of our national Society in representing the interests of the members in all aspects of amateur radio. I am a firm believer in the benefits of teamwork and good communication in management which I have practiced throughout my career. I would particularly like to see the continued development of the multi-tier UK exam system entry requirement into amateur radio adopted internationally.

Nominated by

Name & Callsign	Town	Known for (years)
Andrew Shone M5ALA	Rochdale	25
Arnold Mathews G3FZW	Lichfield	4.5
Charles Elliot G4UJW	Burton-on-Trent	5
Dave Murphy G8OWL	Birmingham	39
Derek Southey G0EYX	Stafford	6
Gareth Turner G1VLS	Northfield	3
John Storey G8SH	Birmingham	4
Martyn Vincent G3UKV	Telford	15
Mike Street G3JKX	Telford	12
Peter Braidwood M1TCP	Cirencester	1
Ron Yates G8ACR	Birmingham	4
Robin Page-Jones G3JWI	Brentwood	3.5
Roger Barrow G8ILD	Stockport	32
Roger Hancock G4BBT	Solihull	2.5
Stan Houlding G0BYA	Castleridge	6
Stuart Viney M0SJV	Dudley	4

Roy Clarke, G8AYD

Paul Gaskell, G4MWO

Paul Gaskell, G4MWO

(Candidate for election as board member)

Date of Birth: 10/03/1949

Curriculum Vitae

Joined Society 1964. Licensed 1979 as G8PQD, G4MWO in 1981. Founder School, Local Radio Club and RAYNET Group. Currently RCVS National Coordinator. One of team achieving the 5MHz experiment frequencies. Joined RAYNET in 1979, serving at all levels. 11 years on national committee, representing North West. Advisor, Republic of Ireland's emercomms organisation, AREN. Member of G-QRP, UKFMGW. Served in UK Charity International Voluntary Service up to its National Committee level. Single, 56, retired special education teacher (profound and multiple learning difficulties). Other interests – music, performing Gilbert & Sullivan operetta, assisting sick and handicapped on yearly religious pilgrimage.

Personal Statement

Amateur radio is special in being a hobby of many facets – technical, humanitarian, experimentation, discovery, achievement, education, recreation, friendship and assistance – the list is endless. Recent events have shown us why it is so important to make these qualities visible to a wider body of people – regulators, government and the public at large, in order that they can be informed and more fully appreciate the Amateur Service. This promotion is particularly necessary in continuing to justify the valuable amount of spectrum we use, show how the hobby benefits the community and our need for the protection of the hobby for its participants, from young to old. Equally, the most important people in helping to display this are you, the members – without you this would be impossible. I will serve both of these elements to the best of my ability if elected to the Board.

Nominated by

Name & Callsign	Town	Known for (years)
John McCullagh GI4BWM	Ballyclare	30
Kathleen Wilson M1CNY	Sandbach	8
R S Unsworth G3WPF	Wilmslow	42
Gordon Adams G3LEQ	Knutsford	14
Michael William Dixon G3PFR	Norley	3
David Hicks G6IFA	Elton	18
Andrew Marsden GM4FEI	Carnoustie	29
Steve Richards G4HPE	Royston	12
Eric C M Walton G4FSN	Lostock	25
Peter Brian Williams G3XRI	Merseyside	35
Derek Ainscough G1OMY	St Helens	20

Board election

David Hicks, G6IFA

(Candidate for election as board member)

Date of Birth: 16/11/1943

Curriculum Vitae

I have had an interest in Radio since the age of eight as a short wave listener. The interest progressed, via operating in the army cadets and TA, through to CB and the RAE in the 70's & early 80's. I joined the Chester and District Radio Society working on the committee and then as Chairman for some 10 years, and was awarded Honorary Membership for services to the Society. I also have an interest in Emergency Communications as a member of RAYNET, and have held positions of Group & County Controller in Cheshire and am currently Chairman of the North West RAYNET Association, Zone 10 RAYNET Coordinator, and a Trustee of the Radio Amateur's Emergency Network. I am currently a member of the RSGB Board, with responsibility for Amateur Radio Services (Radio Sport & Emergency Communications, RCVS etc.)

Personal Statement

If re-elected to the Board of the RSGB, I would continue to consider the wishes of the membership, and serve them to the best of my ability. In particular I would wish to further the Society's work in promoting the hobby, and its many facets, especially to the young. I would also continue to promote Radio Sport within the hobby, and the need for Emergency Communications, RAYNET, which is not only the "shop window" of Amateur Radio, but extremely important to the security of us all in times of emergency and disaster.

Nominated by

Name & Callsign	Town	Known for (years)
Jeff Smith MI0AEX	Kirkistown	4
Angus Annan MM1CCR	Blairlogie	2
Catherine Clark G1GQJ	Chinnor	12
Trevor John Groves G4KUJ	Watford	12
W L Mahoney G3TZM	Solihull	15
R G Titterington G3ORY	Lutterworth	1
Geoff Darby G7GJU	Co Durham	10
Dave Wilson M0OBW	Sandbach	13
Harold James G3MCN	Northwich	20
C G Hampson G8RXA	Christchurch	12
Thomas Hanratty G0JRT	Consett	12
Alan Hopkinson G8OJQ	Neston	23
Malcolm McIntosh GW4IEQ	Buckley	15
Mike Hampson G8RXB	Wallasey	20
David Ollerhead G4JMF	Whitby	23
Greg Mossop G0DUB	Chester	18
Paul D Gaskell G4MWO	St Helens	18

David Hicks, G6IFA

Brian Reay, G8OSN

Brian Reay, G8OSN

(Candidate for election as board member)

Date of Birth: 06/11/1956

Curriculum Vitae

Licensed in 1978, worked in defence electronics for about 25 years before entering teaching in 2003. I am active in local radio club activities, including being Vice-Chairman of the MARTS and training activities across several groups. I was invited to join the RSGB's ARDC team developing the syllabi for the UK's new examination scheme, becoming a full member of the ARDC in 2003 and its Chairman in 2005. I am part of the team that developed the new International Amateur Radio Examination. As a member of STELAR, I train teachers who wish to introduce amateur radio into schools.

Personal Statement

We share a diverse and fascinating hobby with a common strand: we enjoy learning, be that learning about technical matters, operating skills, or other amateurs. We have a unique mix of knowledge and experience that we can share with each other and the wider community. My aim is to build on training facilities for new amateurs, which have revitalised many local clubs, so we all have the opportunity to explore aspects of the hobby that are unfamiliar to us. We are all aware of increasing commercial pressure on our spectrum allocations and that we cannot hope to defend them financially.

We need to build a case to protect our spectrum around the benefits we can offer the wider community, such as encouraging youngsters to study technical subjects and groups such as RAYNET, which directly benefit our society. Working together we can keep our hobby vibrant and sustainable for the future.

Nominated by

Name & Callsign	Town	Known for (years)
R C Whelan	Comberton	10
Anthony Vinters G0WFG	West Yorkshire	8
Steve Hartley G0FUW	Bath	2
Alan H Stanley G1OMH	Chatham	20
Kevin Earl G8VJU	Chatham	25
Terry Chipperfield G3VFC	Gillingham	2
Pauline Odle 2E1HRY	Gillingham	4
Robert Marshall G8HLE	Maidstone	14
Richard Thomas Marshall G4HEP	Gillingham	8
Russell Meech M0IJZ	Tunbridge	3
Barry George Capper G4DBC	Rochester	4
Edwin Taylor G3SQX	London	4
Elizabeth Cabban GW0ETU	Llanrwst	2
Richard J Constantine G3UGF	West Yorkshire	4
Albert Gammon G1EUQ	Faversham	15

RADIO SOCIETY OF GREAT BRITAIN

(A Company Limited by Guarantee. Registered in England No 216431)

Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE

Election of Board and Regional Council for 2006-2008

(Only paid-up corporate members are entitled to vote)

The ballot paper below contains the names of the candidates for the vacancies on the Board and Regional Council. The candidates are listed in order of receipt of their nomination paper.

Please note:-

Corporate members may vote for up to TWO candidates in the Board election.
Each corporate member voting must write his/her name and callsign, RS or membership number legibly on the back of the envelope for this ballot paper to be valid.
Ballot papers must reach RSGB HQ by noon on Monday 28 November.
Failure to do so will result in your vote being discounted.

Peter Kirby
General Manager

Ballot Paper

Regional Council

Region 1 (Scotland West & Western Isles)	Gordon Hunter, GM3ULP	Elected unopposed
Region 5 (West Midlands)	Position vacant	
Region 7 (South Wales)	Gareth Price, GW3MPP	Elected unopposed
Region 10 (South & South East)	Gavin Keegan, G6DGK	Elected unopposed
Region 11 (South West & Channel Islands)	Pam Helliwell, G7SME	Elected unopposed
Region 13 (East Midlands)	Jim Stevenson, G0EJQ	Elected unopposed

Board

David Hicks, G6IFA	
Brian Reay, G8OSN	
Leslie Butterfields, G0CIB	
Roy Clarke, G8AYD	
Paul Gaskell, G4MWO	

This ballot paper must be enclosed in the official envelope that came with this issue of the magazine.

Tick up to but no more than two of these boxes. Ticking more than two will invalidate your paper.

Back of ballot paper

Regional manager statements

Gordon Hunter, GM3ULP

(Candidate for election as regional manager for Region 1 – Scotland West & Western Isles)

Date of Birth: 08/03/1943

Curriculum Vitae
Licensed as GM3ULP in 1965. Studied Science and Technology with the Open University and graduated in 1980. Employed as Lecturer in Electronics at Motherwell College with early retirement in 2004. Building crystal sets and simple valve receivers at the age of 12 years promoted a life-long interest in Radio. Previously, GB2RS Newsreader on 80metres, RSGB Regional Liaison Officer for Strathclyde and Secretary of Mid-Lanark ARS. Currently, Morse Assessor and Lead Instructor for Foundation, Intermediate and Advanced Courses. Active on all bands 160m – 70cm. Co-opted as regional Manager for region 01 during 2002 and elected 2003 – 2005.

Personal Statement
I have almost completed my first full term as Regional Manager for South Scotland & Western Isles. Attendance at rallies and club visits has given me, along with the Deputy Managers, the opportunity, to discuss the various thoughts and suggestions of amateurs on the future of Amateur Radio, including their relationship with the Society. In general, the outlook has been positive with the need to attract more new entrants at whatever age and level, being considered as a priority.
The training courses being offered by the various clubs throughout the region continue to attract candidates particularly at Foundation and Intermediate level. I am keen however, to see more candidates progressing to Advanced Level.
Communication methods are changing, and to remain relevant and vibrant, Amateur Radio must continue to update. Thus, if re-elected, I would endeavour along with the Deputy Managers, to continue promoting the work of the Society at all levels, including improving the public awareness of Amateur Radio.

Nominated by

Name & Callsign	Town	Known for (years)
William Tracey GM4UBJ	Motherwell	24
Douglas Maxwell MIEE BENG Hons GM0ELP	Hamilton	19
Michael Eccles GM3PPE	Kelso	1.5
Bob Glasgow GM4UYZ	Prestonpans	3
James Kelly GM0SYV	Bellhill	15
Jim Stirling GM3UWX	Bishopton	40
John McGinty GM4GZQ	Houston	5
Alex Irvine GM7OAW	Bishopton	5
Mr T Sorbie GM3MXN	Larkhall	45
Roger Harman MM0BRG	Kilwinning	5

Elected unopposed

Gordon Hunter, GM3ULP

Gareth Price, GM3MPP

Gareth Price, GM3MPP

(Candidate for election as regional manager for Region 7 – South Wales)

Date of Birth: 30/08/1937

Curriculum Vitae
First licensed in May 1958 – Member of the RSGB for 52 years – RSGB registered Instructor for Foundation, Intermediate and Advanced examination levels – Founder member of Pontypool ARS (GW3RNH) – Founded the recently formed Chepstow ARS (2004) course designer and presenter of electronics / radio component within the Secondary School curriculum for South Glamorgan L.E.A – Tutor for A level electronics – Course Director for Teacher Development involving Electronics – Ex DRM for RSGB within Monmouthshire, Newport and Torlaen – Present RM for South Wales – (Region 7).

Personal Statement
In a region such as South Wales (Region 7) having a mixture of high population density in the SE and very low density in the West it follows that the distribution of Radio Enthusiasts follows a similar pattern. The expectation of the Society (RSGB) reflects this distribution and it is important for myself and the Region Team to identify these varying demands and through the various Radio Clubs and GB2RS respond in all cases. The Spectrum of Society's Services are not understood by a lot of members and as a co-opted Regional Manager I have worked hard to make sure that my team has publicised what is available to club members and individuals who are not club members, during my year in post.

Nominated by

Name & Callsign	Town	Known for (years)
Roger Williams GW4HSH	West Cross	2
John S Hammond GW3JBH	Newport	52
Douglas A Nixon 2E0BKC	Cinderford	3
Martin Shelley GW3XJQ	Carmarthen	5
Steve Trott GW8ZOE	Chepstow	1.5
Ross Clare GW3NWS	Gwent	40
Derick Rumble MW0JBX	Newport	5

Elected unopposed

Regional manager statements

Gavin Keegan, G6DGK

(Candidate for election as regional manager for Region 10 – South & South East)

Date of Birth: 12/06/1940

Curriculum Vitae

I have been interested in radio for many years and used both VHF and HF every day in my job as an airline pilot. In 1980 I discovered that there was an evening class course running locally, geared to the RAE, in which I enrolled and then passed the examination in June of 1981.01. My licence and callsign, G6DGK, were then issued in August 1981 and I have been closely involved with amateur radio since that time. Currently, I enjoy operating ssb on the HF bands, looking for interesting dx and keeping in touch with amateur friends on daily and weekly nets.

Personal Statement

I first joined the RSGB in 1981 after passing the RAE and becoming involved with amateur radio, because I believe that it was very important that all British Amateurs had a national body to represent their views and to protect their interests, both nationally, in consultations with our own Government, and internationally, acting in concert with other national bodies, to protect the interests of radio amateurs worldwide.
Recent events involving Ofcom – the UK regulatory body – have reinforced my belief, even more firmly than before, that amateurs should all strongly support the RSGB thus ensuring that we maintain an efficient, well organised, and motivated national body to look after and protect our interests against the possible depredations of those who look with covetous eyes at our parts of the radio spectrum. I have recently been working as a Deputy Regional Manager and hope, that with your support, I may continue my efforts with the Regional Council.

Nominated by

Name & Callsign	Town	Known for (years)
Philip Godbold G4UDU	Steyning	25
John Kenneth Gibson G3WYN	Haywards Heath	5
Chris Saunders G4ZCS	Burgess Hill	4
Peter C Fry G4AKG	Burgess Hill	6
John Berry G8JBJ	Newick	5
Harry Francis Mattacks G3EKJ	Lewes	10

Elected unopposed

Gavin Keegan, G6DGK

Pam Helliwell, G7SME

Pam Helliwell, G7SME

(Candidate for election as regional manager for Region 11 – South West & Channel Islands)

Date of Birth: 13/07/1957

Curriculum Vitae

Passed RAE in December 1993, and received my validation document the following July; I then joined Torbay ARS. In 1995 was co-opted as secretary dealing with minutes, letters, arranging guest speakers, annual dinner dances and inter club quizzes for six years. Joined South Devon Raynet, then became Assistant Controller, and eventually in February 2005 took over as Controller. I've assisted the Scout and Guide Associations with amateur radio events including spending a week with GB4FUN at an International Camp in 2003. I became DRM for Devon in 2003 and was co-opted as RM in September 2005.

Personal statement

Whilst being a Housewife, I have sufficient free time to devote to the post of Regional Manager. With my home being centrally located with easy access to all main roads serving Region 11, it will be easy for me to travel to the clubs within the region when representing the RSGB. Since I took on the post as Deputy Regional Manager for Devon I have enjoyed the opportunities of meeting radio amateurs at their clubs and rallies.
Were I to become the new Regional manager, it will give me the opportunity to go further a field and meet and support radio amateurs in the South West.
My vision is to promote Amateur Radio as a hobby for the new millennium, provide support to existing amateurs and the young that are the future of our hobby. With the existing network of deputy managers we can continue the good work of my predecessor.

Nominated by

Name & Callsign	Town	Known for (years)
David Bowyer M1AEI	Crediton	10
Dave Helliwell G6FSP	Torquay	26
Barry Scarisbrick G4ACK	Wookey	3
Peter Tanner G4UTO	Newton Abbot	10
Colin Coker G4FCN	Newton Abbot	15
D Webber G3LHJ	Newton Abbot	15

Elected unopposed

Regional manager statement

Jim Stevenson, G0EJQ

(Candidate for election as regional manager for Region 13 – East Midlands)

Date of Birth: 16/11/1948

Curriculum Vitae

I passed the RAE at the Grimsby Technical College in 1983. Allocated the call G1PCI. Three months later passed the 12WPM Morse test. Gained A licence and allocated the call G0EJQ. Active member since (with a four year break for personal reasons). Working all bands (mainly SSB, with some CW). A keen DXer, currently pursuing IOTA awards. Long term member of RSGB and Lincoln Short Wave Club. Currently serving as temporary RM (Region 13). Former committee member of latter. RAOTA member and also past member of Grimsby, Worsop, RAF Waddington clubs. Awarded LSWC shield in 2005 for committee and fund raising work in 2005. Morse tutor and past DRM for Region 13 for RSGB.

Personal Statement

Through a planned programme of regular club visits coordinated with the respective DRMs. I intend to make myself known to as many of our members as possible. My aim will be to encourage amateurs in my region to join the RSGB. Send welcoming letters to new members and to advise them of what the RSGB in general, and me, and my team in particular can do to help them with any amateur radio related problems, and to support them in their radio activities. Furthermore I wish to emphasize that to ensure our hobby is properly managed and steered through this rapidly changing and challenging time as Ofcom reviews our licensing arrangements etc their feedback and membership is essential to enhance the efforts being made by RSGB to preserve the integrity of our hobby in the best interest to us all.

Jim Stevenson, G0EJQ

Nominated by

Name & Callsign	Town	Known for (years)
Peter James Kendall M0EJL	Lincoln	3
James Nichol G0EUN	Doddington Park	5
John Riddoch G1TSL	Dunstan	6
Nevil Brinnen G3VDV	Mablethorpe	5
Derrick G J Walls M0DIW	Lincoln	6
Terry Stow G0SWS	Mablethorpe	3
John Gregory M3ERG	Spilsby	2
Richard Pollard M0RJP	Spilsby	3
Colin D Higgins G3NRQ	Saltfleet	6
Martin Farmer M0MDF	Nettleham	5
John Bailey M0OST	Heighington	3
Barry Keith Middleton G4DBS	Branston	7
Robert Pickles G3VCA	Lincoln	6
Roy James Wollard G8RCK	Lincoln	5
Michael Stephen Forster M1MSF	Waddington	4
Robin Holderness G3XDA	Spalding	3
Graham Boor G8NWC	Spalding	3
John R Hill G4NBR	Surfleet Cheal	3
Alistair Morrell M0YDK	Spalding	3

Elected unopposed

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The last word

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Bi-directional propagation – response

From: Dave Lawley, G4BUO

As coordinator of GB5HQ in the IARU contest on behalf of the RSGB, I was very surprised to see the letter from Chris, G4ZCS, in October *RadCom*.

I have since confirmed in a phone call that it was apparently the GB5HQ 20m phone station, at around 2300. Having scanned the GB5HQ log there is no 30 minute period during which we made no QSOs on 20m phone. Our log, which incidentally places us in the top three HQ stations on claimed scores, is at variance with the account printed in *RadCom*.

At no time did the 20m phone team use an automatic voice keyer. Having considered the facts and discussed it with G4ZCS, I am sure what must have happened was that we were the victim of a pirate, who recorded our CQ call and played it back repeatedly on a different frequency. This is supported by the report that the signal was 60dB over nine, most unlikely on 20m at a distance of about 100 miles. It's a terrible shame that some idiot is prepared to spend his time doing this sort of thing and bring the reputation of the RSGB station into question.

My concern about the incident as reported in *RadCom* is that it could so easily undo the hard work put in by all the 34 operators comprising GB5HQ to try and gain the first spot in this prestigious contest for the Society. We have worked hard to encourage Gs to come on and work the station of their national society. The DARC station DA0HQ works a phenomenal number of Germans, and if we were to be able to get half that number of Gs to call us, we would win the contest for the RSGB.

This year there was an encouraging increase in UK support: 3,012 of our QSOs were with the UK, and that's 24% of the total. These were with 1,145 different callsigns. Many Gs worked us on all 12 band/mode slots, and have claimed the award for doing so. I most certainly endorse G4ZCS's comment that it is vital to listen, and I want to assure readers on behalf of the team that all GB5HQ operators listen very hard for every last QSO.

In defence of FlexRadio - 1

From: Gerald Youngblood, K5SDR, owner, FlexRadio

I am writing with regard to an article by Pat Hawker in the August 2005 issue of *RadCom* entitled "Buying Overseas – Caveat Emptor." I am shocked by the comments in the article. The article contains pure speculation with regard to FlexRadio and the SDR-1000. To my knowledge and his admission, the writer has no experience whatsoever either with the company or the radio.

The facts are that the SDR-1000 has been shipping for over two years, is in the hands of almost 700 customers worldwide, and every customer has received the support they requested. There has not been a single radio returned to the company that has not been repaired (other than for lightning damage).

On the other hand, since this is a software radio, it will never be finished. We provide free software updates almost every week that contain new features, many of which are either suggested or actually contributed by customers in open source software.

However, to characterise the SDR-1000 as "virtually still under development" at this point is grossly misleading. The hardware is extremely stable and serial number one can be upgraded to the latest performance chrematistics. The PowerSDR v1.4 software is extremely stable and matches or exceeds the features of the most expensive Japanese radios. And by the way, its IMD performance now exceeds the $10K+ radios. How many radios do you know of that get new customer-suggested features almost every week for free?

In the words of Willi, SM6OMH: "Used SDR-1000s do not exist. You get a new radio every time you download the latest [software] release."

In defence of FlexRadio - 2

From: Klaus Lohmann, DK7XL

The author of the topic "technical topics – caveat emptor" (August 2005) wrote that it would be interesting to hear from anyone who has been an early purchaser of SDR-1000 and their experience. I got the boards from FlexRadio Systems, Austin, in October 2003. Since that time I have operated the radio on a daily basis, mainly on the low bands. I have beefed it up with 100W PA and I am using different soundcards (both PCI and USB-type). Since working with SDR-1000 – i.e. experimenting with the hardware and dozens of upgrades in software – I have discovered again the excitement of amateur radio and enjoy being part of a community that is paving new roads in wireless communication. The Technical Topics article and comments totally misunderstand the nature of the SDR-1000. There is an important difference between FlexRadio and companies like Yaesu, Kenwood, ICOM, TenTec and so on.

The nature of SDR-1000 and the business philosophy of FlexRadio (so far as I understand them) are different. Firstly, the radio is not off-the-shelf equipment that can be operated without going into technical details. FlexRadio allows its customers to purchase hardware from a bare system up to a complete set of additional equipment (100W PA; ATU) to take part in the development of software defined radio. Secondly, under the GNU (General Public License), FlexRadio is sharing its updated software with its customers (and non-customers!) – I haven't heard of any other wireless communication company operating such an enlightened business culture.

In the light of this completely unique framework, "after sale service" is provided by different means. I have not heard from anyone complaining that they have not received spare parts or got the warranty service they wanted. More than ordinary "after sale service" is available through the Internet. In a special forum and by a so-called e-mail reflector, the FlexRadio user community is in permanent conversation with FlexRadio to solve installation or operating problems (and successes) thus being a real part of the development team.

Highly professional software engineers from FlexRadio are getting permanent feedback from the user/customer – who often are highly skilled persons donating their great ideas and contributions generously. To my knowledge, in an unprecedented move in the wireless communication equipment market, the users are asked by polls how to design and advance software revisions. The user community is truly part of the system. This is modern ham radio using state-of-the-art techniques at its best.

Let me sum up: the author's comments regarding SDR-1000 cannot be justified, nor are they fair. SDR-1000 is a different approach to ham radio technically speaking and what is most important FlexRadio Systems is establishing a totally different and better relationship with the users/customers. It is true when FlexRadio Systems advertises the SDR-1000 as "The radio that keeps getting better!"

I have a name!

From: Mike Ferriday, G1NQW

Recently I visited the Ofcom website to view the comments on the recent consultation. I could not find my contribution nor that of several friends. On closer inspection I found they were in the anonymous section. This section contains 355 contributions from peo-

ple who sent them in via email. Now I know my email contained my full name, callsign and address and I suspect most of the others did.

I have a name – response

From: Steve Roper, Ofcom

Ofcom is very grateful to all those who took the time to respond to the consultation on a Proposal to Reform Amateur Radio Licensing. In all, we received more than 1,400 responses, the largest number of responses to an Ofcom consultation since we were established. Our standard practice is to publish every response we receive unless requested not to do so by the respondent. If it is not clear whether the respondent wishes his or her response to be made public (usually because the Ofcom Consultation Response cover sheet has not been fully completed), we try to contact the respondent directly to ask if we can publish the response together with the respondent's name. However, if it is not possible to establish contact with a respondent, the response is published in any case, but with name and contact details removed to avoid compromising personal data rules.

Ofcom is happy to hear from anyone who responded to the consultation but is unable to find their response on the website. If we have published a response anonymously which a respondent would like us to publish with attribution, we will of course amend the website accordingly.

Each consultation response is considered with equal weight, regardless of whether the response was attributed to an individual, published anonymously or submitted as a confidential response. Ofcom will consider each response before publishing a policy statement. The statement will summarise the views expressed during the consultation, provide Ofcom's response to these views and set out our decision regarding the future of amateur radio licensing. Non-confidential responses are available for inspection at the following link: www.ofcom.org.uk/consult/condocs/aradio/responses/?a=87101

QRM problem

From: Peter Dodd, G3LDO.

I have a serious QRM problem. The interference was first noticed about two years ago and it appears to be getting steadily worse. It comprises a spiky broadband repetitive signal centred on the lower end of 14MHz band, although as it gets worse it is affecting adjacent bands of 10 and 18MHz.

The local source of the signal at this QTH seems to come from a telephone distribution pole located about 100m to the south. It can be minimised by rotating the beam so that the side minimum of the pattern is facing the telephone pole. However, the QRM appears to have many sources, spread over a wide area. A local radio amateur, G3CCX, who used to work exclusively on 14MHz, has now moved from the band and changed his monoband 14MHz antenna for a higher band antenna.

About a year ago I reported the interference to BT in Bristol and they spent the best part of a day here. This was done just before the service was closed down. I have also been in contact with the RSGB EMC committee but, as yet, they have been unable to identify the problem.

I have put details of the QRM, comprising .wav files and a local map showing QRM hot spots, on to my website – web.ukonline.co.uk/g3ldo. I would appreciate any information regarding the source of this interference.

French takeaway

From: Jim, MM0BQI

As an IT engineer, I know the importance of computer backups. My plan during our holiday at a remote cottage in France was to sort out my laptop as it was to be replaced soon. The idea of sitting out in the garden under the trees with a glass of red wine working a few stations, learning my logging program, tidying up files and getting the backups ready to install on the new machine seemed idyllic.

Our Paris hotel was carefully chosen for its underground carpark with security guards, dogs, CCTV etc. As a Scotsman, it takes a lot for me to part with £10 just to park my car for the night but for peace of mind it was worth it! Having seen the tough looking guards and the BIG dog, we decided that the safest place for all our valuables (cameras, laptop, IC7400 – serial number 1619 – microkeyer etc) was the underground carpark. We all know how flimsy hotel bedroom doors are, so everything would be safer left in the car.

I even returned to the car at midnight to collect our toothbrushes, picked up the case with the laptop and rig and thought, no, better to leave it here, much safer.

Next morning after breakfast, throwing the overnight bag in the back of the car, I turned to my wife, Cary, and said: "It's amazing how big this boot is – there is still plenty of room for the overnight bag". Very, very slowly it dawned on me that the boot was empty. Not a single thing was left.

The passenger door had been forced and everything we owned removed. We were not alone, six other cars were emptied and one was stolen to remove all the loot. There are now a few out of work security guards with their big dogs looking for new employment in Paris! So I had lost everything on the laptop – five years of antenna experiments, articles, logbooks, photographs. But thankfully, the back-ups were not in the same bag as the laptop, they were carefully wrapped up in my rucksack.

We refused to let the B******** spoil our holiday and continued regardless. We joked that for the first few days only one of us could go out in public as we only had one set of clean underwear. I refuse to be drawn on whether it was male or female! Two silver linings to the dark clouds were: we filled the car with great French wine to bring back home (about 200 bottles); and we were not doing piles of laundry for the week after our return home.

The moral of this story is don't pat yourself on the back too quickly for doing back-ups, only relax once they are stored well away from your PC somewhere safe and secure.

Girl prodigy

From: Joachim Geisau, DH4JG

Having read with interest some of your articles on youngsters passing amateur radio licence exams, I would like to inform you that my daughter, Deborah, has taken the German Class A licence exam. Having held a national Class 3 novice licence for over two years, she passed the Class A exam and obtained her new callsign DL7KDG. That is nothing unusual. The interesting fact is that Deborah is 13 years old. She is currently the youngest YL holding a full licence in Germany. She also obtained an educational callsign (DN1DG) that allows her to teach other people in amateur radio, also very unusual at that age. I hope you'll find that of interest too and a further motivation towards your work with young people.

Mix and match

From: Brian Clowes, GW4HBZ

I am delighted I have stimulated a debate on high performance mixers and oscillators and the letter from G3SBI (Ideas exchange, Last Words, October 05) is very welcome. I am not saying that such things are a waste of time. What I am saying is that going beyond a certain point is a waste of time. Where that point should lie is a matter of debate but It is interesting that G3SBI finds that the Icom 735 works well. So do I. But it is quite old now and I don't think it has anything really special in the mixer department.

I certainly appreciate the good technical work that amateurs have done over the years. Technical Topics is excellent and I have contributed material myself. One article was about using parallel lengths of coax as matching devices and another more recent one was about narrow filters using watch crystals plus other bits and pieces. It was just that endless articles on mixers did get rather boring.

National Field Day

From: Dick Biddulph, M0CGN

I was amazed to see (p35, October RadCom) a hydraulic lift being used to support antennas for National Field Day 2005. Whatever became of simplicity? In the old days, NFD was arranged for true portable operation with no generators, a maximum DC input to the Tx PA of 5 watts and only wire antennas. This did produce a bit of nonsense with a Tx that could

be put in the pocket and an AR88 Rx weighing about 1 cwt and powered by a number of 6V car batteries and several 120V high tension batteries! My, small, part in the proceedings was to climb the tree to put up the antenna – I don't think masts were allowed. It seems that nowadays those with the deepest pockets have an unfair advantage.

Re - Lucky escape

From: Mike Grierson, G3TSO

Reading the letter by G3NRT (Lucky escape, Last Words, October 2005) regarding his trip to France, it seems that Bob has committed the cardinal sin of placing electronic equipment inside his hold baggage.

There are many signs at airports telling passengers not to do this. Frequently on check-in you are asked if there is any electronic equipment in the baggage because it will immediately arouse suspicion as a potential bomb when x-rayed! Another point to consider is that airlines do not accept any liability for electronic equipment placed in baggage. If they break it, you can't claim!

There is no problem traveling with radio equipment, which should always be carried in your cabin baggage. I traveled to the USA immediately post 9-11 with a new 817 in my bag and nobody showed the slightest concern.

If radio equipment is shipped as air freight then it will need a general declaration as described in the letter but that should not be necessary for personal effects; the fact that it was placed in hold baggage contrary to advice attracted attention of the bureaucrats who probably weren't sure of the rules anyway. France is a country that thrives on bureaucracy. When in France, do as the locals do, ignore all the rules; its much easier that way, to try and follow them opens a bag of worms that you later wish you had not disturbed.

Listen and learn

From: Ron Bravery, G3SKI

Having recently acquired two new digital hearing aids via the NHS, I thought that fellow amateurs who also suffer from hearing loss may like to share my experiences. During a follow up phone call, I mentioned that I had some difficulty in using headphones when operating the rig and also when using the telephone. A visit from a council sensory technician was arranged and he duly arrived complete with an array of gadgets. I was first fitted with an induction loop system which fits around the neck and can be easily concealed under one's shirt. Being terminated with a 3.5mm plug, it is plugged into the phone socket of the rig, and with the hearing aid switched to the "loop" position, the results are outstanding and I am once again able to 100% copy transmissions.

Alternatively the loop can be plugged into an Echo "Mini Tech" amplifier for use with a TV or "around the table" conversations. This unit comes complete with an extension lead and a spare microphone. These items are provided free and include replacement batteries for the amplifier. I have also been given a remote wireless doorbell system in the same package. This and replacement batteries are also free of charge. The telephone problem has been solved by the purchase of a BT Converse 2100 telephone which has a built in loop pick up coil in the headset. I hope that this information will be of use to fellow operators who also suffer from hearing loss.

Propagation predictions

From: Gwyn Williams, G4FKH

I enjoyed reading the '40m long path – a well-kept secret' article (*RadCom*, September 2005) and do not dispute the results. However, it is important to point out to readers that my propagation predictions for *RadCom* are not based on the sophistication that is described in the article. The basic differences have been pointed out in *RadCom* on several occasions. But, because of space considerations, the magazine does not publish the relevant information in each issue. Readers should refer to my website – uk.geocities.com/g4fkh@btinternet.com – for a full explanation.

Dutch balloon foxhunt

From: Ian Harling, G7HFS

I would just like to say what an enjoyable event the recent Dutch balloon foxhunt (www.ballonvossenjacht.nl) was. I was lucky enough to be invited over to Holland to take part in this event back in September after following the signals from the balloon from the UK last year. A group of local amateurs in my area have monthly radio foxhunts and would love to get the chance to stage a similar event over here in the UK. But that depends on the powers that be giving us permission. Along with other groups like SOAR (Space Observation with Amateur Radio) we hope that we can eventually get the chance to experiment with balloon transmitters in the way that the Dutch do now.

The future

From: Andrew Moseley, G7VOT

For some time now radio amateurs around the world have been raising concerns about the future of this great historic hobby. Like it or not, amateur radio is a minority hobby. As such, not many youngsters are exposed to the hobby. Amateur radio is becoming more and more affordable. You can buy a radio now for not much more than the cost of the latest all singing and dancing game console and for a lot less than the latest high spec PC.

How can we guarantee the growth of amateur radio and also guarantee that people will continue to come into the hobby in the distant future not just the near future? Well the answer is easy; we need to capture the imagination of the young. Children have an enthusiasm that we old timers have long lost. Children are also our future. Amateur radio to a child has a long list of competitors.

For boy's we have game consoles, football, fishing, train sets, scalextric, action figures and computers. For girls we also have computers, games consoles and more are starting to partake in football. We also have dolls and prams, dancing and horse riding to name but a few. All of which, they can partake in almost whenever they want to and all of which are promoted in many ways by the media. We must also not forget the good old mobile phone, which like it or not is a competitor of amateur radio; it is a way for the young to communicate.

Eugene Sully taking part in Big Brother has been a massive impact for the good of promoting the hobby to adults and older teenagers. Six months ago if I had mentioned amateur radio to anyone who had never heard of it, their immediate and unenthusiastic reaction would 95% of the time be: What's that, CB? Now, thankfully you get more enthusiasm and people tend to take a greater interest in what is involved.

So, the question that now needs to be asked and answered. How do we capture a child's imagination and enthusiasm to get them interested in the hobby? Well a start would be for the RSGB to get together with Ofcom and discuss the possibility of a children's day or better still, days. Once every three months, these could coincide with school holidays. Obviously the children would have to be directly supervised by the licensed radio ham. This would give all children the opportunity to taste amateur radio in a real shack and would also open the world of ham radio to all, not just the scouts, cubs, brownies, girl guides etc etc.

Rules could be changed slightly on these days so they are allowed to have a real conversation and not just a brief QSO as is the case with JOTA. Let them call CQ and have a real QSO, exchanging reports, location and working conditions etc. Maybe this idea could be put to the radio administrations throughout the world and we could have a Children's World Amateur Radio Day, where children of the world call DX to each other. This would give them the opportunity to promote there own country through a child's eye.

Other ways to promote the hobby would be for clubs or individuals to arrange visits to schools to talk about and demonstrate the hobby. GB4FUN is a great step in the right direction and must be congratulated, but we need more.

My son is four years old, he loves to sit in the shack, and he is fascinated by the equipment, the noise, the lights etc. He often sits with one of my spare microphones in his hand and calls CQ. He knows how to do his name in CW; I know many licensed radio hams who can't do that. Long live our fantastic hobby. ♦

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ADONIS AM-708

*Electret condenser mic.
*FM/SSB quality selection
*2 transceiver operation
*Electronic PTT & latch
*Analogue level meter
*Up/Down Buttons
*500 - 100k Ohm match
*2 x AA cells or ext. 5-9V

£129.95 C

AM-308 £69.95 C
Electret Condenser Mic with built-in preamp

AM-508 £79.95 C
Electret Condenser Mic with compressor amp

Kenwood Desk Microphones

MC-60A £117.95 C
Moving Coil Cardoid Mic with built-in preamp

MC-90 £187.95 C
Wired Dynamic Mic for DSP radios

Yaesu Desk Microphones

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 (HCL-4, HCL-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 £79.95 B
Hand Mic with studio insert for Icom users

HHG Lower Price £99.95 B
Heritage Professional Studio Mic, 50's style

HCLP Lower Price £164.00 B
Heil Classic Pro Mic RCA design

PR-20 Lower Price £99.95 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 transceiver 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(K,M,Y) £12.95 A
Versatile Earpiece with boom mic

WCT-321(K,M,Y) £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.

£159.95 B

PRO-SET-PLUS-IC £169.95 B

PRO-SET £99.95 B
Headset with boom mic, choice of HC-4 or HC-5 insert, please state when ordering

PRO-SET-IC £109.95 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.

HSTD NEW £99.95 B

Heil Traveler Dual Sided Headset Boom Mic. Available for Icom, Kenwood & Handhelds.

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 (Q-PHONE)

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.

£79.95 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

NEIM-1031 £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-PCB £79.95 B
Small DSP PCB modulefor retrofitting into rigs

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 selectable.
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.

£199.95 B

Carriage Charges: A=£3, B=£6, C=£10

LOWEST 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

Ni-MH Batteries

NXC-4AA £4.95 B
4xAA Rechargeable Nickel Metal Hydride Cells

NXC-4AAA £4.95 B
4xAAA Rechargeable Nickel Metal Hydride Cells

NXC-CHG £5.95 B
Ni-Cd/Ni-MH Battery Charger charge 2/4 cells

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.

£79.95 B

RR/4012/C £89.95 B
12-way 13.8V DC (25A,10A,5A,1A)

RR/4010/SG £109.95 B
10-way 13.8V DC (25A,10A,5A,1A)

RR/4005/C £49.95 B
5-way 13.8V DC (25A,10A,5A,1A)

Spare Power Pole Connectors

C15/PK/12 NEW £11.95 B
15A Pack of 12 pairs

C30/PK/12 £11.95 B
30A Pack of 12 Pairs

C45/PK/12 NEW £13.95 B
45A Pack of 12 Pairs

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

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.

£299.95 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 £59.95 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 SO239, Power 2.5kW

DL-300M 300W Dummy Load

Every station needs one!

A convenient way of testing your rig and measuring power etc. DC - 150MHz, 300W. Requires 50 Ohm patch lead. **DL-300MN** "N" socket **£48.95B**

£46.95 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-72A £39.95 B
Duplexer "N" Type, 1x 'N' Plug + PL-259

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 £59.95 B
Port1:HF+6m+2m Port2:70cm Port3:23cm

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.

Kuranishi Antenna Analysers NEW

KURANISHI LA-310

This is a professional grade frequency counter and field strength meter and matches the BR-210 and BR-510 series of analysers. *10MHz - 2500MHz (3 ranges) *New Pre-Amp increases sensitivity by 20dB

£399.95 C

BR-210 £359.95 C
Antenna Analyser 1.8-170MHz in 6 bands

BR-400 £369.95 C
Antenna Analyser 100-170MHz, 300-500MHz

BR-510A £439.95 C
Antenna Analyser 1.8-170MHz, 300-500MHz

BR-510D £479.95 C
As BR-510A, covers improved ranges

Carriage Charges: A=£3, B=£6, C=£10

THE PINNACLE OF PERFORMANCE...

FT DX 9000D

The Ultimate, "All Options Installed" Version.

Three μ-Tuning Modules Factory Installed

The D version is equipped, at the factory, with all three μ-Tuning modules, covering the 160, 80/40. and 30/20 meter Amateur bands. These Hi-Q RF Tuning modules provide a degree of RF selectivity not normally found on other Amateur transceivers, and make operating the FTDX9000D a truly special experience.

Large, Easy-to-Read TFT Display

The wide-screen 6.5" TFT screen (800 x 400dpi) is standard on the FTDX9000 and supports the following functions, World Clock, Spectrum Scope, Transceiver status page, band swept SWR, Audio scope showing waveform and waterfall display, Rotator control page with Great Circle map, memory channel list and menu list. An external VGA monitor can be connected to the rear panel VGA connector to replicate the internal display.

Other features include:

- WORLDS FIRST HRDDS LOCAL OSCILLATOR USING 400MHZ REFERENCE SIGNAL.
- 3 USER SELECTABLE ROOFING FILTERS AT 15KHZ, 6KHZ AND 3KHZ FOR OUTSTANDING CLOSE-IN DYNAMIC RANGE.
- 32 BIT IF DSP FOR DSP SIGNAL PERFORMANCE WITH INTERNAL DSP AGC FOR THAT 'ANALOGUE SOUND'.
- FAST ACTING AUTOMATIC DSP NOTCH FILTER TO REMOVE ANY INTERFERING CARRIER.
- 3 BAND PARAMETRIC EQUALISATION MICROPHONE AMPLIFIER WITH XLR AND 8 PIN MIC CONNECTORS.
- 200W RF OUTPUT WITH 75 CLASS A MODE FOR ULTRA LOW DISTORTION TX SIGNAL.
- SMART CARD FOR STORING USER CONFIGURATION AND LOGBOOK DATA.

...The radio

YAESU

Choice of the World's top DX'ers

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