www.rsgb.org

RadCom

The Radio Society of Great Britain Members' Magazine

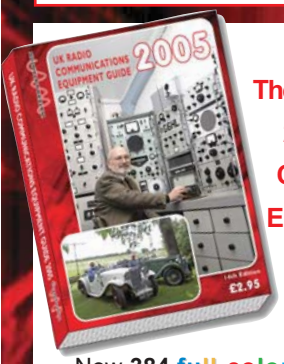
£3.95 Vol 80 No. 12 December 2004

A winter's tale - see RadCom News, pages 10-11

Merry Christmas from the RSGB

WATERS & STANTON ZERO DEPOS

WATERS & STANTON WISH ALL OUR CUSTOMERS A MERRY CHRISTMAS & HAPPY NEW YEAR!



New

The Waters & Stanton 2005 UK Radio Communication Equipment Guide Now Available

Now **384 full colour** pages bursting with over 5000 products, information and money off vouchers, still only **£2.95** +P&P

Price Match Competitor's goods must be: new, UK sourced via official UK distributors and be in stock. Some competitors items offered may be non-UK compatible, ex demonstration or have no CE or E approval. All our new products come through official sources.

carriage charges:
A=£2.75, B=£6, C=£10

NEW IC-7800 In Stock!

BUY NOW PAY LATER AT ALL THREE STORES

You won't find a better deal!

Proof that at W&S you get the best possible deal. On selected items it is now possible to pay nothing for a whole year without incurring any interest charge. Amazing but true. And what's more, you get probably the best prices in the business. Give us a call today or visit one of our branches.

Important. When visiting a store, please bring two pieces of identity eg. driving licence, recent utility bill, passport, recent bank statement (all to show your address), or credit card.

0% APR TYPICAL EXAMPLE OF BUY NOW PAY LATER. CASH PRICE £600. PAY NO DEPOSIT AND PAY THE FULL AMOUNT 12 MONTH'S LATER. PAY NO INTEREST.

OR AFTER TWELVE MONTHS

29.8% APR REPAY £31.53 PER MONTH FOR 36 MONTHS. TOTAL AMOUNT DUE £1135.08. INTEREST IS CALCULATED FROM THE DATE OF THE AGREEMENT.

ALL FINANCE SUBJECT TO STATUS WRITTEN QUOTATION ON REQUEST.

ICOM IC-756 PRO II £1899 C

Flagship of the Icom range of HF transceivers. HF & 50MHz, features large colour LCD with spectrum scope, auto ATU and 32-bit floating point DSP unit.

LAST FEW!

ICOM IC-7400 SPECIAL OFFER £1299 C

HF/VHF 100W transceiver covers 1.8 - 146MHz Features large LCD with spectrum scope, auto ATU and same DSP system as IC-756PRO II. A great base station!
Comes with *FREE* SP-21 Speaker & SM-20 Desk mic

ICOM IC-703 SPECIAL OFFER £539 C

HF/ 50MHz Transceiver 0.1-10W Portable, Mobile, Base-Station. Ideal for Foundation Licence/QRP. Auto ATU, DSP memory keyer. External batt **BP-228 £71.76. B**

FREE Icom IC-703 Logbook with every IC-703 - While Stocks Last!

ICOM IC-706 IIG DSP £769 C

HF/VHF/UHF mobile DSP transceiver. Its relative small size not only makes it a great mobile rig but also for fixed station use as well. HF general coverage and VHF & UHF .

Heil Traveler single ear "706" headset + PTT **£89.95 B** →

ICOM IC-718 £449 C

HF 100W transceiver. Covers all HF bands plus wideband receive. C/w dual VFO, SWR meter etc. Options include extnl ATU DSP & filters.

KENWOOD TS-2000 £1599 C

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.

ARCP Control Software. **£44.95 B**

KENWOOD TS-870S DSP £1399 C

HFDSP 100W base station. 1.8 - 30MHz. Excellent all round rig great for DX working with its ability to winkle out weak stations using its true IF DSP. No filters to buy.

MC-60A base mic with pre-amp. Ideal match. **£117.95 B** →

KENWOOD TS-570DGE £849 C

HF100W base station with built-in auto ATU. Very popular rig, excellent performance on SSB and CW. Two fitted antenna sockets - very handy.

SP-23 Matching base station receiver **£68.95 B** →

ICOM IC-910HX with 23cm £1249 C

Icom's all mode VHF/UHF transceiver with 23cm.
Large clear LCD with lots of facilities. 100W on VHF and 75W on UHF, 10W on 23cm.

UT-106 DSP unit **£84.99 B**

Basic Model IC-910H £1099 C

YAESU FT-1000 MKV £2349 C

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

YAESU FT-1000 FIELD £1749 C

100W HF transceiver, EDSP, Collins filter, auto ATU, 220V AC / 13.8V DC - Building on the success of the FT-1000MkV, the Field has become a respected leader in its class.

KENWOOD TS-480SAT & TS-480HX

NEW

The **TS-480SAT** is the 100W version of this new HF+6m transceiver from Kenwood. Smaller than the TS-2000/ TS-B2000 it has many similar features.
TS-480SAT £999 C

The **TS-480HX** is the 200W version of this new HF+6m transceiver. **TS-480HX £1099 C**

YAESU FT-897D £899 C

100W HF rig plus 2m and 70cms (50W/20W) 13.8V external supply / internal optional FP-30V AC power supply / self powered portable using optional Ni-MH pack at 20W output. Compatible with FC-30 auto ATU and ATAS 120/100 antennas. The "must have" radio for 2003.

YAESU FT-847 £1199 C

1.8 to 440MHz, this all-in-one transceiver offers unbeatable value. 100W on HF plus 6m, and 50W on 2m and 70cm. You get genuine RF clipping on SSB for up to 6dB gain and there are 4 separate antenna sockets.

YAESU FT-857D £649 C

HF / 50 / 144 / 430MHz Mobile Transceiver. HF/6m 100W, 2m 50W, 70cm 20W. (13.8V DC)
Developed on the FT-897 and FT-817 transceivers. Built-in features 32 colour display, spectrum scope, AM airband aircraft reception, built-in memory keyer, detachable front panel.

YAESU FT-817ND £499 C

160m - 70cms. Up to 5W output all modes.

Ours includes **battery and charger.**
Add £90 for DSP version

TOKYO HY-POWER HL-50B £269.95 C

Designed for FT-817 ***Last few!***

This Linear Amplifier has been specifically designed for use with the FT-817. Enjoy up to 50 Watts output

SG-2020 160-10m 20W £499.95 C

QRPers Delight

100mW to 20W SSB and CW. Rugged, compact and very low DC drain (4A max).Selectivity 100Hz - 2.7kHz. Amazing value.

SIT ZERO INTEREST

THE ONLY THING WE WON'T DISCOUNT • CUSTOMER SERVICE •

NO DEPOSIT NOTHING TO PAY FOR 12 MONTHS

ON SELECTED ITEMS MARKED BY £

ICOM IC-E208 NEW £279 C

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 *512 memories *FM narrow capability *104x2 DTCS, 50 CTCSS tone squelch *16 DTMF channels *HM-133 remote control mic *Packet ready for 9600/1200bps-mini DIN or 1200bps-mic socket *Supply 13.8V

ICOM IC-2725E £269 C

The Icom IC-2725 dual band FM transceiver is proving very popular. Easy to install, the controller is separated from the main unit - great where space is limited.

ICOM IC-2100H £229 C

2m 55W FM mobile. Commercial grade, rugged construction. One piece die-cast aluminium chassis. Selectable green or amber display.

YAESU FT-8900R NEW £339 C

Want the best of all worlds then the FT-8900R is just the ticket! A rig with four of the most popular mobile bands - 10m/6m/2m & 70cm. Detachable head.

YAESU FT-2800M NEW £159 C

*144-146MHz *FM *137 - 174MHz expanded Rx *RF Pwr 65/25/10/5W *25/12.5kHz channel spacing.The NewFT-2800M from Yaesu with 65 Watts High Power, rugged construction, excellent receiver performance and direct keypad entry.

YAESU FT-8800E £289 C

Dual Band FM Mobile 50/35W
The FT-8800R series operates as two radios in one, with independant two channel operation.
Remote head mounting capability, wideband receive on VHF & UHF and over 1000 memories.

YAESU FT-7800E NEW £239 C

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

We Price Match!
Call 08000 73 73 88

KENWOOD TMD-700E £449 C

Certainly the best 2m/70cm dual band mobile transceiver with APRS. Does not need extra high cost boards to function. The only extra if required is a compatible GPS receiver.

KENWOOD TM-V7E £359 C

Dual-band 2m/70cm.
A lovely cool blue display, easy to read with 50/35W output. 50W/35W plus 280 memos and five storable operating profiles.

KENWOOD TM-G707E £289 C

Dual Band
If you are looking for simplicity and low cost, here's the answer. 2m &70cms with detachable front panel and "Easy operation mode." GREAT!

YAESU VX-7R £299 B

6m/2m/70cm

Available in Silver or Black

The VX-7R is the best outdoor handie ever. The case, keypad, speaker and connectors are all sealed against water damage. Wide Frequency coverage from 500kHz to 900MHz the VX-7R is ideal for monitoring a variety of broadcasts. The display is a dazzling 132x64 dot matrix providing easy-to-read frequencies and information plus pictorial graphics.

YAESU VX-150 £125 B

The VX-150 is a fully featured compact yet incredibly rugged 2m 5W Handheld. Features include direct keypad frequency entry, CTCSS, DTMF, 1750Hz tone calling, wide/narrow deviation selection. It has a die-cast case, large high output speaker, illuminated keypad and battery voltage meter.

YAESU VX-2E NEW £169 B

Dual Band handy, 1.5W (2m) and 1W (70cm). Full DTMF, CTSS and DCS. With 1300 memories and AM/FM coverage 500kHz-960MHz.

ICOM IC-E90 £269 B

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

ICOM IC-T3H £129 B

The IC-T3H 2m handheld features tough quality but with slim looks. Its striking green polycarbonate case has been ergonomically designed. The rig is capable of providing a powerful 5.5W output with either Ni-Cad or Ni-MH battery packs. Supplied with charger and rechargeable battery.

KENWOOD TH-D7E £319 B

DATA COMMUNICATOR

One of the most successful handhelds over the past few years. It has a built-in TNC for Packet use. You can also use it for APRS operation in conjunction with an external GPS unit. Plus NMEA, 200 memos, and up to 5W output.

KENWOOD TH-F7E £249 B

WITH EXTRA WIDE RX COVERAGE

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

Up to 6W out with Li-ion battery and "scanner" style coverage from 100kHz to 1300MHz including SSB on receive! This is a great radio to have at all times when you are on your travels.

KENWOOD TH-G71E £199 B

If you want an excellent 2m/70cm dual-bander then you can't go wrong with the TH-G71. Fully functional with three power levels, 200 memories, CTCSS tone encoder/decoder, illuminated keypad and backlit LED.

YAESU VX-110 £119 B

Combining the ruggedness of the VX-150 with the simplicity of 8-key operation, the VX-110 is a fully featured 2m hand held ideal for the most demanding of applications. With its die-cast case, large speaker, and illuminated keypad, it is particularly well suited for most conditions. The VX-110 is a very affordable, rugged and reliable handheld.

NEW ICOM IC-756 PRO III

The IC-756PRO III marked its debut at the Leicester Amateur Radio Show at Donington. This is Icom's latest HF transceiver and incorporates many of the features from its predecessors and from the new technology used in the IC-7800.

£2099 C

NEW YAESU FT-60R

5 Watts Dual Band

For Just

£169.95B

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

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

WEB ORDERING www.wsplc.com

GENERAL ENQUIRIES:
01702 206835/204965
FREEPHONE ORDERLINE:
08000 73 73 88

HEAD OFFICE & SOUTHERN STORE

SPA HOUSE, 22 MAIN RD, HOCKLEY, ESSEX, SS5 4QS
ENQUIRIES: 01702 206835/204965 FAX: 01702 205843
Christmas Opening Days: Closed Sat 25th & Sun 26th Dec
Closed Sat 1st & Sun 2nd Dec

MIDLANDS STORE

W&S @ LOWE, BENTLEY BRIDGE, CHESTERFIELD RD, MATLOCK, DERBYSHIRE, DE4 5LE
ENQUIRIES: 01629 580800 FAX: 01629 832375
Christmas Opening Days: Closed Thurs 23rd Dec - Sun 2nd Jan

SCOTTISH STORE

W&S @ JAYCEE, 20 WOODSIDE WAY, GLENROTHES, FIFE KY7 5DF - CLOSED MONDAYS
ENQUIRIES: 01592 756962 FAX: 01592 610451
Christmas Opening Days: Closed Fri 24th - Mon 27th Dec
Closed Fri 31st Dec - Mon 3rd Jan

WATERS & STANTON

PRICE MATCH

THE ONLY THING WE CUSTOMER SERVICE WON'T DISCOUNT

VERTICAL MOBILE ANTENNAS

Out performs all other single banders by up to 3dB!

Purchase the **MO-3 base** (137cm) for **£24.95** or the **MO-4 base** (68cm) for **£22.95**.

Then add the **coil + resonator** of your choice: **RM-10, RM-12, RM-15**, all **£19.95** ea. **RM-17, RM-20 £24.95** ea. **RM-40 £26.95, RM-80 £29.95** (all 200W)

If you want **1kW power** handling and even better bandwidth choose: **RM-10S £24.95, RM-15S £26.95, RM-20S £29.95 RM-40S £37.95** or **RM-80S £49.95**

Base section (MO-3 or MO-4)

Carriage £6 on any combination.

CUSHCRAFT HF BASE ANTENNAS

CUSHCRAFT BASE ANTENNAS

MA6V *NEW*	20-17-15-12-10-6m 250W PEP	**£269.95**	C
MA5V	20-17-14-12-10m 250W PEP	**£239.95**	C
R-8	40-30-20-17-15-12-10-6m 1.5kW	**£469.95**	C
R6000	20-17-15-12-10-6m 1.5kW PEP	**£329.95**	C

DIAMOND CP6 £239.95 C

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

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. It doesn't need long wire radials. Adjustable rigid radials, DC return helps the antenna get rid of static noise. Antenna is adjustable for each band.

HARI High quality German traps. (Pairs)
200W 20m £44.95 40m £49.95 80m £53.95
1kW 20m £59.95 40m £64.95 80m £73.95
Carriage £2.75

HARI High quality German Baluns
SO-239200W 1:1, 4:1 or 6:1 £25.95 ea.
1kw 1:1 £34.95 4:1 or 6:1 £41.95 ea
Carriage £2.75

HORIZONTAL BEAMS & DIPOLES

CUSHCRAFT Prices down!

Premier HF beam used around the world by serious DX'ers.

X-7	20/15/10m 7 el. Yagi 2kW	**£669.95**	D

Not got the space for a full sized HF beam antenna, then the mini beam MA-5B should be considered.

MA5B	10-12-15-17-20m 4 el. Yagi 2kW	**£369.95**	C
A4-S	10-15 & 20m 4 el. Yagi 2kW	**£569.95**	D
A3-WS	12 & 17m 3 el. Yagi 2kW	**£379.95**	D
D-3	10-15-20m dipole element 2kW	**£249.95**	C

Don't want a wire antenna but can't fit a Yagi, then consider a rotatable dipole.

D-3W	12-17-30m dipole element 2kW	**£249.95**	C
D-4	10-40m dipole element 2kW	**£349.95**	C
D-40	40m dipole element 2kW	**£319.95**	C
TEN-3	10m 3 el. Yagi 2kW	**£229.95**	C
ASL-2010	13.5-32MHz 8 el. log periodic	**£749.95**	C

RADIO WORKS - CAROLINA WINDOMS

A choice of quality wire antennas available to fit almost any circumstances. Prices down!

CW-160	160-10m 76.8m long	**£129.95**	C
CWS-160	160-10m 40.5m long	**£119.95**	C
CW-80	80-10m 40.5m long	**£89.95**	C
CWS-80	80-10m 20.1m long	**£109.95**	C
CW-40	40-10m 20.1m long	**£84.95**	C
CW-20	20-10m 10.36m long	**£89.95**	C
CW-620	20-6m 9.7m (32ft) long	**£89.95**	C
G5RV PLUS	80-10m with balun 31m (102ft) long	**£59.95**	B

MFJ

In Tune with MFJ...

World's Finest Base Base Auto Antenna Tuners

MFJ-993

*Auto ATU with digital data dis[play*1.8-30MHz *Long wire, coax & balanced line *300W SSB, 150W CW *Cross needle metering *Size 255 x 70 x 235mm *Weight 1.8kg

The auto ATU that has a digital data display and can even handle wires!

£249.95 C

World's Finest Base Base Auto Antenna Tuners

Auto ATUs

MFJ-991

Similar to the MFJ-993 but handles 150W SSB/100W CW and matches 6-3200 Ohms. Does not have digital VSWR meter LCD readout aural VSWR, antenna switch or 4:1 balun.

Auto ATU

£209.95 B

MFJ-941E

A great budget ATU. All the great MFJ features that make it ideal for base station use. *1.8-30MHz *300W *Cross needle meter *VSWR & PWR 30/300W *Terminals for wires and bal. lines *Internal 4:1 balun *Ext. Dummy load socket *SO-239 sockets *Size 260 x 180 x 70mm

Manual ATU

£129.95 B

MFJ-974H

A true balanced line ATU that is ready made for open wire feeder. Extremely accurate balancing provides optimum performance. It can also be used for long wires and coax. Great for all-band doublets. *1.8-54MHz (MFJ-974H) *300W *Balanced, wire or coax *SO-239 sockets *Size 195 x 155 x 220mm *Weight 2.05kg

£179.95 C

MFJ-904H

Just the job for portable use. It's so small! *3.5-30MHz (80 - 10m) *150W wire, coax, balanced *Internal 4:1 balun *SO-239 sockets *Size 180w x 60h x 80d (mm) *Weight 650g

Mobile and portable use

Manual ATU

£129.95 B

MFJ-962D

Ideal for use with linears. Gandles balanced, coax and wire. *1.8-30MHz *1.5kW Roller Coaster *VSWR meter *6-way antenna/load switch *Buit-in 4:1 balun *2 coax positions *Size: 270x375x115mm

Manual ATU

£279.95 C

MFJ-989C

3kW 1.8 - 30MHz. Wire, balanced and coax feed. Full metering and switching.

£359.95 C

MFJ-986

3kW fast differential tuning design. 1.8 - 30MHz. Wire balanced and coax systems. Full metering and switching.

£329.95 C

MFJ-949E

1.8 - 30MHz. 300W wire, balanced and coax. Inc dummy load, metering and antenna selector.

£159.95 B

MFJ-948E

Similar to the MFJ-949E, but without internal dummy load. One of the most popular ATUs in the world!

£139.95 B

Zero Space - - DX Antennas

From Hustler USA

Run full legal power - 80m to 10m - with no masts or guys to worry about. 50 Ohm feed.

Small garden, planning problems or similar restrictions? Then the Hustler range is the answer. These HF verticals will take 1kW of power, work at ground level, and are self-supporting. A single earth rod will get you going. Add buried radials for even better results. Many hams have got on the HF bands with just this simple system. So why not join in the fun. These are rugged, well-built antennas that American hams have been using for years. Now they are available in the UK from our three stores.

4BTV
40-20-15-10m. 6.52m high. Full band coverage.
£149.95 C

5BTV
80-40-20-15-10m. 7.64m high. Full band coverage (100kHz on 80m).
£179.95 C

6BTV
80-40-30-20-15-10m. 7.3m high. Full band coverage (100KHz on 80m).
£209.95 C

SMP-1000A £9.95 A

*Input: 100-240V AC 50/60Hz
*Output: 3, 4.5, 5, 6, 9.& 12V DC
*Regulated
*Max current 1000mA
*6 connectors
*Reversible connectors
*Cable length 1.8m

Very handy switch mode regulated AC/DC Adaptor with short circuit and overload protection with max current to 1000mA. Great for the shack, 3-12V DC selectable, many uses. Six diffrent power connectors with the ability to change the polarity.

PORTABLE ANTENNAS

MIZUHO (FOR FT-817)

ATX-WBN	Walkabout 80-6m Whip 1.5mBNC	**£44.95**	B
ATX-WPL	Walkabout 80-6m Whip1.5mSO-239	**£44.95**	B
ATX-W38	Walkabout 80-6m Whip 1.5m 3/8in	**£44.95**	B

New

ATX-MkII **£49.95 B**
The new ATX-MkII Walkabout includes 3 different connections, PL-259, BNC & 3/8th.

AT-80	Single band 80m whip with BNC	**£19.95**	A
AT-40	Single band 40m whip with BNC	**£19.95**	A
AT-30	Single band 30m whip with BNC	**£14.95**	A
AT-20	Single band 20m whip with BNC	**£14.95**	A

Range of single band HF antennas with BNC connection. Ideal for FT-817.

AT-17	Single band 17m whip with BNC	**£14.95**	A
AT-15	Single band 15m whip with BNC	**£14.95**	A
AT-12	Single band 12m whip with BNC	**£14.95**	A
AT-10	Single band 10m whip with BNC	**£14.95**	A

Check our website for more info - www.wsplc.com

RSGB matters

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

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

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

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

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

HONORARY TREASURER:
Position vacant

BOARD OF THE SOCIETY
PRESIDENT
J D Smith, MI0AEX
MEMBERS
G L Adams, G3LEQ
E F Taylor, G3SQX
R J Constantine, G3UGF
E A Cabban, GW0ETU
D G C Hicks, G6IFA
K A Wilson, M1CNY
C J Thomas, G3PSM
A G Annan, C Eng, MIEE, MM1CCR

REGIONAL MANAGERS
K A Wilson, M1CNY
G M Darby, G7GJU
E A Cabban, GW0ETU
M J Salmon, G3XVV
G Hunter, GM3ULP
R Clarke, G8AYD
K Frankcom, G3OCA.
B Scarisbrick, G4ACK
P Thomson, GM1XEA
R Ricketts, GW7AGG
P Berkeley, M0CJX
I Rosevear, G3GKC
P Lowrie, MI5JYK
Details of the Society's volunteer officers can be found in the RSGB Yearbook 2004

HEADQUARTERS AND REGISTERED OFFICE
Lambda House, Cranborne Road,
Potters Bar, Herts EN6 3JE
Tel: 0870 904 7373
Fax: 0870 904 7374
All calls to the RSGB are charged at National Rate
QSL Bureau address:
PO Box 1773, Potters Bar, Herts EN6 3EP
E-mail addresses:
sales@rsgb.org.uk
(books, filters, membership & general enquiries)
GB2RS@rsgb.org.uk
(GB2RS and club news items)
RadCom@rsgb.org.uk
(news items, feature submissions, etc)
AR.Dept@rsgb.org.uk
(Examinations, beacons, repeaters, GB calls, licensing)
IOTA.HQ@rsgb.org.uk (Islands On The Air)
GM.Dept@rsgb.org.uk (managerial)

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

DOUBLE SPECTRUM AT 40m FOR UK AMATEURS

The RSGB and Ofcom are pleased to announce that all UK radio amateurs were granted access to frequencies between 7.1 and 7.2MHz from 0100UTC on 31 October. Access is granted on a Secondary (non-interference) basis using a maximum of 26dBW (400 watts) PEP for Full licensees (50W for Intermediate and 10W for Foundation licensees).

Notices of Variation for the three licence classes were published on the Ofcom website (www.ofcom.org.uk/licensing_numbering/radiocomms/am_radio/ap_forms/?a=87101) on 27 October.

It is recommended that for the time being only voice and Morse code modes are used between 7.1 and 7.2MHz. Band planning issues on 7MHz will be kept under regular review and will be dependent on the number of administrations granting early access to this band prior to full Primary access on 29 March 2009.

The RSGB would like to offer its appreciation to all parties involved in the consultations, in particular the broadcasting industry, the UK Ministry of Defence, the Radiocommunications Agency and its successor Ofcom.

Amateurs in the Republic of Ireland were also granted access to 7.1 - 7.2MHz towards the end of October, joining those in Croatia, Norway and San Marino who already had access to these frequencies. Radio amateurs in Switzerland will also gain access to 7.1 - 7.2MHz from 1 January 2005.

RSGB PROPOSES ALLOCATION AT 500kHz

The RSGB has made a proposal for radio amateurs in the UK to have access to frequencies between 501 and 504, or 508 and 515kHz, at a transmit level of 10W EIRP. The allocation, if accepted, would extend amateurs' experimental work to that taking place on 73, 136 and 1810kHz and thus aid understanding of low and medium frequency propagation mechanisms. The two frequency band options are proposed as they are no longer used for maritime telegraphy in the Western hemisphere and their usage for non-directional aeronautical beacons (NDB) is being phased out. It is understood that it is unlikely, in the near future, that these channels will be re-allocated to another service. Further details of the RSGB proposal can be found on the Spectrum Forum website at www.rsgb-spectrumforum.org.uk/mf.htm

RSGB AFFINITY CREDIT CARD

Holders of the RSGB credit card will have, or will shortly, receive a letter from Bank of Scotland advising you that this programme will be transferred to MBNA in June 2005. This transfer should not inconvenience or penalise you in any way. For you, the cardholder, there will be no change in the way that your account is operated and we have been advised that the APR is in fact lower than the current charge. MBNA will of course advise you further in due course.

For the Society there will be an increase of £1.50 to £4.00 for each card activated in addition to the current income received for usage. This is dependent upon cards being used within the last six months. This source of income requires little input from the Society and we are grateful to our members for their support of the scheme.

NEW 5MHz BEACONS

The RSGB is close to installing and operating two new beacons on 5290kHz. The new beacons, which some have monitored during their hardware test phase, will be installed shortly and operate under the callsigns GB3WES and GB3ORK. GB3WES will be located in Cumbria and GB3ORK in the Orkney Islands. Both will have a stepped transmit power sequence and a 30-second sounder sequence of 0.5ms pulses at 40Hz prf identical to that of the current GB3RAL beacon. Their transmit times will follow GB3RAL by one and two minutes respectively.

With GB3RAL located in Oxfordshire, the three beacons will provide an excellent spread of signal source across Great Britain and thus offer experimenters a unique opportunity to study propagation effects at 5MHz from their own QTH. In addition to people designing and conducting their own experiments all are additionally invited and encouraged to send in their reports to the 5MHz Working Group in support of the '5MHz Experiment'. Note that the use of these three beacons is open to all, as no NoV or amateur licence is required to monitor and collect data.

Further information is available on the RSGB Spectrum Forum website at www.rsgb-spectrumforum.org.uk/5MHz.htm The RSGB 5MHz Working Group would like to thank Andy, G4JNT, who has designed and built the beacons and also the two new beacon keepers, John, G3WGV, and Donnie, GM0HTH.

'TRAIN THE TRAINERS' GOES TO DEVON

At the end of a week of the worst storms to hit the Torbay area for many years, Saturday 30 October saw the first 'Train the Trainers' course in the West Country take place. The session was organised by Deputy RSGB Regional Manager for Devon, Pam Helliwell, G7SME, after requests from club instructors who were concerned about how to incorporate extra material demanded by the new three-tier licence structure into their courses.

A minimum of eight interested instructors were needed to make the course a viable proposition. Pam contacted

CONGRATULATIONS!

Congratulations go to the following RSGB members who successfully upgraded from **Foundation to Intermediate** licence by taking the Intermediate exam on 11 October:

Alan Jessop, M3JRA; Susan Ramsden, M3XJT; Mark Vaughan, M3VAU; Clive Crosby, M3XBY; Alan Fraser, M3FVM; Alistair Morrell, M3DLK; David Rennie, M3HGG; Chris Jewell, M3HGI; Dave Sharpen, M3GHK; John Roberts, M3FQC; Graeme Hendry, M3GZS; Ian Sanderson, M3ILS; Keith Taylor, M3KRP; John Dixon, M3LKD; David Holloway, MW3MMD; Carl Elton, M3XCE; Michael Foy, M3FOY; Eric Foster, M3HCA; Frank Taylor, M3EBJ; Phillip Mather, M3PMM.

Brian Reay, G8OSN, leading the Devon 'Train the Trainers' session.

several Devon clubs and soon there were more than enough interested in taking part. Brian Reay, G8OSN, was in charge of the course, with Alan Betts, G0HIQ assisting.

The instructors being trained were Derrick, G3LHJ; Colin, G4FCN, and Larry, M1ARW, from the Torbay Amateur Radio Society; Bob, G7NHB, and Chris, M5CJW, from Plymouth ARC; Peter, M0BHJ, and David, G0VTX, from Nortel RC; Don, G7PFU; David, M3EOQ, and Brian, M3OZJ, from Holsworthy ARC, all representing Devon, and, from further afield, Peter, M0PTR, from Flight Refuelling ARC in Dorset; Phil, G0KKL, DRRM for District 114; Peter, G0FIM, and Les, G7THT.

The lectures were very interesting and informative. Each new syllabus item was discussed, along with tips on how to put across the requirements to the candidates. The Child Protection Act was interpreted in the context of the training environment. The importance of having a parent or guardian present during the course was emphasised - also the advantage of persuading the parent or guardian to sit the exam at the end of the course and therefore having an extra radio amateur in the family!

Some of the instructors were new to teaching and some had a great number of years experience as radio amateurs. All found the lectures of interest and benefited from being able to bounce ideas off each other. It was useful to share personal experiences from running old-style RAE courses and see how to incorporate these in the new three-tier system of licences.

Brian Reay and Alan Betts are to be congratulated on running this course. A lot of time, effort and energy has gone into preparing for the day and putting across the information in a very light-hearted (sometimes) and authoritative manner.

RADIO COMMUNICATIONS EXAMINATIONS

Following discussions between the Society and Ofcom, changes will be made in the Advanced examination. This is the examination that qualifies amateurs for the Full Licence, the top level of the three-stage UK licensing process. The changes have been made following the current pilot scheme, which has been in effect since the exam's introduction at the beginning of this year.

To bring it into line with current educational practice, a Formula Sheet will be included in the exam material. This will allow candidates to concentrate on the concepts required, rather than memorising equations. In addition, the number of questions will be reduced to 62 from the current 68, to shift the emphasis more towards operating practices rather than electronic theory. The changes will come into effect from the beginning of 2005.

RSGB Board member Ed Taylor, G3SQX, said, "We proposed some amendments in the operation of the Advanced exam, following comments that the new exam was more technical than the old RAE. Ofcom agreed, and we are pleased that a way was found to implement changes without reducing the rigour of the system."

We hope to publish an article about the new Advanced Radio Communications Examination in *RadCom* next month.

INTERNET-LINKING NoVs - CLARIFICATION

It appears there is some confusion regarding precisely which class or classes of Internet-linking related NoVs will lapse on 31 December 2004 unless renewed prior to that date (see 'RSGB Matters', *RadCom* November 2004 p5). Only those NoVs which have been issued to allow operation of an 'internet gateway' on a simplex frequency, via the RSGB Data Communications Committee, are affected at present. Neither those NoVs which have been issued by RA or latterly Ofcom which permit Internet-linking of a repeater which has a callsign in the 'GB3xx' series, nor those issued by the RSGB DCC for packet radio mailboxes or digital nodes are affected at this time, and these will remain in force until further notice. For specific queries, please e-mail your request to dcc.online@dcc.rsgb.org

CORRECTION

144MHz Direct Conversion Receiver, pp102/03 November *RadCom*. The table to the extreme right of the switched amplifier section should read as follows.

dB	Resistors	Total
0	-	
10	43k + 3.3k	46.3k
20	11k + 110	11.11k
30	3.3k || 330k	3.267k
40	1k + 10	1.01k

The symbol '||' means 'in parallel with'. Also, the capacitor value shown in brackets towards the left in the band-pass filter should read 0.35pF, not 36pF.

VHF AWARDS NEWS

All recent claims have been for the 50MHz band. Donald McKay, MM5AJW (KW), now has a 100 countries sticker for his 50MHz Countries (2-way) certificate. Geoff Crowley, MM5AHO (AB), has been awarded a 50 countries sticker for his 50MHz Countries (2-way) certificate, together with a 250 squares sticker for his 50MHz Squares certificate.

Douglas Rolph, G0UYC (NR), has gained a further sticker for his 50MHz Squares certificate and this time it is for working 575 squares. I have also received a large claim from Andy Kissack, GD0TEP (IOM). Andy now has a 140 Countries sticker for his 50MHz countries (2-way) certificate. In 2002 Andy set a record by becoming the first person to have 600 squares confirmed on 50MHz. Andy has now raised the bar again by becoming the first person to have 700 squares confirmed on 50MHz.

Details of awards can be found in the latest RSGB Yearbook, or by following the link from the RSGB website or by e-mail to vhf.awards@rsgb.org Claims should be sent to Bill Salt, M0CBQ, 89 Woodhall Drive, Waltham, Grimsby, North East Lincolnshire DN370UX and all claims must be accompanied by an SASE.

QSL BUREAU NEWS

Graham Ridgeway, M5AAV, the RSGB QSL Bureau Sub-Manager for the M5 series of callsigns (www.users.zetnet.co.uk/m5aav/index.htm) has moved house. His new address is: 6 Pilgrim Street, Nelson, Lancashire BB9 0JQ. ♦

By John Gould, G3WKL, Chairman, HF Convention Organising Committee

Pathways, 116 Wolverton Road, Newport Pagnell, Bucks MK16 8JG.

E-mail: g3wkl@btinternet.com

"The best HF Convention in years . . ."

This year's HF Convention took place over the weekend of 22 - 24 October at a new venue, the Gatwick Worth Hotel. From the feedback and the sheer buzz going around the place over the weekend, everyone seemed to enjoy themselves, as John Gould explains . . .

This year's HF Convention was a great success, one of the reasons probably being that we had the complete run of the hotel, and were thus able to spread ourselves out, making use of their many conference rooms, hotel bar and TV lounge, thus radically transforming the place to suit our needs.

This year was also the IOTA programme's 40th anniversary, which helped to attract 'island chasers' from near and far, many of whom arrived on the Friday evening for the welcome buffet.

The Convention programme certainly helped to attract a large gathering, not only of those who booked packages but also of day visitors. With a string of DXpeditions such as 7Q7MM, T33C, TJ3G, GB2LI and of course 3B9C to draw upon, the convention had to be a success from the DX perspective! However, in keeping with recent years we also had a very strong programme for those interested in a more technical slant. We were privileged to host the first major technical presentation outside Japan on Yaesu's new transceiver, the FT DX 9000, and we were also treated by two near-flawless Internet videoconferences. Another key session of relevance to most radio amateurs was the one on PLT and the future of the HF spectrum. It was a fascinating panel discussion, chaired by the well-known journalist Barry Fox, and a session that deserved longer than we had programmed.

This year also saw additional efforts to make newcomers to the hobby feel more part of the event. We did this in two ways, firstly by putting on a number of sessions within the programme aimed at their interests. Secondly, we hosted all three licence exams over the weekend.

In addition to the lecture programme, there was a number of other attractions at the event. For the first time for many years, we saw both HF and VHF trophies being presented at the same event. We had an excellent pair of HF stations, both sponsored by Yaesu (UK), which made contacts with over 180 DXCC entities, and an LF station on 136kHz that managed 20 QSOs in eight countries.

In putting on the event, we once again we need to thank our main sponsors Yaesu (UK) and Martin Lynch & Sons whose support is crucial to the financing of the event. We also need to thank Yaesu (UK) for the first prize for the DXpedition Fund raffle of an FT-897 all-mode 1.8 - 430MHz multi-mode transceiver, which was won by Mike Allisette, GU4EON. ML&S kindly sponsored the second prize, a Yaesu FT-8900 29 / 50 / 144 / 430MHz FM transceiver, which was won by Don Field, G3XTT. The raffle raised around £1200, all of which will be used to support future HF DXpeditions. In addition I would also like to acknowledge bhi Ltd, Kenwood (UK), KMK Ltd, Moonraker, Nevada, SHACKLOG, W3UR (The Daily & Weekly DX), RCQ Electronics, Walford Electronics, W H Westlake, IZ7AUH, the RSGB Bookshop, IOTA and some anonymous amateurs for donating prizes for the raffle.

As is usual with any event, there are many people to thank who worked behind the scenes, often over many months, to make it all happen. I have personally thanked members of my organising committee, the RSGB HQ staff and the members of the Crawley ARC. Finally, we need to thank our presenters, for their time, effort and skill at making their talks so interesting. ♦

Top, from left to right: At the 'DX Dinner', star MC Bob Beebe, GU4YOX, with overseas guests Wayne Mills, N7NG; Jens Sperling, DL7AKC, and (with hat) Yaesu's Chip Margelli, K7JA.

Who says amateur radio is an old man's hobby? This year there was a very welcome large contingent of young amateurs at the Convention.

This year the HFC celebrated IOTA's 40th anniversary. Here, IOTA Manager Roger Balister, G3KMA, mans the IOTA stand.

Bottom, from left to right:
Jim Moritz, M0BMU; Mike Dennison, G3XDV, and (sitting) David Bowman, G0MRF, at the 136kHz demonstration station.

"There was a real 'buzz' around the place."

Winner of the raffle star prize, a Yaesu FT-897 HF / VHF / UHF transceiver, was Mike Allisette, GU4EON (right), seen here being presented with his prize by Paul Bigwood, G3WYW, of major sponsor Yaesu (UK).

ML&S martin lynch & sons

Suppliers of Communications Equipment

Yaesu Specials

Yaesu FT-1000MP mkV

Still the flagship of theYaesu HF Range. 200W and put the CDXC IOTA crew on the map.

RRP: £2599, MLS: £2395 including FREE VX-2E Twin bander

FT-847 + FC-20 Mega Bundle!

The famous HF•6•4•2•70 Transceiver is now even better value.

Buy a new FT-847 and add a new matching FC-20 Auto Tuner for only £69.95 (worth £249.95!)

Only £1268.95 or 36 x £46.14

FT-817ND + Miracle Ducker Package.

Combining the brilliance of the FT-817ND HF•6•2•70 with the Miracle Ducker offered at special price. Our FT-817ND's come with Metal-hydride batteries, charger, mic & antenna.

Only £499! or 36 x £18.14 (For the FT-817ND-DSP Version add £125)

FT-897 + CD-24 + FNB-78 + QPAK

We have put a package deal together that we think you can't afford to miss. A brand new FT-897 Transportable Base rig with HF/6/2/70 all mode, internal FNB-78 Battery, matching CD-24 DC Charger and the excellent QPAK ATU make this a must have for the long winter operating months. **Only £999 or 36 x £36.32**

VX-7R + CSC-88

A popular combination but with added value. The worlds most popular Tri-Band 6/2/70 5 Watt Handie. Offered with matching VOX Earpiece-Mic & Protective Carry Case.

All for only £299
or 24 x £14.99

Yaesu VX-5R

Still a very popular choice, the VX-5R has Tri-Band operation and offered with 5W lithium Ion Battery, charger & antenna. We've slashed the price and made it an unbeatable offer!

Only £199.95

FT-857 + ATAS-120 Mega-Deal!

The best selling All Band Mobile/Base has even more appeal that last month - you can add an ATAS-120 for £100 off RRP.

Only £799 or 36 x £29.05

FT-8900 with YSK-8900+HMC-4 FREE!

One-stop solution to high-power FM on 10m, 6m, 2m & 70cm. When your local repeater is busy, slip onto 10m & work DX!

The ML&S Package Deal includes:

- YSK-8900 Remote Head & cable assembly
- Maldol HMC-4 The best quad band mobile antenna money can buy.

Only £429 or 36 x £15.60

Yaesu FT-1000MP mkV Field

Ditto mkV but 100W and built in PSU.

RRP: £1999

ML&S: £1739

NEW Yaesu FT-60E

Latest Twin Band 5W Handie from Yaesu

Only £189!

Yaesu FT-7800

Bar make the tea it'll give you 2m/ 70cm- @ 50W/40W.

RRP: £239, ML&S: £239

Yaesu FT-8800

Similar to the FT-7800 but can receive on 2 & 70 simultaneously.

RRP: £289, or 48 x £8.26 p/m

Yaesu FT-2800M

2M brick-built 65W rig.

RRP: £179, ML&S: 159

Yaesu VX-2E

Micro Handie 2/70 with scanner. Complete withLi-Ion battery, charger & antenna.

NEW LOW PRICE -
Now only £139

Yaesu VX-150

Built on the commercial VX-400, simple to use rugged 2m Handie, supplied with Nicads & Charger.

RRP: £149, ML&S: £119

Take Away Now and Pay NOTHING Until This Time Next Year!!

Having many years of experience offering specific finance packages for our customers, we can now offer various options on payment. We have added "**Take-Away Now & Pay Later**" to all our products over £199. It works like this:

0% APR An example of our Take-Away Now: Discounted price of £300. Pay no interest provided you pay by the date the amount is due, in full.

After the 12 months period has expired pay £15.76 for 36 months. TAP £567.43 Please note that interest is calculated from the date of the original agreement. 29.8% APR.

Call us 6 days a week, mon-sat 9.30-5.30

0845 2300 599

local call number

fax: 0845 2300 339

e-mail: sales@hamradio.co.uk

web: www.hamradio.co.uk

RadCom

RADIO COMMUNICATION

Editor
Steve Telenius-Lowe, G4JVG

Technical Editor
George Brown, M5ACN

Secretarial
Sarah Clark, M3GOA

Advertising Design
Jodie Escott, M3TPQ

All contributions and correspondence concerning the content of RadCom should be posted to:
The Editor, Radio Communication,
Lambda House, Cranborne Road
Potters Bar, Herts EN6 3JE
Tel: 0870 904 7373
Fax: 0870 904 7374
E-mail: radcom@rsgb.org.uk

ADVERTISING
All display and classified advertising enquiries (excepting Members' Ads) should be sent to:
Chris Danby, Danby Advertising,
299 Reepham Road,
Hellesdon, Norwich NR6 5AD
Tel: 0870 904 7377; **Fax:** 0870 904 7378;
E-mail: adsales@rsgb.org.uk

RadCom is published by the Radio Society of Great Britain as its official journal on the first day of the relevant month and is sent free and post paid to all members of the Society.
Closing date for contributions, unless otherwise notified, is five weeks prior to publication date.

All material in RadCom is subject to editing for length, clarity, style, punctuation, grammar, legality and taste.

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

Designed and printed by Space Matters, 60 Borough High Street, London SE1 1XF.

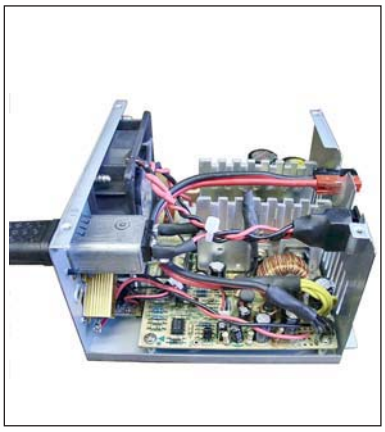
RSGB MEMBERSHIP – Annual Rates

Home Corporate	£42.50
Overseas Corporate	£42.50
Corporate (Senior Citizens) (Applications should provide proof of age at last renewal date)	£33.50
Corporate (50 years membership)	50% DISCOUNT
Corporate (60 years membership)	FREE
Family member (Must reside with existing member. Does not include RadCom)	£18.50
Student Members (Applications should include evidence of full-time student status)	£28.50
HamClub (under 18)	£18.50
Affiliated Societies (UK or Overseas)	£42.50

Subscriptions include VAT where applicable.
Special arrangements exist for blind and disabled persons. Details and membership application forms are available from RSGB HQ.

Contents

DECEMBER 2004



p59 – A modified switch-mode power supply.

p83 – VHF NFD 2004.

A winter's tale

Olavi Veitola, OH5BR, of Imatra, Finland, has an unusual problem most winters. He lives 300m from the River Vuoksi and when the weather is very cold the river feeds so much moisture into the air that it causes a tremendous build-up of snow and ice on the OH5BR antennas. When one of those antennas is an 80m beam on a 36m-high tower, the weight of the accumulated ice and snow can present very real difficulties.

Olavi has solved the problem in an ingenious way. He writes: "A 6ft axle is attached to the tower just below the boom with bearings. The axle has welded plates at both ends and wooden blocks (2 x 4 x 20in) are bolted to the plates. A nylon rope runs from the far end of the arm to the ground inside the tower. Pulling the rope makes the wooden 'hammers' swing as the axle rotates. You create a very effective vibration to the whole antenna system and tower by swinging the rope and axle back and forth a couple of times before the actual hit on the boom. This breaks ice and allows the ice and snow to fall to the ground."

The pictures show a close-up of the hammers, the moment of impact, and the beam half a second after action is taken. Our front cover this month shows the antenna three seconds after the boom is struck.

Foundation licensees lead the way!

The prizewinners in the British Wireless for the Blind Fund 'Transmission 2004' (www.blind.org.uk/transmission) fund-raising competition were presented with their trophies at the RSGB HF Convention on 23 October. Prizes were given for the groups and individuals who raised the most money for the charity and for those who made the most contacts during the weekend. The group or club raising the most money was the Poldhu Amateur Radio Club, which netted £1304.50 for the charity. The club that made the greatest number of contacts was the Cray Valley Radio Society, with a staggering 3057 QSOs. The individual who raised the most funds for the BWBF was Daren Loxley, M3LOX, with £245, while the individual making the most contacts was Bob Palmer, M3DPQ, who quit when he achieved his personal target of 100 QSOs. It is good to see Foundation licensees showing the way to more experienced amateurs in this fun competition that raises money for such a good cause. BWBF, launched by Winston Churchill in 1929, issues adapted radio sets for the blind and partially-sighted throughout the UK. BWBF Chief Executive Margaret Grainger, ex-G7SXD, said she was delighted by the efforts of all who took part in Transmission 2004.

Individual winner Bob Palmer, M3DPQ, receives a platter and certificate from RSGB President Jeff Smith, MI0AEX, and BWBF Chief Executive Margaret Grainger.

Left to right: Graham Anthoney, GM0AAX, Anne Hood, GM4UXX, Jan Miller (bride), Graeme Miller, G8JIP (groom), and Jack Hood, GM4COX, at the Donnington Valley Hotel in Newbury on 19 September 2004. Congratulations!

PHOTO BY ANKUR PURANIK

MARS volunteers on one of the towers.

Amateur radio crowd control at mass event

Ganesha Chaturthi is an Indian religious festival held every August / September in which effigies of the God Lord Ganesha are worshipped and immersed in water. The biggest such ceremony is held in Mumbai (Bombay) at Girgaon Chowpatty beach, where millions of people gather on the night of the full moon.

With so many people, trouble is bound to brew and every year there are incidents. Mumbai Amateur Radio Society (MARS) volunteers VU2NLF, VU2NHR, VU3MWH, VU2JPN, VU3AUA, VU2OZO, VU2SFN, VU2HIT, VU2LUB, VU2GYM and SWLs manned look-out towers constructed along the route of the processions. Using VHF base stations and 5/8-wave antennas on the towers, with hand-helds for the amateurs on the ground, an entire network was created to provide communications for police and government departments at the festival. MARS did a great job locating parents of lost children, monitoring the crowds in the water and reporting drowning cases, and getting the injured to first aid centres.

Thanks to Shantanu Chand, an SWL currently awiting his VU licence and one of the MARS volunteers, for this news story.

PHOTO BY ANKUR PURANIK

A small part of the estimated million people on Chowpatty beach.

NEWS BRIEFS

- Eddie, 2M0EDY, asks if he is the first Foundation licensee to pass his callsign on to his son? Eddie's son Peter passed passed the Foundation exam, becoming MM3EML, two months after Eddie passed the Intermediate. Eddie hopes grandson Jason will also take out a Foundation licence and have the callsign passed on to a third generation.
- Bob Parkes, G3REP, informs us that there is now an amateur radio page on Sri Lanka Telecommunications Regulatory Commission website (www.trc.gov.lk/arl2.htm), from where it is possible to apply for a Sri Lanka amateur radio licence. There is also a link to the Radio Society of Sri Lanka site.
- The new Waters & Stanton catalogue was released in October. It contains 380 pages listing almost every conceivable amateur radio product plus a number of general-interest amateur radio articles. It costs £2.95 and is available from W&S plc, 22 Main Road, Hockley, Essex SS5 4QS.
- In 1992 the first Amateur Radio Stamp was issued to record the first amateur radio operation from the Isle of Pabay, near Skye. Since then, several other stamps have been issued with amateur radio connections. Details of these and other Pabay stamps can be found on the Pabay website at www.pabay.org
- The UK's first unattended 'store and forward' single frequency voice relay became operational on 16 October. It operates on 70.4375MHz using the callsign MB7FM, with a maximum 'store' time of 120 seconds. The installation is on an elevated site in the Chiltern Hills at locator IO91PS, with 10dBW ERP from a dipole antenna at 32m above ground. Please send signal reports etc by e-mail to mb7fm@77hz.com
- The next Club-TV amateur radio programme broadcast on the Sirius 2 satellite at 5° east (vertical polarisation, SR 3400, FEC 3/4) will be at 1000UTC on 18 December. The two features in the programme will be *Airing Ailsa* by GM4LVW and *Venus Transit* by S51KQ. The downlink frequency will be announced on www.parabolic.se under Club-TV/HAM Radio in due course.

SOTA news

Robin Morrison, GM7PKT, became SOTA's fourth 'Mountain Goat' when he went through the 1000 points barrier when activating Ben Nevis GM/WS-001. Participation in SOTA is reliant on the use of a PC with Internet connection, as this is how the chaser, activator and SWL logs are submitted and the summary scores calculated. For those without Internet access, Rob, G4RQJ (QTHR), offers a service of entering logs and providing occasional print-outs of the results for non-online participants. This is on a casual *ad hoc* basis, and anyone wishing to take Rob up on his offer should contact him for details.

Robin, GM7PKT, activating Beinn an Dothailh, GM/CS-025.

Lottery grant for Northants amateur radio Guides

Last year Northamptonshire 77th Guides was awarded a £5000 lottery grant for equipment to train Guides to Foundation level and to run special event stations to show Guides what amateur radio has to offer. At this year's Jamboree on the Air, Guide Leader Sue Hall, M5AFY, with the girls of 77th Northampton Guides, made contacts as far afield as Tasmania. Some Guides sent Greetings Messages to as many as 15 different contacts. John Chisholm, M5TTT, the radio instructor for the Northamptonshire guides, writes that all of the Guides in the photograph who do not already hold Foundation licences are on his next course.

Guide Leader Sue Hall, M5AFY, with the girls of 77th Northampton Guides at their JOTA station.

ARDF newcomers

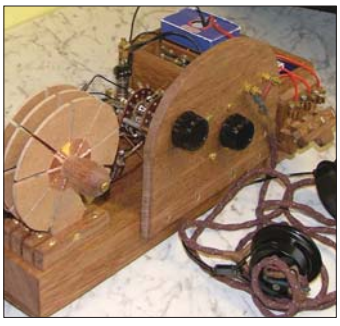
John, M1SHE, and Emily Little just after finding their very first hidden transmitter on 2m.

John, M1SHE, and Emily Little travelled from Milton Keynes to Leicester to sample IARU-style direction finding at the Bagworth ARDF event on 10 October. Their receivers and aerials were loaned to them by David Deane, G3ZOI. The event involved a 2m DF in the morning followed by three more hidden stations to find on 80m in the afternoon. The weather turned out better than expected and everyone had lots of fun.

Old radio for an old house

Mike Brett, M3JTX, recently moved to a farmhouse near Wisbech and decided to build the sort of radio that would have been found in the house when it was built, around the time of the birth of radio. The result is shown below. It is a battery powered four-band regeneration radio (mains electricity was a long way off for such a remote location.

Mike says he has tried to use old components where possible. The power requirements are 90V DC, 45V DC and 1.5V DC. An old pair of 1920s headphones purchased on e-bay finishes it off nicely. There is no volume control, but the volume can be adjusted by careful use of the front 'tickler' Spider Coil as it moves from side to side into and out of regeneration. With a long wire antenna and a good earth, it worked the first time it was switched on.



Horkheimer Prize 2005

Rudolf Horkheimer was one of the first radio amateurs in Germany. The Horkheimer Prize is awarded by the German national society DARC "for merits of amateur radio, its further development and the targets of DARC". All members of IARU member societies are entitled to be nominated and self-proposals are permitted. The prize consists of an etched glass trophy and a monetary prize for non-personal use. Nominations, which should list the name and address of the proposed amateur, a short substantiation, and any further information, should be submitted to DARC, Lindenallee 4, 34225 Baunatal, Germany by 31 March 2005. The prize is awarded at the 'Ham Radio 2005' fair in Friedrichshafen.

Club and regional news

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

1 Scotland South & Western Isles

COCKENZIE & PORT SETON ARC
4, Club Christmas night (TBC). Bob, GM4UYZ, 01875 811723.
KILMARNOCK & LOUDOUN ARC
14, 'Bright Sparks' quiz night. Len, GM0ONX, 01563 534383.
LIVINGSTON & DARS
4, Christmas bash. Mark, MM0MMK, 01506 656513, mark.mckay@virgin.net
LOTHIANS RS
6, Curry night. Toby, MM0TSS, 07739 742367, tobysigouin@onetel.net.uk
PAISLEY (YMCA) ARC
8, 'Why Valves are not Extinct', GM4GZQ. No meeting on 22 December. Jim, GM3UWX.

2 Scotland North & Northern Isles

No club details received.

3 North West

CHESTER & DARS
14, Christmas social. Chris, MW3TWI, 01244 683629 or Bruce, 01244 343825.
SOUTH MANCHESTER R & CC
3, Quiz. 10, Software applications.
17, Christmas party. The club is closed for the next two weeks. Ed, 0161 969 1964.
THORNTON CLEVELEYS ARS
6, On air.
13, Christmas party at Frank Townend Centre.
20, 'Distress Beacons', G4EZM. No meetings on 27 December and 3 January. Jack, G4BFH, jack.duddington@btinternet.com

4 North East

GOOLE R & ES
8, Christmas dinner at The Black Swan, Asselby. Richard, G0GLZ, 01405 769894.
GREAT LUMLEY AR & ES
1, 8, On air.
15, Christmas Dinner, Chilton County Pub & Hotel, Fencehouses.
22, On air. Nancy, 0191 447 0036, 07990 760920, nancybone2001@yahoo.co.uk
GRIMSBY ARS
2, New licensing, Carl, G7EOG.
9, Party night. George, G4EBK, 01472 887720.
HALIFAX & DARS
7, Quiz, Tom, M0TKA, plus supper. Tom, M0TKA, 01484 715079.
HORNSEA ARC
8, 'Frequency Measuring and Standards', G3RMX.
15, RSGB presentation, Andy, G0VRM.
22, Christmas party. Next meeting 5 January. Richard, G4YTV, 01964 562498, g4ytv@aol.com
KEIGHLEY ARS
9, On air. 16, Christmas buffet. Kath, G0OSA, 01535 656155.
NORTH WAKEFIELD RC
2, Quiz with Pie and Peas, John, G0EVT.
9, On air.
16, Christmas party (music by NJW and the Morse Tappers). See club website.
SHEFFIELD ARC
6, Video. 13, VHF radio. 20, HF on air. No meeting on 27 December. Nick, G4FAL, 0114 255 2893.
TYNE & WEAR REPEATER GROUP
8, AGM. Nancy, G7UUR, 0191 477 0036, 07990 760920, nancybone2001@yahoo.co.uk
WAKEFIELD & DARS
7, 'Digimodes', John, M0JOR.
11, Visit National Coal Mine Museum to see Santa.
14, BBC, Dave, G4CLI.
21, Christmas party at Ossett Community Centre. No meeting on 28 December. Charles, M3ZYZ, 01226 726434, 07900 500775.

5 West Midlands

BROMSGROVE & DARC
10, Surplus equipment sale.
17, QRP matters. Chris, M0BQE, 01905 776869.
COVENTRY ARS
3, EchoLink or digital modes (TBC).
10, On air, Intermediate, Morse practice.
17, Christmas social (last meeting of year). John, G8SEQ, 024 7627 3190, johng8seq@ntlworld.com
GLOUCESTER AR & ES
6, 'Radio History - Acorn Valves'.
13, Christmas buffet. Tony, 01452 618930 (daytime).
KIDDERMINSTER & DARS
7, Christmas social evening. Tony, G1OZB, 01299 400172.
MALVERN HILLS RAC
9, AGM. Mike, G3TGD, 01905 830752.
SALOP ARS
9, Raynet.
16, Club Christmas dinner at Red Lion, Battlefields.
23, 'The Christmas spirit' with mince pies at club HQ. Fred, G3NSY, 01743 790457.
STRATFORD UPON AVON DRS
13, Surplus sale.
27, Festive natter night. Terry, G3MXH, 01789 294387.
TELFORD & DARS
1, Open evening, HF on air.
8, How to do it! A 'workshop practices' evening.
15, TDARS Annual Dinner.
22, Bring your own, informal Christmas social. Club closed next week. Mike, G3JKX, 01952 299677, mjstreetg3jkx@aol.com
THORNBURY & SOUTH GLOS ARC
1, HF radio comparisons for all to see and hear.
8, Video.
15, Quiz, John, M1EON, bun fight. Stan, G0RYM, stang@talkgas.net

6 North Wales

DRAGON ARC
6, Introduction to club FT-990.
20, Informal Christmas party. Les, MW0AQZ, 01407 760986.
MEIRION ARS
2, AGM. Martyn Jones, GW4XZJ.

7 South Wales

CHEPSTOW & DARS
7, Social evening to celebrate the for mation of the club. Steve, GW8ZOE, gw8zoe@btinternet.com
SWANSEA ARS
2, AGM.
16, Annual dinner at Clyne Golf Club. May, GW3OMN, mj33@btinternet.com

8 Northern Ireland

BANGOR & DARS
1, 'Wire Antennas', Harry, GI4JTF, and 'ARGONI Update', Mike, GI4XSF. Mike, GI4XSF, 028 4277 2383 [www.bdars.com]

9 London & Thames Valley

AYLESBURY VALE RS
8, Chairman's mince pie evening. Roger, G3MEH, 01442 826651, roger@g3meh.com
CRYSTAL PALACE R & EC
3, Christmas quiz, open forum and mince pies. Bob, G3OOU, 01737 552170 or Victor, G1PKS, 020 8653 2946.
DORKING & DRS
9, Annual dinner. John, G3AEZ, 01306 631236.
RADIO SOCIETY OF HARROW
3, Construction contest.
17, Christmas social. Jim, G0AOT, 01895 476933, g0aot@blueyonder.co.uk
SHEFFORD & DARS
2, '3B9C: DXpeditioning for the first time', John, G3WKL. 16, Mince pie evening. David, G8UOD, 01234 742757.
SILVERTHORN RC
3, HF beacons, Les, G0CIB.
17, Christmas party (TBC). Les, G0CIB, 07980 275081.
SOUTHGATE ARC
9, AGM. Mike, M0ASA, 020 8366 0698.
STEVENAGE & DARS
7, Modems.
14, Christmas dinner. info@sadars.org
SUTTON & CHEAM RS
9, Christmas junk sale (please note date). John, G0BWV, 020 8644 9945, info@scrs.org.uk
WHITTON ARG
3, On air.
10, Christmas dinner.
13, Advanced licence exam.
17, 24, On air. G6VZM, g6vzm@warg.info
WIMBLEDON & DARS
10, Christmas social. Jim, M0CON, 020 8874 7456.

10 South & South East

BASINGSTOKE ARC
6, Ladies' night.
27, ARDF 'foxhunt' turkey settler, Janet, G6JDP. Frank, M0AEU, barc@2lo.info
BURNHAM BEECHES RC
6, Christmas meal.
20, Video evening. Ian, M1FHU, 07767 342 169, bbrcinfo@btconnect.com
FAREHAM & DARS
1, On air.
8, How does it work? The linear acceler ator, Peter, G8TXK.
15, 10-min talks for Christmas and New Year.
22, Mince pies. No meeting next week. enquiries@fareham-darc.co.uk
HARWELL ARS
14, AGM. Angus, G0UGO, 01235 522858.

HORNDEAN & DARC
14, Christmas meal. Stuart, G0FYX, 023 9247 2846.
HORSHAM ARC
2, AGM. David, G4JHI, 01403 252202.
ITCHEN VALLEY RC
10, Christmas high jinks. Sheila, G0VNI, 023 8081 3827, sheila.williams@ivarc.org.uk
SOUTHDOWN ARS
6, Christmas dinner at Toby carvery. 9, G0DOF contest at 2100. John, G3DQY, 01424 424319, vaughdqy@aol.com
SWINDON & DARC
2, Digital photography techniques, Den, M0ACM.
16, Christmas dinner.
23, Inter-club fun quiz. Mike, M5CBS, 01793 826465.
TROWBRIDGE & DARC
1, Christmas social & presentation night. Ian, G0GRI, 01225 864698 (evenings / weekends).
WORTHING & DARC
1, See the club's new IC-7400 in action.
8, Christmas 'What Is It?' quiz.
15, Club awards and Christmas party. Roy, G4GPX, 01903 753893.

11 South West & Channel Islands

APPLEDORE & DARC
20, Christmas party. Brian, M0BRB, brian.jewell@ic24.net
BOURNEMOUTH RS
3, Chairman's pint.
17, 'My Other Hobby'. Chris, M5AGG, 01202 893126, www.brswebsite.freeserve.co.uk
CITY OF BRISTOL RSGB GROUP
13, Grand Christmas party. Martyn, G3RFX, 0117 973 6419.
CORNISH RAC
2, Christmas party. John, G4LJY, 01872 863849.
EXMOUTH ARC
8, Mast erection, Ray, M3RTB.
22, Christmas party. Mike, G1GZG, 01395 274172.
NORTH BRISTOL ARC
10, Christmas party (TBC). Dick, G0XAY, 01454 218362, Jon, 0117 941 4602.
PLYMOUTH RADIO CLUB
4, Rooster breakfast at Trago's, Liskeard.
21, Sherry and mince pie evening. Frank, G7LUL, frank@foxonezero.fsnet.co.uk
SOUTH BRISTOL ARC
1, Computer & Software Clinic, David G7PKJ.
8, Feeder cable sale, Len, G4RZY.
15, Christmas social, Muriel, G4YZR.
22, Celebrating a record year, Fred, G7LPP.
29, On air. Len, G4RZY, 01275 834282.
SOUTH DORSET RS
4, Skittles & buffet at Lugger Inn, Chickerell. Carol, 2E1RBH, 01305 820400, carolonfraggle@tiscali.co.uk
TORBAY ARS
17, Christmas party and inter-club quiz. Dave, G6FSP, g6fsp@tars.org.uk
WEST SOMERSET ARC
7, Quiz. Jean, G0SZO, 01984 633060.
WESTON-SUPER-MARE ARS
6, Construction night.
20, Christmas party. D Welch, G0ATD.
YEOVIL ARC
2, 'The CR-100 Receiver', G7LNJ.
9, 'Protective Multiple Earthing', M3HIR.
16, Christmas photo quiz, M0WOB.
23, Mince pies on the air.
30, Festive on air. Derek, M0WOB, 01935 414452, m0wob@tiscali.co.uk

12 East & East Anglia

BRAINTREE & DARS
6, On air.
20, Christmas social. John, M5AJB, 01787 460947.
CAMBRIDGE & DARC
10, Christmas party. Club closed till 7 January. Ian, G4AKD, 01954 782974.
CHELMSFORD ARS
7, Social evening (ticket only). Martyn, G1EFL, 01245 469008.
COLCHESTER RADIO AMATEURS
2, 'Beams', Alan, G0HKG.16, Inter-club convention, open to all. James, M0ZZO, 01255 242748.
FELIXSTOWE & DARS
13, Christmas noggin, video. Paul, G4YQC, paul.whiting@bt.com
HARWICH ARIG
8, AGM & Christmas party. Tony, G4EYE, 01255 886065.
HAVERING & DRC
1, Local history, Hornchurch aerodrome in WWII.
8, On air.
9, Christmas dinner, the Harvester, Abb's Cross Lane.
15, Construction contest?
22, Christmas refreshments. Oliver, G3TPJ, 01708 746677.
NORFOLK ARC
1, Talk by County Emergency Planning Officer and Raynet.
8, Tuition, construction, informal.
15, Christmas party. Reg, G0VDO, 01603 429269.

13 East Midlands

DERBY & DARS
7, Junk sale. 21, Christmas social (no meeting next week). Martin, G3SZJ, 01332 556875.
EAGLE RADIO GROUP
14, Review of 2004, plans for 2005, elec tion of officers. Terry, G0SWS, 07979 733640.
LEICESTERSHIRE REPEATER GROUP
6, On air, junk sale.
13, On air, video.
20, Sherry & mince pies (no meeting on 27th.) Geoff, G4AFJ, 01455 823344.
LOUGHBOROUGH & DARC
7, Thoughts for future build projects.
14, Fun quiz.
21, Pre-Christmas drinks, Black Swan, Shepshed. Chris, G1ETZ, 01509 504319.
MELTON MOWBRAY ARS
17, Mini-talks, trophy presentations, Christmas festivities. Phil, G4LWB, phil@croxtonkerr.fsnet.co.uk
SOUTH NORMANTON, ALFRETON & DARC
6, Christmas party, all family welcome.
13, Christmas on-foot 2m 'foxhunt', fish & chip supper.
20, Santa's junk sale.
27, On air. Mike, M0RMJ, 01949 876523, mike.jeffs@ntlworld.com, www.qsl.net/snadarc

Edward Cree, M3TBK, and father Dave, G3TBK, with their trophies.

LIKE FATHER, LIKE SON

Dave Cree, G3TBK, recently won the CDXC Penallt Trophy for his DX work on the low bands. Not to be outdone, his son Edward, M3TBK, was one of the winners of the Nevada Rodrigues Trophies, as a Foundation licensee making the most contacts with the 3B9C DXpedition. Congratulations to both! CDXC (Chiltern DX Club) - The UK DX Foundation (www.cdxc.org.uk) - is a national society affiliated to the RSGB.

KIND-HEARTED CLUB

The Cockenzie & Port Seton ARC's annual presentation of money raised for the British Heart Foundation took place on 1 October. Heather Gregory, Regional Organiser for the BHF accepted a cheque for £955.49 from club chairman Bob Glasgow, GM4UYZ. Over the past 11 years the club has raised £10,392 for the charity.

Bob writes: "It is great to see that something good can be put back into the community from our tremendous hobby. The hobby takes many knocks from people who are not prepared to do anything for it. So to all amateurs: don't knock the hobby, think positive and drive this hobby forward in a positive light!"

Left to right: Colin Smith, GM0CLN; Bob Glasgow, GM4UYZ; Heather Gregory of the British Heart Foundation, and Cambell Stevenson, MM0DXC..

JOTA IN DUNDEE

Jamboree on the Air (JOTA) is an annual event that allows around 500,000 members of the Scout movement world-wide to communicate using amateur radio. JOTA has taken place since 1958 and is held over the third full weekend in October every year.

Dundee JOTA station GB4DAS with four enthusiastic listeners.

Dundee Amateur Radio Club (www.dundee-amateur-radio.co.uk) president Tom Harrison and secretary Martin Higgins attended Douglaswood Scout Centre near Forfar to help 45 Scouts from various Dundee Scout troops participate in JOTA and obtain their Communications Badges.

NEWS FROM DOVER CLUB

The Dover Radio Club has recently completed another Foundation course. One of the students who passed was nine-year old Katie, from Hawkinge, near Folkestone. In the photograph Katie is seen with Tony, G4IMP; Lead Instructor David, G0DQI; and Cecil, G0OJZ. Katie has just received her callsign - M3XPO - and is eager to get on the air with a new dual-band hand-held bought for her by her parents.

The Dover Radio Club meets every Wednesday during term time at the Boys' Grammar School in Dover, and hosts a mixture of talks and demos as well as providing training courses. For more information visit www.darc.org.uk

Katie, M3XPO, with Tony, G4IMP; Lead Instructor David, G0DQI; and Cecil, G0OJZ.

BRATS GOING FOR RTTY GOLD

Bredhurst Radio And Transmitting Society (BRATS) made a serious club entry in the CQ WW RTTY contest in September. Their target was to make over 1000 RTTY contacts. The station was loaned by Neil, M0FSH, and consisted of a Yaesu FT-1000MP MkV, Acom linear amplifier, ATU, band-pass filter and Toshiba laptop running Writelog / MMTTY. The club provided a caravan and an operating / social tent. Being very cold on site the operating tent was heated by an oil-filled radiator. Operators included M0FSH, G7MMF, G4VSZ, 2E0HRX, M1WPB, 2E0RIO, 2E0AXN, G3VCP with G6YLW, 2E0SRA, G4VSZ, G7MMF, G3ZSU, 2E0RIO, G0LJD, 2E0AXN, M3MLR, M0DKT helping as loggers. The G0BRC/P team achieved their target of over 1000 contacts and a claimed score of over 1,000,000 points.

Guernsey DRRM Bob Beebe, GU4YOX, with Rt Hon Michael Portillo MP, at Gatwick Airport.

BUSY TIMES FOR GU DRRM

It has been a busy period recently for Guernsey Deputy RSGB Regional Manager Bob Beebe, GU4YOX. Bob ran an Intermediate course in Guernsey for four months and the two candidates passed with flying colours in September. Earlier in the year, Bob took part in the 3B9C DXpedition (see RadCom July 2004) and was on the planning team for the trip. He has been presenting the 3B9C story at many rallies and venues throughout the country. Bob also travelled to Bologna, where he presented the 3B9C story in Italian at their national convention. "It took place in Marconi's home at the very heart of where radio started, and I felt very honoured to be there", he said.

On the way to Italy, Bob happened to meet Michael Portillo at the airport. Bob took the opportunity to explain that amateur radio is very much alive and kicking and Mr Portillo was particularly interested to hear about Bob's DXpeditioning activities.

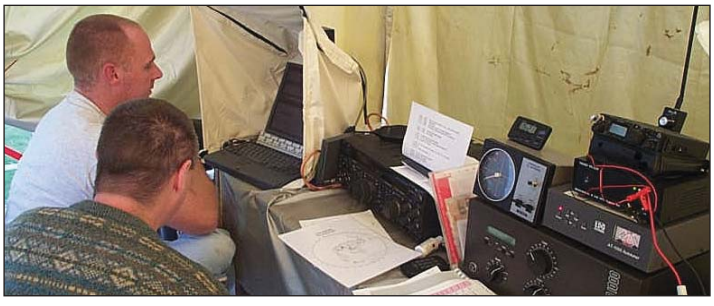
Bob was pleased to celebrate 30 years with the RSGB earlier this year. His busy schedule continued as he was the MC for the Gala Dinner at the RSGB HF Convention in October.

David, M1AEI, 'on the air' at Gemini.

FROM AMATEUR TO PROFESSIONAL RADIO

Torbay Amateur Radio Society (TARS) was recently given a guided tour of the studios of Gemini Radio. The studios are in a cage suspended from a steel framework, almost like a lift going nowhere, in order to stop any noise or vibration being transferred to the studio from the road or harbour. The window looks out across the harbour towards Brixham and the presenters get an excellent view across the bay.

The TARS members wrote a fictitious news item that was read by David, M1AEI. The recording was then edited as if it was a real news item for broadcasting, complete with jingles and music intros. All the mistakes were edited out by digital processing, unlike in the old days when cutting and splicing tape was the only way. The finished article sounded very professional. What surprised all the TARS members was the complete lack of turntables, CDs or records in the studio. All the music is stored digitally and produced from computers either locally or in Bristol.



NEWS IN BRIEF

♦ The Bromsgrove and District ARC will celebrates its 40th anniversary next year. Special activities will take place during the year, with a special event station in June. Any past members who would like to attend these events are asked to contact the secretary, Chris, M0BQE, on 01905 776869.

♦ The Midland Amateur Radio Society (MARS) is now running classes on demand for the Foundation, Intermediate and Advanced licences, as well as an amateur radio constructional class, from its HQ in central Birmingham. Exams take place at approved premises in Kings Heath. Full details from the MARS secretary, tel: 0121 742 1808 or e-mail M0WSN@aol.com

♦ James Mahoney, M0MHY, of the Rose and Crown Radio Club in Barnsley, writes to say that the club should shortly be holding an Intermediate course followed by another Foundation course for its younger members aged between 7 and 11.

♦ Congratulations to father Allan Davies, and son Philip Davies on passing the Intermediate exam on 21 September at Hoover ARC Merthyr Tydfil. Both are now studying for the full licence. Further details of courses in the Merthyr Tydfil area can be obtained from James Sneddon, MW0EQL, tel: 01685 350594 or 07789258025 or e-mail: MW0EQL@Lycos.co.uk

♦ Stirling & DARS has a new website at www.gm6nx.com The club meets every Thursday at 7.30pm at Bandeath Industrial Estate, Throsk, near Stirling. New members welcome. The club celebrates its 25th anniversary in 2005 and is hoping to take part in contests and special event stations throughout the year.

♦ On a recent trip to Jersey, Judith Brooks, G4IAQ, and Dave Brooks, G4IAR, operating with club callsign GJ4LAB/M and /P, took the opportunity to activate numerous navigational lights and lighthouses on the island. The activity was for members of Worked All Britain (WAB) and the British Amateur Radio Lighthouse Society (BARLS). Further information regarding these two organisations can be found by visiting www.worked-all-britain.co.uk or www.barls.fsnet.co.uk

THE AMATEUR RADIO OPERATING MANUAL
By Don Field

This 6th edition of the RSGB Amateur Radio Operating Manual has been completely updated and redesigned this edition reflects the huge changes in hobby in recent years.

The impact of licensing changes and the ubiquity of PCs and the Internet are just some of the challenges in the hobby in the 21st Century. To deal with these, RSGB Amateur Radio Operating Manual has a completely new look at the content and approach. For example, some of the traditional demarcations between HF and VHF and between the various operating modes have been overturned. New and comprehensive chapters can be found on topics such as PCs in the Shack and Operating Modes. There is also a huge amount of new material included, for example, the 136kHz and 5MHz allocations, new data modes and the WSJT software suite, APRS and VoIP. Much of the book has been heavily updated and there is a complete rewrite of the chapter on Satellites and Space communications.

If you are interested in amateur radio the RSGB Amateur Radio Operating Manual is the book you should not be without. This book provides a comprehensive guide to operating across the amateur radio spectrum. Packed with information and tips this book has long been a standard reference work found on the bookshelf of radio amateurs.

The RSGB Amateur Radio Operating Manual is a valuable addition to your bookshelf and the must have book for everyone interested in amateur radio. Size: 210mm x 297mm, 224 pages, ISBN 1-905086-00-8

£19.99 plus p&p Non Members Price

RSGB SHOP

RSGB
Lambda House
Cranborne Road
Potters Bar
Herts. EN6 3JE
Tel. 0870 904 7373
Fax. 0870 904 7374

ORDER 24 HOURS A DAY ON OUR WEBSITE
www.rsgb.org/shop

Radio Propagation: Principles & Practice
An essential read for anyone associated with radio communications.
112 pages, size: 174 x 240 mm, ISBN: 1-872309-97-6
£12.74 Members
£14.99 Non Members

HF Amateur Radio
The HF or short wave bands are one of the most interesting areas of amateur radio. 128 pages
Size: 240 x 175mm,
ISBN: 1-872309-75-5
£11.89 Members
£13.99 Non Members

Amateur Radio Mobile Handbook
The Amateur Radio Mobile Handbook covers all aspects of this popular part of the hobby. 128 pages
Size: 240 x 175mm,
ISBN: 1-872309-77-1
£11.89 Members
£13.99 Non Members

The Low Frequency Experimenter's Handbook
For amateurs and experimenters who have an interest in low power radio techniques below 200kHz. 146 pages
Size: 296 x 210 mm,
£14.24 Members
£18.99 Non Members

Yasme
This is the history of 3 travelers spanning the birth of YASME--the boat that carried young sailor Danny Weil on his first voyages beginning in 1954
320 pages.
ISBN: 0-87259-893-4
£16.99 Members
£19.99 Non Members

All prices plus p&p


YAESU
146.520
14.195.000
14200.000


WISHING YOU A MERRY CHRISTMAS
AND A HAPPY NEW YEAR FROM
YAESU
Choice of the World's top DX'ers
Visit us on the internet : www.yaesu.co.uk

Last call for the RCF charity raffle!

There's still time to enter the grand Radio Communications Foundation raffle, with some great prizes up for grabs .

In last month's *RadCom* you should have received five raffle tickets. There's still time - just - to enter the RCF Charity Raffle, as the closing date is not until Tuesday 30 November.

The raffle is to raise funds for the Radio Communications Foundation which, among other things, funds the GB4FUN mobile amateur radio demonstration vehicle. To find out more about the important work of the RCF, take a look at the website at www.commsfoundation.org

THREE STAR PRIZES

There are no fewer than three Star Prizes in the raffle: an Icom IC-703 transceiver, a Yaesu FT-817 transceiver and a Kenwood TM-D700 transceiver. In addition, there are many other great prizes, including RSGB books.

A brief description of the three star prizes, which were kindly donated by Icom (UK), Yaesu (UK), and Kenwood (UK), can be found on page 15 of the November RadCom. Note that the winners of the three Star Prizes must have an amateur radio licence before transmitting on the air.

HOW TO ENTER

The tickets cost £1 each. All you have to do to enter the raffle is to return the counterfoils clearly marked with your name, callsign (if applicable) and address, along with a cheque for the appropriate amount. Send the cheque and counterfoils to "Radio Communications Foundation Raffle", c/o RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE, to arrive not later than Tuesday 30 November.

If for some reason you did not receive any tickets with your November RadCom, don't worry! Tickets are available on-line at www.rsgb.org/shop or on request from RSGB HQ (tel: 0870 904 7373). You may buy any number of tickets you wish and additional tickets can also be purchased on-line or from RSGB HQ. You do not have to be an RSGB member to enter, and members can help the work of the RCF by selling raffle tickets to non-members of the Society.

The draw will take place at the Annual General Meeting of the Radio Society of Great Britain, to be held at the Institute of Chemistry, London, on 4 December and it is planned that the prizes will be delivered to the winners in good time before Christmas. A list of the winners will be published in the February *RadCom*. ♦

PHOTO: JANETTE ACKERLEY, G8TKQ

The RCF finances the GB4FUN mobile amateur radio demonstration vehicle. The Mayor of Lutterworth, Neil Ackerley, G3RIR, is seen here with GB4FUN project manager Carlos Eavis, G0AKI, when GB4FUN visited Lutterworth Carnival in August.

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 this issue. Contributions continue to be wanted: if you would like to help, please send your donation to RCF, c/o RSGB HQ.

RCF 'Big Hitters'
7th Epsom (Methodist) Scout Group
Northampton Radio Club
I Flemming, G3ZDQ
P J Banbury, G8BNK
A J Wilkinson, GW4PVU
H A Jarvis, RS27376

A E Keenan, 2E1GWJ
M J Hickford, 2E1MJH
J P Ketch, EI2GN
P Maher, EI3AV
G Lefebvre, F6AGS
Mrs M Burchmore, G0ARQ
S R Tricker, G0AZP
T M Sherriff, G0CHV
F Beesley, G0EYJ
A Harding, G0HVT
D J H Chalmers, G0IYE
S W Nichols, G0KYA
Rev F G Bligh, G0MTA
L J Goddard, G0MVB
G A Nattrass, G0OGD
M J Payne, G0OGU
W Hargreaves, G0PLG
A C Dennis, G0PZX
A A Robinson, G0RLW
B Hillman, G0UXO
D Wood, G0VIK
H Yearl, G0WKI
D A Winkley, G1DYC
G E King, G1HXN
D A Keable, G1ICA
C Rickerby, G1NWA
P V F Beardow, G1SHV
R Dowdeswell, G1WIW
D Goyder, G2SZ
J R Andrews, G3APU
R L Knight, G3DPW
C Tamkin, G3EWT
E A Matthews, G3FZW
B J Mase, G3GLA
F J Tooley, G3HPB
M J Griffin, G3IIN
A A Chisholm, G3INL
E W G Allen, G3JHP
A Parker, G3KAG
D Webber, G3LHJ
K A V Hurrell, G3NBC
T M George, G3NJG
D W Blackford, G3NPB
J M Jones, G3UED
S Tudor Jones, G3UMZ
W F M Hahn, G3UOL
L Hoskins, G3VN
J A Arscott, G3VSL
A Strong, G3WXI
R W S Hewett, G3XLU
Otley ARS, G3XNO
K R Brooks, G3XSJ
A F Hydes, G3XSV
J C Hill, G3XYH
S Hunt, G3YQ
S H Bassford, G3YZB
J Swanson, G4CBD
M W Viner, G4CJJ
K G Knight, G4DFZ
J P Ball, G4DPI
I A Welburn, G4EMA
C V Redmayne, G4GLW
D J Barrott, G4GVN
J M Butcher, G4GWJ
B D Clarke, G4ICB
M H Parker, G4IUF
V A Tomkins, G4KEE
D A Holmes, G4KIZ
Prof J M Nelson, G4KLA
B R Lawrence, G4LSL
R Greengrass, G4NRG
J E Vivian, G4PBN
R Goulden, G4VDY
S H Aust, G4YBI
G S C Crabbe, G4ZFN
P Tarmey, G6AZL
P C Bridges, G6DLJ
D M King, G6KWA
A J Florence, G7CDK
R D Mount, G7DOE
M G Phillips, G7EUK
E T Cloude, G7FAQ
B G Whittock, G7IYA
D Remnant, G7LXP
D M Gee, G7NAP
R A Hoggard, G7PUL
N Waterman, G7RZQ
D Robbins, G8DKF
M Richards, G8GVK
A N Malbon, G8MIA
N E Brown, G8NCK
R H Band, G8NUG
A F Jeffery, G8SIG
A Lambert, G8TNU
R A Clarke, G8UNO
A Crowther, GD0MWL
R McAteer, GI4MFM
H Warke, GI6GAQ
C Ashdown, GM0FHF
Mrs I B Birkett, GM0FTX
J P Power, GM0KTO
C Mackay, GM0KVD
J Y Merson, GM4MOA
J L Mac Donald, GM4XZN
D Brown, GM6JUA
M Glendinning, GM7GIS
P Glanville, GM7JFR
R McLennan, GM8BQY
B W Parsons, GW0KZK
T Higginson, GW3AHN
J Brace, GW3JBZ
D Harris, GW3NDR
W J Elton, GW3RIH
D S Daymond, GW7AVB
878 Squadron ATC, Highworth, M0ATC
Mrs L M Taylor, M0CMK
G K Hyde, M0CTP
J A Chaldecott, M0CZQ
R Chick, M0FAK
G Gash, M0GUD
J J T O'Toole, M0HEM
T E Thomas, M0VAB
K R Austen, M1AZO
K Broxup, M1BVQ
A C Moore, M1CFZ
E Roberts, M1EWH
J A Bradford, M3EPU
K W Buxey, M3KBX
R C Goody, M3OBO
B E Upton, M3RBU
J Child, M3WXE
P Smiley, MI0PJS
L Paschalis, MW3FJL
R J Ramm, RS171477
G Bowden, RS176339
D L Mann, RS181011
R Nottage, RS185003
J Fleet, RS187173
P Ford, RS191887
R Hall, RS193567
B Kehoe, RS193643/EI
A B Siddall, RS193708
A J W Rozelaar, RS4590
R I H Scotland, RS93531
A C F Smith, VK6CPV
J Troup, WA6JYU

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.

Reviewed by Chris Lorek, G4HCL

PO Box 400, Eastleigh SO53 4ZF.

E-mail: g4hcl@rsgb.org.uk

Four-way multi-band hand-held 'shoot-out'

Chris Lorek reviews and compares the very latest models of VHF/UHF handhelds from the 'big four' manufacturers.

	DJ-596	IC-E90	TH-F7	FT-60R
Freq Coverage TX	144-146	50-52	144-146	144-146
	430-440	144-146	430-440	430-440
		430-440		
Freq Coverage RX	136-174	0.495-1000	0.1-1300	108-520
	400-512			700-1000
TX Power Output	4.5(4)/0.5W	5/0.5W	5/0.5/0.05W	5/2/0.5W
Cross Band Split	Yes	No	Yes	No
Dual Receive	No	No	Yes	No
Simultaneous Cross Band	No	No	No	
Automatic Repeater Shift	No	Yes	Yes	
FM Narrow TX	Yes	Yes	Yes	Yes
FM Narrow RX	Yes	No	No	No
AM RX	No	Yes	Yes	Yes
WFM RX	No	Yes	Yes	No
SSB RX	No	No	Yes	No
Memory Channels	100	500	400	1000
Memory Scan	Yes	Yes	Yes	Yes
Smart Search	No	No	No	Yes
Priority Scan	Yes	Yes	Yes	Yes
Memory Tuning	No	No	No	Yes
Memory Banks	1	18	8	10
Alpha Tag	Yes	Yes	Yes	Yes
Search Bands	0	25	10	50
RX Audio Output	200mW	200mW	300mW	400mW
CTCSS Encode	Yes	Yes	Yes	Yes
CTCSS Decode	Yes	Yes	Yes	Yes
CTCSS Search	No	Yes	Yes	Yes
DCS Encode	Yes	Yes	Yes	Yes
DCS Decode	Yes	Yes	Yes	Yes
DCS Search	No	Yes	Yes	Yes
DTMF Encode	Yes	Yes	Yes	Yes
DTMF Memories	9	10	Yes	9
DTMF Decode	No	No	No	No
Auto Power Off	Yes	Yes	Yes	Yes
RX Battery Saver	Yes	Yes	Yes	Yes
Internal VOX	No	No	Yes	No
PC Cloning	No	Yes	Yes	No
Size	56x124x40	58x87x29	58x87x30	58x109x30
Weight (actual)	330g	295g	260g	370g
Typical Price	£124	£269	£249	£169

For many amateurs, their first transceiver is often a VHF / UHF handheld, and even if your interests primarily lie in base or portable HF operation, a 2m (145MHz) or 70cm (433MHz) handheld is often a subsequent purchase, if only for keeping in touch with the locals.

There are few areas of the UK that are not now within the coverage of a VHF or UHF repeater. Simplex channels on 2m are frequently used for club nets, one-to-one technical discussions, GB2RS news broadcasts and mobile rally talk-in. The 'magic band' of 6m (50 - 52MHz) has also seen an increase in FM activity together with a number of repeaters which are now serving various areas of the UK.

Plug the handheld into a simple outdoor collinear antenna and your horizons widen significantly in terms of communication range. On the move, add a magnetically-mounted mobile antenna and the handheld transforms into a mobile rig. Some external plug-in speaker-mics offer limited remote control in addition to the usual PTT (push-to-talk) and several hands-free units are also commercially available. You can even use some hand-helds in 'VOX' mode for complete hands-free communications.

Many readers are also avid listeners, and today's handhelds often feature wideband receive capabilities, sometimes even including HF and multimode CW / SSB / AM / FM / WFM reception. The performance on HF will not be that of a dedicated base HF rig, but could be useful for listening to HF broadcast stations while you're on holiday. Scanner enthusiasts are of course well catered for with a combined transceiver and scanner!

REVIEW MODELS

For this review, we've chosen a cross-section of the latest models of VHF / UHF handhelds from four different manufacturers. Rather than fully detail the facilities of each and take up a substantial part of this month's magazine, the accompanying comparison chart gives you an 'at a glance' list of the availability of various operating features of each

handheld. Each radio also has its own 'unique' features, which are individually detailed in the review text for each model.

As well as testing the radios from my home area, each accompanied me on at least several hundred miles of travel by either road, rail, air and sea around the UK and mainland Europe to provide a thorough trial.

ALINCO DJ-596

The DJ-596 is physically the largest of the handhelds tested here, although Alinco does also manufacture ultra-tiny handheld transceivers, like the low-power dual-band DJ-C7E which will be the subject of a forthcoming *RadCom* review. The DJ-596 is a multi-featured handheld that fits nicely in your hand, and is the only one of the four with a BNC socket fitted for easier connection of an external antenna. Just some of the unique features are a switchable mosquito repellent (!) which produces an ultrasonic tone in an effort to dispel the insects, and a 'theft alarm' which sounds when a jack plug, which would be typically be secured by cord to another object, is unplugged. As well as having switchable narrow FM deviation for 12.5kHz channel spacing as used on 2m, it also switches in a narrower filter on receive to give far better 12.5kHz adjacent channel signal rejection.

I found the radio generally easy to use on air, and the click-step rotary knob normally acted as a channel / frequency change. But each time I wanted to change the receive volume I needed to press the lower left 'Vol' button on the keyboard first, and then use the knob to change the level, which I found a bit of a pain. There was plenty of good-sounding audio from the internal speaker, and I appreciated the fact that I could leave the rig set to 'narrow' FM on 2m and 'normal' FM on 70cm, getting best-of-both-worlds performance on each band. When powered by its clip-on battery pack the transceiver is stated to give around 4.5W out on 2m and 4W on 70cm, but plugging in an external 13.8V DC supply in my car increased this by around a watt on each band. This was also useful in 'topping up' the battery, as

although the nickel-metal hydride type was physically larger than the other handheld batteries, with a capacity of 700mAh at 9.6V it had a slightly lower capacity than the others.

Even without reading the manual first I found the radio was intuitively easy to use, the keypad logos being self-explanatory and most functions were no more than a two-button push. For night-time use, the lamp facility illuminated not only the display but also the keypad, and the keys were large enough to use with gloved hands. Although the specifications say that the receiver covers just the 2m and 70cm amateur bands, in practice I found it covered a wider range of 136-174 and 400-512MHz. With a reasonable amount of audio from the internal speaker and good reports on my transmitted signal, the DJ-596 proved itself to be a very capable on-air performer.

ICOM IC-90E

Not only is the IC-90E a 2m / 70cm dual-bander, but it has the addition of 6m transceive capabilities. The supplied helical whip with its SMA connector has a short screw-off top section for 2m and 70cm use, which is replaced with a 'chunkier' top-loading section, as shown in the photo, for 6m use. It includes a wideband receiver as well, covering medium wave right up to 1000MHz with AM, FM and Wide FM modes. A 1300mAh Lithium-Ion rechargeable battery is supplied.

A top-panel rotary click-step knob is complemented by a pair of large up / down buttons on the fascia. In normal use, the rotary knob is the frequency / channel change control with the up / down buttons altering the receive volume, but these can be transposed if you like. Alternatively, whilst pressing one of the up / down buttons the rotary knob is temporarily converted into a volume control.

Despite the small speaker, the audio was quite readable although in noisy surroundings I found I had to hold it nearer to my ear. The translucent keypad buttons were raised and with a tactile feedback for easy use, and although I had no problems at all, some users with large fingers might find them a little challenging. The display was very readable with large digits and selectable green, orange or red backlighting, with the 'band' button scrolling between nine band ranges, three transceive and six general coverage receive each with their receive modes automatically switched. There's even a built-in Morse code readout of the operating frequency should you want to use this. The supplied belt clip is a 'swivel' type, one part clipping on your belt and the other screwed on to the transceiver, allowing a 'quick release' as well as a 360º swivel.

No fewer than 18 memory banks, each capable of storing up to 100 channels from the available 500 were available; great for sorting various amateur and wideband listening interests for monitoring and scanning. For many less-used preset operating modes a 'set' function is used, this also includes FM narrow or normal transmit deviation which I initially had to change constantly depending on whether I was using 2m or 70cm at the time; it's not possible to have this pre-stored as narrow TX deviation on 2m and normal TX deviation on 70cm. Eventually I just left this at normal and simply spoke a little further away from the microphone on 2m! The 1750Hz toneburst deviation in 'normal' deviation mode might possibly fail to open the occasional 2m repeater although I had no problems here, but if so I could of course have either switched to narrow or used CTCSS for access.

In use I had plenty of contacts on 2m and 70cm, but I also appreciated the 6m capability which gave me contacts on my travels around the UK which I'm sure I'd have otherwise missed. I even used the radio on a brief visit to Geneva to have a few interesting contacts, as well as listening to news from back home on the HF broadcast bands. An internal 10dB receive attenuator can be switched in to prevent overload from strong signals. For external power operation, not more than 11.5V must be plugged into the side connector, although Icom offers an optional CP-19 reducer for in-car or base operation. An optional remote control microphone can also be connected, which allows up / down frequency / channel control as well as band switch and two further buttons which act as band and VFO

/ Memory toggle or two other preset selections.

KENWOOD TH-F7E

At around the same size, weight, and price of the IC-90E, the TH-F7E offers 2m and 70cm transceive, together with simultaneous dual-frequency reception using two VFOs each with their own separate frequency display plus a wideband receiver on the lower 'B' VFO frequency display. As well as a set-top SMA terminated helical antenna, there's also an internal ferrite rod bar antenna, mounted horizontally at the base of the transceiver, which can be switched into operation for reception below 10.1MHz. It also offers CW, LSB and USB reception below 470MHz with tuning steps down to 33Hz, so you can even tune into amateurs and others on the HF bands. The receive coverage extends right up to 23cm (1300MHz) and in the UHF ranges a variable RIT (Receiver Incremental Tuning) facility of up to ±5kHz can be used to pull in slightly off-frequency signals.

Narrow and normal FM transmit deviation is selectable and stored on a band-by-band basis, and by using the dual VFOs you can even simultaneously monitor two frequencies on the same band. If dual-receive gets too complicated, the radio can be switched into single-band operation if you wish. A small four-way 'rocker' key together with a centre 'OK' push button is used to navigate through the various menus, the dot-matrix LCD providing text-based details of the menu settings. A small but high-capacity Lithium-Ion battery clips on to the rear panel.

A dual-concentric rotary knob is fitted to the top panel, the outer is a standard analogue receiver volume control, the inner knob is a click-step type for frequency / channel change and for changing various menu settings. A press of the small 'Sql' keypad button followed by a twist of the click-step knob adjusts the squelch level, a bar-graph of the level being shown on the display.

In use, I found my transmitted signals to be excellent, and although there was plenty of receive audio I'm tempted to say it did sound a little 'tinny' from the small but very robust internal speaker. Even so I found the radio very handy for wideband listening, again an internal switched attenuator was fitted (which operated on both VFO bands simultaneously) which helped signal readability on, say, 40m SSB in the presence of nearby broadcasters with an external wire plugged into the antenna connection. The AM filter is used for SSB / CW, which although a little wide I found that with careful tuning was quite reasonable for such a tiny do-everything transceiver / receiver.

For repeater use, as well as a quick 'input check' by pressing the 'Rev' keypad button, a longer press of this placed the set into an automatic simplex check mode, where the receiver periodically checked the input channel to see if a direct contact was possible. About the only thing I found a slight problem here was a constant weak internal spurii on 145.000 MHz (R0 input). For mobile or hand-free portable use with a headset, built-in VOX can be used, there's also an optional remote control mic available with programmable button functions.

As well as various scanning modes, the receiver also had a 'visual scan' where the display would show a bar-graph of signal levels at ±5 channel steps away from the tuned signal. If you were listening to the 'A' VFO (amateur bands) this also didn't interrupt the receiver audio, as it uses the 'B' VFO receiver for the searching. With all these memories to play with, you can 'clone' the contents to and from your PC with a suitable interface lead, there's even freely-downloadable Windows software for this available on the Kenwood website.

YAESU FT-60R

The most recent entrant to the foursome, having just become available, is the Yaesu FT-60 dual-band hand-held. With a 1400mAh 7.2V Metal-Hydride battery pack and a tough polycarbonate exterior, this is a chunkier hand-held than the Icom or Kenwood models and is the heaviest of the four; my first impression when holding it was that it's built to last. The top fascia volume and squelch controls are both analogue rotary types, with an inner click-step rotary knob for frequency and channel change.

With its 1000 memory channels the information can be cloned between radios but not to a PC, although usefully the memory channels also store your selected transmit power level as well as the other usual parameters. On each of the five memory bands there's also a quick-access 'home' channel memory, for you to store your favourite frequency on each. As well as usual memory and VFO scanning, a 'smart search' will search above and below your tuned frequency, automatically storing active frequencies into memory for you. A possibly handy facility is an optional 'PIN Code' on switch-on, where you need to enter a four-digit number before you can have access to the radio's functions. The only way to override this is to perform an 'all reset' on switch-on, which clears all the memories from prying eyes. For use in strong signal areas as an alternative to the usual noise squelch, an RF level squelch can be used, where only signals above a given S-meter reading will raise the squelch. There's also a selectable 'TX Battery saver' where the transmitter will switch to a lower transmit power level when received signals are at a high level, to make your battery last that bit longer.

Yaesu has also thought about emergency operation, as by pressing and holding the '4' key for a second, the radio will automatically go to your 'home' UHF channel, the radio's keypad and LCD will flash with an alarm tone sound from the speaker, and if you press the PTT on the radio you can interrupt the alarm temporarily to transmit on your UHF channel. An emergency automatic ID can also be used by another station transmitting a CTCSS tone pair to place your radio into either intermittent or continuous transmit mode, it'll even transmit your pre-stored callsign in Morse for you every 10 minutes. Other Yaesu-specific functions in the radio include their 'auto-range transponder system' which lets you know if another paired radio goes out of range, and the automatic transmission of a given DTMF tone on each PTT for the Vertex Standard 'wide coverage internet repeater enhancement system'.

Although the radio can easily be

used with many of these 'bells and whistles', I found it extremely easy to use on-air even without reading the instruction book – the automatic repeater shift and simple controls also found favour with one or two other amateurs who 'had a go' with the handheld. I found it was very immune to close-in 12.5kHz spaced signals, even though the receive bandwidth stayed unaltered between narrow and wide transmit deviation settings.

CONCLUSIONS

The measured laboratory test results are shown in the accompanying table. These have been measured using the normal *RadCom* VHF / UHF test methods (see recent review issues for details), but the important point to note is that all have been measured in exactly the same way so that direct performance comparisons can be made.

In examining the technical results and using the handhelds on air, I must say that, hand-on-heart, there's no clear 'winner'. Each radio has its own strengths, and different users will naturally have different needs and preferences. The good technical performance and reasonable price of the Yaesu is based on a 'hand' sized radio, whereas the operating versatility, ultra-wide receive coverage and small size yet long battery life of the Icom and Kenwood handhelds come at a higher price. Budget-minded users will probably be swayed by the more economic Alinco, which offers good performance and ease of use together with some unique 'bells and whistles' of its own. Conversely, none of the handhelds came out looking badly, for example by having a high price tag (or even a low price tag) but with poor technical or on-air performance.

Thus, ladies and gentlemen, in conclusion, I declare the four-way 'shoot-out' competition . . . a draw!

Our thanks go to Nevada, Icom (UK), Kenwood Electronics (UK), and Yaesu (UK), for the loan of the radios, and especially for all of these gladly agreeing for this competition to take place! ♦

	DJ-596 145MHz	DJ-596 433MHz	IC-E90 51MHz	IC-E90 145MHz	IC-E90 433MHz	TH-F7E 145MHz	TH-F7E 433MHz	FT-60R 145MHz	FT-60R 433MHz
RECEIVER									
Sensitivity (µV pd)	0.17	0.16	0.16	0.16	0.19	0.14	0.15	0.16	0.18
Squelch Level Min (µV pd)	0.11	0.1	0.12	0.12	0.14	0.1	0.17	0.07	0.08
Squelch Level Min (dB SINAD)	3.5	2.5	6.5	6.5	6.5	4.5	4.5	2	2
Squelch Level Max (µV pd)	0.2	0.18	0.57	0.58	0.59	0.83	1.24	0.38	0.46
Squelch Level Max (dB SINAD)	14	13	25	24	24	29	31	21	20
Adjacent Chan Rejection +12.5kHz (+10kHz 6m) (dB)	51.5/28.5	44.9/14.9	6.8	25.9	20	28.8	16.3	53.5	50.2
Adjacent Chan Rejection -12.5kHz (-10kHz 6m) (dB)	49.4/20.7	46.8/28.1	6	43.9	41.1	13.7	23.8	59.9	49.6
Adjacent Chan Rejection +25kHz (+20kHz 6m) (dB)	55.9	43.1	56.1	67.8	58.6	62	52.7	67.8	59.3
Adjacent Chan Rejection -25kHz (-20kHz 6m) (dB)	49.3	51.2	57.2	67.9	57.1	58.8	53.6	68.3	58.8
Blocking Rejection 100kHz spacing (dB)	67.1	65.7	71.4	78	70.3	73.6	66	80.4	71.8
Blocking Rejection 1MHz spacing (dB)	87.8	79.3	84.6	82.3	79.9	88	82.3	92.9	90
Blocking Rejection 10MHz spacing (dB)	91.3	83.8	94.1	86.9	84	89.4	83	93.7	93.6
Intermodulation Rejection 25kHz spacing (dB)	69	68.8	52.2	56.7	52	57.9	66.5	71.4	75
Intermodulation Rejection 50kHz spacing (dB)	66.9	64.2	51.6	56.5	52	57.3	63.1	69.9	72.5
Image Rejection 1st IF (dB)	80.8	56.1	Bl. Lim.	Bl. Lim	70.4	74	59.9	78.8	70.8
Image Rejection 2nd IF (dB)	Bl. Lim.	Bl. Lim.	74.1	75.8	72.7	Bl. Lim	>100	77.6	77.8
Image Rejection _ 1st IF (dB)	66.4	57.3	Bl. Lim	Bl. Lim	70.8	63.7	55.4	98.6	80.4
Maximum Audio Output (mW)	201	201	177	177	177	374	374	562	562
S Meter Level 1st indication (µV pd)	0.44	0.51	Sq Open	Sq Open	Sq Open	0.31	0.13	0.3	0.23
S Meter Level 1st indication (Relative Level dB)	0 dB ref	0 dB ref	n/a	n/a	n/a	0 dB ref	0 dB ref	0 dB ref	0 dB ref
S Meter Level 2nd indication (µV pd)	0.7	0.79	0.49	0.5	0.53	0.49	0.24	0.42	0.4
S Meter Level 2nd indication (Relative Level dB)	3.9	3.6	0 dB ref.	0 dB ref.	0 dB ref	4	4.8	5.1	4.7
S Meter Level 3rd indication (µV pd)	1.06	1.23	0.6	0.61	0.65	0.72	0.32	0.65	0.61
S Meter Level 3rd indication (Relative Level dB)	7.5	7.5	1.8	1.7	1.6	7.3	7.4	6.7	9.4
S Meter Level 4th indication (µV pd)	1.58	1.86	0.76	0.81	0.78	1.05	0.51	1.16	1.04
S Meter Level 4th indication (Relative Level dB)	11	11.1	3.8	4.2	3.3	10.6	11.4	11.8	12.9
S Meter Level 5th indication (µV pd)	2.69	3.55	0.89	0.96	0.92	1.66	0.87	1.88	1.95
S Meter Level 5th indication (Relative Level dB)	15.6	16.7	5.2	5.7	4.7	14.6	16	16	19.4
S Meter Level 6th indication (µV pd)	4.7	5.1	1.27	1.28	1.23	n/a	n/a	2.79	3.15
S Meter Level 6th indication (Relative Level dB)	20.4	19.8	8.3	8.2	7.2	n/a	n/a	19.4	22.6
S Meter Level 7th Indication (µV pd)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	4.37	4.68
S Meter Level 7th Indication (Relative Level dB)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	23.3	26
S Meter Level 8th Indication (µV pd)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	6.69	7.13
S Meter Level 8th Indication (Relative Level dB)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	27	29.7
TRANSMITTER									
Power High (W)	4.74	4.46	5.15	5.29	4.8	5.29	4.78	5.74	5.23
Power Mid (W)	n/a	n/a	n/a	n/a	n/a	n/a	0.56	2.38	2.16
Power Low (W)	1.08	0.85	0.49	0.62	0.41	0.53	0.08	0.45	0.41
Deviation 25kHz channel spacing (kHz)	4.78	4.71	4.7	4.71	4.36	4.23	4.41	4.79	5.27
Deviation 12.5kHz channel spacing (kHz)	2.22	2.19	2.6	2.37	2.22	2.19	2.27	2.38	2.57
1750Hz deviation 25kHz channel spacing (kHz)	3.72	3.62	3.16	3.22	2.99	3.62	3.49	3.35	3.3
1750Hz deviation 12.5kHz channel spacing (kHz)	1.61	1.65	1.56	1.56	1.51	1.82	1.84	1.65	1.66
2nd harmonic level (dBc)	-76	70	<-80	-64	<-80	-76	-78	-73	-80
3rd harmonic level (dBc)	-68	-69	<-80	<-80	<-80	<-80	-74	-63	-78
4th harmonic level (dBc)	<-80	-70	<-80	<-80	<-80	<-80	-68	-71	<-80
5th harmonic level (dBc)	<-80	<-80	<-80	<-80	<-80	<-80	<-80	<-80	<-80
6th harmonic level (dBc)	<-80	-<-80	<-80	-	<-80	-	<-80	-	
7th harmonic level (dBc)	<-80	-<-80	<-80	-	<-80	-	<-80	-	

By Steve Hartley, G0FUW

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

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

Father and son Ashley and Andrew Elias, and Mark Dean, three more Foundation successes for the Llanelli ARS. Thanks to club instructors, Roy, GW0KJZ; Ken, MW0CEE, and Ken, GW0RNK.

Newcomers' news

Steve Hartley answers some licensing questions and looks at the use of converted CB rigs for 10m.

The definition of the term "the Station" in the October 'Newcomers' news' column prompted some questions from John, G0MXN. He asked where this interpretation was documented. One place to look is on page 19 of the *Foundation Licence Now!* textbook.

John also asked for clarification on the issue of Maritime Mobile operation, particularly with respect to the Norfolk Broads, some of which are tidal. As I understand it, the dividing line between 'Mobile' operation on an Inland Waterway and 'Maritime Mobile' in tidal waters is blissfully vague. The only time I can see an Ofcom inspector getting overly excited about such matters is where a Station is causing "undue interference" (EMC problems) and as most vessels move around the Broads, this seems unlikely.

The final point raised was the old chestnut about when Mobile operation stops and operation from a Temporary Location begins. The Licence states that a 'Temporary Location' means a location, other than the Main Station Address, in the UK and in a fixed position and that 'Mobile' means located in the UK in any vehicle, as a pedestrian or on any Vessel in Inland Waters. Again, there is no clear divide and definitions relating to the power supply (mains or battery) and time spent stationary are nothing more than urban myths. As I see it, if you park your car on some high ground for a long distance contact you are still Mobile (in a vehicle) but if you parked your car in the same place for an eight-hour contest, then I would say you were at a Temporary Location (a fixed position). Please note that 'Static Mobile' and 'Pedestrian Portable' are not terms you will find anywhere in the Licence and Stations using them are technically in breach of their Licence!

OFFSHORE NETS?

Paul Clark, M3FPC, wrote a little while ago to ask if I knew of any amateur radio nets operating between offshore platforms. Paul has interested in amateur radio since around 1974: "My father was in the Royal Signals in the 1950s and I can well recall the (AR88?) receivers in a bank across one wall being utilised in Egypt and Libya at this time. When I got the listening bug at 15 or so I borrowed an Eddystone EC10 Mk2 which I thought was pretty amazing. I later bought a Yaesu FRG-7 and this performed very well. Over the next number of years I had plenty of time to indulge in all sorts of overseas audio adventures. I recall hearing an Antarctic base where the operator spent over half an hour in QSO with no pile-ups and no outside interference! I also recall a chap in the Azores sounding pretty worried as the weather was deteriorating. The next day it was on news reports that the islands had suffered a mini tornado and the church on the main island had been badly damaged. I always wondered what happened to that chap!"

Paul gained his M3 callsign last September and is enjoying being on the transmitting side of things. He had some problems finding a Foundation course but ended up at the Beacons at Frodsham in Cheshire and says the weekend course was very good. Paul now attends the St Leonard's ARS in Stafford, which he describes as "a smashing group egged on with loads of enthusiasm by the chairman Derek Southey, G0EYX."

He goes on, "I've developed an interest in working remote islands around Britain - delighted to work St Kilda the other day - but I'm also interested in offshore oil platforms. I wonder if you are aware of any regular net that may be undertaken in the North Sea or off our coast involving oil rigs or platforms?"

Well, readers, anyone got any information for Paul?

CONVERTING CB RIGS FOR 28MHz

A topic cropped up on the QRP Club e-mail group a few weeks back that I thought newcomers might be interested in. The question asked related to the conversion of CB radios for use on the 28MHz amateur band. This is seen by many as a cheap and effective way of getting on the air but there have been problems over the legality of owning 27MHz SSB CBs that cannot be licensed in this country.

Doug Raynes of Ofcom provided the following statement: "The Radiocommunications Agency (RA) had a scheme many years ago giving the opportunity for amateur licence holders to apply for an authority to possess unapproved CB equipment converted (or to be converted) to amateur bands. This was a concession to enable amateurs to legally possess such equipment and the RA ceased issuing these authorities in 1990. There was never any restriction on amateurs converting approved CB equipment. So if the set was originally a legal CB set, there is no restriction on sale and possession".

I think that sets the record straight but I must remind readers that the Foundation licence does not permit operation on 28MHz, you need to have an Intermediate or a Full licence to take advantage of this.

TRAINING SLIDESHOWS

The Chelmsford Amateur Radio Society is making available PowerPoint slides for the Advanced course. They can be downloaded from the 'Training' page on the CARS website. Slides for the Foundation and Intermediate courses are also available.

For further information about amateur radio courses in Chelmsford contact Clive Ward, M0SIX, tel: 01245 224577 or e-mail: training2004@g0mwt.org.uk

FURTHER READING

Foundation Licence Now! by Alan Betts, G0HIQ. Essential reading for all potential radio amateurs. Available from the RSGB Shop for £3.39 (members' price: non-members £3.99). ♦

WEB SEARCH

Foundation Licence Now!:	www.rsgb.org/shop
Chelmsford ARS (licensing training):	www.g0mwt.org.uk

Ian Poole, G3YWX

5 Meadway, Staines, Middx TW18 2PW.
E-mail: ian_poole@lineone.net

Why HF radio waves travel around the globe

In the first of a two-part series on HF propagation, Ian Poole takes a look at why radio waves are affected by the upper reaches of the atmosphere.

Signal propagation using the ionosphere is the key to long-distance communications on the HF bands. As a result, a good working knowledge of the concepts is essential for anyone wanting to make the most of the equipment they are using on these bands. Experienced DXers always have a good understanding of the different modes of propagation, and they are able to make the most of them – knowing what times and frequencies to use and what to expect. A good knowledge of propagation can make the difference between achieving ordinary or average results and making those interesting contacts with rare DX stations all around the globe.

Before looking at the effects of propagation, it is first necessary to take a look at the atmosphere and the ionosphere to understand more about the areas where these effects occur.

THE ATMOSPHERE

The atmosphere can be divided into a number of areas according to the different properties of each region. There are naturally a number of ways this can be done, but the most commonly used categories are those used by meteorologists, where changes in the temperature gradient define the boundaries for the different regions (see **Fig 1**). Closest to the earth's surface, extending to an altitude of around 10km is the *troposphere*. Above this at altitudes between 10 and 50km we find the *stratosphere*, which contains the famous ozone layer at a height of around 20km. Above the stratosphere is the *mesosphere*, extending from an altitude of 50 to 80km, and above this the *thermosphere*, where temperatures can reach anything up to 1200° Celsius.

For VHF and UHF communications the troposphere has an important effect on radio conditions. However, for MF and HF band communications, it is the ionosphere that is the most important. The ionosphere is a region that crosses over the boundaries of the meteorological layers and extends from around 60 up to 700km.

THE IONOSPHERE

The ionosphere receives its name because it is a region in the atmosphere where ions exist. Normally it might be expected that the molecules would exist as molecules. In fact the very high temperatures and low pressures mean that the gases exist in a monatomic form and they are known as *neutrals*. In fact at altitudes greater than about 150km, most of the gases exist in this form.

Radiation from the sun (mainly ultra-violet light) is sufficiently strong that when it strikes the gas molecules and neutrals, they split or ionise, to form an electron which is negatively charged and a positive ion (ie a molecule or neutral which is short of an electron).

Although it is the ions that give their name to the region it is the free electrons that actually affect the radio waves. Look at Fig 2. The number of electrons starts to rise at an altitude of around 30km. However, it is not until an altitude of approximately 60km is reached that the level rises sufficiently to have a significant effect on radio signals. In

Fig 1

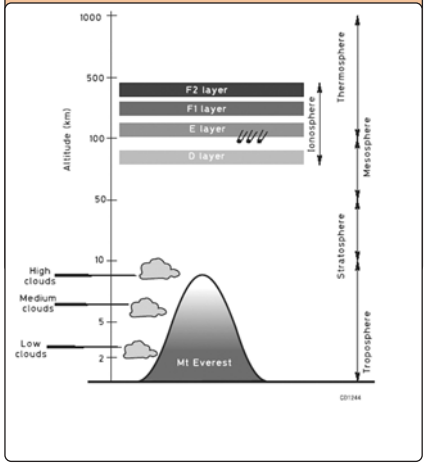


Fig 2

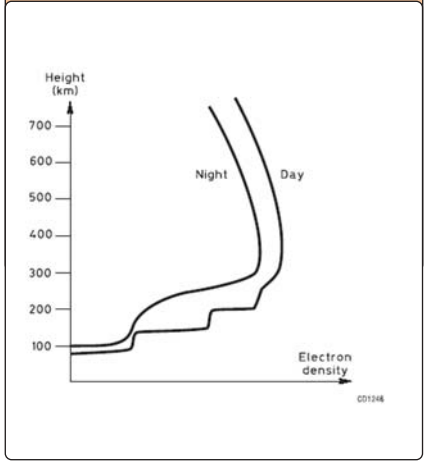


Fig 3

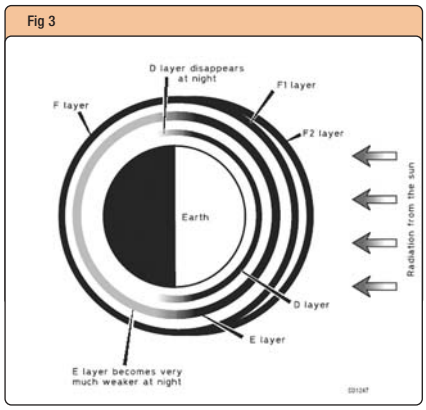


Fig 4

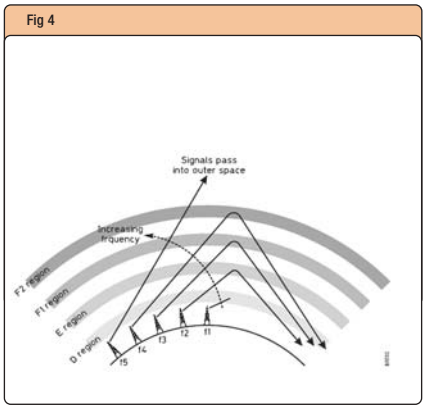


Fig 5

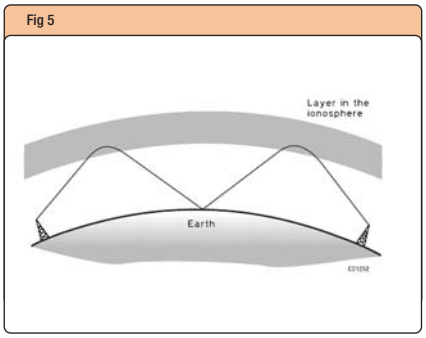


Fig 1: Regions of the atmosphere.

Fig 2: Typical electron distribution at day and night.

Fig 3: Simplified view of the layers of the ionosphere over the period of a day.

Fig 4: The effect of increasing frequency on the refraction of radio signals in the ionosphere.

Fig 5: Multiple reflections.

fact at higher altitudes (especially above about 150km) the level of ionisation rises significantly even though the gas density is much lower and there are less molecules or neutrals to ionise. The reason for this is that that the neutrals are much easier to ionise than molecules.

It is often considered that the ionosphere consists of a number of distinct layers. While this is convenient for many explanations, it is not accurate. There is ionisation in the whole of the ionosphere, but there are regions where there are peaks in the level of ionisation. These peaks are probably more correctly termed 'regions' than 'layers', as there is no marked change between one and the next. However, in order to refer to these different regions, they are given designations, namely D, E and F (there is actually also a C region, but the level of ionisation is so low that it has no effect on radio waves).

THE D REGION

Fig 3 shows a simplified view of the layers of the ionosphere over the period of 24 hours.

The D region is the lowest of the ionospheric regions that affect radio signals. It exists at altitudes between about 60 and 90km - but only during the day when radiation is received from the sun. Because the density of the air is relatively high at this altitude, the ions and electrons recombine relatively quickly and after dark - when no radiation is received - the electron levels fall rapidly and the region effectively disappears.

This region attenuates MF and HF signals that pass through it, the attenuation being inversely proportional to the square of the frequency, ie doubling the frequency reduces the level of attenuation by a factor of four. The level of attenuation is sufficiently high that that MF signals (eg medium wave and 1.8MHz or 'topband') are prevented from reaching the higher layers, except at night when the D region disappears.

The reason that the D region attenuates signals is that the signal passing through it causes the free electrons to vibrate. As the electrons vibrate they collide with the gas molecules. At each collision a small amount of energy is lost and this results in a reduction in the level of the signal. The amount of power lost, ie the attenuation, is proportional to the number of collisions, and in turn this is dependent upon a number of factors. One of the most obvious is the number of gas molecules that are present. The greater the number of gas molecules, the higher the number of collisions and hence the higher the attenuation. The level of ionisation is also very important. The third main factor is the frequency of the signal. As the frequency increases, the wavelength of the vibration shortens, and the number of collisions between the free electrons and gas molecules decreases. As a result signals lower in the frequency spectrum are attenuated far more than those which are higher in frequency. Even so, high frequency signals still suffer some reduction in signal strength.

THE E AND F REGIONS

Above the D region, two further ionised regions exist. The lower of these is the E region that is found at an altitude of between 100 and 125km. As the electrons and ions still recombine relatively quickly here, there is a large reduction in the level of ionisation after sunset. This means that the E region almost disappears at night although there is still a residual level of ionisation.

Above the E region is found the most important region for long-haul communications and it is known as the F region. During the day it often splits into two, the F1 and F2 regions, and at night they normally merge. The altitude of these regions varies considerably dependent upon a variety of factors including the time of day, season and the state of the solar cycle.

In summer, the F1 layer may be at around 300km with the F2 layer at about 400km or even higher. In winter these figures may be reduced to about 200km and 300km. Then at night the F layer is generally around 250 to 300km. But as these figures vary considerably they should only be taken as a very rough guide.

In the same way that the level of ionisation of the D and E layers falls at night, so it does for the F layer. However, the rate at which recombination takes place is much slower because the layer is higher and the air density is less. This means that the ionisation remains over night and it still affects radio signals.

The E and F regions act in a different way to the D region. Signals entering these regions again cause the electrons to vibrate, but rather than causing the signal to be attenuated, the chief effect is that the signal is refracted. As the signal travels into the region and sees an increasing electron density it is refracted away from the area of higher electron density. In the case of HF signals, this refraction is often sufficient to bend them back to earth. In effect it appears that the layer has reflected the signal, and often people talk about reflections caused by the ionosphere.

The degree of refraction is dependent upon the frequency and the angle of incidence. As the frequency increases, it is found that the amount of refraction decreases until a frequency is reached where the signals pass through the layer and on to the next. Eventually a point is reached where the signal passes through all the layers and on into outer space, as shown in Fig 4.

HOPS, REFLECTIONS AND LOSSES

It is possible to reach considerable distances when using the ionosphere to refract or 'reflect' radio signals. Using simple geometry it is possible to calculate that the maximum distance that can be achieved is around 2000km for the E region and 4000km for the F region.

This does not explain how signals can travel over much greater distances, and even reach the other side of the globe, though. This results from the signal undergoing several reflections. Having returned to earth from the ionosphere, the earth's surface acts a reflector and returns the signal back up to the ionosphere where it is again reflected back to earth, as shown in Fig 5. In this way a signal can travel right around the world.

When signals are refracted by the ionosphere there is a number of losses that must be taken into account. The D region attenuates signals each time they pass through it. For a single 'hop' the signal will pass through it twice, and four times for a double 'hop'. This is one of the major losses incurred, but fortunately it falls rapidly with increasing frequency. This is why signals on the 28MHz band can be very much stronger than, for example, those on 14MHz when both bands are 'open'.

Loss is also incurred when the signal is reflected by the earth's surface. The sea, or marshy and wet areas are the best, and dry arid areas such as dessert or urban areas are the worst and reflecting signals. Accordingly it is best to choose frequencies that are likely to provide signal paths with the minimum number of hops. This usually entails using higher frequencies, provided that that band is open for communications via the ionosphere.

FURTHER READING

Further information on this subject can be gained from the RSGB book *Radio Propagation – Principles and Practice* by Ian Poole. It is available from the RSGB Shop at £12.74 (members price: non-members £14.99). ♦

WEB SEARCH

Radio Propagation – Principles and Practice: www.rsgb.org/shop
Ian Poole's radio and electronics website: www.radio-electronics.com
Ian Poole's business website: www.adrio-communicatons.com

ALINCO Now

Quality • Inno

DR-135E

Full Featured 50W 144MHz Mobile

Now down £67

- TX: 144 - 146MHz
- 50/10/5 Watts power settings
- 100 memory channels
- Frequency Steps: 5, 8.33, 10, 12.5, 15, 20, 25, 30, 50kHz
- Front panel GPS input for APRS
- Rear panel DSUB9 computer connection
- Ignition key on/off feature
- CTCSS and DCS encode + decode
- Super-wide 7 character display
- Wide/narrow (25/12½kHz) FM modes
- Theft alarm feature
- Ten auto dial memories
- Size: 142 x 40 x 174mm

- ***EJ-41U*** Optional internal TNC operates 1200, 9600bps ***£69.95***
- ***EJ-40U*** Optional Digital Voice Board ***£79.95***

£169.00

Now down £100

- TX - all HF + 6mtr
- 100W output on HF & 6mtrs
- RX - general coverage 150kHz - 30-MHz, 50MHz - 54MHz
- SSB, CW, AM, FM and digital modes
- 100 memories
- Detachable faceplate and remote mounting kit available
- Speech processor standard
- Narrow filters fitted as standard

ALINCO DX-70TH

Fully Featured Portable HF+6mtr Transceiver

The DX-70TH packs a hefty 100W punch on all Ham bands 1.8 - 50MHz. It is backed by a superb receiver with narrow filters fitted as standard. Make no mistake - this is a real DX operators transceiver ideal for use at home, or for that portable DXpedition.

£599.00

EDX-2

Auto Tuner

An automatic antenna tuner that matches a transceiver to a random wire antenna of over 3m in length (3.5MHz and above), or over 12m in length (1.6MHz and above). It comes installed with 5m of coaxial and control cables for instant operation with Alinco DX-70.

- Auto tuner
- 3.5MHz-30MHz (with over 3 metre element)
- 200W PEP power handling
- Power for tuning = 7-20W
- 13.8V DC ±10% operating voltage

£289.00

Now down £100

- 100W HF transceiver
- General coverage RX 500kHz - 30MHz
- All modes, FM, LSB, USB, CW & AM
- 100 memory channels
- Built in speech compressor
- Front mounted speaker, loud clear audio
- Optional keyer

ALINCO DX-77E HF Transceiver 'GREAT VALUE'

The DX-77 is a design achievement that puts a HF desktop transceiver within your reach! And this is no 'bare bones' radio, nor is it a converted 'channelised' adaptation. The DX-77 was designed from the beginning to be a quality Amateur Radio, full of features to enhance its performance and your enjoyment.

£499.00

HFM-1

A stainless steel, heavy duty HF mobile antenna complete with spring base. Covers 3.5 to 30MHz when used with the Alinco EDX-2 Automatic Tuner. Alternatively it may be base matched with any type of tuner for mono band or multi band use. Power handling with the EDX-2 is 150W.

- Covers: 3.5 - 30MHz *when used with EDX-2 auto ATU)*
- Length: 2.7 metres

£59.95

VISIT OUR WEBSITE - SEE THE FULL RANGE!

www.alinco.co.uk

also available from our dealers in the UK or direct

unbeatable value!

v a t i o n • S t y l e

DJ-193E

GREAT VALUE 2 mtr Handheld

Now down £30

- 2m (144-146MHz)
- Up to 5W VHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted
- 40 memory channels 1 call channel
- Alphanumeric display
- DCS, Tone burst and DTMF
- 13.8V DC direct input facility with battery charge feature
- THEFT ALARM! Emits a tone when disconnected from power
- S Meter
- Audio dialler
- Call cloning facility
- Computer programmable 3rd party software
- Experimental insect repellent feature!

£109.00

DJ-X2000 Intelligent Scanning Receiver

- Covers 100kHz - 2,149.99MHz
- 2000 channel memory
- AM/NFM/WFM/LSB/USB/CW
- 'Flashtune' reads the frequency of a nearby transmitter and instantly takes your receiver to it
- Record up to 160 secs direct from receiver or via the built in mic
- Descrambler
- Channel scope
- Bug detector
- CTCSS decoder/Search
- Frequency counter
- Field strength meter
- S Meter
- PC programmable
- Includes FREE:
  - Multi voltage 110V-240VAC Mains Charger for easy use anywhere in the world
  - 4.8VDC 700mAH NiCad battery pack
  - Belt clip • Carrying strap
  - Flexible low profile antenna

Now down £100

£399.00

DJ-C7E

NEW

- Dual Band Transceiver
- Air Band Receiver
- Scanner
- FM Radio

The dual-band transceiver, airband receiver, scanner and FM radio fits comfortably in your shirt pocket! Giving superb dual-band performance in a handy package, this radio just feels 'right' from the moment you first hold it.

- 2m FM, 70cm FM
- Broadcast FM receive
- Optional extended RX coverage: Airband: 108 - 136 MHz (inc new 8.33kHz steps) VHF: 136.000 - 173.995MHz UHF: 380.000 - 511.995MHz FM and AM: on all extended frequencies
- Frequency steps: 5/6.25/8.33/10/12.5/15/20/25/30/50/100/125/200KHz
- Power out: 300mW (battery) 500mW (6V DC)
- 200 memories
- Modes: VFO / Memory / Scan
- Full CTCSS encode and decode
- Four different tone bursts for European operation
- SMA antenna socket, rubber duck antenna supplied
- Size: 56 x 96 x 14.5 mm
- Only 102g including battery and antenna

Supplied Accessories

- Lithium-ion Battery Pack EBP-58N (3.7V 600mAh)
- Mains (100-240V) Fast Charger
- Helical Antenna
- Antenna Cap

Optional Accessories

EMS-60 speaker microphone	***£19.00***
EME-24 earphone microphone	***£17.95***
EME-18 earphone	***£9.95***
EBP-58N Li-Ion battery pack	***£24.00***
EDC-126 battery charger	***£14.00***
EDH-32 cigarette lighter cable	***£6.50***
ESC-38 soft case	***£14.95***

£149.00

DJ-195E

2 mtr Handheld with Keypad

- New 2 metre (144-146MHz) handheld
- Easy to use, direct entry keypad
- Wide RX possible (typical 135-173MHz)
- Up to 5 Watts output (0.8W low power)
- 40 memory channels + 1 call channel
- Large range of accessories available

Now down £40

£119.00

DJ-X10E

Advanced Scanning Receiver

- Receives: 100kHz - 2000MHz
- Multi mode reception AM - WFM - NFM - SSB - CW
- 1200 memory channels
- Channel scope spectrum analyser - allows monitoring of 40 channels
- Advanced scanning features: Programmed scan (up to 10 groups) Programmed memory scan
  - Any memory scan
  - Mode scan
  - VFO search
  - Dual VFO search
  - Band encursion scan
  - Priority scan
  - Any channel ship scan
- Battery save facility
- Facilities for cloning another set
- Built-in 24 hour clock
- Switchable attenuator

Now down £50

£249.00

DJ-596 E Dual Bander

Now down £50

- 100 memory channels, any mix of VHF/UHF
- Alphanumeric channel labels
- Direct freq input from keypad
- Large backlit display
- CTCSS, DCS encode + decode
- DTMF tones and autodial memories
- Tone bursts
- Three scan modes
- Theft Alarm feature
- Wide and narrow FM TX/RX
- 12VDC direct input (5W output)
- High-power NiMH battery (4.5w output VHF/4w UHF)
- Busy Channel Lock Out
- Mosquito Repelling feature *(experimental)*
- External Terminal Control
- Wire cloning capability
- Optional digital mode *(where permitted)*

£149.00

DJ-X3

Ultra Modern Scanning Receiver

with 8.33kHz for airband

- 100kHz - 1300MHz
- AM/FM/WFM
- 700 memory channels
- Steps: 5/6.5/8.33/10/12.5/ 15/20/25/ 30/50/100kHz
- Auto descrambler
- Bug detector
- Stereo FM (with headphones)
- Attenuator
- SMA Antenna
- Battery saver cct
- Size: 56w x 102h x 23d mm
- Weight: 14.5g (without batteries)
- Supplied c/w: 3 AA dry cell battery case, carrying strap

Optional extras

- Ni-Mh battery pack
- Drop in Hob mains charger
- Earphone

£129.95

DJ-V5E

Compact Dual Bander

- New dual band handy transceiver
- 5W/1W/0.5W output power
- Super wide receive (76-999MHz)
- Includes wide FM mode
- CTCSS Encode+decode, DTMF squelch and 4 different European Tone Bursts
- 200 memory channels + 2 call channels
- Alphanumeric Display, up to 6 characters
- Autodial memories
- Up to 6 character alpha-tagging
- 4 scan modes, 5 programmable scan banks
- Input voltage display with over voltage warning
- Automatic high temperature protection feature

Now down £37

£189.00

VISIT: www.nevada.co.uk

ORDER HOTLINE: 023 9231 3090

Unit 1 • Fitzherbert Spur • Farlington • Portsmouth • PO6 1TT • fax: 023 9231 3091

UK Distributors of Alinco Products

nevada®

OLSON IS THE MARKET LEADER FOR HIGH QUALITY MAINS DISTRIBUTION PANELS

POWER FOR THE OFFICE

A WIDE RANGE OF PRODUCTS AVAILABLE WITH RCD, MCB AND RF FILTER PROTECTION

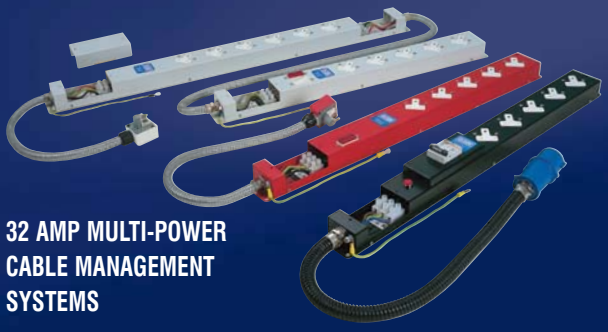
INTERNATIONAL RANGE

For 19" rackmounting systems, designed for vertical or horizontal use. Available with European, American, Australian and IEC sockets.

POWER FOR 19" RACKMOUNT SYSTEMS

FLOOR BOXES

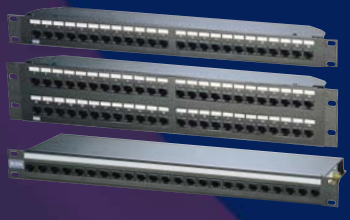
INDUSTRIAL WITH RCD PROTECTION



32 AMP MULTI-POWER CABLE MANAGEMENT SYSTEMS

19" CABLE TIDIES

DATA PATCH PANELS



19" VENTILATION PANELS

19" FAN TRAYS

NEW CATALOGUE!

SALESLINE 020 8905 7273

24 HOUR DELIVERY SERVICE

VISA MasterCard SWITCH

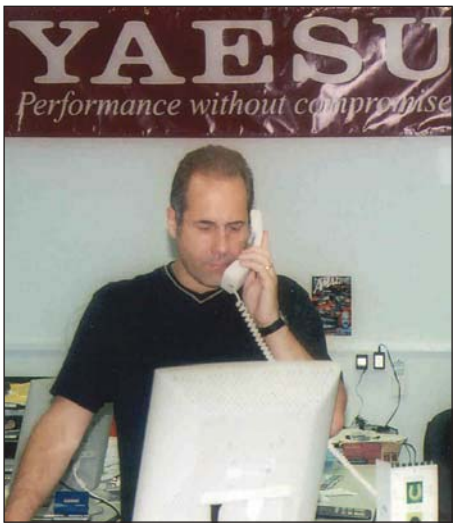
VISA, MASTERCARD & SWITCH CARDS ACCEPTED

OLSON ELECTRONICS LIMITED

OLSON HOUSE, 490 HONEYPOT LANE
STANMORE, MIDDLESEX HA7 1JX
TEL: 020 8905 7273 FAX: 020 8952 1232
E-MAIL: sales@olson.co.uk WEBSITE: www.olson.co.uk

ML&S Open Day

An 'Open Day' is being held at the new ML&S store in Chertsey, Surrey on 4 December. We preview what you will find there.



Martin attends to a customer.

The well-known amateur radio dealers Martin Lynch & Sons have moved from Ealing, West London, and opened a much larger store, devoted entirely to amateur radio, in Chertsey, Surrey. The store opened back in August and Martin is now holding a 'super-sale' open day at the new premises on 4 December. Representatives of Yaesu, Kenwood and Icom will be there to show off their latest products, together with the RSGB, PW Publishing, RAIBC and other club stalls.

But that's not all: Martin and the 'Lynch mob' have organised a car boot sale in the rear car park, along with a hog roast, sponsored by Yaesu, Kenwood and Icom. The car boot sale is operated on a 'first come, first served' basis, so if you want to sell any second-hand equipment - as well as look at all the latest new gear - you'd better get there early!

One of the great advantages of the new premises over the previous location is the ease of parking. Immediately outside the store is a private car park which, combined with the back yard, allows free customer parking for up to 70 cars. There are also several public car-parks within walking distance.

The new air-conditioned store measures a massive 3000 sq ft, with an additional 1000 sq ft area upstairs that is so far unused. In the showroom, row upon row of gleaming new equipment is available for use. There are three dedicated areas for Yaesu, Kenwood and Icom, plus additional racks featuring other manufacturers such as Linear Amp UK, MyDEL, Miracle Products, MFJ, Diamond, SGC, bhi and many others. The roof of the building is now festooned with aerials for all the HF bands, VHF and UHF, so you can try out any of the transceivers in a 'real life' on-the-air situation.

NEW PRODUCTS

In addition to the familiar and not-so-familiar equipment from the manufacturers listed above, Martin is announcing at least three new important product lines at the open day. For years, Barenco have appeared at all the major rallies selling their extensive range of antenna hardware. For the first time you can now buy Barenco products over the counter in the ML&S showroom. Tigertronics (www.tigertronics.com) are best known for their excellent Signalink Sound card interface, for which ML&S have sponsored the control software since day one. The full range is now available from stock, including the very popular SL-1 Signalink. Finally, New Communications Solutions (NCS - www.ncsradio.com) are a new US manufacturer producing very high quality 'multi-switcher' rig controllers allowing operators with more than one rig in their shack to use just one microphone, keyer and TNC.

The Martin Lynch & Sons Open Day takes place between 9.30am and 5.00pm on Saturday 4 December at ML&S, Outline House, 73 Guildford Street, Chertsey, Surrey KT16 9AS. Entrance is free. The store is located just over a mile from junction 11 of the M25. Alternatively, exit at junction 13 (Staines exit) and follow the signs to Thorpe Park then Chertsey town centre. By train, Chertsey railway station is an 800-yard walk along Guildford Street. For more details see www.HamRadio.co.uk or call 0845 2300 599. ♦

Part of the showroom. Since this photo was taken, the shelving has been replaced with purpose-built displays for 'the big three' manufacturers.

'Antennas 'R' us'? Customers make their choice.

LINEAR AMP UK

Field Head
Leconfield Road, Leconfield,
Beverley, E. Yorkshire,
England HU17 7LU

Phone / Fax +44 (0)1964 550921
e-mail sales@linamp.co.uk
web www.linamp.co.uk

BALANCED SUPERTUNER

The new Balanced Supertuner has been designed for maximum efficiency and optimum Q on each band. It will handle any amplifier with an output of up to 1500W RMS CW. The new ATU is up to 3dB more efficient than a conventional tuner using a 4:1 balun. The Supertuner, though intended for balanced feed line, can also tune a long wire and coax.

You can feed an LF aerial on the 30 – 160m terminals and feed an HF aerial on the 10 – 20m terminals and experience the ease of tuning with this new ATU and the speed that you can change bands.

Without SWR/power meter £345

With SWR/power meter £395

RANGER 811H

Britains best selling small amplifier gives 800W on all bands 10 –160m using 4 x 811A valves. The Ranger uses many components which are rated far greater than its modest O/P.

Price £945

RANGER 811K

Do you fancy building your own amplifier without having to tramp around flea-markets looking for parts? The RANGER is now available in kit form – everything you need in one box.

Price £695

Diode Commuications

UK Importers and stockist of Ecoflex™ Coaxial Cables and Connectors

Aircell™7 This 7mm diam ultra flexible coax is your replacement for RG213/UR67 With a double screen, loss is actually lower at VHF&UHF than RG213/UR67

Ecoflex™10 This 10.3mm diam coax is the coax to use if you want a good all round low loss performance from HF to UHF. ULTRAFLEXIBLE and highly durable due to the foil having a plastic backing to make it virtually indistructable by normal bending or flexing this includes the loops on rotator cages and on crank-up towers.

Ecoflex™15 This ½Inch(15mm) diameter coax is the best ULTRA FLEXIBLE coax. This cable is SO flexible it even goes around the ROTATOR cage on the tower like RG213!!! No kidding with a better loss figure than that of FSJ4-50 and close to that of LDF4-50 Shouldn't you make Ecoflex™15 your next cable choice

For more infomation and prices on the Ecoflex™ Range, and other radio items go to the Diode Communications website

www.diodecomms.co.uk

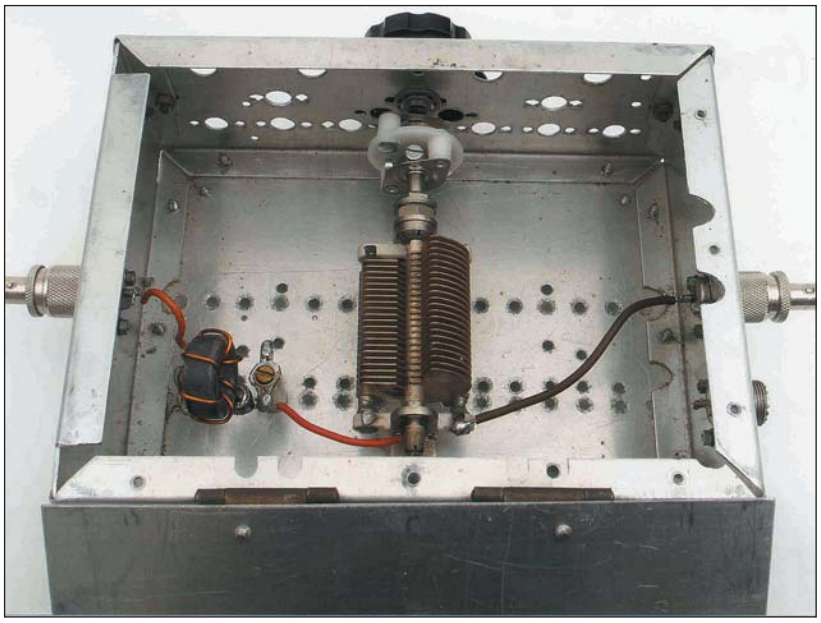
contact us via email: - sales@diodecomms.co.uk or Tel/Fax:- 01226 758885

Pat Hawker, G3VA

37 Dovercourt Road, Dulwich,
London SE22 8SS.

TT

G3VA takes a look at short doublets, and discusses the effects of ground on inverted-Vs. He also considers the use of ATUs, both in balanced and unbalanced form.



Practical implementation of G3IPV's QRP ATU shown in Fig 3.

SHORT DOUBLETS, INVERTED-Vs & GROUND LOSSES

The July 'TT' item 'Short-Span HF Antennas & the C-Pole Vertical', has brought comments from David Reynolds, G3ZPF, Dave Gordon-Smith, G3UUR, and Norman Bonnett, DL6NEE/G0NNA.

DL6NEE/G0NNA believes there is an unwarranted assumption that the doublet antenna is used mainly as an electrically-short 'wire' or 'LF' antenna. He writes: "I have used a doublet for many years as a rotary antenna on the HF bands, and cut as a 14MHz half-wave dipole. The antenna has a metal rod element centre-fed with 450Ω open-wire feeder. This is fed via a modified G5RV tuner. The element comprises aluminium tubing of 1mm wall-thickness, easily obtained here in Germany from local builders' supermarkets.

"This antenna has the advantage that it covers all HF bands from 14 to 28MHz without the inherent losses (2-3dB) of traps, providing a modest gain compared with a dipole on bands above 14MHz. It can also be used as a top-loaded vertical with some directivity on 10MHz and 7MHz. [It could presumably also be used with some loss of efficiency as an electrically-short doublet on 10MHz and even 7MHz – G3VA].

"I use this as my normal 'flat band' antenna for my weekly /P trips to the local hills. With its simple construction, the antenna can be erected in 45 minutes. In adverse weather it can be lowered within three minutes and packed away in a further 20. Rotation is with the un-patented 'Arm-strong' system. It works, has given me 3B9C on four bands, including a QRP contact. It is simple to construct and works first time – 'plug and play' in practice."

G3ZPF reports using an 84ft 'top' in an inverted-V multi-band doublet antenna with an apex only 25ft high: "Yet I managed 5-band DXCC on it... I'm not saying it was easy, mind. The height (not the length) was the big problem on 3.5MHz. The feed-lines were about 18ft long. I was lucky enough to have the shack in an upstairs room immediately below the gable end of the house. After having settled on an 84ft top. I subsequently saw references to antennas of similar length for all-band use, so maybe 84ft is some kind of 'magic' length... Alternatively, it may just be a convenient length for average gardens..."

A span of 84ft can be used successfully on 1.8MHz as G3UUR testifies: "I think you may be interested in the results of my experiments on short doublets over the past four decades. On and off, I've been using multi-band doublets with legs as short as 42ft on 160m. I've moved around a bit in that time and sometimes a multi-band doublet has not been the most convenient antenna for me to use, but it is certainly my preferred antenna. The leg length of 42ft performs very well on 80m, since it is about two-thirds of a full-size half-wave dipole but, on 160m, it is about the shortest length I would want to use for reasonable results.

"The performance you get from such a short doublet on 160m depends greatly on the height of the antenna and the dielectric constant and conductivity of the ground beneath it. Lowering the ends of a short horizontal doublet to form an inverted-V doublet seriously degrades the performance on 160m. My observations are that this can degrade the performance by 6dB or more, if the ends are lowered from about 30ft to 6ft, but this is very much dependent on the parameters of the ground beneath it. When the original work on inverted-V antennas was done by American amateurs, the height of the ends of their antenna was considerably greater than what we typically use as the centre height in this country. They wouldn't have noticed the increased dielectric loss that we get from having the voltage point so close to ground. On 80m, where the voltage at the ends is not so great, because the antenna is longer in terms of a half-wavelength, I think the loss is only about 3dB or so.

"Most amateurs don't realise that horizontal antennas induce so much loss in the ground when they are relatively low. It's not just antennas fed against ground that suffer from ground loss. The horizontal section of an inverted-L can have significant induced ground loss if it is low in terms of the wavelength in use. Just look at the feed impedance of a horizontal half-wave dipole over real ground, and you can get a feel for the sort of losses that can be induced in the horizontal elements of inverted-V antennas. Mind you, it might take a bit of digging in the lit-

FIG 1 © RADCOM 293

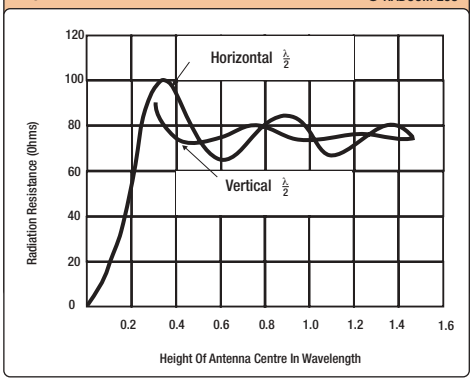


Fig 1
Variation of the radiation resistance of a theoretical half-wave dipole with height above a perfectly-conducting earth.

FIG 2 © RADCOM 294

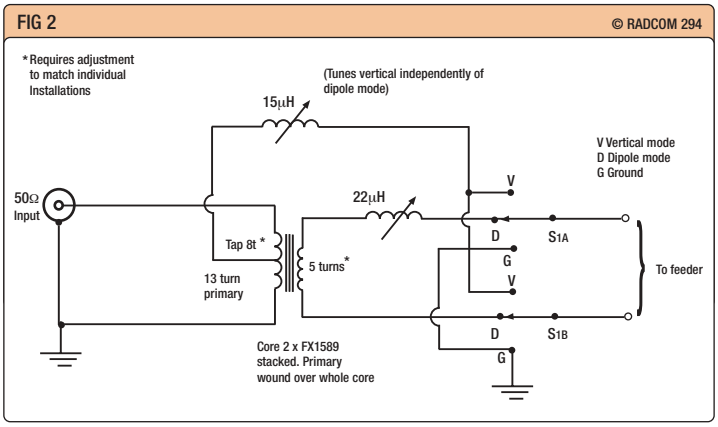


Fig 2
Simple ATU used by G3UUR to match a short doublet on 160m in balanced dipole-mode with open-wire feeders or as a vertically-polarised T-antenna with strapped feeders.

erature to find figures for a dipole over real earth, rather than a perfectly conducting one! Why the handbook editors insist on including graphs of dipole feed impedance over perfect ground rather than the infinitely more useful plot over real ground, I just don't know. They've had the experimental plot of the real situation since the late 1930s, and a paper in *Wireless Engineer* by Sommerfeld, about 1942, gave a theoretical treatment of the subject, which produced a similar plot for various ground conditions."

I must confess that I have not yet traced the Sommerfeld plot and **Fig 1** from *Fundamentals of SSB* (Collins, 3rd edition, 1960) shows only the variation in radiation resistance of a theoretical half-wave dipole with height above a perfectly conducting ground. The text adds that for a practical half-wave dipole over actual ground, the variations will be lower. The chart shows the steep decline in radiation resistance at heights below about 0.2λ, and the approximate magnitude of the changes to be expected even at heights of about one-wavelength. The radiation resistance of the theoretical, free-space, half-wave dipole is 73Ω while that of a practical half-wave dipole in free space is of the order of 65 to 70Ω, due to the resonant length of the actual dipole being slightly less than a half-wave. Despite the limitations of Fig 1, it does indicate that the centre-impedance of a low antenna is unlikely to provide a really good match to either 50Ω or 75Ω coaxial cable. That is why it will usually be advisable to use some form of ATU if you are determined to present a unity match to the output socket of your transceiver. But remember that, unless there is an unusually-long coax feeder, the extra power loss due to a modest VSWR will usually be insignificant; the main problem these days is that solid-state transceivers automatically reduce power output when presented with a VSWR of more than about 1:1.5 or 1:2."

G3UUR continues: "With reference to the multi-band short doublet used on 1.8MHz, readers may be interested to know about the ground-wave performance of such horizontal antennas. The interaction between the horizontal doublet and ground through the near-zone electric field gives rise to a ground-wave and low-angle vertically-polarised radiation that has maximum strength off the ends of the doublet, and minimum broadside to it. The strength of this ground-wave depends on the height of the doublet, the ground parameters, and the length of each leg relative to a quarter-wave. The shorter the leg length, the greater the strength of the ground wave, since the electric field at the ends increases for shorter lengths at any given height. As to be expected, the higher the doublet, the weaker the ground wave becomes, and the more efficient the antenna becomes for high-angle sky-wave. Half-wave dipoles also produce a ground-wave and vertically-polarised low-angle radiation when they are low in height; this decreases in strength as the dipole height is increased.

"An installation I used for about five years was a doublet with 48ft per leg, about 45ft high at the centre and 9ft high at either end. I would have preferred to put the ends higher, but one leg came down into a small front garden where it would have been impossible to erect a tall pole to support the end. I did try raising the end that came down in the small back garden, and this gave the antenna interesting and useful directional properties. However, I could not make use of this directivity because the noise pick-up with the two legs balanced was so much reduced that I was forced to opt for the balanced configuration with both ends low.

"The two doublet and feeder legs were made from the same length of 14SWG wire, so there were no joints that needed protection from the weather. From the measurements I made, it had a centre feed impedance of 35 – j950Ω, which transformed to 7 – j194Ω at the bottom of a 55ft long, 500Ω feeder. I estimated that this antenna was about 5 to 7% efficient on 160m, but it gave a very good account of itself, and I worked

around the world with modest power on this band.

"I could have increased the performance by about 3dB if I had loaded the legs for resonance on 160m, but the performance on 80m would have been impaired and I wasn't willing to make that sacrifice. Interestingly enough, when it rained and both the ground conductivity and dielectric constant went up, the resistive part of the feed impedance increased, indicating worsening ground loss. This confirms the dominant effect of the near-field-induced dielectric loss (the improvement in ground conductivity due to increased moisture content would have reduced the magnetically-induced ground loss). For local ground-wave communication, I used to short the feeders together and tune the antenna against ground to avoid the effects of the two ground-wave nulls broadside to the line of the doublet when fed in the balanced mode. I had had reports from mobiles driving through these broadside nulls that they were in excess of 40dB deep!

"Incidentally, I always used the low-angle vertically-polarised radiation launched along with the ground-wave from the doublet interacting with the ground, when it was at the right direction for DX, in preference to the strapped-feeder vertical radiation. This was because my ground system was never good enough and my feeder was too close to the house wall not to incur serious loss from the wet bricks in the winter. The feed arrangement on 160m was extremely simple. It consisted of a broad-band toroidal transformer matching from 50Ω down to 7Ω, with a series variable inductor to one leg of the 7Ω output of the transformer to cancel the reactance of the feed point impedance.

"This gave me simplicity, and the convenience of the broadest possible operating bandwidth of any matching network for this sort of impedance. For the strapped-feeder mode, I have a tap on the primary winding of the broadband transformer at 21Ω. I've been using this arrangement since the early 1980s, and there is really nothing to compare with it. Much as I love large balanced ATUs, I just can't justify using one these days, except for show or nostalgia! The 160m ATU arrangement and antenna connections are shown in **Fig 2**. For the HF bands, I have a W1JR-type balun to isolate the coax input and give a balanced 50Ω. Then a single-ended ATU with an autotransformer matching the resistive part of the antenna impedance (anything from 12.5Ω to 450Ω) with a series inductor and capacitor to tune out the reactance. This simple arrangement matches a wide variety of antennas with a low loaded-*Q* and good balance. Anything I can't match with this set-up can be made to match by lengthening, or shortening, the feeder slightly. However, to-date I haven't had to resort to any feeder trimming."

G3UUR has also commented briefly on the 'C-Pole vertical' ('TT' July 2004) giving the reasons why this configuration would have no advantage over a ground-based quarter-wave vertical. He is doubtful about accepting without experimental verification just what *EZNEC* says about ground losses. He would not trust even the latest professional version of NEC *(NEC-4D)* which, for small transmitting loops over average ground, shows next to no induced ground loss, yet the experimental results show an extra 10dB compared with the conductor loss.

BALANCED ATUs

The growing popularity of multi-band doublet antennas on HF has brought about a revival of the use of twin-wire balanced feeders brought all the way to the operating position or, alternatively, to a remote ATU positioned immediately below the centre of the radiating element as shown in Fig 2 of the July 'TT'. While G3UUR shows above one versatile form of ATU using a toroid balun, it is noticeable that a number of firms have recently introduced new high-power ATUs capable of being used with either balanced or unbalanced feeders. A 'Product Review' in *QST*, September 2004, provides information on 'A New Generation of Balanced Antenna Tuners' including the MFJ-974H, the Palstar AT15000BAL and AT4K. All three of these high-power units use a different architecture, each different from their logical ancestor, the Johnson Matchbox.

All ATUs that are intended to match into a wide range of resistive and reactive impedance, over the full HF spectrum, depend for efficiency (ie minimum power loss) on the use of high-Q components variable over a wide range of inductance and capacitance. Traditionally for ATUs, inductors may be varied by the use of plug-in coils, tapped coils, or roller-coasters. Capacitors may require to have a very low minimum capacitance (with a high RF voltage rating) and a very large maximum capacitance, a difficult and costly specification. In practice, most ATUs, commercial or home-built, involve compromises to reduce the cost. Power losses in ATUs providing balanced output may also be introduced by the balanced-to-unbalanced transformers (baluns). At high-power, significant losses show up as heat, but at low-power this can pass unnoticed. Saturation of ferrite cores or the use of low-*Q* components can be a problem at high-power. Pig-tail or spring connections to the rotary plates of a variable capacitor required to pass high RF current can lose power.

Jack Belrose, VE2CV, in 'On the Quest for an Ideal Antenna Tuner' (QST, October 2004, pp35 – 38 with an Appendix on p39 dealing with the G5RV antenna) discusses the design of optimum antenna tuners for feeding antennas through balanced lines. He clears up some common misconceptions, taking as his basis, the commonly used high-pass T-network and the computer analyses presented by N6BV and W8ZR in the 20th edition of *The ARRL Antenna Book*.

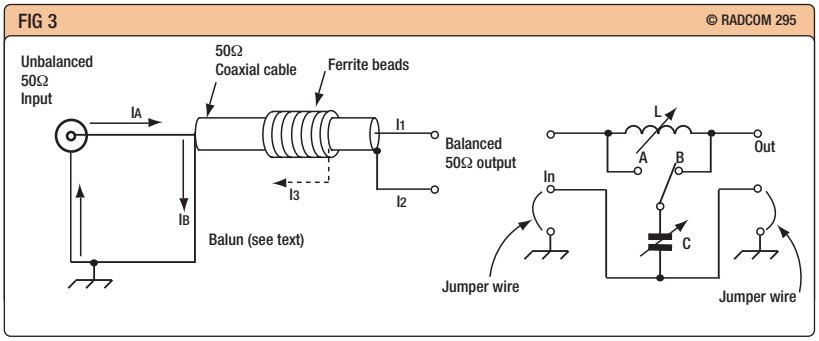
In his introductory remarks, VE2CV points out that, at one time, it was common practice to use link coupling between the power amplifier tank coil and an external resonating circuit, thus providing a balanced output. The change to transmitters required to feed into 50Ω unbalanced (coaxial) line has led to the use of some form of balun, either where the coax feeder connects to a balanced antenna element, or between the ATU and the coax feeder, or between the transmitter and the ATU.

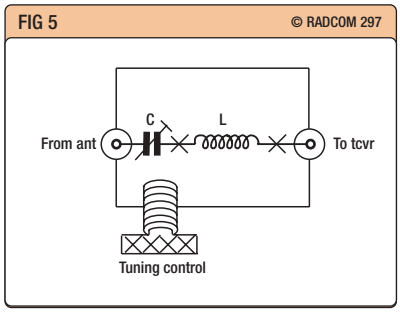
VE2CV comments: "If open-wire transmission line is used, the balun is usually placed between the ATU and the balanced line, where the VSWR can be high. This stresses the

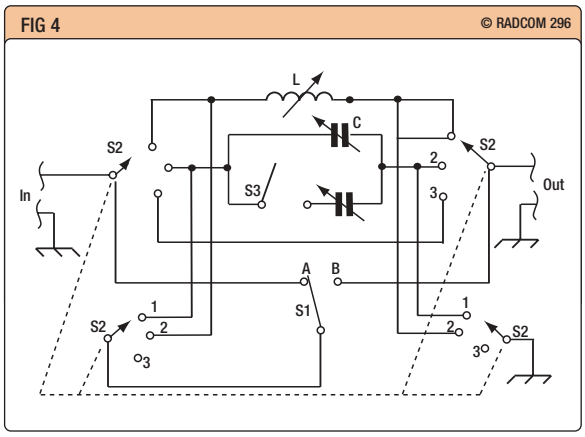
Fig 3
Simple, reversible L-matching network as discussed by VE2CV (QST). Typical value for the variable inductor, L, is 30mH maximum. C is a dual-section 19 – 202pF-per-section arranged so that it can operate as a single-section or with the two sections in parallel so as to keep the minimum capacitance as low as possible, see Fig 4.

Fig 4
VE2CV's L-matching network as a versatile version of the network shown in Fig 3 and basically the same except that the component arrangement can be changed. (QST, October 2004).

Fig 5
Circuit diagram of G3IPV's multi-purpose L/C ATU using a large selection of plug-in coils and claimed as being able to match any antenna in the range 1.8 to 144MHz. Built as a QRP unit in a case 8in by 5in by 3in. C is a vane-type capacitor selected for VHF (15pF max) or 250pF max isolated from chassis. L requires various values to resonate C and external circuitry to operating frequency with unity VSWR. For higher powers, a roller-coaster inductor and high-voltage capacitor could be used.







balun and could lead to balun failure. In addition, power loss can be considerable."

For general applications it seems advisable to use an ATU that provides a balanced output in such a way that it can readily be converted to unbalanced output by means of a jumper connecting one side of the balanced output to earth.

In his preferred design **(Fig 3)**, VE2CV substitutes a reversible L-matching network for the commonly-used T-network, requiring only a single high-voltage variable capacitor. This technique was noted in 'TT', May 1993 in connection with PA0SE's multiband "Comudipole HF Antenna" (see also Antenna Topics, pp303-5 [and this month's 'Antennas' column on p48 – *Ed.*]) which also discusses the use of twin coaxial lines to form balanced 100Ω or 150Ω balanced line.

The 1:1 W2DU-type current balun, comprising ferrite beads over the coax is an integral part of the line connecting the tuner to the transmitter. VE2CV writes: "For many years, I have been making the case that the best method to feed a multiband dipole is to use a balanced transmission line having the necessary length to reach from the antenna element terminals to the transceiver, not as Louis Varney, G5RV, did". [That is with a specified length of open-wire feeder connected to a centre-fed element with a final random length of coax to the transmitter]. He provides a case study, using an EZNEC PRO program, of a 98ft 9in (30.1m) dipole at a height of 40ft, with a feeder comprising 40ft of 450Ω windowed twin lead above average ground. He shows the dipole impedance, input impedance of antenna system, network values and transmission line loss (tuner loss) for all the HF bands from 3.75 to 29MHz. The network values for these frequencies are shown to range from 9.9µH, 413.6pF at 3.75MHz to 0.2µH, 75.1pF at 29.0MHz although the values at intermediate bands are not sequential. Tuner loss is greatest at 21.5MHz (0.24dB) with a complete transmission line loss of 0.41dB. All these network values can be readily achieved with the component values shown for Fig 3 provided that the dual-section 19 – 202pF variable capacitor is arranged so that it can be operated as a single-section, or with the two sections in parallel.

With the simple arrangement shown in Fig 3, there will be some impedances with other doublet spans etc for which the tuner will not provide a good match. The difficulty can usually be overcome by interchanging L and C but, for optimum performance, the switching of the network as shown in **Fig 4** is suggested by VE2CV. This permits switch selection of the full range of versatility available with the L-network.

One further modification could permit the use of a lower-cost split-stator or ganged capacitor, provided that the spindle is not earthed to the tuner enclosure. If the two sections are connected in series, the minimum capacitance is halved and the RF voltage rating doubled, at the cost of halving the maximum capacitance of a single-section (quarter the maximum capacitance of the two sections in parallel).

SIMPLE UNBALANCED LC ATU

Peter Haylett, G3IPV, has been using and experimenting with a novel form of two-component LC ATU that appears to couple any antenna at any frequency and, when adjusted for the band in question, is capable of presenting a unity VSWR to the transmitter: **Fig 5**. His prototype unit was originally built as an experimental means of coupling a low-power VHF transceiver to a long wire antenna while reducing break-through from adjacent channels. However, over the years he has used it, with various HF and VHF transceivers, he has always found it possible to achieve unity VSWR once the correct L/C ratio for the frequency in use has been found. G3IPV has a large stock of coils constructed on HC6Y crystal-holder bases and finds it easy to find the correct L/C ratio on any band. He reports that a rough adjustment can be found by peaking the receiver noise level.

Clearly, the unit as shown in his photograph would be unsuitable for use at high power due to the saturation and consequent heating (power loss) of the toroid-core coil and close-spaced capacitor. I did carry out a simple experiment using a roller-coaster coil and reasonably high-voltage capacitor with a 100W HF transmitter feeding a dummy load in the form of a domestic light bulb. The series connection of the L/C network seemed effective although it would need a more sophisticated test to check whether such an ATU would, with suitable components, meet in practice the claim of matching any antenna at any frequency and without incurring undue power losses. ♦

Only £14.44 plus p&p

RSGB Yearbook 2005 UK & Ireland Call Book

Edited by Steve White, G3ZVW

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

Bigger than ever the 2005 RSGB Yearbook has had every page reviewed and updated from the 2004 edition. The contents reflect the current state of the hobby, with pages devoted to contesting, awards, satellites and propagation. New for this edition are the 'Contesting Guide', your complete guide to RSGB contests from HF to microwave. You will also find features on Top Band Direction Finding and Mills Weekend. The section devoted to licensing now contains a huge list of all the Foundation, Intermediate and Advanced amateur radio courses available, plus a list of Examination Centres. IOTA receives extensive coverage, with a feature on IOTA's 40th Anniversary, information on the awards scheme, the Honour Roll and Annual Listing. Additionally there is the callsign listing for the Irish Republic, for short wave listeners and short contest callsigns, plus surname and postcode listings. As you would expect there is also much, much more included.

All-in-all it adds up to a reference book that no radio amateur should be without. Everything you need at your fingertips, with 476 A4 pages this book is excellent value.

£16.99 plus p&p Non Members Price

Callseeker Plus 2005

Callseeker Plus is the popular CD version of the RSGB Yearbook with a powerful "Eurocall" callsign search facility. Not only does this CD contains the complete contents of the RSGB 2005 Yearbook there is much more.

The Eurocall search facility provides the ideal program for rapidly searching for all or part of a callsign, postcode, name, town, keyword etc. You are also not limited to UK callsigns as the database also includes callsigns from 9A, DL, EA, EI, ES, F, HA, HB9, I, LX, LY, OE, OH, ON, OZ, SM, SP, SV and Z3.

All the information pages of the Yearbook are included in PDF format. This means that by using the Adobe Acrobat Reader included you can see on screen or via your printer every page exactly as it appears in the printed Yearbook.

£13.99 plus p&p Non Members Price

Only £11.89 plus p&p

RSGB SHOP

RSGB
Lambda House
Cranborne Road
Potters Bar
Herts. EN6 3JE
Tel. 0870 904 7373
Fax. 0870 904 7374

ORDER 24 HOURS A DAY ON OUR WEBSITE
www.rsgb.org/shop

RSGB Radio Amateur World Call Book
For the first time you can get up to date UK call information on a CD with World Call data.
£33.99 Members
£39.99 Non Members

IOTA Directory - 40th Anniversary Edition
40 years of the IOTA are celebrated in the essential guide to participating in the programme. 136 pages, size 297 x 210mm
ISBN 1-872309-96-8
£8.49 Members
£9.99 Non Members

World Prefix Map
Map of the World Printed in bold colours 38" (98cm) across and is in a 1: 42,000,000 scale. Fully updated in 2002 and includes East Timor (4W) and the Ducie Islands (VP6/D).
£4.24 Members
£4.99 Non Members

RadCom Archive sets
Special multi-year archive sets of Radcom and its predecessor the Bulletin, with sets available prior to 1996.
£25.49 Members
£29.99 Non Members

RadCom 2003
Single year archive of the RSGB monthly 100-page magazine RadCom in 2003
£16.99 Members
£19.99 Non Members

ARRL DXCC List
This edition includes a complete listing of DX Century Club rules including the latest changes and clarifications.
£3.39 Members
£3.99 Non Members

All prices plus p&p

David Lauder, GOSNO

20 Sutherland Close, Barnet, EN5 2JL.

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

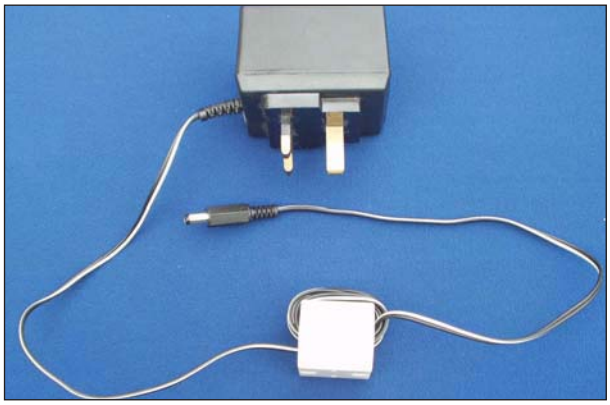
EMC

Ofcom closes the RA EMC Labs – GOSNO reports on this event. He also discusses the problems involved in enforcing some of the EMC regulations. Some useful information is then given about EMC problems associated with Ethernet LANs.

The Radiocommunications Agency (RA) had an extensive programme of technical research in radio communications and EMC. Some of this work was done by external companies and universities while other work was done internally by the RA Radio Technology and Compatibility Group (RTCG) labs at Whyteleafe, Surrey. Details of RA and RTCG research projects and reports can be found in the 'Legacy Regulator Archive' section of the Ofcom website (see 'Web Search').

Ofcom has decided to subcontract all 'internal' technical research to a single contractor and was due to announce the successful bidder for this work at the end of October 2004. The RTCG labs at Whyteleafe, Surrey are to close and the site is to be sold off. All staff at RTCG, including those in technical computing, have received redundancy notices and no staff have been re-deployed within Ofcom. Nearly all staff within the external research and contract management section at Ofcom HQ have been similarly affected.

Although Ofcom plans to continue research activities through an external contractor, it seems a pity that experienced staff are being made redundant and that so much expertise is being lost, not only in research but also in the area of EMC standards.



Left
Winding a DC power cable eight turns through a clip-on ferrite core with a 13mm diameter hole.

Right
Winding a computer network cable 10 turns through a ferrite ring with a 23mm diameter hole.

ENFORCING EMC REGULATIONS

The UK EMC Regulations, Statutory Instrument (SI) 1992 No. 2372, were the UK response to European Commission EMC Directive 89/336/EEC. These regulations came into force on 1 January 1996, and there can be heavy fines for breaching the UK EMC Regulations, for example Section 85 of the EMC Regulations, which relates to falsely affixing a CE mark. Offences under certain other sections of the UK EMC Regulations carry a penalty of imprisonment for up to three months. It appears that the UK is the only country in Europe where a jail sentence is possible under these regulations. Nevertheless, enforcement of the EMC Regulations does not appear to be particularly rigorous in the UK at the moment.

'EMC' in the June 2001 RadCom included information on a product that used mains-borne communication on two frequencies in the HF range. Although the frequencies were outside amateur bands, the EMC Committee was concerned that this could set a precedent for the use of HF mains-borne communication in buildings. I sent a copy of my test report to the London Borough of Barnet Trading Standards department. I stated that although 'pre-compliance' EMC test equipment was used and the test results may not be identical to those obtained by a certified EMC test laboratory, it appeared that the product produced intentional conducted emissions well in excess of the existing mains conducted emission limits. As it was CE marked, it was likely that the Technical Construction File (TCF) route to EMC compliance had been used. I pointed out that a TCF would need to include a justification for permitting the intentional conducted emissions and I questioned the validity of any such TCF. As Trading Standards departments are Enforcement Authorities as defined by Section 73 of the EMC Regulations, I called upon them to investigate this matter. I understand that the matter was referred to Kent Trading Standards and that a similar product was also tested by the RA RTCG labs (Projects 499 and 501) but these reports are not available online. I never received a reply to my letter to London Borough of Barnet however.

Last year, another EMC Committee member, John, G8MM, noticed that a shop in Hertfordshire was selling complete ready-to-use computers in modified cases with Perspex side panels and no CE mark. He also noticed that this shop and another were selling empty computer cases with Perspex side panels. He wrote to Hertfordshire Trading Standards pointing out the lack of CE mark on the complete computers. He also stated that if a Perspex sided case is used, it may be shown by any competent EMC test laboratory that it is not possible to assemble a computer system which could meet the specifications for product testing required for CE compliance. In particular, it would exceed the limits for radiated emission above 30 MHz, as set out in EN55022.

Regarding PC cases with Perspex side panels, Herts Trading Standards stated that these side panels, supplied on their own do not have any electrical components and do not require CE marking. They also stated, "While the side panels of computers normally contribute to the reduction of emissions, an EMC compliant computer may be constructed with these transparent components. It would be the responsibility of the person using these components to comply with the legislation." With regard to the PCs with Perspex side panels and no CE marking, Trading Standards stated that they did not have reason to believe that these computers fail to comply with the legislation but they gave appropriate advice to the retailer on the requirements of legislation with respect to testing, record keeping and labelling. Trading Standards did not investigate further.

So it seems that it may not be easy to get Trading Standards departments to investigate specific EMC compliance cases, even where there is reason to suppose that the product in question may be non-compliant. This may be because they do not have the time or resources for adequate enforcement of the UK EMC regulations.

HOME NETWORKS

With the increasing use of Asymmetric Digital Subscriber Line (ADSL) and cable TV networks for broadband Internet access, some users are installing home computer networks with a router to allow more than one computer to share the broadband connection. One way of doing this is by using IEEE802.11

wireless LANs that operate on 2400-2483.5MHz. As 13cm operators will know, there are a lot of wireless LAN and other signals in the 2400-2450MHz portion of the 2310-2450MHz amateur band nowadays. Apart from compatibility issues with the 13cm amateur band however, LANs that use purely wireless communication do not seem to suffer from or cause many EMC problems with amateur radio operation.

Other home networks use Ethernet type LANs with unscreened twisted pair (UTP) cable. When Ethernet 10Mbps local area networks were first developed, the network cable was coaxial cable. The next generation was known as 10BaseT and uses four pair UTP cable. This was then developed to 100BaseT which operates at 100Mbps and there have been further developments to 'Gigabit Ethernet' at 1000MBps, still using four core UTP. Most Ethernet networks in current use are using 100Mbps devices that can operate at 10 or 100Mbps on UTP cable.

Ethernet networks using UTP cable came into widespread use in commercial and industrial premises before there was any significant amount of home use, so EMC problems were less likely to be noticed. Because UTP cable is unscreened, the data needs to be driven along the pairs in a balanced manner to avoid radiating interference. Signals also need to be transformer coupled to avoid ground loops between connected devices. Although the UTP cable itself is well balanced and the drivers and receivers are fairly well balanced, there may still be some common-mode current that causes the cable to radiate interference. One short UTP network cable between two networked devices is unlikely to radiate much RFI in practice but when several computers are connected to a router via long cables, the network may radiate some RFI in amateur bands.

Ray, G0VSS reports that he has recently noticed significant noise peaking at 3.553MHz in his favourite section of the CW sector.

Following various tests, Ray traced the noise to his recently-installed Netgear DG834G 54Mbps ADSL wireless firewall router which is situated in the lounge on the ground floor. The wireless networking facility is used by Ray's visiting sons but Ray's own computer is located in one of the upstairs bedrooms, in same room as the radio equipment and has a UTP cable connection to the router downstairs. Ray asks where he might get some help or advice on solving this problem.

On the 3.5MHz band, a device such as a network router is too small compared to a wavelength to allow it to radiate a significant amount of RFI directly, particularly as most types are housed in metal cases. The most likely source of RF emissions is the cables connected to the router, both network cables and the power cable. Small routers for home use are normally powered by 'wall wart' type plug-in transformers but, nowadays, even small plug-in transformers may contain a switch-mode power supply with possible emissions of RFI.

The starting point would be to check whether the plug-in transformer feels heavy enough to contain an iron-cored transformer. If it feels light, it is probably a switch-mode type. The next step is to connect the router to the power supply and switch it on with no network cable connected. If there is significant RFI, a ferrite ring choke or clip-on ferrite core should be fitted to the DC power cable, near the router or the power supply, depending on which is the source of RFI. For effective RFI suppression on any band, it is important to achieve a high enough impedance in the ferrite choke, preferably several kilohms or more. With a thin DC power cable, it should be possible to fit eight turns onto a clip-on ferrite core with a 13mm diameter hole, as shown in the photo. This should give an impedance of about 3kΩ on 3.5MHz with a typical clip-on ferrite core designed for RFI suppression. With any split ferrite core, it is important to ensure that the two halves can close together properly without the slightest air gap.

The next step is to plug in network cable(s) and see whether the RFI increases. If it does, wind each network cable through a ferrite ring with a 23 mm diameter hole as shown in the photo. The grade of ferrite needs to be suitable for suppression in the HF bands. Suitable ferrite rings are available from the RSGB Shop, (see the box) but surplus ferrite rings with unknown characteristics may not be suitable. Ideally, 12 turns should be used but the maximum number with a network cable will probably be 10. With a single ring, this should be fairly effective at 10MHz and above but it will only give an impedance of about 1kΩ at 3.5MHz. This impedance can be doubled by stacking two rings together.

Regarding RF immunity of home networks, wired Ethernet networks normally have good RF immunity, although ADSL modems may be affected by strong RF signals. In such cases, it is worth trying ferrite ring chokes on connecting cables as described above. Ferrite rings can also be applied to solving other EMC problems such as RF pickup on speaker cables on audio systems. In any case, the key to success is to wind enough turns on a suitable grade of ferrite to achieve a high enough impedance. Bear in mind that doubling the number of turns gives four times the impedance and halving the number of turns gives one quarter of the impedance. Further information is available in the 'EMC' section of the RSGB Yearbook. ♦

WEB SEARCH

Details of former RA research projects	www.ofcom.org.uk/static/archive/ra/topics/research/research-index.htm
Details of former RA/RTCG project reports	www.ofcom.org.uk/static/archive/ra/topics/research/rtcg/projects.htm

RADIOWORLD

www.radioworld.co.uk
42, Brook Lane,
Great Wyrley,
Walsall, WS6 6BQ.
Tel. 01922 414796.
Fax. 01922 417829.

ALINCO - AOR - BHI - CUSHCRAFT - DIAMOND - HEIL - ICOM - KENT - KENWOOD - MFJ - RADIOWORKS - WATSON - WEST MOUNTAIN - YAESU - YUPITERU

KENWOOD TS-2000

HF 6m 2m 70cm 23cms Option. DSP

UT-20 23cms Unit . £369.95
DRU-3A Rec Unit £99.95
VS-3 Voice Synth ... £45.95
SP-23 Ext Speaker . £68.95
MC-60 Desk Mic £117.95
MC-90 DSP Mic £187.95

1 YEAR WARRANTY **£1,549.00**

KENWOOD TS-480SAT

New HF+6m. HX-200W - SAT-ATU

VGS-1 Voice Unit ... £64.95
SP-23 Ext Speaker . £68.95
MC-60 Desk Mic £117.95
PG-4Z Ext Cable £44.95
PS-53T 23A PSU .. £229.95
SO-3 TCXO £109.95

1 YEAR WARRANTY **£995.00**

KENWOOD TS-870S

100W Base HF. 1.8-30MHz. DSP

VS-2 Voice Unit £45.95
SP-31 Ext Speaker . £82.95
MC-60 Desk Mic £117.95
LF-30A LP Filter £45.95
PS-52T 23A PSU .. £229.95
SO-2 TCXO £122.95

1 YEAR WARRANTY **£1,299.00**

KENWOOD TS-570DGE

100W Base HF. 1.8-30MHz. DSP ATU.

VS-3 Voice Unit ... £45.95
SP-50 Ext Speaker . £27.95
MC-60 Desk Mic £117.95
MB-430 Bracket £44.95
PS-53T 23A PSU .. £229.95
SO-2 TCXO £122.95

1 YEAR WARRANTY **£795.00**

KENWOOD TS-50S

100W Moble HF. 1.8-30MHz.

AT-50 TS-50 ATU . £319.95
SP-23 Ext Speaker . £68.95
MC-60 Desk Mic £117.95
MB-13 Bracket £39.95
HS-5 Del Phones £52.95
SO-2 TCXO £122.95

1 YEAR WARRANTY **£599.00**

KENWOOD TMD700E

2m & 70cms. Dual Band. APRS. TNC

SP-50B Speaker £27.95
PS-33T DC PSU £199.95
MC-58DM DTMF ... £44.95
PG-4X Ext Cable £61.95
PS-53T 23A PSU .. £229.95
VS-3 Voice Unit £45.95

1 YEAR WARRANTY **£429.00**

KENWOOD TMG707E

2m & 70cms. Dual Band. Det Front

SP-50B Speaker £27.95
DFK-3C Panel kit £34.95
MC-58DM DTMF ... £44.95
PG-4X Ext Cable £61.95
MB-12 Mount £14.95
MB-201 Mount £14.95

£269.00

KENWOOD Handhelds

TH-F7E 2&70 .... £249.00
TH-D7E 2&70 .... £299.00
TH-22E 2m £135.00
THG-71 2&70 .... £199.00
TH/K2E 2m £143.00
TH/K4E 70cms .. £143.00
Plus much more phone...

www.radioworld.co.uk

YAESU FT-1000MP

HF Base DSP. MkV 200w £2300.00

SP-8 Ext Speaker . £136.95
MD-100 Base Mic . £116.95
TXCO-6 TXCO £124.95
DVS-2 Voice Unit .. £199.95
FH-1 Keypad £33.95
E-DC-20 DC Cable . £11.95

FT1000MP FIELD **£1,739.00**

YAESU FT-847

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

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

2 YEAR WARRANTY **£1,149.00**

YAESU FT-897D

HF 6m 2m 70cm.100W Transportable

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

2 YEAR WARRANTY **£898.00**

YAESU FT-857D

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

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

FREE DSP **£647.00**

YAESU FT-817ND

HF 6m 2m 70cm. Portable / Mobile

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

FREE BATTERY & CHARGER **£478.00**

YAESU FT-7800E

2m & 70cms. Dual Band Mobile.

FBA-28 Bat case £11.95
FNB-72 Batt pack ... £41.95
YHA-63 Whip ant £15.95
FVS-1A Voice Unit £199.95
TCXO-9 TXCO £69.95
CT-62 CAT Cab £15.95

2 YEAR WARRANTY **£239.00**

YAESU FT-8800/8900

FT-8800 Dual Band Mobile. 2/70
£279.00
Lower than the rest
Quad Band Mobile. 10/6/2/70 **FT-8900**
£329.00

2 YR WARRANTY

YAESU FT-2800M

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

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

2 YEAR WARRANTY **£157.00**

www.radioworld.co.uk

ICOM IC-7800 FLAGSHIP

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

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

2 YEAR WARRANTY **£6,400.00**

ICOM IC-756 PROIII NEW

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

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

2 YEAR WARRANTY **£TBA** COMING SOON

ICOM IC-7400

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

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

2 YEAR WARRANTY **£1,299.00**
Inc. SP-21 & SM20

ICOM IC-706 MkII G

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

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

2 YEAR WARRANTY **£749.00**

ICOM IC-703

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

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

2 YEAR WARRANTY **£575.00**

ICOM IC-718

HF 100W TX. Dual VFO. Auto Notch.

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

2 YEAR WARRANTY **£449.00**

ICOM IC-910H / X

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

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

2 YEAR WARRANTY **£1089.00**

ICOM & YEASU Handhelds

IC-T3H 2m FM .. £129.00
IC-E90 6/2/70 .... £269.00
VX-2E 2&70 ..... £165.00
VX-5R 6/2/70 .... £249.00
VX-7R 6/2/70 .... £289.00
VX-150 2m FM .. £125.00
VX-110 2m FM .. £119.00

www.radioworld.co.uk

01922 414796

ORDER HOTLINE

Email: sales@radioworld.co.uk

Mon - Fri - 09:30 - 18:00,
Sat - 09:30 - 1600.

Most Goods are shipped for 24Hr delivery. [UK Mainland] is £10 P&P unless otherwise stated.

Credit Cards Accepted

MasterCard VISA VISA Electron SWITCH SOLO

Order Hotline - 01922 414796
Order Online - www.radioworld.co.uk

ALINCO - AOR - BHI - CUSHCRAFT - DIAMOND - HEIL - ICOM - KENT - KENWOOD - MFJ - RADIOWORKS - WATSON - WEST MOUNTAIN - YAESU - YUPITERU

MFJ. Tuners

Tuners, Meters, Analysers.

MFJ-989C 3Kw	£339.95
MFJ-986C 3Kw	£319.95
MFJ-993 Intellituner	£249.95
MFJ-971 QRP	£89.95
MFJ-969 300w	£189.95
MFJ-962D 1.5Kw	£259.95
MFJ-949E 300w	£149.95
MFJ-948 300w	£139.95
MFJ-945E Mobile	£109.95
MFJ-941E 300w	£119.95
MFJ-934 ATU+AG	£169.95
MFJ-921 2m	£139.95
MFJ-924 70cms	£119.95
MFJ-914 Extender	£59.95
MFJ-901 200w	£79.95

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

Analysers

MFJ-249 1.8-170 Dig	£239.95
MFJ-259B 1.8-170 Rm&Dig	£259.95
MFJ-269 HF/VHF/UHF	£349.95

Dummy Loads

MFJ-250 1kw Oil filled	£69.95
MFJ-250X 1kw without oil	£49.95
MFJ-260C 300w PL259	£37.95
MFJ-260CN 300w N-Type	£44.95
MFJ-264 1.5kw PL259	£74.95
MFJ-264N 1.5kw N-Type	£79.95

MFJ-418
Morse Decoder / Tutor
£76.50

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

Heil. Audio.

Microphones, Headsets, Accessories.

Pro-Set-Plus Headset	£155.95
Pro-Set-Plus-IC Headset	£169.95
Pro-Set-HC-4/5 Headset	£109.95
Pro-Set-HC-IC Headset	£119.95
Goldline GM-4 Stick mic	£109.95
Goldline GM-5 Stick mic	£109.95
Goldline Vintage Stick mic	£129.95
HM-10-4 HC4 Reg stick mic	£69.95
HM-10-5 HC5 Reg stick mic	£69.95
HM-Dual HC4+5 Stick mic	£119.95
HM-10-I Icom Stick mic	£89.95
HMM-1C Icom Hand Mic	£59.95
HMM-K HC4/5 Ken hand mic	£74.95
HMM-Y HC4/5 Yae hand mic	£74.95
Traveller-817 Yaesu headset	£79.95
Traveller-706 Icom headset	£79.95

Call for Leads and Accessories

Adonis Microphones

AM-708E
Variable Compression
2 Microphone Outputs
£129.95

Adonis AM-7500E	£Phone
Adonis AM-708E	£129.95
Adonis AM-508E	£79.95
Adonis AM-308E	£69.95
Adonis FX-10	£59.95

bhi DSP

Noise Cancelling Solutions for Amateur Radio & SWL

NES10-2 Speaker with dsp	£99.95
NES1031 Inline dsp module	£129.95
NES1061 817 dsp module	£89.95
NES1061 817 brd inc fitting	£115.95
NES1062 dsp module	£89.95
NES1042 Switch Box	£19.95

Watson Supplies

W30-AM
0-15VDC
30/35A Peak
£119.95

W25-XM
NEW
13.8VDC
25A Switchmode
£99.95

W-25AM 25A Supply	£89.95
W-10AM 10A Supply	£59.95
W-5A 5A Supply	£29.95
W-3A 3A Supply	£22.95
W-25SM 25A Supply	£79.95
W-10SM 10A Supply	£49.95

Diamond Supplies

GZV4000
5-15 VDC
40A Peak
£154.95

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

Frequency Counters

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

FC130	£79.95
Hunter	£59.95

Call for further details

* 10Hz-3GHz
* Imp - 50 Ohms
* LCD readout
* 10-Digit display

Super Hunter
£149.95

Daiwa Accessories

Cross-needle meters

CN101L HF/VHF	£59.95
CN103N VHF/UHF	£65.95
CN801H HF/VHF	£109.95
CN801V VHF/UHF	£119.95

Coax Switches 2/4 Way.

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

Avair Meters

AV-200
HF / VHF PWR
SWR meter

AV-200 HF/VHF	£49.95
AV-400 VHF/UHF	£49.95
AV-600 HF/VHF/UHF	£69.95
SX-1000 HF/VHF/UHF	£99.95
AV-20 HF/VHF	£39.95
AV-40 VHF/UHF	£39.95

CT Keys

THE NEW CT HAM IAMBIC LEVER PADDLE features the compact and ergonomic new design and approach to the iambic lever paddles

CT1 Mini Hand Key	£55.95
CT2 Mini Hand Key	£61.95
CT3 Mini Hand Key	£69.95
CT4 Camel Back	£129.95
CT4D Deluxe Camel	£139.95
CT6 HQ Straight Key	£139.95
CT9 Iambic Paddle	£69.95
CT11 Single Paddle	£90.95
CT12 Classic Paddle	£97.95
CT12DX DX Paddle	£111.95
CT91Single Paddle	£Phone

Watson Antennas

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

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

Bencher Antennas

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

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

Hustler Antennas

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

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

West Mountain Radio

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

Tonna Antennas

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

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

Diamond Antennas

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

Cushcraft Antennas

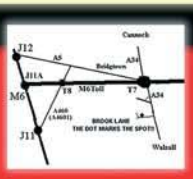
X-7 - 20/15/10 7el Yagi	£669.95
A3S - 20/15/10 3el Yagi	£499.95
A4S - 20/15/10 Yagi	£569.95
A3WS - 12/17 3el Yagi	£379.95
ASL-2010 13-32MHz Log	£749.95
MA5B - Mini Beam	£369.95
D3 - 20/15/10 Dipole	£249.95
D3W - 30/17/12 Dipole	£249.95
D4 - 40m Rotary Dipole	£349.95

Sharman Antennas

M-150GSA 1/4 2m Mobile	£11.95
M-285 5/8 2m Mobile	£13.95
NR-770H 2&70 Mobile	£23.95
SG-7900 2&70 Mobile	£31.95
CR-627 6&2&70 Mobile	£33.95
X-200 2&70 Base	£58.95
X-300 2&70 Base	£63.95
X-510 2&70 Base	£98.95
V-2000 6&2&70 Base	£68.95

Radioworks Wire Ants

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



RADIOWORLD
If You Don't need it, we won't sell it to you.

price match
Find a lower price? We'll try to match it!*

www.radioworld.co.uk

RADIOWORLD

42, Brook Lane,
Great Wyrley,
Walsall, WS6 6BQ.
Tel. 01922 414796.
Fax. 01922 417829.

ALINCO - AOR - BHI - CUSHCRAFT - DIAMOND - HEIL - ICOM - KENT - KENWOOD - MFJ - RADIOWORKS - WATSON - WEST MOUNTAIN - YAESU - YUPITERU

LDG Electronics

AT-1000

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

£499.95

LDG Z-100

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

£129.95 ***BEST SELLER****

LDG AT-11MP

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

£199.95

LDG RT-11

100w Waterproof Auto ATU - 1.8-54MHz
1-5 seconds Tune

£179.95

LDG RBA 1:1 & 4:1

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

£29.95

LDG AT-897

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

£199.95

Accessories:

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

W4RT Electronics

One-Plug-Power

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

OPP-817
£54.95

NEW! 1800 mAh Large Capacity FT-817 Internal Battery Soluion Still use Internal 817 Charger

OPP-897
£99.95

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

NEW!

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

One-Big Punch

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

OBP
£49.95

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

Hand Mike
£57.95

W4RT Electronics Microphone with One BIG Punch Speech Compressor included.

The One BIG Punch is an AF-based speech compressor specifically configured to provide remarkable increase in talk power while maintaining good audio quality. The OBP is NOT a clipper, but a 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.

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

NEW* FT-817 Stand
£19.95

Simply snaps into position. Adjust for desired height. Complete with non slip feet and allen wrench.

Professional-Grade FT-817 Stand

W2IHY Technologies

Available and IN STOCK now*

W2IHY 8 Band Audio EQ Noisegate

£229.95

Finally, professional audio processing technology is applied to the unique requirements of amateur radio operators! The W2IHY 8 Band Audio Equalizer and Noise Gate is an easy-to-use, sophisticated unit loaded with high-performance features. This thoughtfully-designed, quality- constructed station accessory performs three important functions, all in one good looking, low-profile package.
Don't forget you can use your exsisting desk mike/pro mike etc.
For arm chiar or DX audio tailored to *your* own specifications.

Adapter cables to fit Icom - Kenwood - Yaesu £22.95

ATX Walkabout

ATX Walk--about PL-259

£47.95

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

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

The Miracle Whip

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

Power Limits 25W PEP 10W Cont.

£127.95

In Stock*

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

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

Portable Masts

Telescopic Masts Inc Guy Rings

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

Mobile Mounts

Solarcon MAGZ-17 TRI-MAG

£39.95

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

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

Tokyo Amplifiers

Tokyo HL-50B HF / 50MHz Power Amplifier

£269.95

Frequency: 3.5 - 28MHz + 50MHz
Mode: SSB/CW, FM/AM
RF Drive: 5W (FT817)
RF Output: 50W PEP (25W AM)
Power: 13.8V 10A max

01922 414796

ORDER HOTLINE

Email: sales@radioworld.co.uk

Mon - Fri - 09:30 - 18:00,
Sat - 09:30 - 1600.

Most Goods are shipped for 24Hr delivery. [UK Mainland] is £10 P&P unless otherwise stated.

Credit Cards Accepted

MasterCard VISA VISA Electron SWITCH SOLO

Do a great deal better @ RADIOWORLD

01922 414796 - www.radioworld.co.uk

price match
Find a lower price? We'll try to match it!*

Linear Amp U.K.

Challenger Mk3
£1795.95

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

SGC. Smartuners

SGC-230 200Watts
£359.95

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

Rotators

YAESU

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

Feeders & Wire

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

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

Rotator Cable: - Color coded Cable

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

DC Connecting Cable

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

Second Hand List

Second Hand Antennas

Cushcraft X9 10/15/20 9ele	£450.00
Cushcraft MA5B 10-20m	£250.00
Cushcraft R-6000 Vertical	£200.00
Cushcraft A3S 10/15/20 3ele	£299.00
Butternut HF6V Vertical	£175.00

PLUS MUCH MORE... CALL FOR DETAILS

Second Hand Options

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

PLUS MUCH MORE... CALL FOR DETAILS

The UK's No.1 Used Equipment Trader

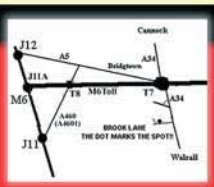
Second Hand List.

Quality Used Equipment. 3 Month Warranty.
Best prices paid on your used equipment.

Acom Acom 1000 HF/50 1KW Amp £1,299.00
Adonis AM-805G Desk Microphone, £70.00
AEA PK-232 MBX TNC £125.00
AEA PK-900 TNC £200.00
AEA PK-96 TNC £90.00
AKD 6001 6m FM Transceiver £135.00
Alan HQ-2000 2kW 26 - 30MHz SWR / Watt Meter £25.00
Alinco DJ-G5EY Dual Band Handheld £199.00
Alinco DJ-X2000 Scanner 0.1kHz-2.1GHz £299.00
Alinco DJ-X10 Wide Band Receiver £200.00
Alinco DR-150 2m Transceiver with Air-and Receive £150.00
Alinco DR-605 2m/70cms £175.00
Alinco DR-M10 10 Metre Transceiver £99.00
Alinco DX-70 HF & 6m Transceiver £389.00
Alinco DX-70TH HF & 6m Transceiver (100W Output) £475.00
Alinco DX-77 HF Base £399.00
Alpha 91B HF 2KW Amplifier £1,599.00
Ameritron QSK-5 Amplifier Switch / Pre Heat £200.00
AOR 5500 Display As new display model £450.00
AOR AR-3000A Wide Band Receiver £450.00
AOR AR-3030 HF Receiver, Including PSU £350.00
AOR AR5000+A AR5000+A £1,599.00
AOR AR-7030 Top Receiver £550.00
AOR AR-8200 MkIII AR-8200 MkIII Receiver £299.00
AOR AR-8600mkII Base Scanner / Receiver £499.00
AOR SDU-5000 Spectrum Display Unit £399.00
AOR SDU-5500 Scope £450.00
Ascom 4m Trx 4 Metre Tranciever £99.00
Bearcat UBC-780XLT RX Trunktrack £220.00
BHI BHI Noise Eliminating Module £89.00
Bnos 20AMP PSU 20A PSU £89.00
Bnos 432-25-100M 70cms 100W £199.00
Bnos CLP430/25/100 70cms 100w Amp £199.00
Bnos LP50-3-50 6M Amp Solid State £89.00
Bnos LPM144/10/100 2m 100w Amp £119.00
Comet CD-270D SWR Power Meter £49.00
Commtel Comm-225 Receiver £150.00
Daiwa CN-103L 2/70cms Cross needle Meter £40.00
Daiwa CN-801H 1.8-200 MHz SWR+PWR Meter £80.00
Daiwa CS-201 2 way Switch £10.00
Daiwa PS120 10A PSU £40.00
Daiwa PS-30 XM II 30A PSU £99.00
Datong ASP Auto Speech proc 817 etc £70.00
Datong FL2 Multimode Filter £69.00
Diamond SX-100 SWR & Power Meter - 1.6 - 60MHz £65.00
Diamond SX200 SX200 £69.00
DL-600 DL-600 Dummy Load £60.00
Drake Base Mic Mase Mic £50.00
Drake R8 Receiver £450.00
Drake R8A Receiver+Converter £499.00
Fairhaven RD-500 Communications Receiver £500.00
Fairhaven RD-500VX Communications Rx £550.00
FDK Multi-750 2m Multimode Transceiver £129.00
Fujion F-2000A Radio Direct Finder £99.00
Grundig SAT800 Base Station HF RX - Air Band £350.00
Hal DXP38 TNC £140.00
Hanson FS7 2/70cm Meter £30.00
Heil BM-10-5 Headset £50.00
Heil HMM-K Hand Mic £30.00
Heil Traveller Traveller £65.00
High Sierra Sidekick Sidekick PRO antenna £289.00
High Sierra Sidelick Sidekick antenna £160.00
Hygain Rotator Rotator £250.00
Icom 451E 70cms Multimode Transceiver £250.00
Icom AT160 ATU and Built In Artificial Ground £175.00
Icom IC-271E 2m multimode trx £275.00
Icom IC-207H IC207H £199.00
Icom IC-2100H 2m FM Mobile Transceiver £150.00
Icom IC-2710H Dual Band Mobile £225.00
Icom IC-271E 2m multimode £299.00
Icom IC-471E 70cms Multimode Transceiver £299.00
Icom IC-490E 70cms Mobile Transceiver £250.00
Icom IC-703 HF/6M £450.00
Icom IC-718 Hf Mobile/Base £389.00
Icom IC-726 Mobile/Base £400.00
Icom IC-740 HF £299.00
Icom IC-7400 HF/6/2 Band / All mode Tranciever £949.00
Icom IC-746 HF / 6m / 2m Built In ATU £875.00
Icom IC-901 2m/70cms £175.00
Icom IC-775 DSP 200w Base £1,599.00
Icom IC-R10 Handheld Scanner £229.00
Icom IC-R5 Handheld Scanner £125.00
Icom IC-R70 HF Receiver £299.00
Icom IC-R7000 MINT CONDITION!!! Receiver £550.00
Icom IC-R7100 25mhz - 2Ghz Receiver £450.00
Icom IC-R71E Receiver £325.00
Icom IC-R72 Receiver £350.00
Icom IC-R75 HF/6M Receiver £450.00
Icom IC-R8500 Receiver £999.00
Icom IC-W31E Dual Bander £160.00
Icom PS125 25A PSU £225.00
Icom RC-7000 Remote Control £40.00
Icom SM-20 Desk Microphone £90.00
Icom SM-6 Icom microphone £75.00
Icom IC-756PRO2 HF/6 DSP Base £1,599.00
ICS AMT-2 All Mode Terminal Unit £40.00
Jil Jil SWR Meter SWR Meter £15.00
JPS NIR-10 Noise / Interference Reduction Unit £99.00
JPS NIR-12 DSP Filter £129.00
Junker Pump Key Pump Key £75.00
Kamtronics KAM Multimode TNC £140.00
Kent RA Morse Paddle Key £40.00
Kenwood AT120 ATU matches TS120 £89.00
Kenwood AT250 Auto ATU £199.00
Kenwood AT250 Auto ATU £199.00
Kenwood AT300 Tuner £275.00
Kenwood IF232 IF-232 £50.00
Kenwood LP Filter LP Filter £30.00
Kenwood MB-201 MB-201 £20.00
Kenwood PS-30 PSU £89.00
Kenwood R-2000 Receiver Inc Converter £275.00
Kenwood R-5000 Receiver £499.00
Kenwood R-5000 Receiver inc VHF Converter £600.00
Kenwood SP-430 Kenwood Speaker £45.00
Kenwood TH-79E Dualbander Handie £170.00
Kenwood TH-G71E Dualband Handie £129.00
Kenwood TH-G71E Dualband Handie £129.00
Kenwood TH-K2E 2m Handie £99.00
Kenwood TM-D700E Dualbander TNC £299.00
Kenwood TM-V7E 2m/70cms £250.00
Kenwood TR-751E 2m Multimode Transceiver £250.00
Kenwood TR-9000 2m Multimode £220.00
Kenwood TS-2000 All Band / All mode Tranciever £1,299.00
Kenwood TS-271E TS271E £165.00
Kenwood TS-480HX HF 200w Mobile £850.00
Kenwood TS-570DGE HF 100w £675.00
Kenwood TS-570S HF + 6m Trx (VERY RARE!!) £825.00
Kenwood TS850S HF £550.00 & TS850SAT inc Tuner £699.00
Kenwood TS-870 HF DSP Base £899.00
Kenwood TS-940 HF Base £450.00
Kenwood TS-950SD HF150W DSP Base Station £1,200.00
Kenwood TS-950SDX HF150W DSP Base Station £1,599.00
Kenwood TMG707 2m 70cm mobile £199.00
Linear Amp UK Challenger II 2KW HF Amp £1,395.00
Lowe HF-150 HF Reciever £150.00
Lowe HF-225 HF Receiver £175.00
Lowe HF-350 HF Receiver £295.00
Lowe Keypad Lowe Keypad £30.00
MFJ 9406X 9406X 6m TRX £99.00
MFJ MFJ-1112 DC Outlet £25.00
MFJ MFJ-1272B TNC / Mic Switch £20.00
MFJ MFJ-1278 TNC All Mode £175.00
MFJ MFJ-202B Noise bridge £49.00
MFJ MFJ-442 Elec + memory keyer £89.00
MFJ MFJ-704 Low pass filter £30.00
MFJ MFJ-722 CW / SSB Filter with 5 Watts Amp £59.00
MFJ MFJ-784 DSP Filter £149.00
MFJ MFJ-9015 15m cw TRX £99.00
MFJ MFJ-921 VHF 200 Watt ATU £50.00
MFJ MFJ-949D ATU £99.00
MFJ MFJ-956 Rx ATU £25.00
MFJ MFJ-962B MFJ962B £99.00
MFJ MFJ-986 1.5Kw Tuner £250.00
MFJ MFJ-949E ATU £109.00
Microset PT135 PSU £120.00
Microset RU-432 70cms Amp 100w £150.00
Microwave Mod 432-50 70cms Amp 50w £99.00
Microwave Mod MML/432/50 70CMS AMP £129.00
Nissei DC300GL 30A PSU £80.00
Palstar PS-15 15 Amp Power Supply £49.00
Palstar PS-30N PSU £79.00
Palstar PS-50 50A PSU £139.00
Realistic PRO2004 Base Scaner £89.00
Realistic PRO2005 25-13000 Scanner £119.00
SGC SG-231 Smart Tuner £275.00
Sommerkamp FT-290R 2m Multimode Transceiver £150.00
Sony ICF-SW7600GR World band Receiver £99.00
Standard C-156E 2m Handheld Transceiver £125.00
Starmaster Memory Keyer Electronic memory keyer £59.00
Target HF3 HF3 RX £99.00
Tentec Paragon HF BaseInc. Speaker £700.00
TenTec RX-350 HF Receiver £999.00
Timewave DSP9+ External DSP Unit £99.00
Timewave PK-12 Packet £99.00
Trio PS-430 Kenwood PSU 22A £100.00
Trio R-1000 HF Reciever £170.00
Trio TR-9130 2m multimode £220.00
Trio TS-530SP TS530SP £299.00
Trio TS-711E 2m Base £350.00
Uniden UBC-780XLT Scanner/Trunk Tracker £249.00
Yaesu DSV2 Voice recorder £139.00
Yaesu FC-20 ATU for FT847 £175.00
Yaesu FC-700 ATU £99.00
Yaesu FL-2025 Amplifier £90.00
Yaesu FP-700 Power Supply £100.00
Yaesu FP-707 PSU £110.00
Yaesu FP-757GX 757 PSU £99.00
Yaesu FR-101 HF, 2m, 6m Base Transceiver £399.00
Yaesu FRG-100 HF Receiver £299.00
Yaesu FRG-8800 RX £199.00 or inc Converter £299.00
Yaesu FRG-9600 RX VHF/UHF £199.00
Yaesu FRT-7700 FRT-7700 £70.00
Yaesu FRV-7700 Converter for FRG-7700 £60.00
Yaesu FT-100 HF/6m/2m/70cms Mobile Transceiver £499.00
Yaesu FT-1000MP AC HF Base £1,199.00
Yaesu FT-1000MP Field HF DSP Base £1,599.00
Yaesu FT-1000MP MkV DSP HF Base £1,799.00
Yaesu FT-200 FT200 £175.00
Yaesu FT-2600M Mobile VHF / FM Transceiver £120.00
Yaesu FT-290R Mk II 2m multimode £250.00
Yaesu FT-290RmkII 2m Multimode Mobile Transceiver £225.00
Yaesu FT-41R Handheld Transceiver £120.00
Yaesu FT-470R Dual Band Handheld £129.00
Yaesu FT-690R 6m Multimode Mobile Transceiver £199.00
Yaesu FT-7100M 2m / 70cms Mobile Transceiver £220.00
Yaesu FT-736R 2/70 Base £550.00 or 6/2/70 £750.00
Yaesu FT-767GX HF/6/2/70 Base £799.00
Yaesu FT-76R 70 cms Handheld Transceiver £99.00
Yaesu FT-77 HF inc FM £275.00
Yaesu FT-7800 2/70 mobile £199.00
Yaesu FT-8100R 2m / 70cms Mobile Transceiver £220.00
Yaesu FT-817 Mobile HF, VHF, UHF Transceiver £450.00
Yaesu FT-840 HF 100w Moble £399.00
Yaesu FT-847 HF/6/2/70 BASE £899.00
Yaesu FT-897 Portable £699.00
Yaesu FT-920AF HF / 6M Base Transceiver £899.00
Yaesu FT-980 FT980 £399.00
Yaesu FTV-1000 200 W Transverter £475.00
Yaesu MW-1 Remote Control Microphone & Infra-Red £60.00
Yaesu NC70 Battery Charger £60.00
Yaesu Quadra 1KW Amp + PSU £2,750.00
Yaesu SP-980 SP980 £60.00
Yaesu VR-500 Yaesu Handheld Scanner £149.00
Yaesu VR-5000 Top Class Base Scanner £450.00
Yaesu VX-110 VX110 £99.00
Yaesu VX-1R VX1R £99.00
Yaesu FT-747 HF Trx £299.00
Yaesu FV-101Z FV101Z £125.00
Yupiteru MVT-7100 Handheld Scanner £140.00
Yupiteru MVT-9000 II MVT9000II £269.00

PLUS SO MUCH MORE... CALL FOR DETAILS

The UK's No.1 Used Equipment Trader - Call 01922 414796



42 Brook Lane
Great Wyrley
Walsall WS6 6BQ

We are Premier UK Dealers for ICOM, Kenwood, Yaesu.
Full UK Warranty with full peace of mind. RADIOWORLD

ALINCO - AOR - BHI - CUSHCRAFT - DIAMOND - HEIL - ICOM - KENT - KENWOOD - MFJ - RADIOWORKS - WATSON - WEST MOUNTAIN - YAESU - YUPITERU

Peter Dodd, G3LDO

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

E-mail g3ldo@ukonline.co.uk

Antennas

More about 7MHz delta-loop antennas – how to configure and use them

In the September edition of 'Antennas' I described a delta full-wave loop for 7MHz, where the apex of the loop was supported by a small stub mast on the chimney of the house. Since that time, I moved the loop away from the house and it is now supported by an 18m high mast. The transmitting efficiency was changed very little by this move, but the receive performance, particularly on 7MHz, was much improved, because of the reduction of electrical interference. On the first night of operation on 7MHz, I heard stations from many parts of Latin America and worked a few of them.

If you have two supporting structures, say a mast and the chimney of a house, you could try inverting the loop. This arrangement is used by SM0DTK [1], with the base of the triangle 13.5m high and fed at the apex close to the ground. According to *EZNEC-4*, such an inverted loop would have a gain of around 5dBi over good ground, with a maximum angle of radiation of 50°, compared with my loop that has a maximum gain of only 1dBi but a maximum radiation of less that 30°. The sides of this triangle are 12.6m and the base is 16.9m.

SM0DTK has added another identical loop, located just over 5m away that is tuned with a 100pF capacitor via 4.85m of 450w ladder line so that it can act as a reflector or director. This gives an extra 3 or 4dB gain and a useful front-to-back ratio. The only disadvantage of this arrangement is that it requires four support structures (in SM0DTK's case, trees). It occurs to me that such an antenna could be scaled for the higher frequency bands with a loop spacing arrangement that requires only two support structures.

THE COMUDIPOLE FEED ARRANGEMENT

I received an e-mail from ON6TJ, who uses the same type of single-support delta loop as described above. It is fed on one side, λ/4 down (on 7MHz) from the apex, using 450Ω ladder-line. This ladder-line does not go straight into the house; instead it is connected to the balanced side of a 4:1 balun located outside the house. The rest of the run into the house is made using coax cable. Such an arrangement, shown in **Fig 1,** is known as the 'comudipole'; it was first described in [2], but can also be found in [3]. The lengths of the coax and the twin feeder are not critical, although losses will be minimised by having as much of the total feeder length as possible being made up of twin feeder. I also use the comudipole feed method for my loop. In this case, the coax length is 6m and the 450ω ladder-line, 30m. The balun is a PA0SE wideband 4:1 coax type, as shown in the photograph, and is described in [2] and [4].

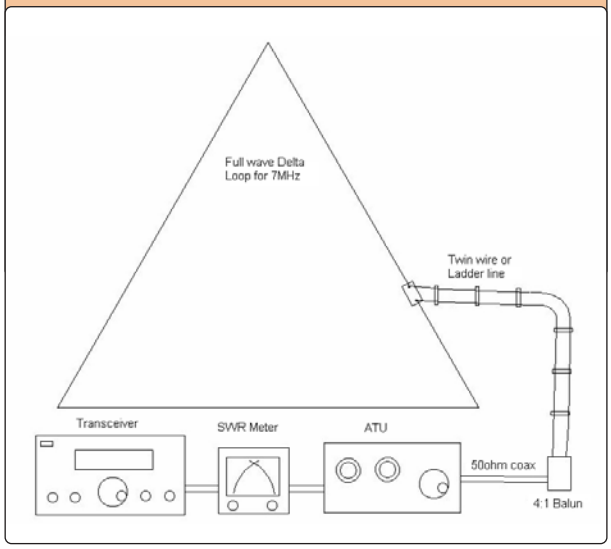
WHY A 4:1 BALUN?

I was recently asked why the balun in an ATU should use a ratio of 4:1. Good question.

Most commercial ATUs use a T-match arrangement, which provides the best compromise between efficiency, simplicity and cost. However the T-match is an unbalanced antenna tuner, and some type of balun transformer must be incorporated if it is to be used successfully with balanced feeders. While a balun transformer provides a very simple solution for coupling a balanced feeder to an unbalanced tuning unit, it may not be as efficient as a properly-balanced ATU. Many published designs use a 4:1 balun on the assumption that most of the balanced impedances that will be encountered will be in the range 150 to 600w. The feed impedance of the full-wave loop discussed above is around 130w on 7MHz and 1300w on 10MHz (ignoring reactance). The unknown length of the feeder might mean that these impedance values could have a much wider range. In practice, the system seems to work, although some experimental pruning of the twin feeder might be necessary to ensure the antenna loads on all bands of interest.

The impedance range of the ATU can be increased by having a balun that can be switched from 4:1 to 1:1. If the balun is wound on a ferrite toroid core (as are all baluns in ATUs), it can easily be modified by replacing the two (bifilar) windings with three wires wound trifilar fashion. That is to say, three identical windings are wound on together. Lack of space precludes a description here, but full details of the construction of the G3TSO ATU can be found in [5] and [6]. ♦

FIG 1



Top: A 7MHz loop using the 'comudipole' feed arrangement. The coax cable from the balun is connected to the coax output socket of the ATU.

Left: The PA0SE wideband 4:1 coaxial balun. See 'The Comudipole Feed Arrangement'.

REFERENCES

[1] '2-Element Delta Loop for 40 metres', Martin Hedman, SM0DTK, *QTC*.
[2] 'Eurotek', Erwin David, G4LQI, *Radio Communication*, August 1992
[3] *Backyard Antennas*, pp26/27.
[4] *Backyard Antennas*, pp171/72.
[5] 'A General-Purpose Antenna Tuning Unit', M J Grierson, G3TSO, *Radio Communication*, August 1987.
[6] *Backyard Antennas*, pp45/46.[1] 2-Element Delta Loop for 40 metres', Martin Hedman, SM0DTK, *QTC*..

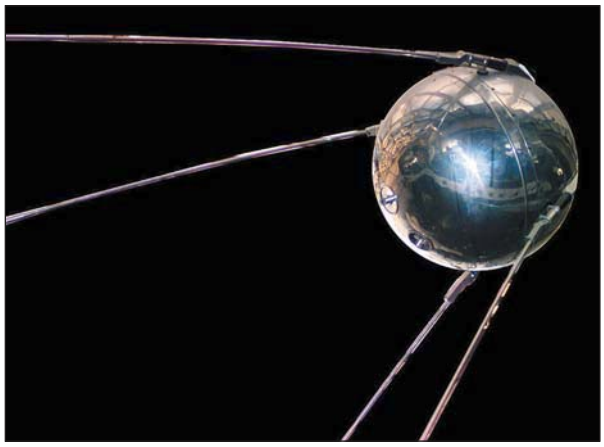
Steve White, G3ZVW

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

E-mail: g3zvw@dsl.pipex.com

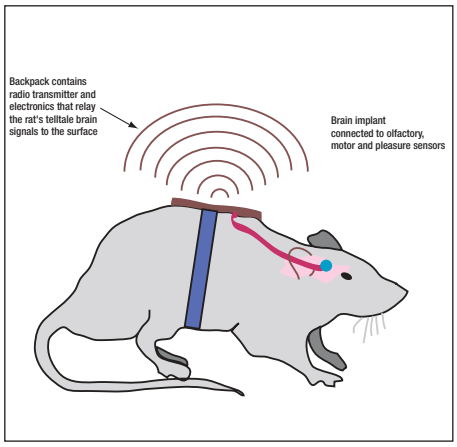
Whatever next

If you are trapped in the rubble after an earthquake, and you see a rat – all may not be lost, as G3ZVW explains • Is it really almost 50 years since Sputnik 1? Read about the planned celebrations • AOR produces an add-on digital voice adapter.



Sputnik 1, the first man-made satellite. For three weeks its two transmitters (on 20MHz and 40MHz) sent data associated with the density of the upper atmosphere, radio propagation and the temperature of the spacecraft. Its launch on 4 October 1957 shocked the Americans, who could scarcely believe they had been beaten into space by their arch rivals, the former Soviet Union.

Rats with electrodes implanted into their brains could soon be helping to locate survivors in collapsed buildings.



MAN'S NEW BEST FRIEND – THE RAT

It is a well-known practice to use sniffer dogs to search for survivors in buildings that have collapsed after an earthquake. Their sense of smell is acute, but they can't get into really small spaces. Rats, however, have an equally good sense of smell and can crawl just about anywhere, which makes them ideal candidates for locating buried survivors. Now there are plans to equip rats with transmitters, so soon they could be helping to save lives.

To become 'rescue rats', the animals need to be taught to home in on people and signal their position to the surface. When a dog is sniffing for explosives, drugs or hidden people, he makes a unique movement that the handler recognises when he achieves his goal. This wouldn't be easy with a rat that would be well out of sight in the rubble, but in a project funded by DARPA, the Pentagon's research arm, Linda and Ray Hermer-Vazquez of the University of Florida have worked out a way to achieve this.

First, they identified the neural signals that rats generate when they find the scent they are looking for so, instead of training the rat to make a conditioned response, they pick up the response directly from the brain. Each rat will have electrodes permanently implanted in three areas of the brain: the olfactory cortex, where the brain processes smells; the motor cortex, where the brain plans its next move; and the reward centre which, when stimulated, gives the rat a pleasurable sensation. First, the researchers trained rats to search for human odour by stimulating the reward centre when it found its target smell. Once they were trained they were set to forage for the target smell, while electrodes recorded their brainwaves. This allowed researchers to identify the patterns associated with finding that smell. "There are two neural events that we believe are hallmarks of the 'aha!' moment for the rat," says Linda Hermer-Vazquez. "These are high-frequency activity in one subset of neurons and decreased activity in two other areas." Signals from the rat's brain will be connected to a radio transmitter strapped to the animal's back. Rescuers will be able to follow the rat's position by tracking the signals. They are also developing software that will recognise the 'aha!' moment when the rat has found its target, so rescuers will know where to start digging. The team hope to create a working system within nine months.

SPUTNIK'S 50th ANNIVERSARY

On 4 October 1957, the former Soviet Union launched *Sputnik 1* [1], the first man-made object to leave earth's atmosphere. The 84kg satellite measured 58cm across and with its launch began the space race. The 50th anniversary of the launch will take place in 2007 and, as part of the celebrations, Arianespace is planning to send 50 mini-satellites into orbit for the International Astronautical Federation. They will be launched from a single Ariane rocket.

It is planned that each 'nanosat', weighing just 1kg, will represent a nation and will conduct small-scale research experiments during two years in orbit. "Arianespace is very proud to be participating in this commemoration," said Jean-Yves Le Gall, the company's Chief Executive Officer. "Supporting science and research is an integral part of our assigned mission. We have already orbited some 40 auxiliary payloads of the same type we will launch in 2007. Just like 50 years ago, when the first man-made earth satellite was launched, these nanosatellites will signal a new era for scientists worldwide."

ADD-ON DIGITAL VOICE

At the recent Tokyo Ham Fair, AOR unveiled its new ARDV8000, which is a plug-in digital voice adapter. Looking like a slightly overgrown speaker-mic, it surely means that AOR sees a significant future for digital voice operation on the amateur bands.

Although there is scant information available on the new product at this time, it would be logical to assume that the ARDV8000 will be compatible with the company's ARD9800 Digital Voice and Image Interface, featured in this column in June 2004. The ARD9800 uses G4GUO's open protocol system and can handle data and SSTV, as well as voice, but it seems likely that the speaker-mic styled ARDV8000 will not handle all – or maybe any – of the supplementary modes.

NOTE

[1] The Russian word 'sputnik' means 'companion' ('satellite' in the astronomical sense). ♦

WEB SEARCH

Sputnik's 50th anniversary
www.arianespace.com/site/news/news_sub_release_index.html
Rescue rats
www.newscientist.com/news/print.jsp?id=ns99996429

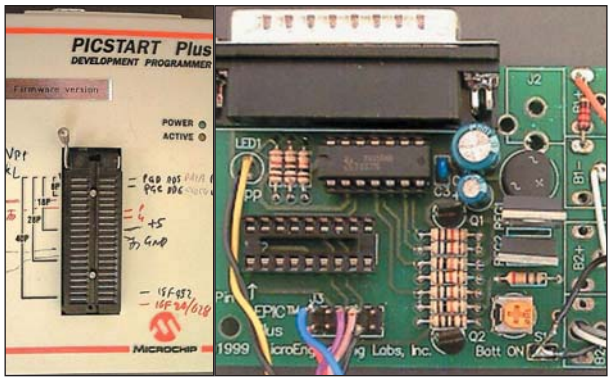
Andy Talbot, G4JNT

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

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

A new concept for packet radio?

More about the packet network and its potential. Andy also begins his series on the use of PIC chips in amateur radio



Two off-the-shelf PIC programmers. The 'Microchip Picstart Plus', supplied as part of a complete PIC programming system, is shown, together with the lower-cost solution, the 'EPIC' programmer, supplied as a printed circuit board module. Both are available from mail-order electronic component suppliers.

Several readers wrote in to point out the mistake in the address given for accessing the ON4KST chat room via packet radio. Eric G0CGL, owner of GB7CGL, wrote in to say: "... the ON4KST telnet address doesn't work. Apparently it should be .info and not .ino - this could be gleaned from going to the ON4KST website but not, I suppose, by anyone who just has packet and no Internet."

Phil Harris, G4SPZ , Chairman of WyrePak (the Wyre Forest Packet Radio Support Group) also wrote to point out the same mistake, and sent the following : "Thanks for a particularly interesting 'Data' column in October's RadCom. I particularly liked your reference to '... the old packet network still used for the DX cluster...', and am delighted to tell you that the packet network is definitely alive and still thriving! Internet links now provide rapid and reliable mail forwarding and real-time keyboard-to-keyboard contacts worldwide. However, an error has crept into the article which would prevent access to the chat room. The correct method of access for packet users is to access the BUXTON packet node GB7BUX-8, then enter 'telnet www.on4kst.info 23000'. Once connected, at the login prompt, type your callsign. The system will recognise you as a new user, and will prompt you to enter your callsign, choose and confirm a password, enter your first name, locator and e-mail address. Once in the system, comprehensive help is provided. The command /SHOW USER lists all stations connected. Use /Q to leave the chat room. On the night I tried the 144MHz chat room, over 70 stations (mainly EU) were connected including eight Gs. ON4KST has, in fact, five chat rooms covering 50/70MHz, 144/432MHz, microwaves, EME and low bands."

Phil also took the opportunity to attach a copy of the WyrePak Newsletter. He states that, unfortunately, this has now had to return to being a twice-yearly publication, due to pressure of work on the his part, and lack of contributions. Among its many articles is an interesting contribution from Nick, ZL3TPN, on the state of packet operation in New Zealand. This was actually sent to WyrePak via the packet radio network!

Paula, G8PZT, gave a paper on Globalnet to the 2004 Packet Conference in Worcester recently. Globalnet is an interesting concept which may prove to rejuvenate the packet network. The (slightly paraphrased) introduction is repeated here, in the box. It is about a possible global networking scheme for packet radio. Although intended for an audience of SysOps, the presentation has been edited slightly, but should hopefully give interested readers a taste of what it's all about.

PIC MICROCONTROLLER

I received a couple of positive replies to the idea of covering something on PIC programming within this column, so here goes. The PIC microcontroller was first introduced about 12 years ago by Arizona Microchip in an attempt to make a low-cost simple universal programmable device. Microcontrollers had been around for a long time, but most of them tended to be derivatives of more complex micro-computer chips and so needed additional hardware and support chips, as well as being rather complicated to program. The original PICs came with a number of input and output pins, which were designed to be interfaced directly to control circuitry – for example they could sink or source 20mA, making them suitable for directly driving displays. The first generation came with a simple programming set of just 32 instructions that could be quickly remembered. The devices have become more complex now, but the basic entry-level devices still exist, now in even easier-to-use small formats, and still remain a low-cost simple solution to doing what otherwise would have needed a lot of TTL or CMOS chips to do the old fashioned way.

But before being able to use these devices, even to run code already written by others, we need to be able to blow the code into them with a programmer. Programmers can be purchased ready-made from all the electronic suppliers, and these all come with support software which allows you to write the code, assemble it, and programme the devices in one go. Alternatively you can make your own and use programming tools from the web – see the 'Web Search' box. ♦

GLOBALNET

A few years ago, whilst watching people texting on their mobile phones, it occurred to me that here was a relatively slow wireless message delivery system which, for all its limitations, had become a so-called 'killer application'. So why couldn't we do something similar with packet radio? Could text messaging become the killer application to keep packet alive? After all, we now had rigs with built-in TNCs, and we had a network which had been moving text around for 15 years or so. All we needed were software and protocols.

I had played with APRS messaging, but it was quite unimpressive. It relied too heavily on part-time digipeaters on a single congested frequency, and it had a limited 'horizon' of two or three hops. What we needed was something which could deliver messages reliably over long distances. Something which used the existing network.

Nearly 20 years in the packet game has taught me that the only way to get new things accepted is to do them, and show that they work. So I set to work on a scrap of paper and have been quietly beavering away at it ever since. There were several things to work out, but underlying them all was the need to route packets from a source node to destination node anywhere in the world without any knowledge of the intervening networks. Until that could be done, the rest was academic.

Paula Dowie, G8PZT

The rest of the paper can be seen via the Wyrepak web page, given at the end.

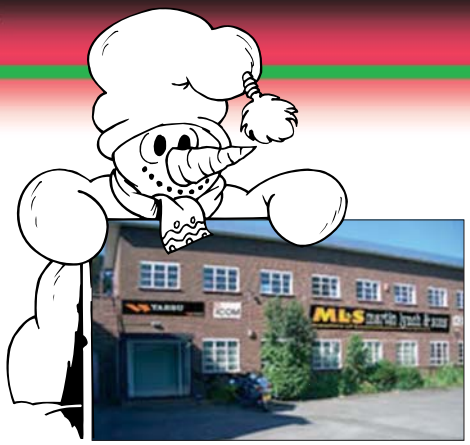
WEB SEARCH

Wyrepak packet group	**wyrepak@aol.com**
Arizona Microchip	**www.microchip.com**
Wisp 628 PIC Programmer	**www.voti.nl/wisp628/**

Index - Vol 80 (2004)

ML&S martin lynch & sons

Suppliers of Communications Equipment



There is only one place you should be on the 4th of December.

(And it isn't sitting at home missing the best open day of the year)

The ML&S Open Day 09:00-16:00

Saturday 4th December.

- Representatives from Yaesu, Icom, Kenwood , PW Publishing, RSGB, RAIBC & more
- Boot sale in the rear car park (First come first placed)
- Tons of FREE Parking for all ML&S Customers in our own PRIVATE CAR PARK
- Masses of stock all at unprintable prices
- Instant Finance available (STS), remember to bring I.D.
- Hog Roast sponsored by Yaesu, Kenwood & Icom
- Easy to get to and lots to do in Chertsey Town for the family
- Talk-in on S22

New product ranges!

A new introduction into the U.K. Ham Market available from ML&S. The complete range of NCS rig and receiver switching products are now available from your favourite Ham Store.

NCS Multi Switcher.....£279.95

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

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

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

SignaLink"! Model SL-1+Sound Card - Radio Interface

For all available Digital modes, the SignaLink SL-1+ also supports the latest Voice modes such as Internet Repeater Linking (EchoLink, VOIP, etc.), Remote Base, and Voice Keyer operation.

TIGERTRONICS
Manufacturers Of Innovative Communications Products

* No Serial Port Required
* Complete Radio Isolation
* Adjustable Rx & Tx Levels
* Variable Transmit Delay
* Works with ALL Radios
* Uses Mic, Data, or Accy Port
* Supports All Available Digital and Voice Modes

We sell four versions of the enhanced model the SL-1+8R with 8-pin round mic. connector, the SL-1+RJ45 with RJ-45 mic. connector, the SL-1+RJ11 with RJ-11 mic. connector and the SL-1+6PMD with 6-pin mini Din Data Port connector SL-1+8xxx Interface with rig lead (you specify!) **£69.95**

Extra leads £14.95
(8-Pin, RJ-45, RJ-11, 6-pin mini DIN)

Extra leads £19.95
(SL-CAB-13I 13-Pin Icom), (SL-CAB-13K 13 Pin Kenwood)

Heil Sound

We have been Heil stockists for over 15 years. With more space we can offer even more of their excellent product range.

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

Pro-Set Series

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

Pro-Set-4 with HC-4 DX Insert **£109.95**
Pro-Set-5 with HC-5 HQ Insert **£109.95**
Pro-Set-IC with Icom Insert **£124.95**
Pro-Set-Plus-IC for Icom & HC4 insert **£169.95**
Pro-Set-Plus with dual HC4/HC5 ..... **£155.95**

AD-1 Interface Leads for any of the above **..£16.95**
(Please specify which radio)

Pro-Set Quiet Phones

New

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

PSQP-4 with DX insert **£189.95**
PSQP-5 with HQ insert **£189.95**
PSQP-IC with Icom insert **£199.95**

FS-2 PTT Foot Switch for any of the above headphone systems **£39.95**

We also stock the Goldline & Classic range, call for details.

Call us 6 days a week, mon-sat 9.30-5.30

0845 2300 599 local call number

fax: 0845 2300 339

e-mail: sales@hamradio.co.uk

web: www.hamradio.co.uk

LOG ON NOW

www.hamradio.co.uk

ML&S martin lynch & sons

Suppliers of Communications Equipment

Outline House
73 Guildford Street
Chertsey
Surrey KT16 9AS

Did you know?

Now we have 4000sq ft of Ham Radio space we now stock a huge range of accessories including:

* Barenco Antenna Hardware
* Westlake Cables, including Westflex, 300 Ohm Ribbon, 75 Ohm Twin, Rotator cable and much more.
* Moonraker antenna wire
* A complete range of plugs and sockets
* More antennas than you can imagine, including Cushcraft, Hustler, Butternut, Maldol, MyDEL.
* The largest display of Amateur Radio equipment all wired ready to 'Try before you buy'

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: HF and 6M: wave.
- 2M: wave 2.15 dBi gain
- 70cm: Two 5/8 waves in phase 5.5 dBi gain
- Power: 200 watts SSB on HF and 150W FM on 6M to 70 CM
- SWR: 1.5:1 at fO frequency
- Connector: UHF (SO-239)
- Mast Diameter: 1.0 - 2.36 inches (25-60 mm)
- Height: 8.5 feet (2.62 m)
- Weight: 5 Lbs. 7 ounces. (2.4 kg)

Maldol HMC-4

Type: Amateur HF/VHF/UHF mobile antenna
Band(s):
10m - 1/4-wave
6m - 1/4 wave
2m - 1/2-wave
70cm - 2*5/8-wave
Gain: 10 - 0 dBi
6 m - 0 dBi
2 m - 2.15 dBi
70 cm - 5.5 dBi
Max power: 50W
Freq range: 120W (10/6 m: 80 W)
RX: 50-1500MHz
Impedance: 50 ohms.
M-plug/PL-259
Length: 1.19m
Weight: 390gr
Manufactured: Japan, 2003-200x
Other: Suitable for Yaesu FT-8900R.

Only £69.95

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

POWER INPUT: 50/144/430MHz
LENGTH: 1360mm
WEIGHT: 910g
DIAMETER: 530mm
SUITABLE MAST: 60mm

Only £89.95

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

Maldol

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

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

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

Apex Range

AX-40 144/430MHz	•TYPE 1/4λ, 144MHz, 1/2λ, 430MHz •GAIN 3.0dBi 430MHz •MAX POWER INPUT 60W •CONN. M-P •LENGTH 425mm •WEIGHT 110g	£24.95
AX-75 144/430MHz	•TYPE 1/2λ, 144MHz, 5/8λ, 430MHz •GAIN 3.2dBi 144MHz, 5.7dBi 430MHz, •MAX POWER INPUT 60W •CONN. M-P •LENGTH 760mm •WEIGHT 140g	£33.95
AX-95 144/430MHz	•TYPE 1/2λ, 144MHz, 5/8λ, 430MHz •GAIN 3.3dBi 144MHz, 5.8dBi 430MHz, •MAX POWER INPUT 60W •CONN. M-P •LENGTH 950mm •WEIGHT 150g	£32.95
AX-110 144/430MHz	•TYPE 1/2λ, 144MHz, 5/8λ, 430MHz •GAIN 3.5dBi 144MHz, 6.0dBi 430MHz, •MAX POWER INPUT 70W •CONN. M-P •LENGTH 1100mm •WEIGHT 150g	£34.95

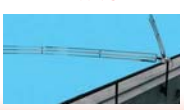
HFC Range

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
HMC-10 & HMC-14	10m & 20m add-ons for the HMC-6	£22.95 each
NEW! HFC-217	7/21MHz. Max power input 120W. Length: 1300mm. Weight: 450g	£44.96
HFC-80L 3.5MHz	•TYPE 1/4λ, •MAX POWER INPUT 120W SSB •CONN. M-P •LENGTH 2110mm •WEIGHT 530g	£44.95
HFC-80 3.5MHz	•TYPE 1/4λ, •MAX POWER INPUT 120W SSB •CONN. M-P •LENGTH 1540mm •WEIGHT 360g	£38.95
HFC-40L 7MHz	•TYPE 1/4λ, •MAX POWER INPUT 200W SSB •CONN. M-P •LENGTH 1870mm •WEIGHT 330g	£34.95
HFC-40 7MHz	•TYPE 1/4λ, •MAX POWER INPUT 120W SSB •CONN. M-P •LENGTH 1310mm •WEIGHT 210g	£29.95
HFC-20L 7MHz	•TYPE 1/4λ, •MAX POWER INPUT 250W SSB •CONN. M-P •LENGTH 1515mm •WEIGHT 275g	£34.95
HFC-20 14MHz	•TYPE 1/4λ, •MAX POWER INPUT 120W SSB •CONN. M-P •LENGTH 1010mm •WEIGHT 190g	£29.95
HFC-15L 21MHz	•TYPE 1/4λ, •MAX POWER INPUT 250W SSB •CONN. M-P •LENGTH 1515mm •WEIGHT 250g	£34.95
HFC-15 21MHz	•TYPE 1/4λ, •MAX POWER INPUT 120W SSB •CONN. M-P •LENGTH 1010mm •WEIGHT 190g	£29.95
HFC-10L 28MHz	•TYPE 1/4λ, •MAX POWER INPUT 250W SSB •CONN. M-P •LENGTH 1515mm •WEIGHT 245g	£34.95
HFC-10 28MHz	•TYPE 1/4λ, •MAX POWER INPUT 120W SSB •CONN. M-P •LENGTH 1010mm •WEIGHT 190g	£29.95

NEW! VC-3 Compact (only 5300mm)

7/21/28MHz Rotary Dipole.

£139.95



Maldol Mounts

Maldol

Earpiece & Microphone Headsets available for Yaesu, Icom & Kenwood

To see the full range of Hokushin's famous Maldol range please see our web site or call into the new showroom

NEW

Icom IC-756 Pro mkIII

The IC-756PROIII incorporates many of the features that made its predecessors so successful. However, the integration of the latest technology employed in the IC-7800 such as receiver technology, +30dBm class IP3, miniscope makes this new rig the very pinnacle of the IC-756PRO series.

BUY NOW PAY AUTUMN 2005 0% APR.

Icom IC-7800

The worlds best H.F. Transceiver? Probably.

No silly freebies. just the ultimate understanding and support you deserve when making an investment of this magnitude. To discuss the new HF+6M Super Rig from Icom, call the ML&S Sales team today. **RRP: £6400.00**

Icom IC-7400

HF/6M/2M DSP Base Transceiver with ATU & 100W.

RRP: £1699, ML&S: £1299 with FREE SP-21 & SM20 (whilst stocks last)

Icom IC-706mkIIG

Eight years old and still going strong. HF/6/2/70 Ideal mobile/basetransceiver.

RRP: £939.00, ML&S: £769 or 48 x £22.75 p/m

Icom IC-703

10W Portable HF Transceiver with built-in PSU.

RRP: £703, ML&S: £589 or 48 x £17.43 p/m

Icom IC-718

Basic ready to go 100W HF Transceiver supplied with Microphone & DC Lead.

RRP: £649, ML&S: £449 or 48 x £13.29 p/m

Icom IC-910X

The best 2/70 & 23cm dedicated all mode base. 23cm included.

RRP: £1675, ML&S: £1239 or 48 x £36.66 p/m

Basic Version (without 23cm) also available £1089 or 48 x £31.93 p/m

Icom IC-R20E

The latest portable receiver with TWIN RX & digital record facility. For full spec see web

RRP: £499, ML&S: £399 or 36 x £14.51 p/m

Icom IC-2200H

Just Arrived! 65W o/p 2M FM. The optional UT-115 provides digitally modulated and demodulated clear audio. It also allows you to send voice and data simultaneously. **RRP: £235, ML&S: £199.00**

Icom IC-E208

2/70 mobile 50/55W Transceiver with host of add

RRP: £365, ML&S: £275.00 or £8.14 p/m

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

Call us 6 days a week, mon-sat 9.30-5.30

0845 2300 599

local call number

fax: 0845 2300 339

e-mail: sales@hamradio.co.uk

web: www.hamradio.co.uk

Take Away Now and Pay NOTHING Until This Time Next Year!!

Having many years of experience offering specific finance packages for our customers, we can now offer various options on payment. We have added "**Take-Away Now & Pay Later**" to all our products over £199. It works like this:

0% APR An example of our Take-Away Now: Discounted price of £300. Pay no interest provided you pay by the date the amount is due. in full.

After the 12 months period has expired pay £15.76 for 36 months. TAP £567.43 Please note that interest is calculated from the date of the original agreement. 29.8% APR.

RRP £2495

ML&S £2099. or 36 x £76.31

Visit hamradio.co.uk for a comprehensive specification

BUY NOW PAY AUTUMN 2005 0% APR.

Kenwood TS-2000E

Just superb on all bands 160m-2m with optional 23cm (X-Version).

RRP: £1699, ML&S: £1589 or 48 x £47.02 p/m

Kenwood TS-2000X

As above but with 23cm fitted.

RRP: £1999, ML&S: £1889.00 or 48 x £55.89 p/m

Kenwood TS-480SAT

The best selling Kenwood H.F. Can be used mobile or base. Includes ATU.

RRP: £1099.95 ML&S: £949 or 48 x £28.08 p/m

Kenwood TS-480HX

As TS-480SAT but 200 Watts, no ATU.

RRP: £1199, ML&S: £999 or 48 x £29.56 p/m

Kenwood TS-570DGE

Still the ideal choice if you are keen on H.F. and want an easy to use radio.

RRP: £999, ML&S: £799 or 48 x £23.64 p/m

Kenwood TMD-700E

The unique 700E is not only a dual-band FM rig but has APRS and TNC built-in.

RRP: £519, ML&S: £439 or 48 x £12.99 p/m

Kenwood TH-F7E

2/70 Handie with Gen Cov RX. If you must have SSB RX on your dual-bander then buy one!

RRP: £289.95, ML&S: £249

Kenwood TH-D7E

A 2/7- Handie with TNC and APRS capability.

RRP: £359, ML&S: £299 or 48 x £8.85 p/m

ditional features.

Power supplies

IC-PS-85 20Amp Matching Switch Mode PSU for Icom Base Transceivers. ..... **Only £169.95**

Yaesu FP-30 Internal PSU for FT-897 ..... **£199.95**

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

Nessel MS-1228 25 Amp continuous power supply. 28 Amp peak..... **£69.99**

Radio Works

Carolina Windom Wire Antennas

CW-160	160-10m 76.8m long	£129.95
CW-160 Special	160-10m 40.5m long	£119.95
CW-80	80-10m 40.5m long	£89.95
CW-80 Special	80-10m 20.1m long	£109.95
CW-40	40-10m 20.1m long	£84.95
CW-20	20-10m 10.36m long	£89.95
CW-620	20-6m 9.7m long	£89.95
G5RV Plus	80-16m with balun 31m long	£59.95
Baluns & Isolators		
T-4 Plus	Line isolator 1.8-54MHz 4kW	£39.95
T-4 500	Line isolator 1.8-30MHz 500W	£32.95
T-4G Plus	Line isolator 1.8-54MHz + gnd4kW	£39.95
REM-BAL	Ladder line 4:1 balun 1.8-30MHz	£45.95
B1-2K Plus	1:1 current balun - for inverted Vs	£28.95
B4-2K	4:1 voltage balun - loops/folded dipoles	£39.95
Y1-5K Plus	1:1 current yagi balun - 1.8-54MHz	£39.95

MyDEL MultiTrap

Forget the G5RV. Install a proper TRAPPED wire dipole MutiTrap for 80-10M Only 66i.Must be centre supported. **£89.95**

MyDEL MegaTrap

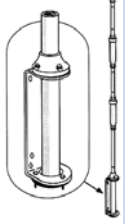
Same as Multitrap but 160m/80/40m, 105' long . **£99.95**

Hustler 6-BTV

The best performing H.F. Vertical - ever!

We have literally sold hundreds of these with fantastic customer reports. At last a vertical that gives you REAL PERFORMANCE on 80m and 40m, as well as the other bands. No radials required. Just mount 18 inches above the ground, connect to a decent earth spike close by and operate.

Only £219.95



Specification:

6-BTV HUSTLER 80-10m Vertical 1kW.

- 6 Bands: 10, 15, 20, 30, 40, 80m
- VSWR 1.6:1 or better
- 10-40m Bandwidth up to 100kHz 80m
- Power: 1kW
- Feed: 50 Ohms
- Solid 25.4mm traps
- Feed with any length 50 Ohm coax
- Heavy duty aluminium mounting bracket
- Solid 25.4mm (1in) fibreglass trap formers
- Use as ground mount with or without radials
- Use with radials on elevated mount
- Size: 7.3m (24ft) - Weight: 7.5kg.

If you can't mount the Hustler 6-BTV on the ground then the only choice is the new VK5Jnr. It's so good we use one at our new H.Q.!

Maldol VK5-Jnr. BACK IN STOCK!

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

Daiwa Meters

Daiwa CN-101L: SWR/PWR Meter 1.8-150Mhz

* Frequency range: 1.8 - 150MHz
* Power range: 15/150/1.5kW
* Power rating: 1.5kW (1.8 - 60MHz), 1kW (144MHz)
* SWR Detection sensitivity: 4W minimum
* Input/Output impedance: 50 ohm
* Input/Output connectors: SO239 (M)
* Size: 80H x 155W x 100Dmm
* Weight: 670g

ML&S only £59.95

Daiwa CN-103LN: SWR/PWR Meter 140-525MHz

* Frequency range: 140 - 525MHz
* Power range: 20/200W
* Power rating: 200W (140 - 525MHz)
* SWR Detection sensitivity: 4W minimum
* Input/Output impedance: 50 ohm
* Input/Output connectors: N type (N)
* Size: 80H x 155W x 100Dmm
* Weight: 670g

ML&S only £65.95

Daiwa CN-801H: SWR/PWR Meter 1.8-200Mhz

* Frequency range: 1.8 - 200MHz
* Power range: 20/200/2000W
* SWR Detection sensitivity: 5W minimum
* Input/Output impedance: 50 ohm
* Input/Output connectors: SO239 (M)
* Size: 109H x 155W x 120Dmm
* Weight: 1000g

ML&S only £109.95

Daiwa CN-801V: SWR/PWR Meter 140-525MHz

* Frequency range: 140 - 525MHz
* Power range: 20/200W
* SWR Detection sensitivity: 5W minimum
* Input/Output impedance: 50 ohm
* Input/Output connectors: SO239 (M)
* Size: 109H x 155W x 120Dmm
* Weight: 1000g

ML&S only £119.95

Daiwa CN-801S SWR/Power Meter 0.9-2.5Ghz

* Frequency range: 0.9 - 2.5Ghz
* Power rating: 2 / 20 watts
* SWR Detection sensitivity: 0.5W minimum
* Input/Output impedance: 50 ohm
* Input/Output connectors: N Type Connector
* Size: 180w x 120h x 130d Approx.
* Weight: 670g

ML&S only £139.95

Noise reduction

bhi Ltd. A British company producing probably the worlds best DSP noise reduction speakers and modules. ML&S stock the whole range of BHi products offering excellent technical engineering, quality and reliability. You just wouldn't believe how much noise these units remove - SSB transmissions almost sound FM quality!

NES-5 Only £79.95 Entry Level DSP Noise Cancelling Speaker for AM & FM Reception

NES10-2 Only £99.95
Adjustable Noise Eliminating Speaker

NEIM-1031 Only £129.95
Noise Eliminating In-Line Module
The same as the NES-10 but an in-line module for you to place between your receiver/rig and own speaker.

Six Way Switch Box Only £29.95
Need to Connect more than one piece of equipment to your bhi Noise Eliminating Speaker or In-Line Module? The 1042 Switch box is the answer...

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

FJ, Miracle Antenna, Oregon Scientic, Revex, Tokyo-Hypower, Watson, Diamond, Yaesu and many more!

ML&S martin lynch & sons

Suppliers of Communications Equipment

The Miracle Antenna Family

Several years ago ML&S bought to you the famous Miracle Antenna. The system chosen by Miracle has its imitators but none offer the quality or ultimate performance. The inventor, Robert Victor has added more to the range.

Miracle Antenna The Miracle Whip is still the only completely self-contained, all-band (including HF/VHF/UHF) 57-inch telescoping whip antenna with integrated tuner for receiving and transmitting that mounts right on your radio. Now able to handle 20W, the Miracle whip is ideal for all sorts of applications. **Only £119.95**

Miracle Ducker A miracle whip without the whip. Why? The advantage is simple. On top of the Ducker is a BNC connector allowing you to connect a random wire to string up at a permanent (or temporary) location. We even do a Ducker Wire, 20ft or antenna wire terminated with a BNC & Strain relief boot.

Only £119.95. Ducker Wire £12.95 or buy both for £129.95

Qpak The worlds best Antenna Tuner. In fact it's so well engineered it's just too good to be called an ATU!

Range: 3.5 - 30 Mhz. 50 Mhz limited
Power: 20 watts max
Loads: Coax, random wire, balanced lines, verticals
Match: Up to 15:1 and beyond in some cases

As Featured in October RadCom 2004

Special Introductory Offer: Only £119.99

SGC

SG-211 Latest mini-smart-tuner. 1.8-60MHz. 60W max, Ideal for FT-817 etc. **Only £189.95**

SG-237 1.8-60MHz Smart Tuner 100W PEP Max, requires 3W drive minimum. 21ft minimum wire length. **Only £299.95**

SG-230 1.8-30MHz Smart Tuner 200W PEP Max, requires 3W drive. **Only £339.95**

We always carry the SG Smart Antenna Tuner range

W2IHY Graphic Equaliser

Only £219.95

Get a W2IHY 8 Band Audio Equalizer and Noise gate ... and get ready for compliments!

* You can adjust 8 bands of Equalization to give your transmit audio that rich, full, wide-band quality ideal for rag chewing.
* You can adjust Equalization for an extra edge in contest and dx work. Have pileup busting penetrating audio with substantial high frequency content.
* You can fine-tune your microphone for more natural reproduction of your voice.
* You can make good microphones sound great and poor microphones sound good.

TomTom Go

TomTom GO - the world's simplest, smartest, all-in-one car navigator. It's so good Lynchy uses one in his Y4ESU Mobile!

* All-in-one car navigation system with software, maps, GPS and car mount.
* Works straight out of the box - just turn it on and GO
* Clear spoken instructions in your language
* Crystal-clear 3D or 2D views with day and night variations
* 1000s of points of interests on the way
* Easy to fit and remove

ML&S Only £469.95

MFJ Products

Don't forget! ML&S now stock one of the largest displays of MFJ in the country. Call in today!

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

MFJ-16010 The MFJ-16010 is a variable L-network random wire antenna tuner designed to match the low output impedance of your transmitter to the high impedance of a random wire (or vice versa). 160-10 meters. Max 100W. **Cheap too. £56.95**

MFJ-901. HF Antenna Tuner w/ Balun The MFJ-901B is MFJ's smallest and most affordable 200 Watt PEP Versa Tuner. It's designed to match virtually any transmitter (up to 200 Watts RF power output) to almost any antenna. **£85.95**

MFJ-904 Tiny Travel Tuner w/ SWR/Wattmeter & Balun. Tiny 4Ω x 2º x 3 inch tuner handles full 150 Watts! Covers 80-10 Meters, has tuner bypass switch, tunes nearly anything! **£129.95**

MFJ-941E 300 Watt ATU with cross needle metering, antenna switch and 4:1 balun. 2 Coax, random wire, balanced line & external dummy load socket. **£129.95**

MFJ-969 The MFJ-969 Antenna Tuner gives you MFJ's superb AirCore Roller Inductor and full 6 meteres through 160 Metre coverage! **£199.00**

MFJ-948 The MFJ-948 Antenna Tuner has nearly all the features (except dummy load) of the MFJ-949E — the World's leading 300 Watt antenna tuner - for an incredibly low price. **£139.95**

MFJ-949 Full 1.8-30MHz Operation. Custom designed inductor switch, 1000 volt tuning capacitors, Teflon insulation washers and proper L/C ratio gives you arc-free operation with up to 300 Watts 1.8 to 30 MHz. Tunes out SWR on dipoles, verticals, inverted vees, random wires, beams, mobile whips, shortwave receiving antennas. Coax, random wire or balanced lines. Has heavy duty 4:1 balun. **£159.95**

Linear Amp Range of Amplifiers

Challenger 3
The Ultimate H.F. Amplifier

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

ML&S £1795

Ranger 811
Bags of Power for Little Money!

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

ML&S £Phone

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

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

ML&S £1395

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

Call us 6 days a week, mon-sat 9.30-5.30

0845 2300 599 local call number

fax: 0845 2300 339
e-mail: sales@hamradio.co.uk
web: www.hamradio.co.uk

LOG ON NOW

www.hamradio.co.uk

THANK YOU FOR MAKING TRANSMISSION 2004

25–26 SEPTEMBER

A RIP-ROARING SUCCESS

CONGRATULATIONS TO OUR WINNERS

Most Funds Raised by an Individual:
Daren Loxley M3LOX

Most Contacts Made by an Individual:
Bob Palmer M3DPQ

Most Contacts Made by a Club:
Cray Valley Radio Society GB2BF

Most Funds Raised by a Club:
Poldhu Amateur Radio Club GB2GM

THINK YOU OR YOUR CLUB DESERVE TO BE KING OF THE JUNGLE?
THEN GET READY FOR TRANSMISSION 2005!

TRANSMISSION is a national fund-raising event open to all Amateur Radio Clubs and individuals to aid the work of **BRITISH WIRELESS FOR THE BLIND FUND**

BWBF

REG. CHARITY No: 1078287
Gabriel House, 34 New Rd, Chatham, Kent ME4 4QR
Tel: 01634 832501 www.blind.org.uk

Ian White, G3SEK

52, Abingdon Road, Drayton, Abingdon, Oxon OX14 4HP.

E-mail: g3sek@ifwtech.co.uk
Website: www.ifwtech.co.uk/g3sek

IN PRACTICE

In his closing column of the year, G3SEK gives advice on using the bewildering array of adhesives and sealants accumulating in your shack • How to choose EHT rectifier diodes to repair your linear's PSU • The return of 'Dick and Smithy'.

STUCK AND SEALED

Q What kinds of adhesives and sealants do you recommend for typical jobs in amateur radio?

A This question comes around repeatedly, so I will run through some of the options. There is a huge range of adhesives and sealants, and obviously a large overlap between the two categories. I made a trawl through the drawer where such things are kept, and here are the ones I find useful.

Hot-melt glue is both an adhesive and a sealant. Normal glue sticks are made from amorphous polypropylene, a colourless, translucent substance which is exceedingly sticky when molten. Like the hot glue from an old-fashioned gluepot, it sets by simply cooling. It gives a very good bond to almost all surfaces, yet does not attack or dissolve them. It can be softened again by heating, of course, so the gluing process is often completely reversible. With a very determined effort, even the cold glue can be cut or peeled away from metal and plastics, leaving the original surface clean and unharmed.

This is an impressive array of useful properties, and I tend to use the glue gun more often than all the other adhesives and sealants put together. Every time I plug in the glue gun, I am grateful to the 'In Practice' reader who ordered me to buy one! It is very handy for holding components in place, and as an additional strain relief on wires and cables - yet they can still be moved again if necessary. Hot-melt glue also survives well outdoors, and the normal polyproplylene material has extremely low RF losses (being closely related to polyethylene). This makes hot-melt glue the best sealant I have ever found for the ends of coax antenna feed-lines.

The main problem about trying hot-melt glue is that first you need a glue gun - but they aren't expensive. If anyone is asking you for hints about a Christmas present, now's your chance!

To dispense a small, controlled drop of hot-melt glue, you will need a very steady finger on the trigger. But don't use too little, either, or else it will cool before it sticks, making the equivalent of a 'cold' soldered joint. Never try to spread a thin film on to a cool surface, because that will chill the glue almost immediately. Instead, apply a good dollop that will retain its own heat, place the two parts together, and squeeze the excess out from the joint. After the glue has cooled a little, you can then cut the excess away. Another minor problem is that hot-melt glue is incredibly 'stringy', and will pull out into trailing filaments of amazing length. The cure for this is simply patience. Just leave it be, until the blob of glue has cooled and hardened, and then you can pull or cut off the strings. Don't ever try to shape a blob of glue with your finger while it's molten - it will stick and burn you like a hot mince pie.

The glue gun will take several minutes to warm up; but having done so, it will also stay hot enough for several minutes after being unplugged. This gives you plenty of time to take it outdoors and seal the end of a cable.

About the only application where hot-melt glue is completely useless is... on anything that gets hot. It is also quite soft and rubbery, even when completely cold. Where those problems are important, other adhesives or sealants may work better.

Silicone rubbers share many properties with hot-melt glue, but can also be used up to moderately high temperatures. On the other hand, they are very flexible, and are only suitable for applications where this is a good thing. Silicone rubbers usually form an adhesive bond that is stronger than the material itself, so they can be very difficult to remove cleanly. Also silicone rubbers have quite a long setting or curing time, typically at least overnight and often 24 hours or more. These materials cure by a chemical reaction on exposure to air or moisture, and they are made in a number of different chemical families. Acetoxy silicone sealants are easy to tell by their characteristic smell of vinegar (acetic acid) and they used to have a bad reputation for causing corrosion on copper. I have never seen this happen myself, and the number of stories about corrosion seems to be balanced by the number of occasions when it has *not* happened, even in outdoor situations where it might have been expected. However, it still seems prudent to avoid the use of acetoxy materials in situations where corrosion underneath the sealant would be very hard to reverse or repair - above all, when sealing over bare copper braid.

Non-acetoxy silicone sealants used to be rather rare and expensive, but are now more readily available from the DIY sheds and builders merchants. I tend to pick up whatever is available, although it isn't always easy to tell what the formulation is, except by checking that the safety notices do not say 'releases acetic acid'. A specific non-acetoxy brand that has been recommended is Soudal Silirub 2 Oxime, available in standard 310ml cartridges from some independent uPVC window merchants. Finally, do not confuse silicone sealants with acrylic 'decorator's caulk' - that is a completely different material, and best kept for its intended purpose.

Epoxy adhesives are available in a wide range of brands and properties. The type that I tend to keep handy in

the drawer is rapid (10-minute) Araldite or a close equivalent. However, this tends to be quite runny before it cures, and remains quite rubbery afterwards. The original slower-setting type is harder, and better for jobs where strength in bulk is needed. Epoxy adhesives do not react well to UV, and if used as an outdoor sealant they will yellow, harden and lift after a few years.

Car body filler is good where you need a rigid material that can be shaped and even filed when set. Most modern fillers are polyester-based, and contain large amounts of solids that contribute hardness and strength. This material sets quickly after mixing with the 'accelerator', and in bulk it releases considerable heat which accelerates the setting process. A very similar material is used for anchoring bolt studs into soft brickwork - I can confirm that it sets rock-hard, with embarrassing speed!

Superglue (cyanoacrylate) adhesives are useful for their quick-setting properties. However, they do not bond well to all materials, and although specialist formulations are available, each tends to have quite a limited range of application. Ordinary liquid superglue has excellent penetration into narrow cracks, and bonds well to polystyrene and ABS plastics if you hold the joint closed and give the glue some time to harden. It also excels at bonding ferrite materials, and here it sets very quickly indeed - there is no second chance.

Clear Bostik is typical of a wide class of clear, soft, solvent-based adhesives that also make good sealants. It used to be my favourite for outdoor waterproofing, even though it begins to yellow and lift after a few years, but these days I'd always use hot-melt glue in preference. The industrial version of this class of adhesive is PVC pipe cement, which has a special use in amateur radio. Self-amalgamating tape and many other sealants do not bond well to cable jackets and dipole centre-boxes made from 'waxy' plastics like polyethylene. The answer is to rub some PVC cement into the surface as a primer. After it has completely dried, tape or sealant will make a good waterproof bond.

Sticky foam pads don't only belong in the stationery cupboard. You can also use them to tack a small PC board onto any convenient anchor point (or better, use a double thickness in case of protruding component wires). Commercially, sticky foam pads are the basis for a wide range of stick-down plastic pillars, and chassis anchors for cable ties. For best adhesion, it is important to make sure that the surface is clean and free from grease or skin oils. The plastic feet and anchors benefit from a light tap with a hammer, applied through a tubular box-spanner to spread the impact. These items can also be recycled, by scraping the base reasonably clean and then using hot-melt glue.

Loctite and similar thread-locking compounds are specialist products with a triple action: first as a lubricant while the nut and bolt are being tightened (which prevents galling of stainless steel threads); next as an anaerobic adhesive that sets inside the threads where air is excluded; and finally as a sealant to prevent internal corrosion. Thread-lock comes in four generic colour-coded grades. Red grades are essentially permanent - if applied correctly, you'd probably have to cut the nut off. Green grades require a lot of effort to remove the nut, but will keep it locked against quite severe vibration. Blue grades are good for antenna work, because it will keep the nut locked against moderate vibration, yet allows quite easy disassembly. Purple grades are weakest, for very delicate parts that could snap if locked too tightly. There is an excellent guide at www.loctite.com

And finally, there's **Blu-tack** - because sometimes you *need* an adhesive with a very weak and temporary hold. A dab of Blu-tack on the end of a ruler or screwdriver is a favourite trick for manoeuvring nuts and screws into inaccessible places. Blu-tack also makes a fairly respectable sealing putty, even outdoors, and especially if you need something that can be removed again quite easily. **Coax-Seal** has better outdoor performance as a sealing putty - but as I've said here before, I would never plaster it all over an entire coax connector. That is mostly a job for sealing tape... which is quite another story.

REPLACING RECTIFIER DIODES

Q I need to replace a blown EHT rectifier diode in my valve power amplifier, but I can't find that particular type of diode in any catalogue. Even a web search fails to bring up any reference to it.

A EHT rectifier diodes almost invariably fail due to breakdown when reverse biased, during a high-voltage part of the AC mains cycle. In this application, diodes are always connected in series strings, in order to obtain a peak inverse voltage (PIV) capability of several thousand volts - and preferably with plenty in reserve against occasional spikes and surges on the incoming mains. Modern diodes will almost certainly have higher performance than your existing diodes, which are clearly a very old type. But it is not a good idea to replace just one of the old diodes with a more modern diode, even if it is better. Mixing diodes in a series string is almost guaranteed to cause unequal division of reverse voltages, and may focus undue PIV stress onto another of the older diodes. The hardest part of the whole job has undoubtedly been to remove the rectifier board in order to find and repair the fault. You don't want to have to repeat that performance, so why not replace *all* the rectifiers with a new matched set?

The choice for replacement diodes is easy: the 1N5408 is the industry standard for this application. It has generous ratings (3A RMS current and 1000V peak inverse voltage) and is readily available at low cost. But before you insert the new diodes, check also that the old voltage-equalising resistors are still within tolerance. If they are not, they will be making the reverse voltages *unequal*, and might well have caused the original fault. Very old resistors are likely to be carbon-composition types, which are notorious for drifting erratically higher in resistance over the years. If you find a problem with any of the equalising resistors – including the ones for the EHT smoothing capacitors – replace the whole lot with 3W metal film resistors of the correct original value (eg the Philips/BC PR03 series). While you have the amplifier in bits, it's worthwhile to do the whole job.

MEN IN BROWN COATS II

"Hey, Smithy!"

"What's up?"

"It's this weird old radio I've got here," called out Dick.

Patiently, Smithy the Serviceman put down his test prods...

Familiar? Anyone who ever read *Radio Constructor* magazine will surely remember 'In Your Workshop' – the adventures of Dick, the apprentice radio/TV repairman, and Smithy, his wily mentor. No freakish fault could ever outwit Smithy, and we all followed along as he patiently helped Dick to solve this month's problem.

Well, they're back! Along with many more pages scanned from *Radio Constructor*, a classic selection of 'In Your Workshop' columns from 1953 to 1979 is now available at: http://vintageradio.me.uk/radconnav/radcon.htm

"Not bad at all," commented Smithy. "I think we can say that we have now achieved an acceptable repair at quite a reasonably low cost..."

THANK YOU!

Thanks to everybody who has sent in questions, comments and ideas during the past year. Although it isn't possible to reply to everyone individually, 'In Practice' exists to pass on **your** practical experience as much as my own. Happy holidays, and my very best wishes for 2005. ♦

REFERENCES

More information about adhesives and sealants can be found in previous 'In Practice' columns. You can search the 'In Practice' Cumulative Index on the web, at: www.ifwtech.co.uk/g3sek/in-prac/cumulative.htm

ICOM

IC-756PROIII NEW!

The IC-756PRO Series Continues to Grow

Incorporating many of the features that made its predecessors so successful, the IC-756PROIII employs the latest technology used in the IC-7800 to make this new rig the very pinnacle of the IC-756PRO series.

New Features...

- New receiver gives +30dBm* third-order intercept point
- Real time spectrum scope with mini-scope function.
- Low distortion BPF switching
- Fundamental-type 64MHz roofing filter
- Pre-amp changed to a noiseless feedback type to reduce 2nd order distortion
- Saturation characteristics of mixer and surrounding circuits improved
- 8 Channels of RTTY transmit memory
- Adjustable SSB transmit bandwidth
- Clock function has been added. Displays local time, UTC time etc.
- Screensaver function for prolonging LCD life

Features Retained from IC-756PROII...

- 32-bit floating point DSP with 24-bit AD/DA converter
- 51 types of pass band widths can be freely set
- Soft and Sharp filter shapes to suit the user's operation or band conditions
- RTTY demodulator/decoder
- AGC loop management system eliminates blocking by strong adjacent signals
- Real time spectrum scope
- 5-inch colour TFT display

...and many more outstanding features!

Icom UK Ltd

Sea Street, Herne Bay, Kent CT6 8LD. Telephone: 01227 741741

Fax: 01227 741742. e-mail: sales@icomuk.co.uk Website: www.icomuk.co.uk

* in the 14MHz band

Ian White, G3SEK,

52, Abingdon Road, Drayton, Abingdon, Oxon OX14 4HP. E-mail:
g3sek@ifwtech.co.uk Website: www.ifwtech.co.uk/g3sek

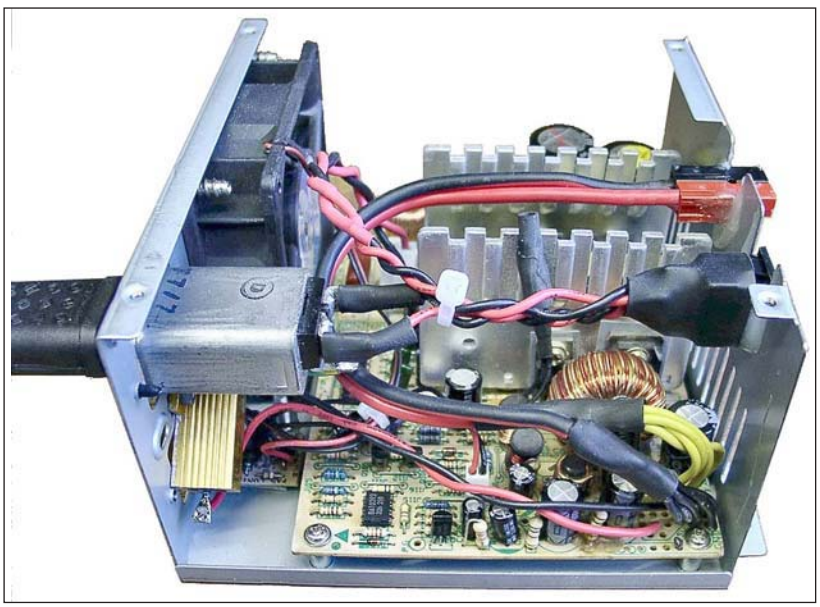
Switch-mode mains power supplies – part two

In the concluding part of his two-part article, G3SEK takes up the story on the secondary side of the main power transformer.

Everything on the low-voltage side of T1 (Fig 5 in Part 1) is referenced to mains earth – but probably only through the PC board mounting screws. Also, beware of high voltages very close by! There is mains on the back of the IEC socket, and mains and high DC voltages on the PC board, never more than a finger's-length away.

Typically, T1 has a single secondary winding that delivers something like 12-5-0-5-12VAC, and the centre-tap is connected to the common 0V rail. At the high switching frequency, very few turns per volt are required, so the winding resistance is very low and the ferrite transformer core can be very compact. Multiple paralleled wires help reduce losses due to the skin effect, and are also easier to wind on to the bobbin. A packaged double-diode, D3a,b, rectifies the 5V supply at up to 20A. A smaller double-diode, D4a,b, delivers +12VDC, typically at up to 8A. Both of these diode packages are mounted on the second large heatsink, which is usually connected to the case and to mains earth. Further diode rectifiers produce the low-current -5V and -12V DC outputs, along with a low-current +12V operating supply for the controller. All of these diodes are high-speed Schottky rectifiers, and if any fail, they must be replaced by similar types. Ordinary rectifier diodes simply won't work - they cannot keep up with these high switching frequencies.

The output smoothing circuits are basically choke-input filters, although an unusual feature is that all the major output choke windings share the same toroidal core. L2a is the winding for the +5V output, and in a PC it will carry by far the largest current, so the other windings, L2b – L1d, are wound in the opposite sense to reduce the net magnetisation of the core. L3 – L6 and their associated capacitors provide further filtering. The high switching frequency means that none of the inductors needs to be large, and the smoothing capacitors can be very small, both physically and in terms of capacitance (compared with what you'd need to remove 100Hz ripple). However, these are electrolytic capacitors, so they do have a finite working lifetime and may eventually fail.



A practical modification for +13.8V DC output.

VOLTAGE REGULATION

Switch-mode power supplies are totally reliant on their control circuits to keep them from disaster – including disaster to the expensive equipment downstream. However, the control circuits are well developed and quite reliable. Most PC supplies of the age that I'm describing are based on the industry-standard TL494 controller, so look for the 16-pin DIL IC package (equivalents of the TL494 include the uPC494, IR3MO2, MB3759 and KA7500; the SG3524 is similar but has a different pinout). This IC stabilises the output voltage by driving the switch transistors Tr1 and Tr2 at just the right pulse width, and it also looks after the tricky startup and fault situations. Close to the TL494, you will often see an LM393 dual-comparator (or equivalent) in an 8-pin DIL package, and this is part of the fault protection.

Although a PC supply has at least four different output rails, their voltages are not equally stabilised. The +5V output has the best stabilisation, because that rail is delivering the highest current, and it also has the greatest need for an accurate voltage. All the other output voltages are determined mainly by the transformer turns ratio, although the +12V output is also somewhat stabilised as described below. All of these outputs are derived by rectifying the same pulse-width-modulated waveform, so this means that the output voltages and currents will interact in quite a complex way.

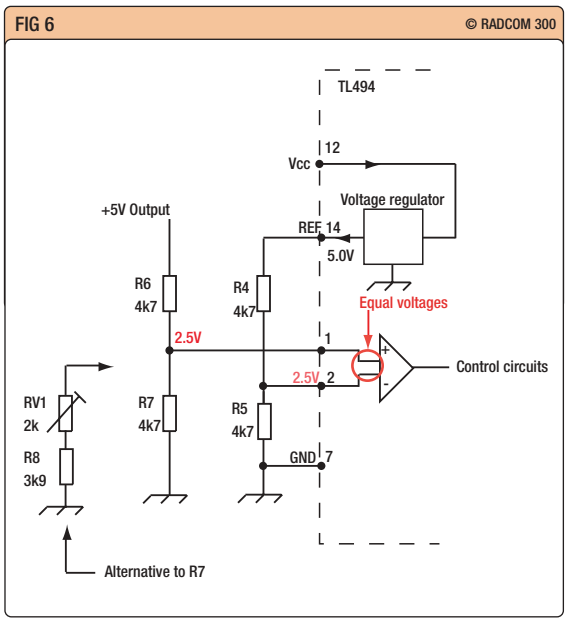
To understand these interactions, we need to know how the TL494 stabilises the +5V output. As shown in **Fig 6**, the TL494 requires an unregulated supply of about +12V on pin 12, and an internal voltage regulator produces a +5.0V output at pin 14. This forms a local supply rail for various other functions of the TL494, one of which is to provide the reference voltage for the output voltage controller. This is based on a simple op-amp, exactly as you would find in a conventional 'linear' (non-switching) voltage stabiliser. The reference input (pin 2) is held at a constant voltage, derived from pin 14 through the voltage divider R4-R5. These two resistors are usually equal, so the reference voltage at pin 2 is +2.5V. The other input of the op-amp (pin 1) receives a divided-down sample of the regulated output voltage from R6-R7. As you probably know, an

op-amp in a feedback circuit will always try to keep the voltages at its inverting and non-inverting inputs exactly equal. In this case, the TL494 achieves that goal by varying the width of the pulses that Tr1 and Tr2 deliver into T1, in such a way that the sample of the output voltage finally arriving back at pin 1 is exactly equal to the +2.5V reference voltage at pin 2.

In Fig 6, we have made R6 and R7 equal in value, so that the output voltage will be regulated to exactly twice +2.5V, ie +5.0V. If you want a different output voltage, simply adjust the ratio R6:R7 so that when this new output voltage is divided down, the voltages at pin 1 and pin 2 will still be equal. Most PC supplies include a small trimpot RV1 (shown as an alternative in Fig 6) so that the regulated output voltage can be adjusted up or down a little.

The +12V rail is usually regulated along with the +5V rail by sampling from both rails at once, as shown in **Fig 7**. Once again, the controller does whatever is necessary to maintain +2.5V at pin 1 – but this means that the two regulated outputs will interact. Neither is as well regulated as it would be on its own, and an increased current demand on one output will cause an unwanted *increase* in voltage on the other. Meanwhile the -5V and -12V outputs are at the mercy of changes on either one of the positive rails... but, fortunately, the PC can tolerate this. Marty Brown's *Power Supply Cookbook* (referenced last month) explains how the relative voltage stabilisation of the +5V and +12V rails is controlled by the ratio of the currents flowing through R9 and R10; the resistor delivering the greater current has the greater degree of control. In PC power supplies, the +5V rail requires the better stabilisation, so the current ratio between R9 and R10 is typically about 70:30%. Marty Brown also explains exactly how to calculate the resistor values - it's nothing more than Ohm's law.

In addition to the monitoring for voltage stabilisation, all four output rails are monitored for over- and under-voltage faults. There is also a little ferrite transformer that monitors the primary current of T1, to protect against the whole power supply being significantly overloaded. The 'Power Good' line is a shutdown input from the PC, but the PSU will run with this input disconnected. All of these protection functions are typically carried out by the LM393 comparator, a few discrete transistors and a handful of resistors, diodes and Zener diodes. The specific circuit details vary (which has serious implications if you want to modify the PSU for 13.8V DC output) but all fault signals eventually find their way to pin 4 of the TL494. This input overrides



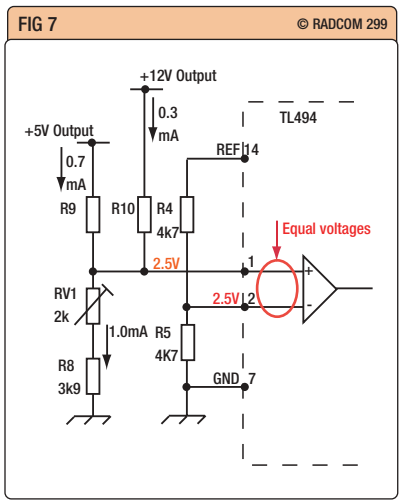


Fig 5: See Part 1, last month.

Fig 6: Voltage stabilisation using the TL494 or equivalent.

Fig 7: Stabilisation of both the +5V and the +12V rail.

the normal voltage regulation loop, and can reduce the width of the drive pulses to Tr1 and Tr2 to a tickover. That will reduce all the output voltages, so a fault on any rail can cause the 12V DC fan to slow down or even stop. In extreme cases the supply will latch into a permanent shutdown state, which can only be reset by switching off the mains.

SPARES AND REPAIRS

I have already pointed out that some of the components in these PSUs are unusual, and many of them are safety-critical. Don't expect to be able to replace them from your junk-box of normal electronic components - it can be dangerous to try.

By all means try to find a circuit diagram on the web; but the manufacturers of PC PSUs are very self-effacing, and often don't mention either their name or a model number on the label. Your next-best friend will be a stack of component catalogues, to identify the failed parts. Another alternative is to search for information on the web, using the part number and 'data' as keywords. It isn't always essential to find an exact replacement, but it takes some judgement and experience to identify a so-called 'equivalent' that will prove suitable in every important respect. And as I warned in Part 1, please try to retain some perspective about repairing these old PSUs. When brand-new replacement PSUs are so cheap, there is no point in spending more than a few pounds on repairs.

Fortunately, the components that are most likely to fail are also the easiest to identify. Part 1 explained that the most highly stressed components are mostly on the mains input side: BR1, C5, C6, Tr1 and Tr2. The diodes D1 – D4 also lead quite a hard life. Failure in the low-voltage and controller areas are relatively much less likely - which is just as well, because these circuits are much more difficult to troubleshoot. Remember that the PSU is a closed-loop control system, so if any part of it fails, you will see abnormal voltage and current indications *everywhere*. **Danger: Deep Hole!** If you jump to the wrong conclusion about where the fault is, you can easily create even worse problems by disturbing circuits that are actually perfectly OK. Until you have reasoned out exactly where the fault has to be, leave that soldering iron alone.

MODIFICATIONS

Despite these dire warnings about failures and repairs, PC power supplies are really very reliable. When the rest of the PC has reached the end of its useful life, you are quite likely to have a working PSU left over. It then becomes rather tempting to modify the PSU for other uses, especially to provide +13.8V DC to power your station.

The photograph shows some basic mechanical mods to the PSU that was pictured last month. Any respectable mod is going to need a mains switch, mains filter, 12-13.8V DC output connector and a permanent dummy load on the +5V output. On the PC board itself, the options range from minor changes to a near-total rebuild of the output side... but the detailed variations between different models of PSU take such mods beyond the scope of a magazine article. I have created a follow-up page that provides further information, and has links to other useful sites: www.ifwtech.co.uk/g3sek/smps

Beyond that point, you will have to make your own way, and I hope this article has given you a useful start. But even if you never do more than open the PSU to clear the dust out, you now know much more about what goes on inside.♦

KENWOOD

Don't just see the show, hear it

Kenwood's new FM Dual Bander (144/430MHz) gives you dual-channel RX capability and prime performance - all in a truly special palm-sized design

▮ Receives 2 frequencies simultaneously, even on the same band ▮ 0.1~1300MHz RX (B band) ▮ FM/FM-W/FM-N/AM plus SSB/CW receive ▮ Bar antenna for receiving AM broadcasts ▮ Special information memory channel RX mode (10 channels) ▮ 1200/9600bps packet compatible (ext. TNC) ▮ 434 memory channels, multiple scan functions ▮ 16-key pad plus multi-scroll key for easy operation ▮ 7.4V 1550mAh lithium-ion battery (std.) for 5W output and extended operation ▮ Built-in charging circuitry for battery recharge while the unit operates from a DC supply ▮ Tough construction: meets MIL-STD 810 C/D/E standards for resistance to vibration, shock, humidity and light rain ▮ Larger frequency display for single-band use ▮ Automatic simplex checker ▮ Battery indicator ▮ Internal VOX ▮ MCP software (Free download from Kenwood website)

144/430MHz FM DUAL BANDER

TH-F7E

Available from all official Kenwood amateur radio dealers. For full details of our dealer network and all Kenwood amateur products contact your local dealer or Kenwood Electronics UK Ltd. 01923 655284.
E-mail: comms@kenwood-electronics.co.uk

Ed Chicken, MBE, G3BIK

Ivy Thorn Cottage, Hepscott, Morpeth, Northumberland NE61 6LQ.

E-mail: chick@chickene.freeserve.co.uk

The programmer and the keyer – part

Here are more circuits using PIC chips. The descriptions are presented here, the source code and layout diagrams being available on the 'RadCom Plus' area of the RSGB Members-Only website [www.rsgb.org/membersonly/radcomplus].

Last month, the first two programs were presented; here are some more adventurous varieties.

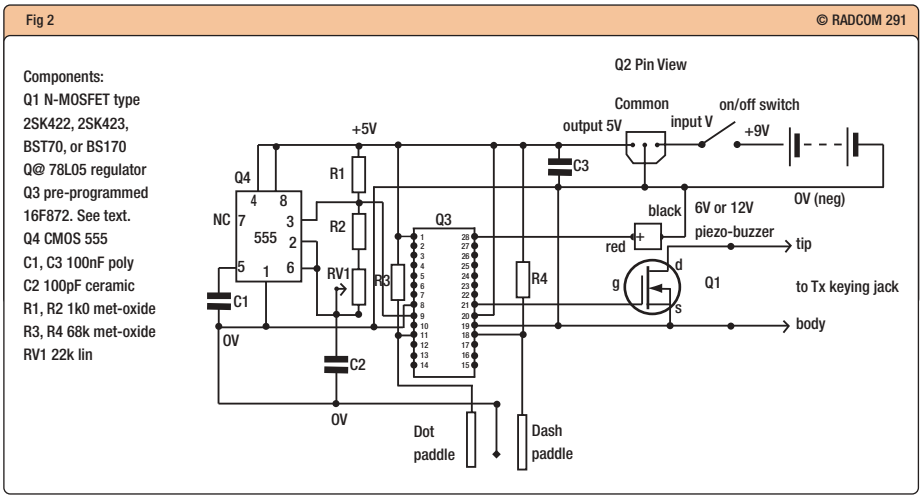
KEYER 3: A PIC 16F872 VARIABLE-SPEED 4 – 30WPM IAMBIC ELECTRONIC KEYER

Fig 2 and Program 3 refer.

Fig 2 gives the circuit details for a variable-speed iambic electronic keyer that can be made by using the Picaxe's own PIC16F872. A strip-board layout is available on the RSGB website (see above). The 16F872 is first programmed in the Picaxe28 using Program 3, also on the website. It is then transferred to a Keyer 3 strip-board of your own making, to produce a fully-iambic electronic keyer with a variable speed range of about 4 – 30WPM.

Additional Picaxe28 microcontroller ICs are available from the Picaxe supplier (see last month), but please be extremely careful when removing the PIC from its socket, to avoid bending the DIL pins. Unlike Keyers 1 and 2, the key-common now connects to 0V as is normal practice, with each key-paddle then connected 'high' via an external pull-up resistor.

This PIC circuit demonstrates the use of an external variable-frequency oscillator as the PIC clock, using the CLOCKIN pin of the 16F872. The oscillator uses a CMOS 555 timer IC configured as an astable multivibrator, but using a special RC arrangement which ensures a near 50/50 duty cycle square-wave, variable from 270kHz to 1.7MHz. The reason for using an external oscillator is that the Picaxe28 programs its own PIC's internal oscillator for use with a 4MHz ceramic resonator, which prevents the internal circuit from being used as an RC oscillator. That crystal mode does, however, allow oscillatory input from an external source, such as is used here.



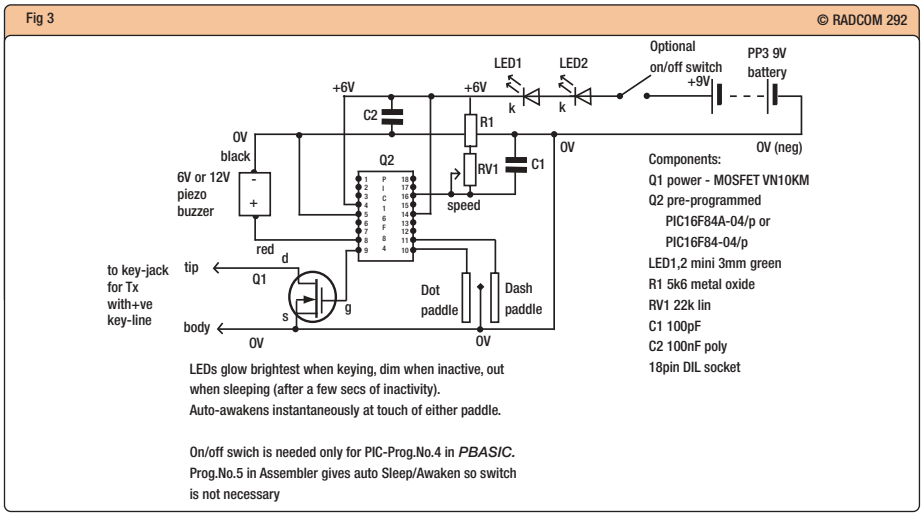


Fig 2 Circuit of the PIC16F872 iambic electronic keyer.

Fig 3 Circuit of the PIC16F84A iambic electronic keyer.

THE BAS800 PIC PROGRAMMER EXPLAINED

Time now to leave the Picaxe28, and look to a more versatile PIC programmer, such as the BAS800, available from the same supplier. The following discussion refers to that programmer in particular, and is the one with which I am most familiar. Programmers from other suppliers would be similar in practice. This one uses *PBASIC* (where 'P' stands for PIC) and the equally well-known assembly language, *MPASM*. A cable is provided which plugs into the same PC serial port as was used by Picaxe28. Some programmers are designed to use the PC's parallel port, the choice of serial or parallel being personal. Required, but not provided, is a mains-to-9V DC adaptor (preferably, but not necessarily, regulated) with a positive-tip 2.5mm DC power plug .

The programmer is easy to use, with clear user-instructions and full working software supplied. It is capable of programming any of the most-popular PICs, including that well-established work-horse, the PIC16F84A-04/P, which is the one used for Keyers 4 and 5. The Programmer has a quick-release 28-pin zip DIL IC socket to accommodate most sizes of PIC. You simply insert the PIC into the socket, follow the instructions given on the PC screen to select the type of PIC of your choice, then select 'Program PICmicro' to load the program from computer screen to PIC. That takes but a few seconds. There is absolutely nothing to be afraid of when using a Programmer, because if the worst comes to the worst, you simply start again! In my experience, PICs are almost indestructible.

ABOUT THE PIC TYPE 16F84A (AS USED IN KEYERS 4 and 5)

Note first, that the 16F84A-04/P is just a faster version of the 16F84 or 16F84A, any of which could be used.

A brief description of the 16F84A is justified, because its inner workings differ quite dramatically from the 16F872 as used in Picaxe28. The 16F872 has an analogue-to-digital converter (ADC) input port, one 8-bit input port and one 8-bit output port, whereas the 16F84A has only two 'ports' and they are quite unlike those of the 16F872. These ports are called RA and RB, and each has

two

within it a number of usable circuits called 'bits' or 'pins'.

The RA port has five pins (RA0-RA4) whereas RB has eight pins (RB0-RB7), making a total of 13 port-pins. Each port-pin of the 16F84A can be individually programmed to act as either an input, or an output!

Programs 4 and 5, which use the PIC16F84A-04/P, employ only four of its 13 port-pins. Two pins are programmed as inputs (RB4 and RB5) for the dot and dash key-paddles, and two pins as outputs (RB2 and RB3) for the buzzer and for transmitter-keying. All other port-pins are programmed as outputs, and are unused.

You will note later on that, in **Fig 3**, there are no external pull-up resistors shown at the key-paddle input pins. This is because the PIC 16F84A-04P has, within it, a number of what are called 'soft pull-ups' which can be programmed to serve as pull-up resistors at the PIC's input pins, so minimising the need for external components. These pull-ups can be connected to any one or all of the input pins and, for Keyers 4 and 5, have been program-connected internally to the two key-paddle input pins.

The two port-pins used for the paddle-key inputs are chosen specially, because they use the PIC's in-built 'interrupt' facility to awaken the PIC from 'sleep'. The 'sleep' command is incorporated in the program for Keyer 5, as are some of the PIC's in-built counters and interrupt-circuits, to shut-down automatically after a few seconds of no keying-activity. The keyer awakens instantaneously at the touch of either paddle.

Did you ever wonder why your TV remote controller has no on/off switch?

KEYER 4: A PIC 16F84A-04/P 4 – 30WPM IAMBIC ELECTRONIC KEYER, WITH BATTERY ON/OFF SWITCH

Fig 3 and Program 4 refer, with a strip-board layout and the program being available on the website.

The diagram gives details for this very functional iambic electronic keyer. Like Keyer 3, it again uses an RC clock-oscillator to give a variable Morse-speed range of about 4 – 30WPM but, this time, the PIC's internal oscillator circuit is utilised. An on/off switch is included, even though the current drain is only about 2 – 3mA.

Program 4 is written in *PBASIC*, and is used with the PIC programmer (not the Picaxe28) and a PIC type 16F84A-04P. It was deliberately written in *PBASIC* to illustrate the relative simplicity of that programming language compared with assembly language. Important note: before Program 4 can be programmed into the PIC 16F84A-04P, you must make a few minor, but vital, amendments to its assembler listing, as will now be now described.

After having selected 'Convert Basic to Assembler' to create the assembler listing, but before selecting 'Assemble', make the following on-screen amendments to the assembler listing.

1. This changes the type of clock-oscillator from default crystal (XT), to resistor-capacitor (RC).
   A few lines down from the start of the assembler listing is a line which looks like this:
   __CONFIG _CP_OFF & _WDT_ON & _PWRTE_ON & _XT_OSC

   This line must be text-edited using the computer keyboard, to read:
   __CONFIG _CP_OFF & _WDT_OFF & _PWRTE_OFF & _RC_OSC

2. This connects the internal 'soft pull-ups' to the key-paddle input port-pins.
   Further down the program listing is a section with the title:
   ***** *initialise the ports******
   Amend its 4th line:
   movlw b'11111111'
   to read:-
   movlw b'01111111'

The assembler listing can then be assembled ready for programming the PIC.

KEYER 5: A 4 – 30WPM IAMBIC ELECTRONIC KEYER WITH AUTOMATIC SWITCH-OFF

Fig 3 and Program 5 refer.

This is the jewel in the crown, a pleasure to use, and is well worth making .

Fig 3, as used for Keyer 4, applies equally to this keyer, except for the on/off switch, which is not needed. Current-drain shuts down automatically from about 2mA to 1µA after a few seconds of no keying-activity, but the keyer awakens instantaneously at the touch of either paddle.

The LEDs glow brightest when keying, dim when inactive, and extinguish when asleep (after a few seconds of inactivity).

Program 5 for this keyer is to be used with the PIC Programmer. It is written in MPASM assembly language suitable for a PIC 16F84A or 16F84A-04/P.

This program does not need to be amended. It is ready for immediate assembly and programming of the PIC. Copy-type or copy-paste it into the Programmer Editor screen, select 'Assemble' , then select 'Program PICmicro'. The PIC is thereby programmed within seconds, and ready for use.

WHAT'S ON THE WEBSITE?

Quite simply: (a) Layouts for Figs 2 and 3; (b) programs 3 – 5; (c) a constructional note; (d) an anecdote about the hurried fabrication of a twin-paddle key; (e) a simple circuit to use with transmitters requiring positive or negative keying. ♦

ABOUT PBASIC, ASSEMBLER, ASSEMBLING, AND PROGRAMMING.

First, a brief explanation of what happens between typing a *PBASIC* or assembler program into the computer, and actually getting it into the PIC.

All data into, within, or out-of, a PIC, is in binary form, sometimes called machine-language, eg 10011101. So, in order to program a PIC, the program must be presented to the PIC in binary form. But, for practical reasons, programs are written in text-based languages such as assembler and *PBASIC*. Assembler mostly uses groups of letters and numbers, whereas *PBASIC* uses words and numbers. However, in order to program a PIC, any program written in either assembler or *PBASIC* must first be converted from text into the PIC's binary language. The PIC Programmer has software for doing that, and the conversion from assembler language to the PIC's binary language is called 'assembling' .

Moreover, any program written in *PBASIC* must be converted to assembly language before it can be used to program a PIC. That is readily done by selecting 'Convert Basic to Assembler', which causes the *PBASIC* program on the screen to be replaced by its equivalent assembler program, ready to be 'assembled ' before moving on to 'Program PICMicro'. 'Assemble' is an invisible behind-the-scenes process which does not change the screen content, except to display a message 'Assemble successful. Do you now want to program the PIC?'. Fortunately for us, these conversion processes are done quickly and automatically by the PIC Programmer.

But there's more, and this reflects in the cost of a PIC Programmer. Before an assembler program can be assembled, it must have added to it a lot of preparatory data for the configuration and setting-up of the particular type of PIC to be programmed . That also applies to a program written in *PBASIC* after it has been converted to assembler by selecting 'Convert Basic to Assembler' . The PIC Programmer software again does that automatically to produce what we will now call the 'assembler listing' . This includes the program, all the necessary set-up routines and instruction sets relative to the chosen PIC, instructions such as the type of clock oscillator to be used, eg crystal or RC, and sub-routines to handle *PBASIC* commands for example 'pause, sound' whether or not they are needed. Leaving them in does no harm, but the type of clock oscillator must be correct for the purpose, and amended if necessary. (See Keyer 4 and Program 4).

With the PIC Programmer used here, a real bonus comes further down the assembler listing, where it displays the original *PBASIC* program, command by command, each with its equivalent in assembly language. This is meant for use by students as an introduction to the use of assembler, and is sure to be of some interest to some readers.

WiNRADiO®

the future of radio...

software ■ hardware ■ antennas ■ radio systems

Just a small selection of our receivers and accessories:

WR-G303 receivers

The internal model WR-G303i, has the entire front end of a sensitive shortwave receiver contained on a PCI card. It is well shielded against the effects of PC-generated interference. Demodulation is performed by the PC using advanced digital signal processing techniques. "Plug and Play" installation.

The WR-G303e is an external software-defined shortwave receiver with USB interface, compatible with modern laptops and desktops. An optional serial interface is also available.

WR-G313i receiver

The internal WR-G313i is a high-performance software-defined HF receiver on a PCI card, 9 kHz to 30 MHz (optionally to 180 MHz).

The ultra-sensitive receiver (CW signals under 0.05 µV can be read) is resistant to strong signal overload.

Remote radio control

The WR-G313i receiver can be controlled remotely via a LAN or WAN (including the Internet) using the WiNRADiO Client/ Server Option (CSO). The receiver is physically connected to the Server computer, while the user can control the receiver via another computer on the network (the Client).

DRM Decoder

DRM decoder for the G3 series is now available. Expand the power of your G3 series receiver even further with the ability to receive and enjoy DRM broadcasts that are thousands of miles away, yet as clear as your local FM station.

Advanced Digital Suite

Expand the power of your WiNRADiO receiver with the optional Advanced Digital Suite, a collection of digital signal processing modules, compatible with all WiNRADiO receivers.

Includes digital processing facilities such as: FAX Decoder, NAVTEX Decoder, Packet Radio Decoder, ACARS Decoder, Signal Classifier, CTCSS and DTMF, Audio Recorder, Audio Oscilloscope, Spectrum Analyzer with waterfall spectra, and a Signal Conditioner with numerous user-defined filters.

Antennas

Amongst our many antennas and accessories, also check out our long wire antenna kit (AX-05E), and a particularly efficient long wire adapter (LWA-0130). Unlike most conventional antenna 'baluns', the WiNRADiO Long Wire Antenna Adapter employs a dual broadband transformer technique which offers an improved performance over single-transformer devices.

Distributed in the UK by:

Radixon Ltd.
Evesham Marina, Evesham,
WR11 3XZ, Worcestershire
'callers by appointment please'

Tel: (0870) 446 0449
Email: info@radixon.co.uk

WiNRADiO®

Check our website for our entire product range:

www.winradio.co.uk

UK's Premier Service Centre

WE ARE STILL THE MOST COMPETITIVE SERVICE CENTRE

ICOM KENWOOD YAESU

FOR SERVICE & SUPPLY OF PARTS

There really is only one choice.
The choice many manufacturers have made when they want their own equipment serviced. We have a comprehensive workshop, fully equiped with modern Radio test sets and spectrum analyzers, along with 25 years experience in all the main manufacturers.
Please ring us for your service and repair needs

SPARES

We now offer a spare parts service on all main makes and models.
RING FOR DETAILS

12.5kHz CONVERSIONS

Save money and keep your existing rig.
Castle can convert most makes and models.
Call us to discuss your requirements.

Castle Electronics

Unit 20, Wolverhampton Airport, Bobbington,
Nr. Stourbridge, West Midlands DY7 5DY
Tel: (01384) 221036 - Fax: (01384) 221037
TRADE ENQUIRIES WELCOME

TETRA COMMUNICATIONS LTD

Tel: 01604 234333 Fax: 01604 603866

The following are fully programmed Complete with mic, power lead, speaker and fitting bracket if available. 10w or 20w
Maxon PM 100 UHF 70cm any 4Ch of your choice £45.00
Maxon PM 150 UHF 70cm any 16Ch of your choice £45.00
Philips PRM 80 VHF 2mtr any 10Ch of your choice £40.00
Key 80 VHF 4mtr any 16ch of your choice £55.00
Key UHF 425 99ch c/w DTMF £60
Key VHF 150 99ch c/w DTMF £60
Simoco VHF FX5000 T/T repeater base 50w £250
Key KF 450 UHF 70cm T/T repeater base station 50w £250.00
TAIT 2000 UHF 70cm any 4ch of your choice £40.00
ALL THE ABOVE mobiles are 10w or 25w with or without CTCSS
Philips PFX UHF 99ch £1.00 Philips PF 710 £1.00
Philips M/MX 290 various £1.00
Motorola M110 £1.00 Storno base stations £1.00 (Grey box)
NEW UHF 70cm 4 stack dipoles £25.00 NEW extension speakers £5.00
Over 3000 new/used ex pmr radios available

www.tetra.tv

The Brent CW TCVR

New single band small DC project
1.5W on 13.8v but can use 8 to 16 volts
Normally 80m with pullable cer res VFO
Other bands to 20m with xtal or Mini mix kit
Sidetone, muting and full break-in TR switching
Double tuned RX RF filter and TX low pass filters
AFG, Coarse & Fine tuning/switchable RIT + many options
Supplied as complete 'flat' kit - price £34 + £2 P&P

Send SSAE or visit: www.users.globalnet.co.uk/~walfor

WALFORD ELECTRONICS

Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ

By Don Field, G3XTT

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

E-mail: don@g3xtt.com

HF

Don Field reports on a welcome marked improvement in HF bands conditions during October with plenty of DX for all.

The bands continued to improve during October, despite days when there were no sunspots recorded at all. The experts are now suggesting the solar minimum could arrive early and the next peak around 2010 (see 'Web search' below). However, late October saw a sudden increase in sunspot activity, back to the level of a year earlier which, combined with a very low K index, led to some superb conditions on all bands, especially in the week leading up to the CQWW Contest, when many contest expeditions were trying out their stations, and I expect I will have some interesting reader reports for next month. In the contest itself, my own impression was that Saturday wasn't bad, but Sunday was better. On 10m, I noted VK9XD (Christmas Island) and XX9C (Macao) to the east, and US stations as far west as W7 land, for example. Some UK stations were also quick to take advantage of the extended 40m allocation; K3ZO, for example, told me had run on 7170kHz for about 20 minutes, working some 30 or so UK stations on the trot.

Earlier in the month, while 10m had been patchy, there were some occasional openings to all parts of the US and elsewhere, while 12m was absolutely buzzing at times, with signals from Japan, Australia, and pretty much everywhere except the central Pacific area. At the other end of the spectrum, conditions on the low bands have been excellent, perhaps the best example being one dawn opening on topband when Bob, GU4YOX, worked KH6ZM and KH6AT in Hawaii.

G3SXW and G3TXF did a great job from Papua New Guinea as P29SX and P29XF respectively, working into the UK on 80 through 12m, despite running just 100 watts, though having their vertical antennas surrounded by sea water did no harm at all! The FP/VE7SV team (St Pierre & Miquelon) were huge signals on all bands from 160 to 10m, workable easily from the UK. TX9 (Chesterfield Islands) was a somewhat tougher nut to crack, as were A52CDX (Bhutan) and VK9LA (Lord Howe Island, confused several times on the Cluster with VQ9LA Chagos)but DX like 9L1ADA (Sierra Leone), ZD7 (various suffixes, St Helena), TJ (various suffixes, Cameroun) and lots of Caribbean activity has been relatively easy to snag on multiple bands.

Not a huge amount of information about forthcoming DX this month. Christmas is a time for families rather than expeditions, no doubt. But plenty of correspondence to cover, as well as new 'Countries Worked' and '9 Band Tables'.

DX NEWS

Fred, M0FDH, writes that he will be in **Sierra Leone** until next July, operating as 9L/M0FDH in his spare time (he is in the Army).

Danny, F5CW, reports that a new DX shack is about to be available in **Senegal** (6W), rented out by owner Jan, 6W7RV. More information on the website.

F6GDC, F6CQX and F5SSM will be active on 10 - 40m SSB (CW on request) as 5T5DY from **Mauritania** from 26 December to 9 January. During the second week Yves will spend three days on Banc d'Arguin (AF-050). QSL via F6GDC.

Alex, RK3DT, is now in **Laos** and should be there well into 2005. He is signing XW3DT and has already worked into the UK on several bands.

Wade, VE9WGS, writes that special event callsign VC9COAL will be on the air during December to commemorate the 100th anniversary of the naming of Minto, New Brunswick, **Canada**. QSL via VE9WGS. More information will be on the website.

Three French operators plan a 'DX vacation' starting at the end of November. F6COW, F6EPY and F6GNZ will be on Rarotonga, **South Cook Islands**, 24 November to 9 December with the callsigns ZK1COW, ZK1EPY and ZK1GNZ. From 11 to 23 December they will be on Hiva Hoa, **Marquesas Islands**, French Polynesia with callsigns FO/F6COW, FO/F6EPY and FO/F6GNZ. They will operate CW and SSB with a little PSK31, RTTY and SSTV by request, concentrating on the low bands when conditions allow. QSL to their home calls. Further information on their website.

There are some nice ones to look forward to in the New Year, starting with Peter 1 in January, then Kerguelen, Somalia, Glorioso and others. Watch this space!

CORRESPONDENCE AND TABLES

Colin, MU0FAL, reports some nice runs of US stations on 12m (the benefit of being in a rare DXCC entity, Colin!), and a few new ones. Unfortunately his KH6 QSL card came back as 'not in log', so Colin will just have to try and find another one. David, M0CNP, caught a few nice ones, especially on RTTY where he worked VU2WAP (20m), ZC4CI, BX4AN, HI8/JA6WFN, HC8N, EM1HO (Antarctica), DU3NXE, EA9IB (all 15m), and VQ9LA (12m).

PHOTO: NIGEL CAWTHORNE, G3TXF.

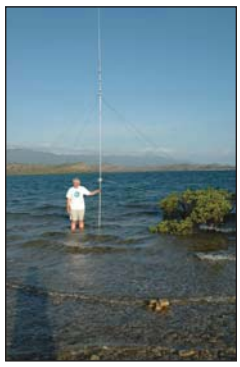


PHOTO: NIGEL CAWTHORNE, G3TXF.

LEFT
Roger, G3SXW / P29SX, with his Butternut vertical close to the ocean.

RIGHT
Nigel, G3TXF / P29XF, with his vertical for 10 / 18 / 24MHz surrounded by salt water.

Terry, G1UGH, is another one with a busy log, including (all SSB) PZ5RA (10m), 5N44EAM, VQ9LA and 5Z4YT1CS (this callsign was apparently issued without the usual '/' designator!) (15m), 4S7UJG (17m), and 3DA0TM and E20KIR (20m). Stan, G0KBL, reports that he retired earlier this year, but "vigilant (and golf-crazy) XYL and poor conditions have so far prevented me from becoming a full-full time DXer"! Nevertheless, Stan recently worked VK9LA (Lord Howe Island) on 40m, and managed a VK with one watt on 20m with wire aerials.

Dave, G3TBK, and your columnist have been busy this year chasing CW band-countries for the CW table run on-line by G3WGV. Dave, who is in Lincolnshire, comments that he often hears me calling the DX some 10 - 15 minutes before he can even hear it. This, he says, has been particularly noticeable with stations in the Pacific. Location is certainly important, and Dave probably has an advantage over me to South-East Asia. But for all of us in the UK it can be frustrating to see spots for T30T, as a recent example, from other parts of Europe, when there is nothing here in the UK. Too often the DX station will move to a higher frequency before propagation reaches us here, and the process starts all over again! Dave reports that he has been without an 80m DX antenna this year as junior ops M3TBK and M3DVQ insisted he kept up the horizontal dipole for them to use in the 80m Club Championships.

Joe, W1JR, says his time has been almost entirely consumed by getting up antennas on his new stronger tower. Joe suffered in a big way with the storms that hit the East Coast of the US earlier in the year, with a lightning strike taking out pretty much everything within a 500m radius. Given that he was entirely off the air for a while, it is remarkable what Joe has managed to work this year. Joe says, "This is shaping up to be a very poor year DX wise. Even with all the DX I missed and those promised, I doubt that the total available will be anywhere near 290 (as I

recall last year was) and I'll be lucky to snag 275, one of my lowest years yet!" Maybe, Joe, but you're doing well so far!

Chris, G4JAG, writes that he is now active from Thailand as HS0ZFP. He listens on 20m most evenings. He looks forward to working his old friends in the UK and finds the best time is around 1800.

David, MM5DWW, had a ball with the CQ WW RTTY contest at the end of September, making 645 contacts in 75 countries, including a 9J2 (Zambia) for a new one. This was followed, after the contest, by PY0F/PS7JN (Fernando de Noronha) for another new one on RTTY. As he says, "I think I like this RTTY!" For the first six months of the year David was using 100W to a vertical antenna, but now has an Optibeam OB9-5 for 10 to 20m, and has purchased an Acom 1000 amplifier. Having seen David's log for the whole year, I have to say that even with the more modest set-up earlier in the year, he was working some excellent DX. He is located in the Orkney Islands. Mark, MM1APX, also in the Orkneys and not too far from David, writes that in May he took the plunge and made a real effort with CW. Since then, he says, "I have worked 87 countries on CW and have never looked back. My speed is still comparatively slow, but I am getting there. It's great fun and quite addictive (once you get over the nerves!). I would encourage any former Class 'B' like myself to give it a go - they may be pleasantly surprised." Notable recent contacts include (SSB) FM5DP on 40m, 5Z4YT1CS, S92BWW on 20m, 5N44EAM on 15m, and VQ9LA on 12 and 15m. On CW, EM1HO on 15m, 4S7EA on 17m and SU8BHI on 40m. As Mark says, "Not too bad using 100W and a G5RV." As I always comment on such occasions Mark, just think what you could do if you had a proper antenna!

Mark, G0LGJ/M, has now reached 100 countries for the year from his mobile station, recent highlights include TU1PM on 17m, FP/DK6XR on 20m and AC6AA (Arizona) on 15m. Chris, G1VDP, writes with an extensive update, all SSB. There isn't really space here to do justice, but JU1DX (Mongolia), VU3DJQ, 9Y4ZC, HK1XX and FP/DK6KR on 20m were all-time new ones for him, as were HS0/IK4MRH on 15m and ZP4KFX on 12m.

Mike, G6HOU, was on for the RSGB 21/28MHz SSB contest on 3 October, and worked some nice ones: VQ9 (Chagos Is), Z2 (Zimbabwe) and HF0 (South Shetland Is). He used a wire antenna for 15m and a Yagi for 10m. In the 13 months since Mike returned to amateur radio, he has worked 114 DXCC, and five continents on 10, 15 and 20m. Gus, M5GUS, in Truro uses a Kenwood TS-690S and half-size G5RV. Recent DX includes 3DA0TM (Swaziland), FR/PA3GIO (Reunion), HF0QF (South Shetland) and VE8AP (Northwest Territories), all on 20m.

Dave, G4FVK, reports that he has found conditions good at times, especially on 15m. Some of his better QSOs were TG and YV on 15m and VK4 on 40m CW in the Oceania contest.

Jack, G3WP, sends in a score for the first time this year. He comments that this is the first time in years that his total doesn't show a single VK or ZL, which he attributes mainly to not keeping late hours and missing the morning openings! Lionel, 2U0GSY (from 1 October, previously MU3GSY), says he has already noticed a difference since being able to run higher power. For example, he managed to work ZL for the first time in the Oceania Contest. I was delighted to receive a report from old friend Cris, GM4FAM. Cris was hoping to be active in the CQWW Phone and CW contests to bump up the scores a bit before the year-end.

Robin, M5AEF, sends a long list of stations worked with his 1 watt of QRP. Robin says, "Pick of the crop has to be D4B, TF4M and TF3AO. I have found it particularly difficult to make any headway on 40m SSB as the band is far too crowded at the moment. It is very much easier to make two-way QRP contacts on 40m CW as there are more stations listening over a smaller range of frequencies!"

My thanks once again to Henry, G3GIQ, for compiling the 9-band tables. Please note the next deadline. I have received quite a lot of correspondence regarding both the all-time and in-year tables with respect to the inclusion of overseas entrants. There seems to be an overriding view that, while it has been interesting to see what can be achieved from other parts of the globe, it would be inappropriate for the tables to become dominated by 'big guns' from around the world if the precedent is allowed to continue. There are already several all-time tables published (for example by 425 DX News and, for confirmed entities, the ARRL Challenge listings), and at least some in-year tables, run for example by the major DX clubs. I therefore propose that, for the next 9-band table and for the 2005 in-year tables, we restrict participation to British Isles stations only. Until then, the status quo prevails.

Finally, a minor correction to last month's column which is that Mike, heading to the Antarctic, is GM0HCQ and not GM0CHQ. My apologies both to Mike and to G0CHQ, who pointed this out. Finger trouble!

9 BAND TABLES No 52

MIXED MODE

CALL	1.8	3.5	7	10	14	18
W1JR	268	314	331	320	335	326
G3KMA	259	303	329	325	334	330
G4BWP	254	306	333	323	335	329
G3XTT	237	281	320	287	334	318
GW3JXN	193	264	301	292	328	321
G3GIQ	153	248	305	270	334	321
G4OBK	194	236	290	298	330	312
G3SED	240	268	299	289	315	298
G3TXF	145	246	305	304	329	307
G3SNN	186	242	293	247	333	301
GM3YTS	150	247	302	292	334	296
G3TBK	145	245	287	277	332	309
G3LAS	121	215	269	280	322	309
G3YVH	139	172	267	290	325	314
G3IFB	65	229	291	249	327	255
G4PTJ	52	200	260	223	326	282
GM3PPE	148	211	256	276	320	271
G0JHC	3	161	250	287	290	312
G3VJP	107	187	260	190	329	277
G3AKU	115	173	245	254	303	270
G3KMQ	59	214	272	222	324	256
G5LP	75	231	287	235	312	253
G3VKW	50	176	243	152	328	251
G3IGW	129	198	318	242	289	246
G4WFQ	55	161	226	213	258	223

WEB SEARCH

6W Shack for rent:	www.le-calao.com
French 'DX Vacation':	http://perso.wanadoo.fr/dominique.auprince
P29SX / P29XF:	www.g3txf.com/dxtrip/P29XF/P29.html
Solar Minimum Information:	http://science.nasa.gov/headlines/y2004/18oct_solarminimum.htm?list692738
VC9COAL:	www.qsl.net/ve9wgs

COUNTRIES WORKED, 2004

(sorted this month by SSB totals)

CALL	CW	SSB	DATA	MIXED
W1JR	239	238	172	263
MM5DWW	3	226	101	230
G4NXG/M	0	192	0	192
G3TBK	238	178	124	248
M5GUS	0	163	0	163
GM0TGE	130	159	0	189
G3XTT	228	156	77	253
G4WXZ	155	146	0	201
VK4BUI	153	134	0	178
M0BKV	0	124	41	129
G1VDP	0	120	0	120
MM1APX	87	109	70	134
G4OBK	153	102	98	197
G0LGJ/M	0	100	0	100
G1UGH	0	100	0	100
MU0FAL	155	99	0	161
GM8OEG	71	99	83	128
M0CNP	28	94	84	114
2U0GSY	1	86	0	86
G0GFQ	32	84	33	91
G4FVK	63	81	0	102
GM4FAM	129	66	0	137
G3LHJ	176	65	114	196
M5AEF (1W)	28	41	0	49
G7CLY	0	38	0	38
G3YVH	153	21	0	153
G3TXF	166	13	4	168
G4DDL	85	10	14	85
G3ZRJ	129	9	0	129
G0KBL	192	0	0	192
G4KFT	187	0	0	187
G3SXW	180	0	0	180
G3VDL	174	0	0	174
G4IRN	171	0	0	171
G3YMC (QRP)	130	0	0	130
M0BVE	121	0	0	121
GU0SUP	0	0	96	96
G3WP	66	0	0	66

21	24	28	TOTAL
332	325	329	2880
335	324	332	2871
335	317	326	2858
333	300	314	2724
322	298	305	2624
333	309	328	2601
320	304	303	2587
304	277	288	2578
327	288	306	2557
326	285	305	2518
324	261	301	2507
322	293	295	2505
319	301	302	2438
314	280	287	2388
307	250	289	2262
323	273	305	2244
279	247	229	2237
319	300	310	2232
316	248	286	2200
277	268	276	2181
280	260	248	2135
286	195	255	2129
324	265	310	2099
264	137	238	2061
236	177	189	1738

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 **February** issue by **25 December**. My thanks to all who have contributed to the column or given me feedback as the year has gone on. My very best wishes to one and all for the festive season. ♦

M0AWX	48	127	168	26	298	266	292	241	253	1719
G4OWT	58	118	207	114	311	150	299	122	271	1650
G4NXG/M	26	60	147	0	298	237	293	203	255	1519
G4BGW	10	82	184	175	232	204	233	168	222	1510
G0PSE	49	67	137	133	222	140	181	155	188	1272
MU0FAL	26	32	164	161	167	106	209	151	167	1183
G0LRX	11	107	128	0	242	73	262	86	237	1146
G4FVK	44	79	109	63	191	109	196	87	176	1054
MM0BQI	39	77	136	54	201	86	186	66	175	1020
M0CNP	11	58	87	13	170	107	158	80	124	808
M3CVN	16	55	94	0	129	63	103	41	0	501
M5AEF	0	22	13	7	69	92	72	30	34	339
AVERAGE	**105**	**179**	**235**	**200**	**285**	**241**	**277**	**222**	**253**	**1997**
CW ONLY										
W1JR	264	291	330	320	333	320	326	308	322	2814
G3KMA	253	284	326	325	334	325	332	312	322	2813
G4BWP	234	242	311	322	313	311	314	288	270	2605
G3XTT	229	257	307	287	310	302	309	281	290	2572
G3TXF	145	243	303	304	324	305	322	287	296	2529
GW3JXN	190	242	288	292	315	308	312	277	279	2503
G4OBK	186	221	282	298	314	302	298	287	287	2475
GM3YTS	150	247	300	292	329	290	318	250	289	2465
GM3POI	217	246	295	281	309	272	289	241	259	2409
G0NXX	177	239	282	294	300	292	278	269	270	2401
G3SED	239	256	293	289	291	268	270	233	227	2366
G3YVH	138	172	262	290	317	301	300	265	272	2317
G3SXW	97	209	268	274	318	292	303	260	286	2307
G3LAS	120	162	251	280	285	290	292	267	268	2215
G3AKU	115	173	245	254	293	260	266	251	260	2117
G5LP	75	227	286	235	302	253	277	194	248	2097
G3NOH	51	124	211	263	303	292	300	258	272	2074
G3KMQ	59	208	272	222	316	239	266	233	221	2036
G4PTJ	51	155	235	223	285	264	294	256	268	2031
G3VJP	106	150	249	190	301	254	287	222	254	2013
G3VKW	44	118	197	151	256	201	278	210	222	1677
G4WFQ	53	157	215	212	200	187	177	145	120	1466
G4OWT	51	112	182	114	250	107	241	96	218	1371
G4BGW	7	81	178	175	181	194	204	157	194	1371
G0PSE	48	67	136	133	212	140	175	151	183	1245
MU0FAL	26	21	161	161	167	100	186	127	120	1069
GM4FAM	43	74	102	120	161	109	152	123	125	1009
MM0BQI	26	57	100	54	121	54	119	34	117	682
AVERAGE	**121**	**180**	**245**	**238**	**276**	**244**	**267**	**224**	**241**	**2037**

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

HF F-Layer, Propagation Predictions for December 2004

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	675....66666	7271..377257	...42267....	...6667.....	...7998.....	....99......	.....
*** Asia							
Yakutsk	1111	4......45211	...65........	...3.........	.....	.....	.....
Tokyo	.....	...1...1..1.	...1.........	.....	.....	.....	.....
Singapore	.....	......11...1	......21....	......3.....	.....23.....	.....22.....	.....1.....
Hyderabad	.....	.....	1......2....	......22....	...1126.....	...3356.....	....66.....
Tel Aviv	451....14555	626....76427	...3..37....	...64463....	....553.....	....22......	.....
*** Oceania							
Wellington	.....	....36531...	....6772....	....676.....	....231.....	....11......	.....
Well (NZ) (LP)	.....	.....	.....	.....	...31...1...	...42.......	.....
Perth	.....	.....	......11....	......2.....	.....36.....	.....34.....	....34.....
Sydney	.....	.....	.....12.....	.....32.....	....675.....	....562.....	.....4.....
Melbourne (LP)	.....	...23.......	...48........	...28........	....821.....	....73......	.....
Honolulu	.....	.....	.....111....	.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....	.....1.....	...111......	...21.....
W. Samoa	.....	.....	....3442....	....253.....	.....2......	.....	.....
*** Africa							
Mauritius	.....	1..........	.....	.....	.....	.....	.....
Johannesburg	32.....11	77......2666	52.....3534	1.....322.1	......12....	...11112....	...2455.....
Ibadan	.....	334.....1222	737.....5611	3..61..252..	...88767....	...88888....	....888.....
Nairobi	.....	12..........	.2......1111	..2....131..	...21124....	...32235....	...2122.....
Canary Isles	333.....3433	7765....7566	66.4...25642	....31126...	....232.....	.....	.....
*** S. America							
Buenos Aires	...1........	2317.......1	...5........	...2........	...22........	....2111....	.....111....
Rio de Janeiro	.....	...3........	...3........	...2........	...331.1....	....4112....	....1..1....
Lima	.....	.....	.....	.....	.....21.....	.....321....	.....11.....
Caracas	.....	...1......11	...2........	....1........	.....1......	.....211....	.....22.....
*** N. America							
Guatemala	.....	.....	.....	.....	.....	.....	.....
New Orleans	.....	11.1.......1	...1........	.....	......65....	......65....	.....
Washington	1	4414......65	.1.21........	.....2..2...	.....133....	......55....	......1.....
Quebec	4443......54	56.72....572	.........1...	.....2112...	.....487....	......87....	......7.....
Anchorage	.....	53.31.1242.3	.........1...	.....	.....	.....	.....
Vancouver	.....	11.1........	.....	.....	.....	.....	.....
San Francisco	.....	.....	.....	.....	........2....	.....	.....
San Fran (LP)	.....	.....	.....	.......4....	.......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 October 2004 issued by the Sunspot Data Centre, Brussels, was 48.4. The daily maximum / minimum numbers were 99 on 24 October, and 0 on 10 October respectively. The predicted smoothed sunspot numbers for December, January and February are respectively: (SIDC classical method - Waldmeier's standard) 34, 33, 31 (combined method) 37, 36, 35. 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.

YAESU

Choice of the World's top DX'ers

on the MOVE

FT-817 ND

PLUS *FREE* TRAVEL CHARGER 110/230V

RadCom Readers only.
Please ask when ordering.
Expires 31/12/04

Experience the freedom and excitement of taking a complete HF station with you in your carry-on luggage or brief case. All modes and all-bands from 160m to 70cms. And with broad-band receive, there is even more enjoyment. Supplied complete with microphone, Ni-MH battery pack VHF/UHF whip and standard charger. The world's most popular QRP radio. And until 31st December we will give you a **FREE 110/230V travel charger** that can also power your radio.

£499

FT-857 D

PLUS *FREE* 3-WAY MAGNETIC ANT MOUNT

You choose SO-239 or 3/8" stud

RadCom Readers only.
Please ask when ordering.
Expires 31/12/04

Here's a mobile radio that gives the might and the power to work DX from car, caravan or home. It's performance will match base station designs yet give you all bands from 160m to 70cms. With 100 Watts on HF (adjustable down to approx 5W) you are never lost for QSOs. This is a superb design that benefits from many design features of Yaesu's bigger radios. But here they are incorporated into one very compact radio with detachable head unit. And until 31st December 04 we will give you a FREE 3-way magnetic mount for mobile use.

£649

VX-7R

PLUS *FREE* TRAVEL CHARGER 110/230V

RadCom Readers only.
Please ask when ordering.
Expires 31/12/04

Probably the world's most popular handheld for 2004, this design absolutely proves that Yaesu not only make great performing radios, they also make the toughest in the business. Throw it in a bowel of water and it carries on working - so in the rain it is never a problem. And with this standard of design and three band operation (6m / 2m /70cm) it is no wonder that the radio is so popular. And if the bands go quiet you can still monitor the AM airband, FM broadcast services or the emergency channels. Order before the 1st Jan 05 and we give you a FREE travel charger.

£299

FT-60E

PLUS *FREE* TRAVEL CHARGER 110/230V

RadCom Readers only.
Please ask when ordering.
Expires 31/12/04

What have those amazing people at Yaesu done now? They have produced a dual band radio (2m/70cms) that sells for a crazy price. Can you believe you eyes. No it is not a printing error, this radio does really sell for just £169.95. A dual band radio is a standard item in many ham stations and this one gives a full-blooded 5W output. Built around a robust chassis with high impact resistance case, it clearly benefits from Yaesu's major push forward in the professional radio market. Key pad operation and LCD screen offer easy use and until 31st December we will even throw in a 110/230V travel charger.

£169

WATERS & STANTON

Head Office & Southern Store: 22 Main Road, Hockley, Essex, SS5 4QS.
Tel:01702 206835/204965, Fax:01702 205843, E-mail:sales@wsplc.com, Web:www.wsplc.com
Midland Store: W&S @ Lowe, Chesterfield Road, Matlock, Derbyshire, DE4 5LE.
Tel:01629 832375, Fax:01629 580020, E-mail:info@lowe.co.uk, Web:www.lowe.co.uk
Scottish Store: 20 Woodside Way, Glenrothes, Fife, KY7 5DF. Tel:01592 756962,
Fax:01592 610451, E-mail:sales@jayceecoms.com, Web:www.jayceecoms.com

By Tim Kirby, G4VXE

Willowside, Bow Bank, Longworth, Abingdon, Oxfordshire OX13 5ER.

E-mail: tim@g4vxe.com

CONTEST

This time, the standings of UK entrants in several overseas contests plus the usual round-up of RSGB contest results.

VHF contesting from the very north of Scotland can be a lonely pastime at times. Here's the station of Clive, GM4VVX/P, during the 144MHz Trophy, 2004.

It's always hazardous extracting the results from the *CQ* magazine tables, as it's so easy to miss some good results. I managed to do that last month with the CQWW CW 2003 results. Two other results well worthy of a mention are 20m single band QRP, where G3LHJ achieved World 3rd place and 80m single band QRP where G4EDG took World 1st. Apologies to you both, Derrick and Steve, and most importantly, congratulations on the superb results!

MORE OVERSEAS RESULTS

ARRL DX CW 2004

The results of this contest are available and there are some great achievements from the UK. In the DX Single Operator QRP class, G0DCK takes World 6th place, with GW4ALG taking World 8th place and G3YMC World 9th place. On 20m single band, M5X, operated by G4TSH takes World 2nd place. On 80m single band, G0IVZ takes World 3rd place and GM4YXI takes World 9th place.

ARRL DX Phone 2004

G0DCK takes World 10th place in Single Operator QRP (well done on a placing on both modes!) On single band 15m, GI0NWG takes World 3rd place, with GW4BLE taking World 4th place. On 20m, MI0LLL takes World 3rd place. On 40m, GI0KOW takes World 1st place. Some great performances, from the GI gang in particular.

Dutch PACC Contest 2004

The organisers of the PACC contest forwarded a well-produced results booklet, showing a good entry to this contest. There's a healthy entry from the UK. Results are listed by DXCC entity. From England, GB5TT was top multi-operator and G3AEZ, followed by G3LIK topped the Single-Operator category. From Scotland, GM0CRA/P topped the Multi-Op entry and GM3CFS, followed by MM0WPM were the single-operator entrants. MU3GSY is Single-Operator winner from Guernsey.

Congratulations to you all!

GW0MAW SK

I was saddened to hear of the untimely death of Norman Davies, GW0MAW, on 13 October. Norman was a key member of the Red Dragon Contest Group, GW8GT, during the 1980s and 90s. He was a keen sideband operator, with a very distinctive, booming voice that stood us in good stead in many international contests. Rest in peace, old friend.

CONTESTS THIS MONTH

A couple of interesting HF Contests this month. The ARRL 160m on 3 to 5 December usually brings out some good activity, so it's well worth trying to get on the band in some form, if you can. Then, on 11 / 12 December it's the ARRL 10m contest. Whether the band will open this year, with the declining sunspots is anyone's guess, but it's a rare year when nothing is worked in the contest from the UK.

On VHF, the 'Christmas Cumulatives' from 26 to 29 December are a good opportunity to get on the air for a few contacts after the Christmas festivities. There's activity on 50, 70, 144 and 432MHz and much of the fun is trying to move stations from band to band.

Finally, a very Merry Christmas and a Happy New Year to all readers. I hope to hear you on the air, on one band or mode or another, during 2005. ♦

1.3GHz / 2.3GHz TROPHIES 2003

A good entry this year in spite of poor conditions. Once again, John Quarmby, G3XDY, pulled off the double in the single-operator section, winning both 23 and 13cm, and narrowly missed taking the G6ZR Trophy. However, in the end, both trophies went to the Parallel Lines Contest Group, G8P.
Andy Cook, G4PIQ

1.3GHz Single Operator Section

Pos	Call	Points	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	10545	36	020B	250	8 x 23Y	DL0GTH	684
2*	G0RRJ	7591	29	91FE	100	55Y	DK2MN	617
3	G3MEH	4843	24	91QS	50	4 x 44Y	DF0OL	622
4*	G4SJH	1366	11	91PI	15	23Y	PA6NL	340
5	G4DEZ	724	4	03AE	100	4 x 23Y	DF0HS/P	475
6	G3YJR	227	2	93FJ	6	44Y	G5B	119
7	G4LDR	205	2	91EC	8	55Y	G4ALY	194

1.3GHz Multi Operator Section

Pos	Call	Points	QSO	Loc	Pwr	Ant	Best DX	km
1*	G8P	25038	82	01QD	350	16 x 23Y	DK0NO	742
2*	M1CRO/P	17974	70	01PU	200	8 x 23Y	DC2OD	583
3	G5B	8531	32	03CE	250	16 x 23Y	DL0GTH	778
4	G3OHM/P	5388	22	82QL	150	8 x 23Y	DF0HS/P	618
5	G5LK/P	4437	18	010C	60	2 x 38Y	DF0OL	488
6	G3SDC/P	2867	26	92FM	55	67Y	DF0HS/P	548

2.3GHz Single Operator Section

Pos	Call	Points	QSO	Loc	Pwr	Ant	Best DX	km
1*	G3XDY	5778	20	020B	120	0.6m	DF0OL	506
2*	G0RRJ	3142	13	91FE	20	25Y	PA0EZ	479
3	G3MEH	2499	11	91QS	10	2 x 67Y	PA0VVH	448
4	G4LDR	205	2	91EC	35	66QLY	G4ALY	194

2.3 GHz Multi Operator Section

Pos	Call	Points	QSO	Loc	Pwr	Ant	Best DX	km
1*	G8P	6034	25	01QD	40	1.2m	DF0OL	477
2*	M1CRO/P	5061	25	01PU	40	2 x 25Y	DK2MN	412
3	G5B	2065	7	03CE	50	1.6m	PA0WMX	441
4	G3OHM/P	1681	8	82QL	70	1.2m	PA6NL	463

* Certificate winner

432MHz UK ACTIVITY CONTEST RESULTS 2003

2003 showed what a good band 70cm really is. Significant openings to Scandinavia occurred in 5 of the 12 sessions - a much better record than the corresponding 2m events can boast. Overall activity was actually slightly up on 2002 with 15% more session logs received from about the same number of entrants – those who liked the contest stuck with it. Some sessions were clearly more popular than others, with some of the best conditions in the summer creating the greatest enthusiasm. While activity is not huge in this contest, do give some thought to coming on when you're at home on a 2nd Tuesday evening of the month – it's probably your best regular opportunity to enjoy some DX on 70cm.

Winners were clear in both sections with Bryn Llewellyn, G4DEZ, and the South Birmingham RS, G8OHM, taking their respective sections. However, the competition was for the runner-up positions, with both of these being closely fought. In the Single Operator Fixed section, Neil Whiting, G4BRK, beat Roger Piper, G3MEH, a particularly notable achievement with around a 13dB ERP disadvantage. In the Open section, David Millard, M0GHZ, went out portable after a house move which left him without proper antennas and high power, and just managed to dislodge the ever-keen Stephen Bunting, M0BPQ/P, and the Reigate ATS, G5LK/P.

Andy Cook, G4PIQ

Single Operator Fixed

Pos	Callsign	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Score	QSO
1*	G4DEZ	129584	0	63096	72917	82849	64119	91924	578907	0	159188	174403	0	6000	317
2*	G4BRK	91485	72604	34690	0	0	60324	81720	264720	0	147662	62388	0	4749	223
3	G3MEH	0	0	47112	87765	26208	47052	56052	3388	10060	94080	0	509795	4681	262
4*	PE1EWR	14007	18664	0	31968	27100	37500	16950	219127	36081	91714	58476	47256	2872	209
5	G3YDY	14889	2588	6040	15952	7830	17685	0	107450	42500	79758	33330	131865	2158	197
6	G0ODQ	0	0	0	0	0	0	22626	34236	57012	0	0	0	1305	62
7	G8HGN	51974	0	0	0	0	12992	0	138030	0	49940	8148	0	1203	97
8	G1ZJP	0	98736	0	0	0	0	0	0	0	0	0	0	1000	29
9	G8FBG	0	0	0	0	80756	0	0	0	0	0	0	0	975	33
10	M0WYE	0	0	0	4320	3496	0	8268	0	2376	0	4064	0	246	38
11*	G8AHK	0	0	12334	0	0	0	0	0	0	0	0	0	195	18
12	G3YJR	526	0	1768	0	0	3275	819	19215	0	1916	372	0	137	44
13*	2E1GUA	1002	0	0	0	0	0	4590	4490	1230	1518	2416	10572	123	43
14	M0DDT	12761	0	0	0	0	0	0	0	0	0	0	0	98	9
15	G3JJZ	0	0	0	0	0	0	0	10136	0	6300	0	0	57	26
16	M1DUD	0	0	0	0	0	0	0	8652	0	0	0	0	15	6
17	G4XPE	0	0	0	0	0	0	336	0	0	0	0	0	4	2

Open Section

Pos	Callsign	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Score	QSO
1*	G8OHM	0	0	0	51492	84285	56424	53340	351739	10736	15786	43428	63752	6000	238
2*	M0GHZ/P	0	0	0	0	0	42642	49644	155130	0	0	0	0	2127	82
3	M0BPQ/P	0	5310	8680	0	0	0	0	0	1995	0	0	0	2017	36
4	G5LK/P	0	0	0	0	0	0	0	0	119250	0	79216	0	2000	77
5	M0WYE/P	0	0	0	0	0	0	0	53218	0	0	0	0	151	19

CONTEST CALENDAR

HF Contests

Date	Time	Contest	Mode	Bands	Exchange
3/5 Dec	2200-1600	ARRL 160m Contest	CW	1.8	RST
11/12-Dec	0000-2359	ARRL 10m Contest	CW/SSB	28	RS(T)+SN
18 Dec	0000-2359	RAC Winter Contest	CW/SSB	1.8-144	RS(T)+SN
18/19 Dec	1500-1500	Stew Perry Topband Challenge	CW	1.8	Grid (IO91)
26 Dec	0830-1059	DARC Christmas	CW/SSB	3.5/7	RST

VHF Contests

Date	Time	Contest	Mode	Bands	Exchange
5 Dec	0900-1700	RSGB 144MHz AFS	ALL	144	RS(T)+SN+Locator
7 Dec	2000-2230	RSGB 144MHz Activity & Club Championship	ALL	144	RS(T)+SN+Locator
14 Dec	2000-2230	RSGB 432MHz Activity	ALL	432	RS(T)+SN+Locator
21 Dec	2000-2230	RSGB 1.3GHz/2.3GHz Activity	ALL	1.3G/2.3G	RS(T)+SN+Locator
26 Dec	1400-1600	RSGB Christmas Cumulatives	ALL	50-432	RS(T)+SN+Locator
27 Dec	1400-1600	RSGB Christmas Cumulatives	ALL	50-432	RS(T)+SN+Locator
28 Dec	1400-1600	RSGB Christmas Cumulatives	ALL	50-432	RS(T)+SN+Locator
28 Dec	2000-2230	RSGB 50MHz Activity	ALL	50	RS(T)+SN+Locator
29 Dec	1400-1600	RSGB Christmas Cumulatives	ALL	50-432	RS(T)+SN+Locator

VHF CHAMPIONSHIP, 2003

This year's results are almost a repeat of last year's, with the Five Bells Contest Group claiming overall victory in the Open section for the fourth year running. They were the only group to enter all of the Championship events. The A1 Contest Group was the runner-up in this section.

The Single Operator, Fixed Station section was won for the fourth year running by Roger Piper, G3MEH, who also managed to enter all of the contests in the VHF Championship. For the second year running, Bryn Llewellyn, G4DEZ, is the runner-up, having entered seven of the VHF Championship events. James Beatwell, 2E1GUA, is the winner of the leading Intermediate station certificate, with Kevin Coyne, M3KGC, claiming the leading Foundation station certificate for this section and the QRP Single Operator section.

In the QRP section, Graham Coyne, G3YJR, just managed to stay ahead of James Beatwell, 2E1GUA, to claim first place for the second year running. Overall, participation in the VHF Championship has increased by approximately 40% this year with several new callsigns appearing in the results.

Ian Pawson, G0FCT

Open Section

Pos	Group/Callsign	Points	No of Contests
1*	Five Bells Contest Group	5452	9
2*	A1 Contest Group	3021	4
3	Northern Lights CG	2425	4
4	Colchester Contest Group	1975	4
5	Newquay & District ARS	541	4
6	GW8ZRE/P	295	4
7	G1KHX/P	267	3
8	Herstmonceux Megacycles CG	261	3
9	Otley Amateur Radio Society	232	3
10	Forth Valley Contest Group	168	3
11	G6GVI/P	156	4
12	GM4VVX/P	96	3

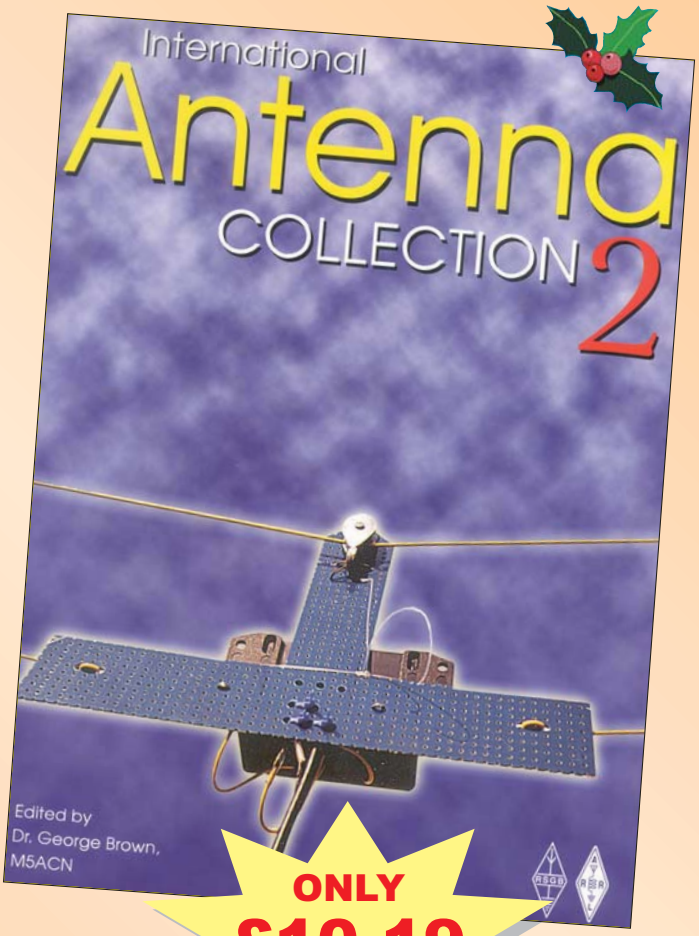
Single Operator, Fixed Section

Pos	Callsign	Points	No of Contests
1*	G3MEH	7066	9
2*	G4DEZ	4002	7
3	G8SRL	2123	4
4	G1KHX	1021	3
5	M0DDT	811	3
6	G4APJ	651	4
7	G3YDY	595	3
8*	2E1GUA	416	7
9	G3YJR	369	6
10	G8HGN	336	3
11	G3JJZ	324	3
12	M1DUD	313	3
13	M0ZZO	270	5
14*	M3KGC	3	3

Single Operator, Fixed, 25W / Single Antenna

Pos	Callsign	Points	No of Contests
1*	G3YJR	3073	5
2*	2E1GUA	2616	6
3	G4APJ	2494	4
4	M1DUD	2218	3
5	G3JJZ	1198	3
6*	M3KGC	29	3

* Certificate winner.



ONLY
£10.19
plus p&p

THE INTERNATIONAL ANTENNA COLLECTION 2

This book collects together some of the best articles from around the world on the subject of antennas. It will appeal to radio amateurs in general, whether they be antenna enthusiasts or not.

This book is a follow-up to the highly successful International Antenna Collection, compiled by the same editor. You will find antennas for most of the amateur bands. Traditional designs and highly original designs are here, simple and complex. Whatever your requirement, you will find something that is directly suited or that sets you thinking about how to solve your problem. Amongst the practical and highly erudite contents is an invited article by one of America's most respected authors on the subject of aerials. He is Kurt N Sterba, the regular 'Aerials' columnist of WorldRadio magazine. He considers one of his pet subjects - the much-misunderstood interface between transceiver and aerial. Does your ATU really tune your aerial?

All the facts are clearly presented, leaving the author in no doubt as to the correct answer. As before, great care has been taken to ensure that there are antennas to cover almost all the bands between 136kHz and 2.4GHz, receiving and transmitting, mobile and fixed. Shipping early November, order now for prompt delivery.
272 x 200mm, 204 Pages, ISBN 190508601-6

£11.99 plus p&p Non Members Price

DELUXE LOGBOOK & DIARY 2005

Finished in glossy metallic copper the Deluxe Log Book is back!
Designed for those requiring more from their Logbook, the RSGB have produced the popular Deluxe Logbook & Diary 2005. 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 2005 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!

£4.99 plus p&p Non Members Price

ONLY
£4.24
plus p&p

ONLY
£8.49
plus p&p

MEMBERS OFFER ONLY
Buy the Deluxe Logbook and Cover for only £9.99 plus p&p

DELUXE LOGBOOK COVER

For those wishing to protect their Deluxe Log Book we have developed a new quality cover for use year after year. The cover is of a padded PU construction with a high quality feel throughout, whilst being very robust. The cover is finished in classic black with a RSGB diamond Gold Blocked onto the front. The ideal accessory for anyone purchasing the Deluxe Logbook. Size 275 x 230mm.

£9.99 plus p&p Non Members Price

RSGB SHOP

RSGB
Lambda House
Cranborne Road
Potters Bar
Herts. EN6 3JE
Tel. 0870 904 7373
Fax. 0870 904 7374

ORDER 24 HOURS A DAY ON OUR WEBSITE
www.rsgb.org/shop

The International Antenna Collection
A collection of over 50 antenna articles from around the world.
256 pages,
Size: 272 x 200mm,
ISBN: 1-872309-93-3
£10.19 Members
£11.99 Non Members

Antenna Topics
If you are interested in antennas this book is a goldmine of information and ideas on the subject.
Size 297 x 210mm,
384 pages,
ISBN: 1-872309-89-5
£16.14 Members
£18.99 Non Members

VHF/UHF Antennas
A valuable resource for anyone interested in antennas, whether newcomer or experienced hand. 128 pages,
Size 240 x 174mm
ISBN:1-872309-76-3
£11.89 Members
£13.99 Non Members

Logbook: Receiving
Spiral-bound A4 Logbook. Enables you to keep a complete record of all stations heard.
£4.24 Members
£4.99 Non Members

Value Logbook: Transmitting
Spiral-bound A4 Logbook. Complies with UK licensing requirements for the correct format for logging all your contacts.
£4.24 Members
£4.99 Non Members

ARRL's VHF/UHF Antenna Classics
Includes antenna project articles gathered from the 1983 to 2003 issues of QST. First Edn, 2003,
ISBN: 0-87259-907-8
£11.04 Members
£12.99 Non Members

All prices plus p&p

By Don Beattie, G3BJ

Hares Cottage, Woolston, Church Stretton SY6 6QD.

IARU Region 2 General Assembly and IARU Administrative Council meetngs

IARU Region 1 Secretary Don Beattie reports on the IARU Region 2 General Assembly and IARU Administrative Council meetings which took place recently in Trinidad.

In past 'IARU' columns I have described the structure of the IARU, with the Executive Committees of its three Regions and the global 'Administrative Council' playing a coordinating and leadership role in the affairs of the IARU. The Administrative Council meets once a year, and normally has its meeting coincident with whichever Regional Conference is taking place that year.

In 2004, Region 2 of the IARU held its Conference in Trinidad at the end of September, and the AC meeting followed immediately thereafter. In this column I will cover some of the outcomes of these two events.

REGION 2 CONFERENCE

Some 15 countries were represented at the Conference, drawn from the Americas and Caribbean. The Regional Strategic plan was discussed and approved, with its focus on the protection and growth of amateur radio in the Region. Not unsurprisingly also, the issue of PLC (BPL as it is called in the Americas) was prominent on the agenda, and resolutions were passed asking member societies in the region to take a range of actions to try to avert the risks which BPL poses. All three regions of IARU face similar problems with the proposed authorisation of PLC / BPL services.

Conference also discussed Emergency Communications at length. This was a timely reminder that, more so than in Europe, Region 2 amateurs are frequently involved in providing communications at times of emergency. In 2004 the hurricane season has been particularly vicious, and the Conference was being held just three weeks after hurricane Ivan devastated Grenada and parts of Haiti. Amateurs from Trinidad & Tobago were still in Grenada, providing emergency communications, during the period of the conference. The Secretary General of the Caribbean Telecommunications Union, Bernadette Lewis, speaking at the opening of the Conference, publicly recognised the important role being played by amateurs in disaster relief, but also challenged Conference to think more broadly about amateur radio's role in education and training in the community.

Also prominent was a discussion about intruders on the amateur bands, where a number of countries in Region 2 appear to have difficulties with unauthorised use of various bands. Initial discussion also took place about the IARU strategy for WRC-07. Other matters included satellite frequency planning, callsign structure, contests and awards, some constitutional issues and communication within the Region.

The three-yearly Assembly is the opportunity for Member Societies to vote on members of the Regional Executive Committee, and this year, Pedro Seidemann, YV5BPG, stood down as President of the Region, to be replaced by Rod Stafford, W6ROD.

The closing session of the Conference was addressed by the Deputy-Secretary General of the ITU, Roberto Blois, who also acknowledged the important work being done by amateurs in the field of emergency communications, but reminded delegates that competition for spectrum was intense, and the amateur radio service would need to work hard to keep its needs in the front of everyone's mind.

ADMINISTRATIVE COUNCIL

Immediately after the Conference had ended, the Administrative Council (AC) meeting took place. The AC consists of two members of the Executive Committee of each of the three Regions, plus the International President, Vice-President and Secretary. The following paragraphs cover some of the outcomes of the 2004 meeting of the Council.

The Council adopted a three-year plan to develop support for amateur radio frequency allocations. The plan provides for the IARU to maintain and increase contact with regional telecommunications organisations through its own regional organisations. The Council also adopted positions on agenda items for World Radiocommunication Conference 2007 (WRC-07). Included in these are that the IARU will seek a future WRC agenda item looking towards a worldwide amateur allocation at 50MHz. Six metres is not currently available in all parts of the world (particularly many parts of Region 1).

The Council also adopted a resolution calling attention to the obligation of telecommunication administrations "to take all practicable and necessary steps to avoid harmful interference to radiocommunication services from power and telecommunication distribution networks, including BPL (Broadband over Power Line) systems that use the HF spectrum."

The Council also received a report from ITU Development Sector Study Group 2 outlining progress toward revising a Recommendation concerning effective utilisation of amateur radio in disaster mitigation and relief. Amendments to the international Radio Regulations at WRC 2003 placed additional emphasis on this role.

Focusing primarily on WRC-07, the Council drew up a list of International Telecommunication Union (ITU) meetings during the coming year at which IARU representation will be required and reviewed plans for staffing them. It seems that as soon as one WRC is over, work begins on the strategy for the next, such is the frequency of WRCs nowadays.

The Council also charged the IARU leadership with drafting a 'white paper' to scope the environment and develop options for the IARU's long-term role and structure. Council members also discussed issues relating to the constitutions of the IARU and its regional organisations and agreed to consider these matters again when the white paper was further developed.

The International Secretariat - ARRL - presented the 2005 - 2007 budget, which includes provision for financial contributions from the three regional organisations to defray a portion of the expenses, in accordance with previously adopted policy.

The Administrative Council's next meeting will be in April 2005. In the meantime much work will be done by individual members of the Council to progress the directions agreed at the 2004 meeting. ♦

Left to right: Pedro Seidemann, YV5BPG, outgoing IARU Region 2 President; Roberto Blois, Deputy-Secretary General, ITU; and Rod Stafford, W6ROD, incoming Region 2 President.

Need a Match?

Even the best transceiver and the best antenna probably don't match.

Solution: The **SGC Smartuner**™ is the Essential link between your HF transceiver and antenna. They operate independently to provide the best match between the feed line and the antenna, totally eliminating SWR problems. They are fully automated, intelligent enough to select the match you need in seconds and remember it so they can recall it in milliseconds.

SGC Smartuners

There is a Smartuner to fit your needs. Choose from 5 models ranging from 1.5 to 500 watts and 1 to 60 Mhz. Buy one for your car, your home, or your portable station — or better yet, buy one for each. Smartuners set the standard. They are the original and still the best.

SG-231 *Coupler*
Cat. # 54-17

SG-237 *Coupler*
Cat. # 54-18

SG-239 *Coupler*
Cat. # 54-22

Once you've learned how the Smartuner works, you won't want anything else!

Visit **www.sgcworld.com** for more information on the entire line of Smartuner antenna couplers.

Smart Choice! Smartuner!

phone us at
800.259.7331

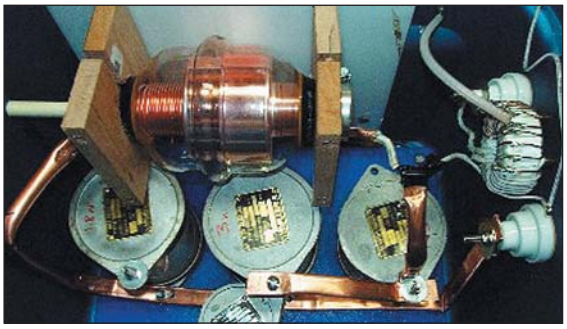
SGC, Inc. 13737 SE 26th St,
Bellevue, WA 98005

SGC

Your HF Solution

Dave Pick, G3YXM

178 Alcester Road South, Kings Heath, Birmingham B14 6DE.
E-mail: lf.radcom@rsgb.org.uk



The ATU of Laurence, WD2XDW, built in a stacking box. You can see the 'doorknob' capacitors below the vacuum variable.

LF

Larry Kayser, VA3LK, silent key • New one-way Europe-to-Oceania record • Trans-Atlantic signals from the USA • More CW operation requested on LF to increase the numbers of newcomers to the band.

I am sorry to report that Larry Kayser, VA3LK, died suddenly in October. He was 64. Larry was a keen experimenter and always put a great deal of effort into his ham radio. During his LF experiments in 2000 and 2001, his LF aerial was suspended from a commercial 240ft self-supporting tower, which Larry would regularly climb, and the transmitter could be remotely-controlled from his home shack. After perfecting the station for 18 months, he made one of the first two-way trans-Atlantic contacts with G3AQC in February 2001. This 5420km contact held the two-way distance record until 2004. The contact took two weeks to complete as the very slow CW in use only allowed one 'over' to be achieved each night, and on many nights conditions weren't good enough to receive any signals.

Larry then concentrated on trying to get a signal to New Zealand with regular beacon transmissions which were received around the USA and Canada, and into Holland, Portugal and Italy on this side of the ocean. In his constant quest for new challenges, Larry had most recently been trying to cross the Atlantic on 2m.

NEW ONE-WAY RECORD

On 2 October, Ed Lesnichy, RU6LA, set up his station at the Machta site, where he was able to erect an efficient aerial supported by a 130m tower. The intention was to run a beacon transmission in the hope that it could be received in ZL. In the event, his 120-second dot-length QRS CW signal was well received by Bob, ZL2CA, at a distance of 16,473km and traces were picked up by Andrew ZL2BBJ at 16,477km.

This extends the previous one-way record from Europe to Oceania of 16,438km, held by RN6BN. Ed's ERP was about 15W, so he had a bit of an advantage over the humble one-watters (if we're lucky!) over here.

TRANS-ATLANTIC – THE OTHER WAY

Some of the US stations who were listening for EU signals last winter are now transmitting under 'part 5' rules. Most successful in crossing the Atlantic so far is John Andrews, W1TAG, whose beacon, WD2XES, on 137.7792kHz has been regularly received by Hartmut Wolff and others. John is in Holden Massachusetts, only about 100km from the coast and Hartmut is near Wolfsburg in Northern Germany, a little further inland. The distance between them is 5,957km.

Other beacons to listen for are VO1NA on 137.777kHz (usually receivable in the UK), VE7TIL on 137.780, WD2XDW on 137.7752 and WD2XFX on 137.7807kHz.

WD2XDW is operated by Laurence Howell, KL1X/5, who is now located near Bartlesville in Oklahoma. This beacon has been widely received around the USA at distances of over 3000km. Like John Andrews, Laurence uses a loop aerial to great effect. These are not widely used for transmitting in Europe, but perhaps we should give them a little more consideration?

Laurence's rectangular version is 130ft long with the top at about 60ft and the bottom at 9ft from the ground, with vertical (tree) supports some 55 – 65ft high. The original was constructed from 6AWG copper wire and has since been augmented buy a second loop of 700-strand Litz wire. This follows the same course as the first and is in parallel with it.

The advantage of a loop aerial is that it can be supported by the branches of trees without the electrostatic losses usually experienced with short Marconis. Voltages may be lower, but currents are high, so the wire must be thick and the tuning capacitors must stand tens of amps. Laurence uses about 11nF of Sangamo 'doorknob' mica types in his ATU, and suggests searching Ebay for suitable ones. Fine tuning is by a vacuum variable. With 200W from his homebrew transmitter, Laurence has measured 13A of aerial current.

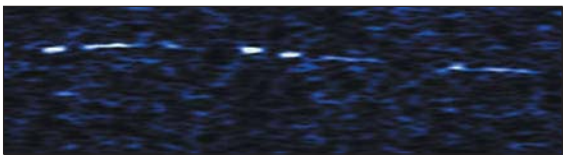
One disadvantage of a loop is that it has a 'figure of eight' radiation pattern with nulls broadside to it. Laurence has plotted the radiation pattern from his system and has found the deep nulls to be about 30° wide. This would be an important factor for those considering a transmitting loop, are your trees in the right place?

CW, ANYONE?

I have noticed, over the past few months, that conventional CW activity has dropped to a low level. Newcomers to the band need a few good audible signals to encourage them and a question I am often asked is "When is there activity on the band?". I usually say that Sunday mornings are a good time to hear CW, but recently this hasn't been true. So how about a bit of key-bashing on a Sunday, to encourage listeners without computers in the shack? See you there!

NEW LF BOOK

The RSGB has recently published a new book by Mike Dennison, G3XDV, entitled *LF Today – a Guide to Success on 136kHz.* It builds upon Peter Dodd's *Low Frequency Experimenter's Handbook,* and is really a mini-*Radio Communication Handbook*, concentrating simply on LF, having chapters on receivers, antennas, transmitters, measurement, etc. The propagation chapter is written by Alan Melia, G3NYK, and is full of interesting information and there are even some of my designs in the transmitters chapter! *LF Today* is available from the RSGB at £10.19 to members. ♦



This is ZL2CA's *Argo* trace showing 'RU' quite distinctly on the left.

WATERS & STANTON

BUY NOW PAY LATER

What's on Offer?

Go to any one of our three branches and take advantage of our new "Buy Now, Pay Later" scheme. It's available on most main-line transceivers and receivers. You pay absolutely nothing for 12 months. It is your chance to buy that dream radio now and keep your cash for 12-months where it can earn a few percent in the process. And it is all so fuss-free.

How does it Work?

You select the product you wish to purchase, sign an agreement form that in twelve month's time gives you the option of paying the full purchase price with no interest or penalty, or opting to spread payments over a three year period on an interest bearing basis.(see below for details). The option is yours. If you choose to pay up the full price 12-months after purchase date, you will have enjoyed an interest free loan with no interest charges. **Much cheaper than using your credit card!**

How to Apply

Either phone or call into one of our stores where we take some personal details and complete your application on-line. For in-store customers we can do it while you wait. For mail order customers we can get acceptance within the hour and send the forms out the same day for signing. Store customers take the goods away immediately, whilst mail order customers' goods are sent out the same day as we receive the signed forms back. It is all very easy and remember, you pay nothing if you settle the agreement within twelve months! **Important.** When visiting a store, please bring two pieces of identity eg. driving licence, recent utility bill, passport, recent bank statement (all to show your address), or credit card.

Conditions Apply

This offer is subject to status. Full details together with an example are shown below. Conditions may change from time to time. Please enquire for latest information.

BUY NOW PAY LATER AT ALL THREE STORES

Jaycee Electronics, Glenrothes.
tel: 01592 756962

Or Use Our Same Day Mail Order Despatch Service

Lowe Electronics, Matlock.
tel: 01629 580800

Waters & Stanton, Hockley.
tel: 01702 206835

0% APR Typical example of buy now pay later. Cash price £600. Pay no deposit and pay the full amount 12 month's later. Pay no interest.

OR after twelve months

29.8% APR Repay £31.53 per month for 36 months. Total amount due £1135.08. Interest is calculated from the date of the agreement.

All finance subject to status written quotation on request.

Mail Order:
Same Day Despatch
Shop:
Walk Away With It

I wanted a new radio.
I would normally have used my credit card.
But then I looked at the interest charge - ouch!! W&S came to the rescue with their **Buy-now Pay-later** scheme. I walked away with my dream radio, got the discount price, and nothing to pay for twelve months. I plan to settle the bill in full in twelve months time, so avoiding any interest charge.
Now that is a deal!

Head Office & Southern Store: 22 Main Road, Hockley, Essex, SS5 4QS. Tel:01702 206835/204965, Fax:01702 205843, E-mail:sales@wsplc.com, Web:www.wsplc.com
Midland Store: W&S @ Lowe, Chesterfield Road, Matlock, Derbyshire, DE4 5LE. Tel:01629 832375, Fax:01629 580020, E-mail:info@lowe.co.uk, Web:www.lowe.co.uk
Scottish Store: 20 Woodside Way, Glenrothes, Fife, KY7 5DF. Tel:01592 756962, Fax:01592 610451, E-mail:sales@jayceecoms.com, Web:www.jayceecoms.com

Rev George Dobbs, G3RJV

St Aidan's Vicarage, 498 Manchester Road, Rochdale, Lancs OL11 3HE.

E-mail: g3rjv@gqrp.co.uk

QRP

Rick Leach, M1RAL, on the G QRP Internet List, excitedly reported on his first trans-Atlantic 5W SSB contact from his present location using a Yaesu FT-817 with a W3EDP wire antenna mounted indoors in the loft space. VE3AT (20m) was closely followed by K3WW (20m). He then went on to his first contact with Japan, and with that finally achieving 1000 miles per Watt on 5W SSB. Not one but two contacts; JA9SCB/P (15m), a difficult contact, followed a few minutes later by JA3YBK (15m), who came back to Rick after one call.

I asked Rick for a little background information on his QRP operation and he replied saying, "Where I currently live, I have restrictions on where I can site external TV and satellite dishes. My base antennas, therefore, have always been indoors, usually in the loft or occasionally a random length of wire thrown from a bedroom window to nearby fence post or tree.

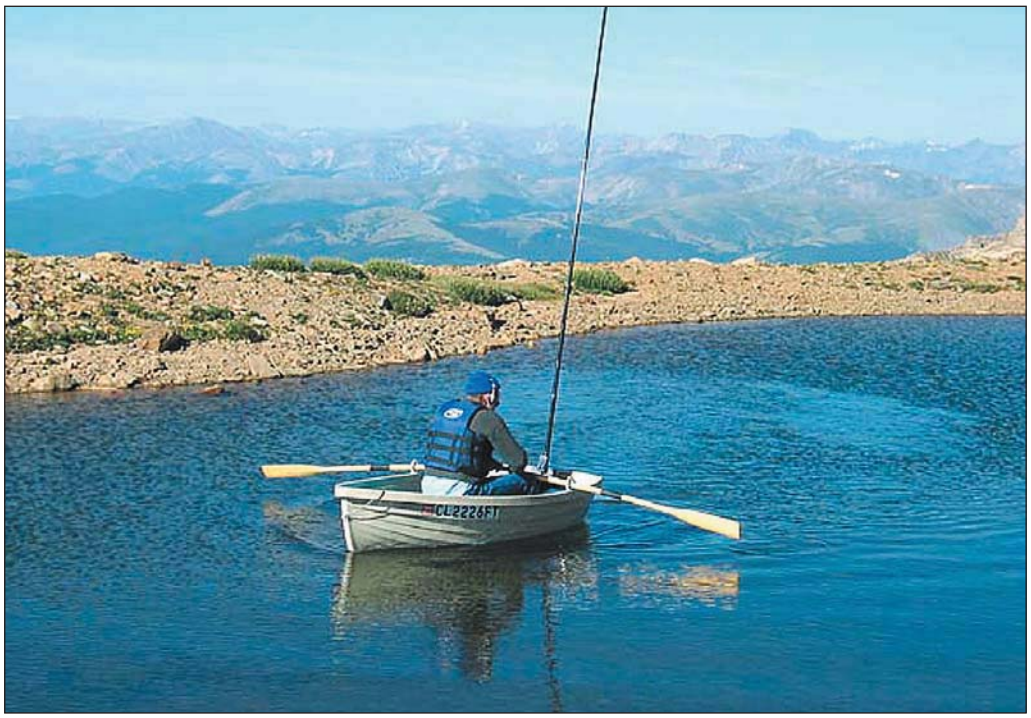
"While it may sound limiting, this indoor W3EDP has served me extremely well. To date, my most memorable contact was with John, K2VV, in Missouri, USA, using just 5W to span the Atlantic for the first time. This was at a calculated distance of 4085 miles and was achieved using an indoor random wire antenna. Contact was also established with Mario, 5N6EAM, in Nigeria at a distance of 3257 miles and was achieved using a Yaesu FT-817 and Miracle Whip antenna located indoors, with Flavio, IK2IQD, in northern Italy acting as the controlling station. Most recently, during a Worked All Europe contest, contact was made with Akihiro, JA9SCB, and Yutaka, JA3YBK, in Japan, again using just 5W into a W3EDP wire antenna erected in the roof space of my house.

"Two-way SSB QRP is also possible too, and just goes to show what can be achieved running low power, with a little patience and perseverance thrown in for good measure. QRP is not always easy, but then again, if it was easy, would it be worth doing?"

Note: The W3EDP Antenna is an end-fed 84ft wire which is usually fed using a balanced tuner against a counterpoise wire of 17ft for 80/40/30m and 6.5ft for 20m and above. The Miracle Whip is a commercial, self-contained, all-band (3.5 to 460MHz) 57in telescopic whip antenna with integrated tuner for receiving and transmitting that mounts directly on to the FT-817 antenna socket.

No sooner had the last edition of this column appeared, with information on some QRP contacts, than I received an e-mail from Paul, G7RSG, about his first-ever QRP contacts on an HF band. "Today (17 March 2004) sitting on Shoreham beach (Sussex) using only 5W from my FT-817, I replied to two CQ calls on 20m SSB, and got responses from both S51GL, Slovenia, and EA3FEB, Barcelona, one being a 5/4 report with QRN at his end. I nearly fell over in shock as these were my first QRP contacts on HF.

"For transmission, I was using a compact, tunable whip made by bhi called the Wonder Wand (an antenna I often use for reception at home, as it also seems to have remarkable receive performance) with the radio powered from a 12A 12V, sealed lead acid battery."



Jake, N0LX, 40 miles west of Denver, at 13,800ft altitude – see 'N0LX/MM QRP World Record Attempt'.

N0LX/MM QRP WORLD RECORD ATTEMPT

Jake Groenhof, N0LX, is an avid QRP portable operator who likes an unusual challenge [see *RadCom*, April 2004, p85 – Ed.]. Just for fun, on Saturday, 14 August at 1500UTC, Jake was at 13,800ft (4206m) altitude in his 8ft rowing boat, attempting the highest-ever HF 'maritime mobile' operation. The weather cooperated and the bands were in good shape. He was joined by Eric, KG0HO, and Bruce, KG0SH, who helped Jake get the boat and gear to the water and to witness the event. The water was a reservoir, 40 miles west of Denver, Colorado and just below the summit of Mount Evans. Built to supply water to a restaurant that was once at the top of the mountain, it is no longer in use.

The station was an FT-817 feeding a homebrew matching unit and coil-loaded half-wave vertical supported with a 20ft fishing pole. In all, 14 contacts were made to eight states, including Iowa, Missouri, Michigan, Illinois, Ohio, New Hampshire, Virginia and Colorado.

Later, Eric and Jake hiked to the top of the mountain to see the summit and try some pedestrian mobile. Jake said he "… made some nice contacts including Florida and Alberta, Canada". ♦

THE G QRP CLUB WINTER SPORTS

The G QRP Club Winter Sports is one of the most popular QRP operating events. Each year between Boxing Day (26 December) and New Year's Day (1 January) the club invites any operators to join in a QRP 'QSO Party' using 5W of RF output or less. The operating takes place on and around the International QRP calling frequencies. These are: for CW – 1843, 3560, 7030, 10106, 14060, 21060 and 28060kHz; for SSB – 3690, 7090, 14285, 21285 and 28360 kHz

The Winter Sports is not a contest, so "5NN BK" exchanges are not heard, and participants often linger over interesting contacts. It is usual for operators to exchange their G QRP Club membership number, if they have one.

The event does provide an opportunity for operators who do not usually use low power to turn down their power to 5W or less and see what can be done. Those taking part are invited to submit logs and comments to the G QRP Club Communications Manager, Peter Barville G3XJS, 40 Watchet Lane, Holmer Green, High Wycombe. Buckinghamshire HP15 6UG (g3xjs@gqrp.co.uk). The G4DQP Trophy is awarded to the station making the best overall contribution, which may not be the station with the most contacts or working the most DX. So turn down the power and have a try at this popular event. It is one of the few times I have heard QRO stations complaining about QRM from QRP stations!

arno elettronica

Licensee of EH ANTENNA SYSTEMS

VENUS 160 TOP BAND
1,830–1,850MHz
VENUS 80
3,500–3,800MHz
248cmx8/12,5cm
Max power rating
2000W SSB-CW
500W RTTY-AM
179£
(264,00 Euros)

COBRA 10
28-29,500 MHz
COBRA 11
27 MHz
COBRA 15
21–21,450 MHz
COBRA 17
18,068–8,168MHz
COBRA 20
14–14,350 MHz
90 x Ø 8 cm
COBRA 30
10,000-10,150MHz
COBRA 40
7,000 – 7,100MHz
93 x Ø 12,5 cm
Max power rating
2000W SSB-CW
500W RTTY-AM
105£
(156,00 Euros)

CHEAP FREIGHT COST via REX European Express Service: 26£ (38,00€) to ship from one to a total of three or five antennas depending on the models.

ASPIS 11 CB
26,500–28,000MHz
68 x Ø8cm
Max power rating
600W SSB-CW
150W RTTY-AM
67£
(99,00 Euros)

ASPIS 6
50,000–
52,000MHz
66 x Ø8cm
Max power rating
300W SSB-CW
75W RTTY-AM
105£
(156,00Euros)

Small and efficient antennas. Pre tuned in the factory. Ready to use. Complete with fixing clamps, SO239 and user's manual in English. Easy to tune with fine tuning sleeve.
More information or a subscription to our news may be required by writing to our Scottish partner Julie at:
info@eheuroantenna.com

Arno Elettronica wishes you a Merry Christmas and a Prosperous and Happy New Year !!!

info@eheuroantenna.com www.eheuroantenna.com
Tel +39 0587 606122 Fax +39 0587 608634
Via Leonardo da Vinci, 13 I- 56033 Capannoli (PISA) ITALY
Registered trademarks and products.

ALWAYS WANTED

Communications receivers and accessories:
Eddystone, Racal, HRO, Watkins Johnson, Marconi,etc
RA17, 117, RA1772, 1792, 840, 940.. What have you?

Ham Equipment and Accessories: Old or Modern:
Collins, Trio, KW, Yaesu, Drake, Icom,etc. Nothing is scrap
19 sets, 62sets, and other mill spec gear, T1154, R1155 and parts.

Test Gear, Components and Spares:
Scopes, Sig Gens, Valves, Semiconductors, Capacitors, etc
Any age, any quantity, Workshop or shack clearance?

Silent Key estates handled with care and respect.
Country-wide collection - no problem.
Contact: 01252 795224 anytime, or Email: rolendra@aol.com

QSL COMMUNICATIONS

UNIT 6 WORLE INDUSTRIAL CENTRE, COKER ROAD, WORLE, WESTON-SUPER-MARE, BS22 6BX.
Email: jayne@qslcomms.f9.co.uk
TEL: 01934 512757

ICOM

IC-7400	£1249
IC-718	£449
IC-706 MK2G	£789
IC-703	£569
IC-2725E	£299
IC-910X	£1249
IC-E90	£269
IC-R3	£389
IC-R5	£169

PLEASE PHONE FOR CARRIAGE CHARGES

KENWOOD

TS-2000	£1539
TS-570DGE	£799
TM-D700E	£439
TM-G707E	£279
TH-F7E	£249

YAESU

FT-60E
2m/70cms
transceiver
£189

EARTH RODS

4FT Long,
adjustable Brass fixing
SOLID COPPER
£10-99+£6 P&P

YAESU

FT-1000MP FIELD	£1749
FT-847	£1199
FT-857D	£719
FT-817	£499
FT-8900	£349
FT-8800	£299
VX-7R	£289
VX-2E	£169
VR-5000	£569
VR-500	£199

Stockist for Hustler, Watson, QAP Cushcraft antennas.

MFJ

MFJ-993	300W Auto Tuner	£249	MFJ-956	Rx Tuner	£59
MFJ-962D	1.5 Kw Tuner	£279	MFJ-704	Low pass filter	£49
MFJ-949E	300W Tuner	£159	MFJ-260C	Dummy load	£37
MFJ-941E	300W Tuner	£129	MFJ1704	4 Way switch	£69
MFJ-945E	300W Tuner	£119	MFJ-259B	Analyser	£259
MFJ-971	300,30/6W Tuner	£99	MFJ-269	Analyser	£349

OTHER MFJ PRODUCTS AVAILABLE ON REQUEST

500 QSL CARDS

£38-60 + £6 P&P
INCLUDING
ARTWORK & VAT

SECONDHAND

Kenwood	PS-31 P.S.U.	£99
Kenwood	KSC-14 Rapid charger	£49
Kenwood	TM-G707E 2m/70cms mobile	£229
Icom	IC-Q7E Dualband handheld	£139
Icom	IC-8500 Receiver	£1100
Icom	IC-R3 Handheld receiver	£279
Icom	IC-R72 Receiver	£350
Yaesu	FT-7800 Dualband mobile	£199
Yaesu	FRG7 Receiver	£149
Yaesu	FTV901R Transverter	£90
MFJ	949E Tuner	£119
MFJ	784B Tuneable DSP filter	£169
BEARCAT	9000XLT Base Scanner	£199
ALBRECHT	AE201S 10M Handheld	£150
Dressler	ARA 900 Active antenna	£99

YOUR CALLSIGN HERE
Card size 140mm x 88mm

YOUR ADDRESS HERE

To Radio.....
Confirming our.....MHz QSO
On.....At.....GMT
Ur SSB/FM/AM/CW Sigs were RST.....
Transceiver.....Pwr.....W
Antenna.....
PSE/TNX QSL

YOUR NAME HERE

By Norman Fitch, G3FPK

40 Eskdale Gardens, Purley, Surrey CR8 1EZ.

E-mail: g3fpk@compuserve.com

VHF/UHF

A full 'VHF/UHF' column, with reports on some excellent tropospheric propagation, making improvements to the sensitivity of the FT-847 on 4m, an operation from the Isle of Man, and much more.

The Wrexham ARS group's Land Rover prior to the GB4IOM DXpedition.

The October edition of the UK Six Metre Group's quarterly Journal *Six News* runs to 51 A5 pages and, as usual, includes some fine articles. Propagation at 50MHz is a fascinating subject and the 23-page feature article is by Jim Kennedy, KH6/K6MIO, who discusses '50MHz Long Path Propagation.' This is one of the most comprehensive treatises I've seen on this topic. Dave Toombs's, G8FXM, 'Digital Bits' column discusses Spectran, which is bundled with the latest WSJT version and Dave Edwards, G7RAU, writes about his excellent Live MUF Calculator. Clive Davies's, G4FVP, 'What's on Six' column is essential reading, too. The back cover shows a picture of the 40 people who attended G3WOS's 6m barbecue on 7 August. Chris Deacon, G4IFX, edits *Six News* and his e-mail address is editor@uksmg.com

The autumn edition of the quarterly publication VHF Communications, edited by Andy Barter, G8ATD, starts with Carl Lodström's, SM6MOM, well illustrated article on 'The noble art of piping power to an antenna'. Gunthard Kraus, DG8GB, discusses the SonnetLite 9.51 in a 23-page article and there is his usual 'Internet Treasure Trove' contribution. VHF Communications is published by KM Publications, 63 Ringwood Road, Luton, LU2 7BG and there is a website - see Web search

IMPROVEMENTS

The comments in the October 'VHF/UHF' about the receiver performance of the Yaesu FT-847 transceiver on 4m brought a very helpful note from Rodney Fry, G3NDI, who bought one last year. He also found that its sensitivity was rather poor. He writes, "It is quite remarkable what a little searching with Google on the web will turn up, such as a number of discussion forums related to the FT-847." He recommends Peter Pfisterer's, DH1NGP, Supercontrol website, which offers some frequently asked questions (FAQs) on the rig, in particular comments on the frequency accuracy and how to make a minor correction, and the Yaesu FT-847 Forum, which tackles frequency adjustment.

The 4m Forum on the 70MHz website is highly recommended. Go to Links and click on Forum, then Equipment and lastly the item 'The FT-847 on 4 metres' which has the very useful comment on the sensitivity adjustment via a hidden menu. He continues, "You need to be nimble with fingers to hold all the microphone buttons down while switching on the rig. I adjusted my rig to the maximum gain - it was set at 53, whatever that was supposed to mean - and it seems quite reasonable now. It would be interesting to know if anyone with access to the proper measuring equipment could confirm the improvement and how it compares to the bands either side." See Web search for details.

ANTENNA DESIGN

Derek Hilleard, G4CQM, has changed his website covering his antenna data - see Web search. There are designs for VHF and UHF antennas of various boom lengths giving element lengths and spacings together with performance plots, cable loss information, etc. He can also supply 'bits and pieces' for would-be constructors.

GD DXPEDITION

The Wrexham ARS mounted a major DXpedition to the Isle of Man as GB4IOM over the 1-8 September period. In the photograph, the group's Land Rover is shown on the docks at Heysham prior to the start of the DXpedition. On the roof rack are 240ft of mast section and two small 30ft masts. On the trailer are the 40ft tower, a 7.5kW generator and various HF and VHF antennas. All the station gear is inside the vehicle. Mike Bryant, GW6NLP, sent some details of the VHF operation on 2m, comprising an FT-225RD, 25W to a 19-ele Yagi 50ft ASL, and a TS-2000, 100W to a 4-ele Quad 35ft ASL on 6m. Operation was from a disused Coast Guard lookout tower at Scarlett Point, 1.5 miles south of Castletown. Their log shows 59 QSOs with stations in DL, EI, G, GI, GM and GW during the RSGB 2m Trophy Contest on the 5th. In an Es opening on 6m on the 5th 17 contacts are listed with stations in EI, G, GW, I2, I4, OH and SM. A full report is on the comprehensive website - see Web search.

SOLAR AND GEOMAGNETIC ACTIVITY

The decline in solar activity continues and in the 30 days to 12 October the 10.7cm solar flux averaged 94.8 units, a significant fall on the previous 30-day value. The maximum was 118 on 13 September and the minimum was 87 on 11 October. The SESC sunspot number was zero on 10 and 11 October, the maximum count was 80 on 16 September and only nine new regions were recorded. The middle latitude A-index at Fredericksburg was in single figures on 23 days, dropping to just 2 on six days with the maximum of 17 occurring on 14 September.

METEOR SCATTER

Going back to the Perseids in August, G4DBL tried FSK441 mode on 2m for the first time and worked a fair few Europeans in various grids completing some QSOs in about 8mins.

The Geminids is one of the major meteor showers in the calendar and the OH5IY program suggests it should peak around 2220 on 13 December with a zenithal hourly rate (ZHR) of 120. The accuracy of this prediction is ±6 hours and the radiant is above a mid-UK horizon from 1630, through midnight, to 1230. At the time of maximum, the north/south and northeast/southwest paths are best. The reflection efficiency is above half the

MOONBOUNCE

Howard Ling, G4CCH (IO93), was QRV on 23cm in the first leg of the ARRL International EME Competition over the 9/10 October weekend and reports that conditions and activity on the first day were good. On the Sunday activity was lower, especially from Japan - the day of the Japanese Formula 1 Grand Prix - and conditions seemed poor. Overall he completed 49 contacts with 31 multipliers and WB5AFY was the only new station, or 'initial' (#) worked. Tim Stanley, G4DBL (IO91), runs 300W to a 17-ele Yagi 11m AGL on 2m and has completed his first EME QSOs using JT65b. These were with I2FAK, W5UN and W8CNL on 22 and 23 September.

The following items are taken from the October issue of the *432 and Above EME News* edited by Al Katz, K2UYH, who reports that 70cm activity in September was way down. Doug McArthur, VK3UM, writes, 'After 20 years of active EME operating this last weekend must rank as the worst I can recall.'

Peter Blair, G3LTF (IO91), was the sole British contributor to this edition and wrote about the August EME Conference in Trenton, which he attended. He was a bit disappointed that there weren't more attendees both at the event and the forum, which latter was held on the Sunday and by which time a number of people had left. He was QRV in the Italian contest but high winds restricted his operation. On 23cm on 11 September he completed with G4CCH, OZ6OL, GW3XYW, K9SLQ, IK2MMB, K0YW, W7BBM, VA7MM and WA6PY. Next day on 70cm he worked SP6KLW, DL9KR and S52CW when Faraday rotation was 90° and fairly sharp. On 11 September he completed with OH6NVQ on 13cm and is concentrating on generating higher power on the band.

The 4/5 December weekend sees the final leg of the ARRL contest, which is for the 50-1296MHz bands. London latitude stations will have about 26.4 hours of Moon time. The declination varies from +15.53° to +7.35°, the 144/432MHz sky temperature range is 217/16K to 239/18K and the signal degradation, referred to perigee, varies from -1.59dB to -1.31dB. The Sun offset at Saturday midnight is -90°.

maximum for about a day but there are reasonable reflections for a few days before maximum. However, this is an asymmetrical shower and reflections drop off quite quickly after maximum.

The last shower of the year is the Ursids, which should peak around 0800 on 22 December ±3 hours. This shower is available all day and the reflection efficiency is above half that at maximum for 14 hours. The ZHR is about 12 and at maximum the east/west path is the best as it is for all the time, while the north/south path isn't particularly good with dropouts at 0900 and 2100.

BAND REPORTS

50MHz

There is very little to report on 6m this time now that the summer Es season is over although Bryn Llewellyn, G4DEZ (JO03), worked quite a lot of Italian stations in the evenings of 4 and 5 October. Ted Collins's, G4UPS (IO81), report for September is a one-page one of completely nil activity in contrast to this time last year.

Derek, G8TOK (JO01), writes, "At 1543 on 19 August testing the stunning receiver on my new IC-7800, I almost immediately worked UT7UV (KO50FK) for a new grid and a very respectable distance for the time of year (2116km)." Kevin Jackson, M0XLT (IO83), found a brief Es opening from 1300 on 4 October during which he copied beacons CT0SIX and IK5ZUL at S5 but CQ calls produced no takers. He also heard EI3IO in beacon mode on 50.0915MHz via tropo scatter. On 11 October, 1253-1317, beacon SR9FHA (KO09) on 50.026MHz was up to S7 but again CQ calls brought no replies. Eastern European TV video carriers were audible, the strongest being on 49.740MHz at up to S9.

70MHz

G8TOK writes that the early September tropo opening was the best he can ever remember but that, despite appeals on the cluster, few stations thought to listen on the band. The GB3ANG Angus beacon was a genuine S9 for almost 24 hours and was louder than the more local ones. At 2202 on the 7th Derek worked GM4AFF (IO86), who sounded like a local station, in astonishing conditions and it was a new grid.

144MHz

The main topic this time is the excellent tropo period at the beginning of September that was just starting as the November 'VHF/UHF' was being written. Geoff Grayer, G3NAQ (IO91), lists 15 stations over 700km worked during the evening of the 7th, ODX being OZ1EP (JO55) at 1002km. Other DX included DJ8MS (JO63/951km) and OZ1LFA (JO54/943km). On the next night activity was lower and most contacts were with stations 500-700km distant, ODX being OK1VZP/P and OK1THE/P (JO60) at 1010km.

G4DBL was QRV in the UKAC on the 7th and Tim made 138 scoring SSB QSOs, ODX being SP2FAV (JO94) at 1393km. With 40 multipliers he ended up with a score of 5520 points, not a bad 2.5 hours work. In his comments section he wrote, "What a blast. Tropo propagation very good. Working DX to the east almost nonstop; decided to look north near the end, just to get some multipliers."

Myke Oldham, G6DDQ/P (IO84), was QRV for the Summits on the Air (SOTA) event on 8 September from summit NP-030 and in 75min from 0900 worked 14 SSB stations in DL, ON and PE, ODX being DF3RU (JN59) at 1094km. He was only running 2.5W to a 3-ele Yagi 3m AGL.

Bob Harrison, G8HGN (JO01), worked HB9FAP (JN46) at 2056 on 6 September in what he thought were rather strange conditions with a strong breeze blowing from the northeast across the path to Switzerland and which usually kills propagation in that direction. He worked OK2PMU (JN99) at 1265km at 2225. He got up early next morning but there wasn't much activity until around 1500 after which he contacted DL1XAQ/P (JO43), OE5XBL (JN68) and OE2CAL (JN67).

In the UKAC that evening he made 46 QSOs with stations in 11 countries and 28 grids for a claimed score of 1288 points, ODX being OE2WPO/2 (JN67) at 1002km. By the next day the conditions were declining but a CQ call at 1902 resulted in contacts with HB9SJV (JN36) and DF1VW (JN39).

Jamie Ashford, GW7SMV (IO81), lists 51 QSOs made between 1719 on the 7th and 0648 on the 8th. OE2CAL and ODX SP3MGM (JO73) at 1259km were two new countries on tropo. Other contacts over 1000km were with OZ6ABA (JO57), DL0BWS (JO64), DK7OM and DG6SYL (JO53), DJ8MS, OK1RI (JO60), DK3WG (JO72), DF1CF (JN57) and DH2UAK (JO71).

Dave Hewitt operated as GW8ZRE/P (IO83JF) in the UKAC running 80W to a 7-ele ZL Special antenna and completed 153 scoring QSOs with 42 multipliers for a claimed score of 6426 points. Ten countries were worked with the antenna pointing to the east, ODX was DL5YEE (JN42) at 1502km and he reckons that it was the best VHF contest he has ever taken part in. 42 grids in 2.5 hours can't be bad.

Steve Bunting, M0BPQ was on holiday in Yorkshire for the tropo opening in early September and was QRV for part of the UKAC on the 7th completing 54 QSOs, ODX being SP6RGB (JO71) at 1134km. Robin Burrows-Ellis, M1DUD (JO02), was QRV in the Nordic Activity Contest (NAC) on 7 September running just 5W to a 5-ele Yagi 6m AGL in the best tropo opening for a long time. He had never heard any GMs on the band till this night when he worked GM3YOG/P (IO85), GM4YXI (IO87) and GM0HTT (IO89).

Steve Burrows, M5BXB (IO91), managed 124 QSOs on the 7th using 400W to a 9-ele Yagi 15m AGL. Countries worked were DL, F, G, HB9, LA, ON, OZ, PA, SM and SP in 36 grids of which JO46, 56, 64, 83, 92 and 93 were new. ODX was SP3VSC (JO92) at 1258km. Within seven months of getting his Class A call Chris Ruddy, MM0KOS (IO85), has notched up 23 DXCC entities and 86 grids on the band using 100W and a 9-ele Yagi. He has used FSK441 and JT65 modes and has also completed three EME contacts.

430MHz

After the Trophy Contest on 2m on 5 September G8HGN put out a CQ call on 70cm and worked OZ8AFC (JO45) at 2119 followed by SM7FMX (JO65) both contacts in QSB. After the 2m UKAC on the 7th, Bob fired up on 70cm just after midnight and worked GI4ATZ (IO74) and GI4SNA (IO64), the latter a new grid number 77. During the evening of the 8th he contacted DF1VW (JN39).

During a French contest on 19 September M0BPQ, running 40W to a 19-ele Yagi at 25ft AGL, worked F4CKV/P (JN16), F8ALX* (JN06) and F5OAU/P (JN27). In the SOTA event on 8 September G6DDQ contacted DJ6JJ and DK9TF (JO31) and PA3FTX (JO21). Myke was running 2.5W to the 3-ele 2m Yagi, then the batteries in his FT-817 died.

1296MHz
Towards the end of the IARU Contest on 3 October M0BPQ contacted DJ5BV (JO30), PA0S (JO21) and PI4Z (JO11). Steve was using 8W and a 35-ele Yagi and the DJ was a new country on the band and ODX at 510km. G8TOK worked OZ1CTZ (JO46) on 2 September and on the 7th GM4LBV (IO86), was the first ever GM that Derek had heard on the band, so a new country.

SIGN OFF
Nice to have had some decent tropo to report for a change so let's hope we get another autumn lift. Thanks to Neil Clarke, G0CAS, for the August issue of *Sun Mag*. The deadline for the February edition is very early, **7 December** and for March, when I'll need your final scores for the annual table in its present form, it's **11 January**. My telephone answering and fax machine is on 020 8763 9457, although it's ages since anyone used it, and my CompuServe ID is g3fpk. I hope you all have a nice Christmas and might find some time during the festivities to participate in the Christmas Cumulatives. ♦

WEB SEARCH

VHF Communications:	www.vhfcomm.co.uk
DH1NGP:	www.supercontrol.de/cat/us/index.php
FT-847 Forum:	http://f16.parsimony.net/forum28107/index.htm
4m website:	www.70mhz.org
G4CQM antennas:	www.antennadesigner.com/g4cqm
GB4IOM:	www.gb4iom.co.uk

LOCATOR SQUARES TABLE
Starting date: 1-1-1979

Callsign	50MHz	70MHz	144MHz	430MHz	1296MHz	Total
G0JHC	1040	26	48	4	-	1118
G3IMV*	846	20	619	125	53	1663
G0FYD	724	1	296	50	17	1088
G4DEZ	688	41	207	47	44	1027
GW7SMV	675	-	250	-	-	925
MU0FAL	540	-	49	9	4	602
GW3HWR	478	31	187	34	-	730
G4OBK	469	28	79	11	-	587
G4VPD	457	14	231	16	-	718
M5BXB	453	15	192	57	-	717
GW3LEW	436	14	232	42	4	728
G8TOK	424	44	145	58	34	705
G6TTL	405	-	140	94	28	667
GM4VVX	357	22	170	2	-	551
G8HGN	346	-	208	77	-	631
G3IKR	340	52	45	-	-	437
M1DUD	294	1	54	10	-	359
G3FIJ	278	29	108	51	23	489
M3CVN	249	-	46	5	-	300
G0ISW	240	7	103	22	-	372
EA7IT	209	-	108	-	-	317
G4APJ	192	-	64	31	-	287
M0XLT	171	-	13	2	-	186
M5MUF	155	23	70	-	6	254
G4FUJ	111	20	28	6	5	170
MM1FEO	59	-	26	1	-	86
G3FPK	30	-	246	-	-	276
2E1GUA	17	-	18	13	-	48
G4YTL	11	56	560	141	14	782
G3XDY	-	34	261	179	130	604
G8RWG	-	-	120	-	-	120

*Silent key. No satellite, repeater or packet radio QSOs. If no updates received for a year entries will be deleted. Band of the month 50MHz. Next deadline is 7 December.

Book review

HIJACKING ENIGMA – THE INSIDER'S TALE
By Christine Large, Director of Bletchley Park Trust
Reviewed by RSGB Staff

Are you an Enigma aficionado, who devours all information on the subject, or do you like a good detective story, particularly one that is true? Whichever it is, you will certainly like *Hijacking Enigma*, a book detailing the recent theft of the famous Abwehr Enigma machine (of which there are thought to be only two or three in the world) from Bletchley Park mansion on Saturday April 1 2000. The four-rotor machine, serial number G312, had been used by the Abwehr, Germany's élite military intelligence force, and was the jewel in Bletchley Park's crown.

The book is written by Christine Large, the Director of Bletchley Park Trust who, despite her name, is "tiny, a Geordie… with a spine of steel," according to *The Times*. Her book contains two stories – the theft of G312, and some of the history of the Enigma machine, dating back to 1918, when its inventor intended it to be used for secure transactions between banks. It follows the machine to its first 'capture' by the Allies and its use to shorten WWII.

It is, perhaps understandably, the more recent theft that has the greater impact on a 21st-century reader, as it is modern history, written by one who was an integral part of it.

Parts of the story still remain unknown but, once the machine had been stolen, dealings with Christine Large were restricted to a 'middle-man' who said he was acting on behalf of a third party in India, and wanted £25,000 for its return. The convoluted dealings were clever, virtually impossible to trace, and very frustrating for Bletchley Park and the police. The middle-man, Dennis Yates, was adamant that he was going to return it but was, in turn, being blackmailed by his 'Master', the intended purchaser. How Yates, a one-time member of the RSGB, was eventually captured, after anonymously returning G312 (less three rotors) to the unlikely personage of Jeremy Paxman at the BBC, is something you can read for yourself. The three rotors were eventually returned.

Depending upon your inclination,

you can read the book *in toto* and enjoy both parallel adventures, or you can read individual alternate chapters, one story at a time.

It is an excellent book, a valuable addition to the growing body of information about Enigma, past and present.

HIJACKING ENIGMA – THE INSIDER'S TALE
By Christine Large, Director of Bletchley Park Trust
John Wiley, 2003
290 pages, 128 x 198mm
ISBN 0-470-86347-1
Member's price £6.79 (non-members' price £7.99)

RCQ COMMUNICATIONS

Possibly

The UKôs Leading Used Equipment

e-mail g3rcq@supanet.com

RCQ Communications - Callers by appointment - Weekends only

Sales Hotline 079 408 37 408

WE ARE OPEN
9-5 MON-SAT

G3RCQôs MESSAGE: Its not always possible to be near a landline telephone - so excuse the mobile HOTLINE - It seems that I am always flying around the country buying ham radios, so the mobile number will always find me. **OK** well what do we do at **RCQ Communications?** WE SELL GOOD QUALITY FULLY TESTED AMATEUR RADIO EQUIPMENT.
GUARANTEE 30 DAYS - YES most of RCQôs used bargains are covered for a full 30 days - apart of course from output stages and misuse -
SO YOU CAN BUY **WITH CONFIDENCE** from a dealer who has been **licenced for 42 years -**
G3RCQ has been an RSGB member for 34 years. ***THE GENTLEMAN DEALER is still G3RCQ***

www.cqhamradio.net

ACCESSORIES	
YAESU FV-901 DIGITAL VFO + MEMORY	Ã95.00
YAESU FV-101DM DIGITAL VFO	Ã125.00
ANTENNA TUNERS/ROTATORS	
MFJ 1782 SUPER HI Q LOOP 10-30MHZ	Ã195.00
ANTENNA GLOMAX VHF MARINE 156-165	Ã50.00
DRESSLER ACTIVE ANTENNA DX-10 HF	Ã65.00
YAESU FC-902 ANTENNA TUNER	Ã175.00
YAESU FT-102 DAMAGE FRONT 1.2 KW	Ã150.00
KW E-ZEE MATCH ATU	Ã50.00
SGC THE Q MATCH COUPLER	Ã50.00
SEM EZITUNE	Ã65.00
DRAKE MN-2000 2KW ATU S/N2128	Ã240.00
KENWOOD AT-250 AUTO TUNER	Ã125.00
LDG AT-11 MP AUTO TUNER	Ã135.00
MORSE KEYS & FILTERS	
KENT MORSE TRAINER	Ã30.00
DATONG MORSE TUTOR	Ã45.00
HI-MOUND HK-702 MARBLE BASE	Ã40.00
KENPRO KP-100 IAMBIC	Ã45.00
HI-MOUND HK-704 PUMP HANDLE KEY	Ã40.00
TEN-TEC IAMBIC PADDLE KR1B	Ã30.00
HF TRANSCEIVERS	
YAESU FT-902DM EXCELLENT	Ã325.00
YAESU FT-1000 MP BOXED AS NEW	Ã995.00
YAESU FT-920 HF TCVR BOXED	Ã825.00
ICOM IC-756 HF + 6 NORMAL S METER	Ã895.00
YAESU FT-757GX HF TCVR	Ã295.00
TRIO/KENWOOD TS-830S HF BASE TCVR	Ã325.00
ICOM IC-756 PRO2 BOXED AS NEW	Ã1,250.00
CB HANDIE TRC-1014 SMALL	Ã30.00
YAESU FT-847 AS NEW	Ã775.00
YAESU FT-980 HF SOLID STATE BASE	Ã425.00

KENWOOD TS-530S BASE HF TCVR	Ã195.00
KENWOOD TS-570D BOXED	Ã495.00
TRIO TS-180 SOLID STATE HF TCVR	Ã200.00
KENWOOD TS-50 HF TCVR	Ã425.00
YAESU FT-100D BOXED AS NEW	Ã575.00
YAESU FT-101Z TRANCEIVER	Ã150.00
DRAKE TR4CW + MS4 PSU & SPEAKER	Ã250.00
TEN-TEC ARGOSY 2 WITH SPEAKER	Ã175.00
ICOM IC-706 MK2 BOXED	Ã475.00
ICOM IC-781 -BANDSCOPE THE BEST	Ã1,395.00
LINEAR AMPLIFIERS	
BNOS LPM 144-10-100 RX PRE-AMP	Ã125.00
SPECTRUM 6M LINEAR 1/3IN 30W OUT	Ã40.00
MICROSET 100W 2M LINEAR BOXED	Ã95.00
YAESU FL-2100Z HF LINEAR	Ã425.00
MICROPHONES	
ICOM IC-SM8 BAS MIC	Ã85.00
ALINCO EDS 5 MIC EXTENTION CABLE	Ã15.00
KENWOOD MC-80 BASE MIC	Ã50.00
KENWOOD MC-50 BASE MIC	Ã40.00
POWER SUPPLIES	
YAESU FP-757HD WITH FAN	Ã95.00
NISSEI MS-1228 25AMP SWITCH MODE - NEW	Ã69.95
WATSON W25 AM	Ã65.00
NISSEI 300GL 30AMP LINEAR - NEW	Ã119.95
RECEIVERS - FILTERS - SCANNERS	
KW-202 RECEIVER WITH SPEAKER	Ã75.00
DRAKE R8A COMMUNICATIONS RECVR	Ã295.00
W9GR DSP2 AUDIO FILTER	Ã100.00
TRIO R-1000 COMMS RECEIVER	Ã125.00
MFJ-748 DSP AUDIO FILTER	Ã95.00
LOWE HF-150 RECEIVER 0-30MHZ	Ã150.00

SWR	
OSKER SWR-200	Ã50.00
WELTZ SP-400	Ã50.00
WELTZ W-120 140-150 MHZ	Ã10.00
AV-400 SWR	Ã30.00
REVEX DUMMY LOAD	Ã15.00
CB 26-30MHZ SWR HQ222	Ã15.00
MFJ 815B 1.8-60MHZ BOXED AS NEW	Ã65.00
AKD WAVEMETER WA-1	Ã25.00
NISSEI RS-102 SWR & PWR 1.8-200MHZ - NEW	Ã59.95
KW -103 SWR METER	Ã20.00
KW LOW PASS FILTER	Ã20.00
AVAIR AV-600 140-525 & 1.6 TO 160MHZ	Ã50.00
TEST EQUIPMENT	
RS LCD DIGITAL MULTIMETER TM 351	Ã35.00
YAESU FT-707 SERVICE MANUAL	Ã25.00
ICOM IC-740 SERVICE MANUAL	Ã25.00
YAESU FT-847 SERVICE MANUAL	Ã20.00
TNC & DATA COMMUNICATIONS	
MFJ-1272B MIC/TNC SWITCH	Ã25.00
TRANSVERTERS	
RN 6M TRANSVERTER 144MHZ TO 50 MHZ	Ã65.00
VHF/UHF TRANSCEIVERS	
ICOM IC-W2E BOXED	Ã85.00
NAVICO 2M 25WATT FM MOBILE	Ã50.00
YAESU FT-2700RH 2/70 FM MOBILE	Ã145.00
ALINCO DR-140 VHF MOBILE AS NEW	Ã135.00
ALINCO DJ-G5E DUAL BAND HANDIE	Ã155.00
KENWOOD TH-79 HANDHELD	Ã195.00
YAESU FT-290R MK1 FM/SSB PORTABLE	Ã135.00
KENWOOD TR-751E 2M MULTIMODE	Ã250.00
AKD 2001 25W 2M FM MOBILE BOXED	Ã65.00
YAESU FT-290R MK2	Ã175.00

WANTED - FOR CASH - IMMEDIATE DECISION

MODERN RADIOS PREFERRED BOXED & CLEAN

OLDER EQUIPMENT CONSIDERED IN P/EXCHANGE - ASK

By Andy Cook, G4PIQ

VHF Contest Committee Chairman, Knaves Acre, Brantham Hill, Brantham, Manningtree CO11 1TA. E-mail: g4piq@btinternet.com

VHF NFD 2004

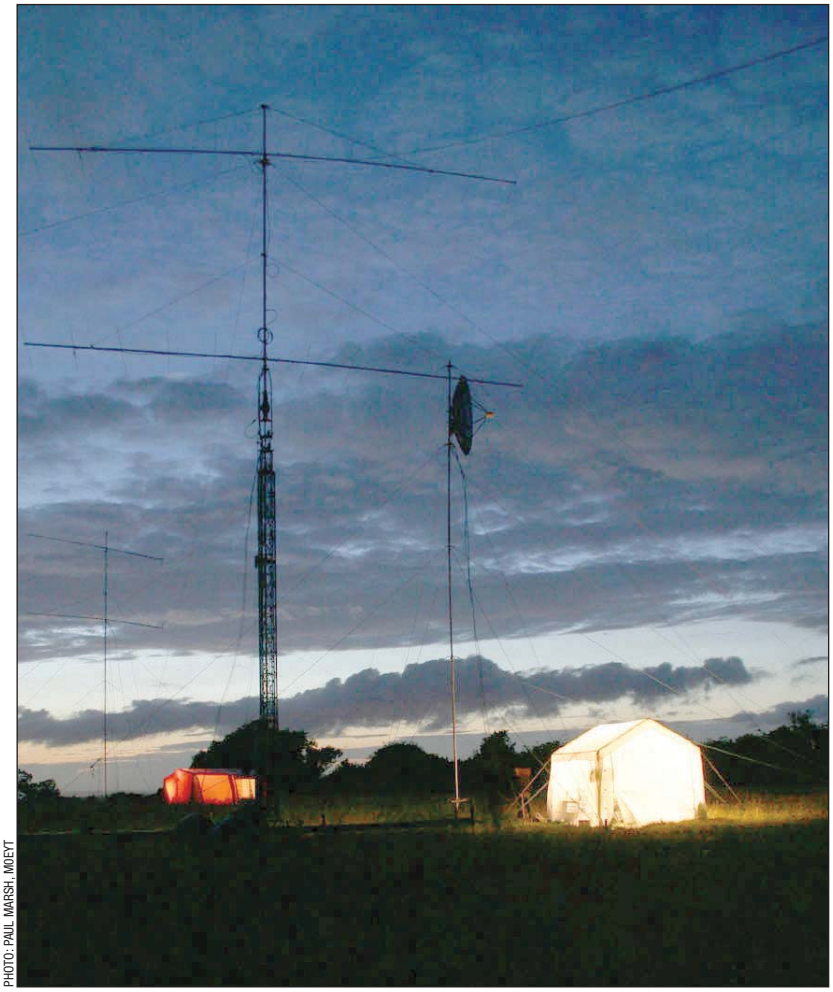


PHOTO: PAUL MARSH, MOEYT

The joint Flight Refuelling ARS and Bracknell ARC station by night.

What will really stick in people's minds about VHF NFD 2004 was the appalling weather – particularly on the Saturday and during set-up time on the Friday. The Newbury Club, G5XV/P, suffered so much from the wind that the tent collapsed and they had to operate from cars for the first three hours. The Stevenage & DARS, G3SAD/P, damaged their mast and antenna for 23cm with the high winds and had to retract the antennas on the other bands. Static rain meant that the Cockenzie & District ARC was effectively two hours late starting on 2m and 6m since they couldn't hear anything over the S9 noise level and a number of other groups complained of static rain as well – the Warrington team said it was the worst that they had ever known. The De Montfort University RS suffered a major disaster as their toilet blew away in the middle of the night but - just to prove that a small hiccup like this can't set a top team off its course – they did still go on to win the Restricted Section. The one up point of the miserable weather was that at least it was a help for those groups like GM3TAL / G3SHK who used wind power for battery charging!

In spite of the poor weather, overall entries are only fractionally down on last year, and a good number of groups who registered didn't show up on the day; presumably the weather had some impact on that! There's a continuing move of entrants out of the Open Section, into the more club-friendly sections which require less hardware. This year, growth in the tactical Mix & Match section was particularly strong. This section allows groups to be in different sections on different bands according to the level of hardware that they have available on that band.

This year, for the first time, groups did not have to pre-register to take part and be tabulated in the results; pre-registration was only necessary in order to be eligible for awards, and this added a little flexibility for some last-minute planners.

The poor weather meant that tropo conditions were poor on all bands and when combined with the fact that Sporadic E propagation was very poor on 6m, and non-existent on 4m and certainly 2m this meant that groups away from the larger population centres had a particularly hard time this year. One non-entrant, the Lerwick Radio Club from Shetland, deserves a mention this year. They made a valiant attempt get on for VHF NFD, but with such poor conditions they were really just too far north to be able to make any sort of impression on the bands without very large hardware.

6m

The lack of traditional European Sporadic E this year on 6m meant that groups made the majority of their QSOs on tropo. However, for those staying alert and in the right places, there was a little excellent DX around, with 5T5SN in Mauritania forming the best DX for a number of stations, and three groups, one in Cornwall, one in Devon and one in southern Scotland, catching an opening to the east coast of the USA.

The physically larger antennas often used on 6m meant that the weather probably played more havoc here than anywhere else. The Clifton ARS, G5YC/P, left out a critical supporting brace in their big 7-element Yagi which gave it a 20º downtilt, but by the time that the operators thought about fixing it, the wind was blowing far too hard for anyone to fancy taking the mast down. The Reigate and Crawley clubs had big plans to use four antennas on the band, but the weather forced them back to just the one Yagi. On the indoor front, Open Section winners the Colchester Contest Group, G0VHF/P, lost their commercial 6m PA in a puff of smoke after two hours and had to run the rest of the contest on 100W.

Cray Valley RS and Addiscombe Radio Club combined forces to become the Kentish Hills' Contest Group. They are most grateful to Icom (UK) who loaned them an IC-7400 transceiver to use on 144MHz when the radio they were going to use became unavailable.

4m

Sporadic E propagation is really the icing on the cake - or a mixed blessing when it occurs on 4m, since it often brings with it lots of Eastern European broadcast station QRM, so its absence this year was not as notable as on 6m. Once again, our stalwart entrant from the far north, Clive O'Hennessy, GM4VVX, was operational, this time with a single-band 4m entry, but only managed to drag five QSOs out of the mire with his 10W. However, he did hear another five stations who couldn't be raised. In spite of losing the first hour of the contest due to a reverse polarity problem with the transverter, the Lothians RS, GM3HAM/P, went on to win the band in the Open Section. Nick Garbett's, M1DDD, one-man band entry deserves some special mention, gaining runner-up position in the low power section on 4m.

2m

The poor conditions meant that even 2m was a bit of a slog this year with some of the best DX being worked down to the South of France, but almost nothing over 1000km. MM0CPS/P had a very hard time on 2m and couldn't figure out where an intermittent high SWR problem was coming from until the end of the contest when they found that the power splitter had come apart internally.

Clifton ARS, M0BPQ/P, had a trying time during set-up, breaking a raising rope on their 30m tower and an antenna in the process as the tower collapsed from 25m to 6m in about two seconds – a scary moment. Thankfully no one was hurt, but they did have to run the contest with a small low Yagi. In spite of this they still worked OL8R at 888km as their best DX. They weren't the only group to suffer this problem this year, so it's well worth checking out the status of the ropes on your tower before the contest.

The Bristol CG also had both of their 2m antennas up and down more often than they cared to remember to fix bad lengths of heliax and broken baluns. However, as they said, at least the linear kept on going.

70cm

The poor conditions inevitably make 70cm rather slow going in places away from the bulk of the activity and a number of groups questioned whether the band was really worth the effort. However, for at least one of those teams, 70cm actually ended up contributing more to their score than any other band. Another group predicted that 70cm may be a little quiet, so they made sure that station was located in the food tent so that at least the operators would be kept well fueled.

Cambridge & DARC, M1KTA/P, took the effective measure of putting both the power and pre amplifiers for 432MHz at the top of the mast. Unfortunately the power supply to them failed and it took some time for them to notice. The South Birmingham Club, G8OHM/P, lost a rotator just before the start of the contest, and a pre-amp on Sunday morning.

Computers also got affected by the bad weather, or perhaps it was just the effects of a portable contest. The Kentish Hills CG suffered when the wet weather got a little too close to one of the computers causing a number of crashes followed by the expiration of a monitor and both the Chesham & Maidenhead and the Cambridge teams suffered hard disk crashes on one band or another losing over half their QSOs on those slots. It may be old technology, but it's well worth setting your logging package to periodically save the log to a floppy disk.

23cm

Activity on 1296MHz has inevitably suffered since we introduced various options for teams not to operate on the band. This year, however, in spite of the poor conditions, the number of stations entering here actually rose slightly. Perhaps this was due to the fact that a number of stations in the Open section took advantage of a new rule allowing them to take all five bands out if they wanted to and to have the best four to count to their overall score. G0VHF/P put in a great score on the band, netting over 100 QSOs, with best DX into Berlin. Not many equipment problems were reported, although Warrington CG lost the valve in their PA part way through the contest once again and had to complete the contest barefoot on 8W. Nevertheless, they still won the band in the Low Power section.

FUTURE RULES?

A number of groups commented that what they find hard about NFD is getting enough antenna hardware, tents, generator power and people together to operate all bands simultaneously. Should we think about a section where groups have the option to operate bands one by one rather than concurrently? Your comments on this would be welcome. However, it's also worth pointing out that the Low Power section, which is already slimmed down to 16 hours and three bands, has once again been won by a team consisting of only two operators. A non-concurrent section would clearly also attract single operators and this year Nick Garbett, M1DDD, put in a single operator entry to the low power section finishing in a respectable mid-table position using just a compromise log-periodic antenna for all bands. The arrival on the market of some small and very cheap generators (my local DIY store had 700VA models for £65 last week) is making portable contesting with moderate power even more practical than it used to be.

WINNERS

The winners in each of the sections were very clear this year. In the Open Section, the first and second placings from last year were reversed, with the Colchester club winning out over the Windmill Contest Group and taking the Surrey Trophy. The Lothians RS, operating from south-west Scotland, put in a great effort and only narrowly missed the runner-up slot from a site so far north, and once again take away the Tartan Trophy by way of consolation.

Just as last year, in the Restricted Section, the De Montfort University RS ended up winning the Martlesham trophy from the Lagan Valley ARS, but the Northern Ireland team have closed the margin this year with a much stronger performance on 6m. The Highland CG take the Cockenzie Quaich as the leading Scottish team in this section.

In the Low Power Section, the Warrington CG decimated the competition to win the section conclusively, with the Cambridge & DARS A team coming in second. Cambridge actually fielded low power stations on all five bands in the form of an 'A' and a 'B' team. The Scottish Trophy goes to the two-man team of GM3TAL & G3SHK.

The tactical Mix & Match section saw the same placings as in 2003 at the top of the table, with Telford & DARS extending its lead a little over the Surrey Radio Contact Club and winning the G5BY trophy. ♦

VHF NFD 2004

OPEN SECTION

Pos	Group Name	Loc	50	70	144	432	1296	Total
1	Colchester RA	01PU	482	0	947	1000	1000	3428
2	Windmill CG	01LD	772	621	1000	0	414	2807
3	Lothians RS	74WV	1000	1000	517	259	0	2776
4	Bracknell ARC & FR ARS	80ST	722	753	550	254	194	2278
5	Reigate ATS & Crawley ARC	01OC	303	0	832	637	391	2163
6	Cockenzie & Port Seton ARC	85RU	893	523	82	41	0	1539
7	Chesham & Maidenhead	91QS	309	315	456	81	172	1251
8	Stevenage & DARS	91TW	435	319	318	84	54	1156
9	Harlow & DARS	01BR	278	378	296	0	0	953
10	Mid Cheshire ARS	83QE	153	234	238	65	0	690
11	Wythall CG	92BJ	166	189	169	69	0	593
12	Dorking & DRS	91TE	112	0	74	29	0	215
13	Edgware & DARS	91VO	0	0	79	0	0	79

RESTRICTED SECTION

Pos	Group Name	Loc	50	70	144	432	1296	Total
1	De Montfort University RS	02ST	511	0	1000	1000	1000	3511
2	Lagan Valley ARS	74AI	1000	1000	500	389	0	2888
3	South Birmingham RS	82XJ	546	324	0	590	895	2355
4	Newbury & DARS	91GI	287	641	763	550	0	2242
5	RADARS	83VP	905	583	259	0	0	1747
6	Basingstoke ARC	91KG	125	0	536	344	732	1737
7	Highland CG	75DH	573	86	361	99	0	1118
8	Leicester RS	92IO	347	226	0	0	0	573
9	Andrew Warburton	84KF	0	0	468	0	0	468
10	Farnborough & DARS	91OG	14	0	167	32	216	430
11	Mex. & DARS + S Yorks ARS	93HO	0	0	145	165	0	310
12	West Brom Central RC (A)	92BX	82	0	48	21	0	150

LOW POWER SECTION

Pos	Group Name	Loc	50	70	144	432	1296	Total
1	Warrington CG	93AD	0	0	1000	1000	1000	3000
2	Cambridge & DARS (A)	02CE	1000	436	377	0	0	1813
3	Two Counties CG (A)	92LJ	691	0	405	476	0	1573
4	GM3TAL & G3SHK	75IU	0	1000	114	52	0	1166
5	Goole R&ES	93PV	0	516	226	254	0	996
6	Nick Garbett	93AE	0	525	325	145	0	995
7	Sutton Coldfield RS	92FM	615	0	216	122	0	953
8	Mid Sussex ARS	90WV	247	0	241	436	0	924
9	Cambridge & DARS (B)	02CE	0	0	75	224	377	676
10	Andover RAC	91FH	0	224	213	110	0	547
11	Two Counties CG (B)	92LJ	0	319	0	0	0	319
12	South Bristol ARC	81QJ	0	89	170	0	0	259
13	Darneth Valley RS	01CJ	0	0	229	0	0	229
14	Clive O'Hennessy	78VB	0	83	0	0	0	83

MIX & MATCH SECTION

Pos	Group Name	Loc	50	70	144	432	1296	Total
1	Telford & DARS	82NN	698	672	638	0	641	2649
2	SRCC CG	91XH	205	0	812	610	450	2078
3	North Beds Gentleman's CG	92TI	0	475	436	318	821	2051
4	Shefford & DARS	92XA	229	500	520	572	0	1821
5	Bristol CG	81TK	330	0	342	351	746	1769
6	Torbay ARC (A)	80DQ	359	439	447	285	0	1529
7	Clifton ARS	01HH	321	488	176	533	0	1519
8	Newquay & DARS	70LJ	623	382	189	85	0	1279
9	Kentish Hills CG	01AH	206	291	369	351	0	1216
10	Guildford & DRS	91TF	318	617	184	0	67	1185
11	Salop ARS	82LQ	410	288	275	107	0	1080
12	Thornton Cleveleys ARS	83NU	373	271	124	40	0	807
13	Hillcrest ARS	82UL	0	0	0	35	111	146

6m OPEN SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	GM3HAM/P	IO74WV	104	57851	400	9Y	5T5SN	4213
2	MM0CPS/P	IO85RU	93	51649	400	6Y	K7BV/1	5128
3	G3GRS/P	JO01LD	146	44638	400	2 x 7Y+5Y	5T5SM	3966
4	G4BRA/P	IO80ST	124	41758	400	8Y	NG4C	5881
5	G3ZME/P	IO82NN	123	40390	400	5Y	5T5SN	3998
6	G0VHF/P	JO01PU	87	27870	400	7Y	5T5SN	4046
7	G3SAD/P	IO91TW	117	25178	400	7Y	CT3FT	2468
8	G5RS/P	IO91TF	128	18382	400	6Y	CT3FT	2405
9	G3WKX/P	IO91QS	110	17855	350	2 x 5	YYU1CF	1648
10	G5LK/P	JO01OC	73	17530	400	7Y	CT3FT	2466
11	G6UT/P	JO01BR	97	16111	400	5Y	CT1DIZ/P	1497
12	G0WRC/P	IO92BJ	59	9626	400	5Y	CT3FT	2448
13	G6ZTT/P	IO83QE	55	8872	100	7Y	EH5ASF	1478
14	M5DND/P	IO91TE	59	6489	90	3Y	GM3HAM/P	482
15	G3ASR/P	IO91VO	24	3820	100	5Y	EI7M/P	461

6m RESTRICTED SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	GI0RQK/P	IO74AI	51	39491	100	5Y	CT3FT	2510
2	G0ROC/P	IO83VP	97	35739	100	6Y	5T5SN	4126
3	M1AWX/P	IO70LJ	32	24610	100	4Y	KA2LIM	5269
4	GM0FRG/P	IO75DH	36	22631	100	5Y	CS0RCL/P	2053
5	G4OHM/P	IO82XJ	134	21560	100	6Y	CT3FT	2441
6	G3SDC/P	JO02ST	44	20161	80	5Y	5T5SN	4148
7	GC3SRT/P	IO82LQ	56	16186	100	7Y	CQ14HZE	1769
8	G4ATH/P	IO83NU	24	14732	100	4Y	CS0ORCL/P	1934
9	G0CDB/P	IO80DQ	52	14171	100	5Y	CS0RCL/P	1580
10	G5UM/P	IO92IO	49	13689	100	6Y	9A1B	1498
11	G6YB/P	IO81TK	88	13033	100	8Y	SQ9CWW	1514
12	G5YC/P	JO01HH	32	12696	100	7Y	5T5SN	3972
13	G5XV/P	IO91GI	69	11343	100	5Y	CT3FT	2370
14	G4ARL/P	IO92XA	70	9030	100	7Y	GM0FRG/P	523
15	G3RCV/P	JO01AH	77	8117	100	5Y	MM0CPS/P	533
16	G3SRC/P	IO91XH	55	8093	100	6Y	CQ14HZE	1705
17	G3TCR/P	IO91KG	39	4951	100	5Y	MM0CPS/P	518
18	G4WBC/P	IO92BX	20	3227	20	3Y	EI7M/P	335
19	G0FRS/P	IO91PF	11	565	100	VERT	G4BRA/P	131

6m LOW POWER SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G2XV/P	JO02CE	47	7334	25	5Y	EI7M/P	477
2	G4APD/P	IO92LJ	46	5068	25	5Y	MM0CPS/P	397
3	G3RSC/P	IO92FM	38	4511	25	3Y	EH2ARD	1024
4	G7AIE/P	IO90WV	22	1809	25	3Y	G6ZTT	307

4m OPEN SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	GM3HAM/P	IO74WV	78	21910	160	11Y	G3GRS/P	538
2	G4RFR/P	IO80ST	79	16508	166	2x12Y	GM3TAL/P	591
3	G3GRS/P	JO01LD	61	13605	100	6/6Y	GM3TAL/P	667
4	G3PJX/P	IO91TF	74	13510	160	8Y	GM3TAL/P	608
5	MM0CPS/P	IO85RU	38	11451	80	8Y	G4RFR/P	561
6	G6UT/P	JO01BR	50	8277	150	6Y	GM3TAL/P	580
7	G3SAD/P	IO91TW	49	7000	150	8Y	GM3TAL/P	541
8	G3WKX/P	IO91QS	53	6902	160	2x5Y	GM3TAL/P	548
9	G4ZTT/P	IO83QE	66	5131	20	6Y	G3GRS/P	334
10	G4WAC/P	IO92BJ	43	4147	150	5Y	GM3TAL/P	444

4m RESTRICTED SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	GI3PDN/P	IO74AI	57	18072	100	5Y	G3GRS/P	586
2	G3UKV/P	IO82NN	78	12153	80	8Y	GM3TAL/P	398
3	G5XV/P	IO91GI	71	11593	100	10Y	GM3TAL/P	560
4	G0ROC/P	IO83VP	55	10536	100	6Y	G4ADV/P	410
5	G5YC/P	JO01HH	48	8824	50	5Y	GM3TAL/P	638
6	G4FOH/P	IO92TI	57	8592	60	6Y	GM3TAL/P	504
7	G4OHM/P	IO82XJ	58	5847	60	6Y	GM0FRG/P	404
8	G4ATH/P	IO83NU	27	4890	10	4Y	G3GRS/P	397
9	G5UM/P	IO92IO	40	4092	100	4Y	GM3TAL/P	445
10	GM0FRG/P	IO75DH	7	1546	50	6Y	G4RFR/P	545
11	GC3SRT/P	IO82LQ	44	5212	80	4Y	G5YC/P	294

4m LOW POWER SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	GM3TAL/P	IO75IU	44	14037	20	9Y	G5YC/P	638
2	M1DDD/P	IO93AE	58	7368	10	21LP	GM3TAL/P	366
3	G0OLE/P	IO93PV	36	7246	10	8Y	GM3TAL/P	365
4	G4ARL/P	IO92XA	52	7021	10	10Y	GM3TAL/P	547
5	G3LHJ/P	IO80DQ	31	6165	10	5Y	GI3PDN/P	435
6	G2XV/P	JO02CE	36	6117	10	5Y	GM3TAL/P	543
7	G4ADV/P	IO70LJ	23	5369	25	6Y	GM3HAM/P	504
8	G4APD/P	IO92LJ	46	4477	20	4Y	MM0CPS/P	397
9	G4ALE/P	JO01AH	29	4081	10	6Y	GM3TAL/P	615
10	G6ARC/P	IO91FH	25	3143	??	4Y	GI3PDN/P	450
11	G7LPP/P	IO81QJ	17	1251	20	5Y	GM3HAM/P	402
12	GM4VVX/P	IO78UB	5	1168	10	6Y	G3JYP	405

2m OPEN SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G0FBB/P	JO01LD	578	188138	400	2 x 17Y	F6KBR/P	968
2	G0VHF/P	JO01PU	518	178087	400	2 x 15Y	F5KSE/P	1016
3	G5LK/P	JO01OC	496	156607	400	4x10Y + 1x18Y	F6KBR/P	962
4	G4RFR/P	IO80ST	398	103403	400	2 x 19Y	F6KOV/P	847
5	GM3HAM/P	IO74WV	332	97193	400	2 x 17Y	F5UTN	766
6	G3MDG/P	IO91QS	326	85781	400	2 x 9Y	HB9RF	842
7	G6YB/P	IO81TK	304	64414	400	20Y + 2x10	DK0OX	825
8	G3SAD/P	IO91TW	295	59779	300	4 x 6Y	HB9SVB/P	754
9	G6UT/P	JO01BR	278	55762	250	2 x 13Y	HB9G/P	732
10	G3ZTT/P	IO83QE	291	44739	100	2 x 17Y	DK0HN	693
11	M0BPQ/P	JO01HH	134	33160	100	9Y	OL8R	888
12	G1WAC/P	IO92BJ	216	31729	400	2 x 17Y	F5AHL/P	727
13	G6GMW/P	IO83NU	117	23248	350	19Y	F6KCP/P	698
14	MM0CPS/P	IO85RU	78	15380	400	4 x 7Y	ON4AMX	738
15	G3ASR/P	IO91VO	85	14915	100	17Y	DK0OX	692
16	G3CZU/P	IO91TE	124	13880	100	14Y	HB9STY/P	697

2m RESTRICTED SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G3SDC/P	JO02ST	221	72961	100	17Y	F1USF/P	937
2	G3WIM/P	IO91XH	300	59248	100	18Y	DL0HB	705
3	G5XV/P	IO91GI	262	55663	100	19Y	DL0GTH	860
4	G3ZME/P	IO82NN	277	46521	80	17Y	GM0HTT	728
5	G3TCR/P	IO91KG	196	39077	100	17Y	DK0LK	680
6	G4ARL/P	IO92XA	153	37926	100	12Y	DK0OX	702
7	GI4GTY/P	IO74AI	145	36462	100	18Y	F6IFR	723
8	M0LKB/P	IO84KF	196	34159	50	9Y	F5UTN	669
9	G4VMX/P	IO92TI	138	31831	80	16Y	DK0LK	612
10	G7GLW/P	JO01AH	187	26914	100	17Y	DF3KV	639
11	GM0FRG/P	IO75DH	86	26303	100	17Y	ON4BAR	762
12	GC3SRT/P	IO82LQ	137	20031	100	14Y	DK0WD	701
13	G0ROC/P	IO83VP	132	18872	100	10Y	PE1RLF/P	580
14	G6GS/P	IO91TF	87	13411	100	17Y	GM3SHK/P	608
15	G6FRS/P	IO91PF	111	12206	100	14Y	DF2RI	626
16	G7MEX/P	IO93HO	107	10570	100	17Y	DL0VR	622
17	G4WBC/P	IO92BX	44	3485	50	9Y	ON4WY	391

2m LOW POWER SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G3CKR/P	IO93AD	303	67060	25	17Y	DK0OX	877
2	G8NJA/P	IO80DQ	127	29959	25	17Y	DK0OX	896
3	G7APD/P	IO92LJ	186	27179	25	17Y	F8ALX	673
4	G8EVY/P	JO02CE	93	25276	25	17Y	DK0OX	697
5	M1DDD/P	IO93AE	154	21820	25	21LP	DK0LK	719
6	G3ZMS/P	IO90WV	122	16177	25	11Y	DK0OX	657
7	G0KDV/P	JO01CJ	105	15355	25	10Y	GM0FRG/P	586
8	G0OLE/P	IO93PV	79	15184	10	13Y	DF0RI	661
9	G3RSC/P	IO92FM	111	14460	25	10Y	PI4GN	560
10	G0ARC/P	IO91FH	101	14290	25	9Y	DK0WD	590
11	M0BFB/P	IO70LJ	47	12683	25	13Y	ON6BX/P	713
12	G4WAW/P	IO81QJ	102	11368	25	14Y	G7ANV/P	429
13	GM3SHK/P	IO75IU	28	7650	20	10Y	G0FBB/P	667
14	G6KWA/P	JO02CE	24	5006	20	9Y	EI7DAR/P	490

70cm OPEN SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G0VHF/P	JO01PU	245	88805	400	4 x 21Y	OL4A	859
2	G5LK/P	JO01OC	163	56533	400	4 x 28Y	F6KBR/P	962
3	G6YB/P	IO81TK	127	31180	400	4 x 21Y	F5LGF/P	775
4	GM3HAM/P	IO74WV	70	22995	400	2 x 28QLY	F6GZI/P	619
5	G4BRA/P	IO80ST	107	22516	400	4 x 21Y	DL0VR	666
6	G3SAD/P	IO91TW	51	7446	50	2 x 23Y	PA5AO	474
7	G1MDG/P	IO91QS	43	7155	300	2 x 23Y	DD0PX	603
8	G7WAC/P	IO92BJ	49	6141	400	2 x 21Y	ON5PX	469
9	G8ZTT/P	IO83QE	40	5786	25	2 x 21Y	G5LK/P	349
10	MM0CPS/P	IO85RU	24	3674	50	24Y	G4BRA/P	561
11	G7DOR/P	IO91TE	29	2544	25	13Y	EI7M/P	465

70cm RESTRICTED SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G3SDC/P	JO02ST	72	24071	100	38Y	DF0YY	748
2	G3ZPB/P	IO91XH	90	14695	100	27QLY	DN3SL	657
3	G8OHM/P	IO82XJ	96	14203	100	24Y	DF2VJ	715
4	G4ARL/P	IO92XA	59	13769	100	28Y	DK0HN	505
5	G5XV/P	IO91GI	74	13248	100	28Y	DL1DAW/P	629
6	G3GHN/P	JO01HH	53	12827	100	21Y	OZ1ALS/P	744
7	MI0BOT/P	IO74AI	35	9357	100	26Y	G5LK/P	602
8	G1RCV/P	JO01AH	67	8441	50	19Y	EI7M/P	487
9	G3TCR/P	IO91KG	48	8272	50	21Y	DF2VJ	612
10	G8BNE/P	IO91TI	43	7658	50	21Y	DF2VJ	613
11	M0CKY/P	IO93HO	29	3967	50	14Y	G5LK/P	329
12	GM0FRG/P	IO75DH	9	2375	50	19Y	G5LK/P	656
13	G8XNH/P	IO70LJ	13	2036	100	88Y	G3ZMS/P	351
14	G0AJQ/P	IO83NU	9	961	100	14Y	G0VHF/P	357
15	G8JVW/P	IO82UL	8	842	75	21Y	GM3HAM/P	295
16	M0FRS/P	IO91PF	13	771	50	23Y	F6GZI/P	185
17	G4WBC/P	IO92BX	7	497	50	19Y	G4BRA/P	244

70cm LOW POWER SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G3CKR/P	IO93AD	105	21443	20	28Y	DF4OVH	886
2	G8LED/P	IO92LJ	57	10212	25	18Y	DF2VJ	655
3	G3ZMS/P	IO90WV	46	9341	25	21Y	F5KSE	922
4	G3NJA/P	IO80DQ	34	6104	25	17Y	PI4Z	537
5	M1KTA/P	JO02AD	30	4812	23	19Y	DF2VJ	577
6	G0OLE/P	IO93PV	25	5436	10	19Y	G4BRA/P	363
7	M1DDD/P	IO93AE	23	3110	25	21LP	EI7M/P	333
8	G3RSC/P	IO92FM	23	2621	25	13Y	GM3HAM/P	314
9	GC3SRT/P	IO82LQ	19	2303	20	17Y	GM0USI/P	365
10	G6ARC/P	IO91FH	16	2350	25	19Y	GM3HAM/P	434
11	GM3TAL/P	IO75IU	2	1120	20	18Y	G5LK/P	681

23cm OPEN SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G0VHF/P	JO01PU	101	31413	300	8x23 + 4x23	DF0YY	770
2	G0FDZ/P	JO01LD	57	13012	400	1.5m dish	OZ1ALS/P	736
3	G5LK/P	JO01OC	42	12269	60	2x35Y	DH9NFM	676
4	G4RFR/P	IO80ST	34	6091	100	2.4m dish	PA6C	660
5	G1MDG/P	IO91QS	33	5399	50	2 x 35Y	DF0HS/P	470
6	G3SAD/P	IO91TW	15	1692	50	23Y	PA6NL	308

23cm RESTRICTED SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G3SDC/P	JO02ST	42	11345	60	40Y	DL0GTH	681
2	G3OHM/P	IO82XJ	46	10156	100	70Y	DL0RTA	619
3	G6YB/P	IO81TK	40	8463	100	60Y	PA0BAT	611
4	G3TCR/P	IO91KG	44	8310	40	55Y	DJ5BV	571
5	G3ZME/P	IO82NN	40	7269	100	55Y	DF0HS/P	636
6	G4FRS/P	IO91PF	15	2456	70	55Y	DF0HS/P	471
7	G5RS/P	IO91TF	11	757	70	19Y	G3XDY	143

23cm LOW POWER SECTION

Pos	Call	Loc	QSO	Score	Pwr	Ant	Best DX	km
1	G3CKR/P	IO93AD	35	6159	25	1m dish	PA6NL	431
2	G4JTJ/P	IO92TI	26	5059	20	6ft dish	DL0RTA	510
3	G8MNY/P	IO91XH	27	2773	10	55Y	DF0HS/P	425
4	G6KWA/P	JO02CE	20	2322	15	55Y	PA6NL	269
5	G8JVW/P	IO82UL	6	685	10	19Y	G8MNY/P	202

Thanks to G6CSY, G4IRX, PE1EWR, G8ZK, M0BGR for checklogs.

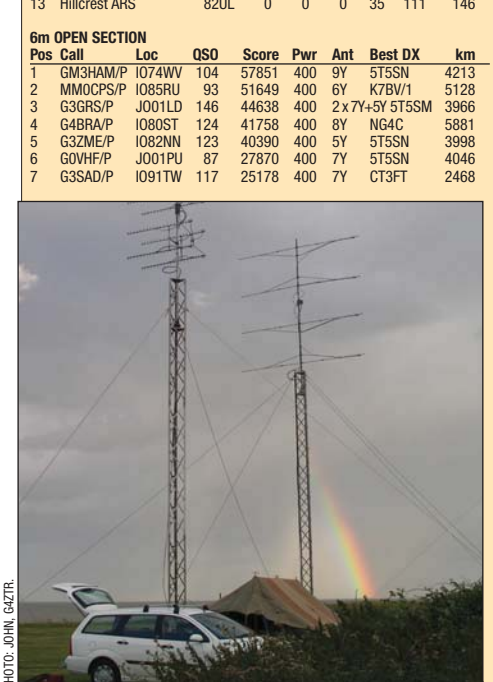


PHOTO: JOHN, G4ZTR.

The UHF part of the Colchester Radio Amateurs, G0VHF/P, station: 8 x 23-ele plus 1 x 35-ele on 23cm, and a 4 x 21-ele stack on 70cm.

Christmas

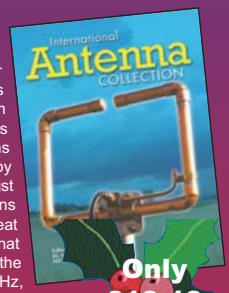
Only £10.19

LF TODAY: A Guide to Success on 136kHz
By Mike Dennison, G3XDV
LF Today is a guide to amateur radio on LF and the effective use of this challenging allocation. Based on the experiences of the LF early experimenters this book will provide the reader with a firm basis so he will not waste time having to reinvent the wheel whilst still providing much scope for experimentation. LF Today takes the reader step-by-step through the various parts of the station, explaining the options available and how to avoid pitfalls. Size: 175mm x 239mm, 128 pages, ISBN 187230999-2
£11.99 plus p&p Non Members Price

Only £23.79

The ARRL Handbook 2005
This edition is by far the most extensively revised version of this work in ten years. Includes analog and digital signals and components; working with surface-mount components; High-Speed Multimedia (HSMM); new and previously unpublished antennas, and advice on baluns; satellites and EME, now with new Phase 3E details; oscillators, DSP and software radio design; a new chapter with Internet tips for hams, Wireless Fidelity or Wi-Fi, and other wireless and PC technology.
£27.99 plus p&p Non Members Price

International Antenna Collection
by George Brown, M5ACN
This book is a collection of over 50 of the very best articles published on antennas from around the world. The book is wide ranging and offers solutions to many problems experienced by the antenna enthusiast. Amongst the articles are antenna designs for most amateur bands. Great care has been taken to ensure that there are antennas to cover the range from 136kHz to 1.3GHz, receiving and transmitting, fixed and mobile. Everyone interested in antenna design and construction will find something in this book. £11.99 plus p&p Non Members Price

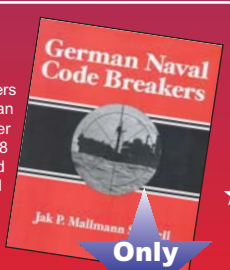


Only £10.19

ARRL Amplifier Classics
This great new book from the ARRL covers amplifier construction through two-dozen projects and articles drawn from the pages of QST and QEX. The articles cover a wide range including amps for HF, MF, VHF and microwave. Provides practical designs and construction details for classic tube and solid-state amplifiers at power levels from 5 W to 1.5 kW. The reader is also provided with amplifiers that are safe, reliable and produce loud and clean signals. 176 pages ©ARRL 2004 ISBN:0-87259-931-0
£13.99 plus p&p Non Members

Only £11.89

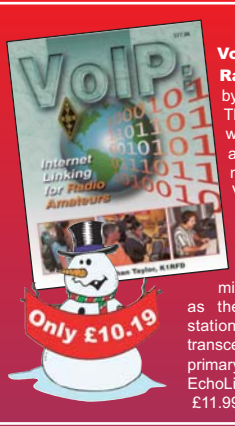
German Naval Code Breakers
German Naval Code Breakers looks in detail at how German code breaking developed after the traumas of defeat in 1918 and the variety of codes used by the British and allied navies during WWII. All those who want to know more about this crucial era in naval warfare will find that German Naval Code Breakers provides an interesting perspective to this aspect of WWII. With over 150 photographs on 160 glossy pages this hard back book is an excellent buy.
£24.99 plus p&p Non Members Price



Only £18.74

Only £14.44

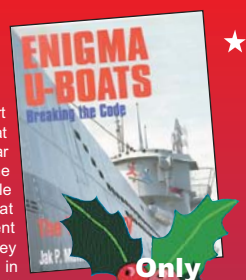
Command
Computers, Microcontrollers and DSP for the Radio Amateur
by Andy Talbot, G4JNT
This book is for the radio amateur and home experimenter who wants to use modern digital and computer technology to make more use of his/her radio equipment. It is aimed at those who want to add additional hardware and try new signalling and communications methods, and to build hardware and systems for controlling existing equipment. Particular emphasis is placed on what can be done with the older computer, now very cheaply available. Software techniques for detecting signals in noise and for automatic beacon monitoring are described.
£16.99 plus p&p Non Members Price



Only £10.19

VoIP: Internet Linking for Radio Amateurs
by Jonathan Taylor, K1RFD
This may be the first book ever written about ham radio applications of VoIP! Growing numbers of hams are using VoIP, or Voice Over Internet Protocol, in combination with their radios for long distance communication spanning hundreds or thousands of miles. They're using the Internet as the relay between their base stations, handhelds and mobile transceivers. This is a guide to the four primary VoIP systems used by hams: EchoLink, IRLP, eQSO and WIRES-II.
£11.99 plus p&p Non Members Price

Enigma U-Boats:
Breaking the Code:
The True Story
by Jak P Mallmann Showell
By the acknowledged expert on the history of the U-boat arm in the Second World War this book analyses the development of Enigma, its role during German U-boat operations and the subsequent codebreaking work at Bletchley Park. This book examines in detail all the U-boats known to have been boarded by the Allies during the war from which Enigma machines could have been captured. 298 black / white photos.
£19.99 plus p&p Non Members Price

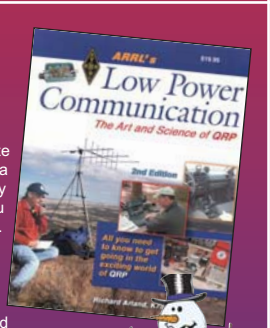


Only £14.99

Only £12.74

QRP Basics
by Rev George Dobbs, G3RJV, QRP
Written by the UK's QRP supremo Basics tells of the fun to be had by operating with low power, both from home and in the great outdoors. Advice is given on how to how to get the best results from a QRP station, how to try out QRP if you haven't before. A large range of commercial QRP equipment and kits are described. Much of the book explains how to construct your own station, including complete transmitters and receivers, and accessories. Even the experienced constructor will appreciate the sections on toroidal coils, construction techniques and equipping a workshop. Finally, there are lists of contests, awards, books and organisations or interest to the QRP. operator in the UK and the USA.
£14.99 plus p&p Non Members Price

Low Power Communication: The Art and Science of QRP - 2nd Edition.
by Richard Arland, K7SZ.
Build, experiment, operate and enjoy ham radio on a shoestring budget! Ask any QRPer, and they'll tell you that less really is more. With a handful of parts, you can build a radio and put it on the air. ARRL's Low Power Communication has the resources you need for getting started and the latest information on advanced QRP techniques. Explore kit Building. Chase DX. Build antennas. Brush-up on propagation theory, and take a band-by-band operating tour. Low power, low cost and big fun!
£12.99 plus p&p Non Members Price



Only £11.04

The Secret Wireless War
The Story of MI6 Communications 1939 -1945
by Geoffrey Pidgeon
Possibly the most important UK wireless traffic in World War II was handled by a unit formed in 1938 by Brigadier Richard Gambier-Parry head of MI6 Section VIII - the communications division of SIS. This book tells of its formation and includes diary entries by one of the 'founding fathers' recording the secret meetings that took place, and the assembly of its talented staff. It also reports the earlier days of the original SIS wireless 'Station X' based in Barnes in SW London. It documents the work of our agents in embassies abroad, and of those in occupied territories; the story of Churchill's personal wireless operator, and there is the description by a German soldier of the Afrika Corps of his operating an Enigma machine at Rommel's HQ in the desert.
£29.99 plus p&p Non Members Price

Only £25.49

RSGB BOOKS ARE AVAILABLE IN BOOK STORES
ASK FOR 'GARDENERS BOOKS WHOLESALE'

ALL PRICES PLUS P&P

Selection

"CQ all Reindeer"

£3.99
per pack of 10 cards

"G3 GEORGE"

Specially commissioned this year the RSGB is please to be able to offer a special amateur radio card in aid of the RFC and GB4FUN. These extra special cards are printed on heavy card in a luxurious large format (148x210mm) supplied with quality white envelopes these cards are ideal for sending to radio amateur friends or non amateurs alike.

This humorous card has all its profits donated to the RCF. Show you care about the future of amateur radio by sending RSGB charity cards this Christmas.

RSGB Embroidered jackets and polo shirts

Top quality clothing from the RSGB. Show your suppport of thie RSGB with our range of hard wearing and practical clothing. Carefully embroidered with RSGB logos and your own callsign (if required) these items make the perfect christmas gift for every amateur.

NEW

RSGB SOFT FLEECE JACKET
Heavy weight polyester
Embroidered with RSGB logo
Pill resistant
Full length zip
Available in Black
Size: Extra Large only

RSGB POLO SHIRTS
Heavy weight 100% Cotton
Embroidered with RSGB logo
Stylish three button design
Taped collar
Available in Large, XL, and XXL
Available in Burgundy & Green

ONLY £19.99 plus p&p

CALLSIGN EMBROIDERY SERVICE
Why not have your callsign added to your RSGB clothing. For only £5 we will have your callsign carefully added to your Polo Shirt or Fleece in one of two styles. Simply call our Sales Office during office hours or order online www.rsgb.org.uk for access to the service. Delivery is normally 10-14 days, direct from the manufacturer.

M1MPA PLAIN

M1MPA SCRIPT

ONLY £9.99 plus p&p

RSGB SHOP

RSGB
Lambda House
Cranborne Road
Potters Bar
Herts. EN6 3JE
Tel. 0870 904 7373
Fax. 0870 904 7374

ORDER 24 HOURS A DAY ON OUR WEBSITE www.rsgb.org/shop

The RSGB would like to thank you for your support during 2004

Merry Christmas & Happy New Year

TRAINING

ADVA	Advance! The Full Licence Manual	£9.99	£8.49
IMED	Intermediate Licence Book	£5.79	£4.92
FNOW	Foundation Licence - Now !	£3.99	£3.39

BEGINNERS

AREX	Amateur Radio Explained	£9.99	£7.49
PAFN	Practical Antennas for Novices	£7.99	**£1.00**
PRFB	Practical Receivers for Beginners	£14.99	£12.74
HRFD	Ham Radio for Dummies	£14.99	£12.74
BNHC	ARRL Best of New Ham Companion	£9.99	£8.49

LOGGING

DL04	Deluxe Log Book & 2005 Diary	£4.99	£4.24
DLBC	Deluxe Log Book Cover	£9.99	£8.49
	Deluxe Log Book and Cover Set	£9.99	
LBAR	Log Book - Transmitting	£4.99	£4.24
LBRX	Log Book - Receiving	£4.99	£4.24

CALL BOOKS

CB05	RSGB Yearbook 2005 Edition NEW	£16.99	£14.44
CS05	Callseeker Plus 2005	£13.99	£11.89
CBCD04	RSGB Radio Amateur Call Book	£39.99	£33.99

SHORT WAVE LISTENING

ABRG	Air Band Radio Guide	£8.99	£6.74
ATCO	Air Traffic Control	£9.99	£7.49
LBRX	Log Book - Receiving	£4.99	£4.24

MORSE CODE

IMTC	Learning the Morse Code (Tapes)	£9.99	£8.49
INMC	Learning the Morse Code (CD)	£9.99	£8.49
MCEL	Morse Code The Essential Language	£8.99	£7.64

PACKET & APRS

PRPR	Packet Radio Primer	£9.99	£8.49
YFPS	Your First Packet Station	£7.99	£6.69
APRS	ARRL Moving HamS: Radio & Internet	£11.99	£10.19

EMC & RFI

RAGE	The RSGB Guide to EMC	£19.99	£16.99
FRIN	Single Ferrite Ring	£2.24	£1.92
FIL3	Filter 3	£10.00	£8.50
FIL2	Filter 2	£10.00	£8.50
FIL8	Filter 8	£29.99	£25.49

SATELLITES

SRHB	Space Radio Handbook	£2.99	£2.54
ANTH5	The ARRL Satellite Anthology	£10.99	£9.34
SATH	ARRL Radio Amateurs Satellite Handbook	£19.99	£16.99
WSHB	ARRL Weather Satellite Handbook	£17.99	£15.29

ANTENNA BOOKS

VUCS	ARRL VHF / UHF Classics NEW	£12.99	£11.04
INAC	International Antenna Collection	£11.99	£10.19
INA2	International Antenna Collection 2 NEW	£11.99	£10.19
ANTO	Antenna Topics	£18.99	£16.14
VUAN	VHF/UHF Antennas	£13.99	£11.89
ATK2	Antenna Toolkit 2	£26.99	£22.94
TAFE	The Antenna File	£18.99	£14.24
BKYA	Backyard Antennas (currently being reprinted)	£18.99	£16.14
NACO	HF Antenna Collection	£19.99	£16.99
HFAL	HF Antennas for all Locations	£19.99	£16.99
TAEG	The Antenna Experimenters Guide	£17.99	£15.29
ANTB	ARRL Antenna Book	£27.99	£23.79
SAFA	ARRL Simple & Fun Antennas for Hams	£16.99	£14.44
YAAC	ARRL Yagi Antenna Classics	£14.99	£12.74
STAR	ARRL Stealth Amateur Radio	£12.99	£11.04
ACV7	ARRL Antenna Compendium VOLUME 7	£14.99	£12.74
ACV6	ARRL Antenna Compendium VOLUME 6	£19.99	£16.99
ACV5	ARRL Antenna Compendium VOLUME 5	£17.99	£15.29
ACV3	ARRL Antenna Compendium VOLUME 3	£12.99	£11.04
ACV2	ARRL Antenna Compendium VOLUME 2	£12.99	£11.04
ACV1	ARRL Antenna Compendium VOLUME 1	£10.99	£9.34
WACS	ARRL Wire Antenna Classics	£12.99	£11.04
MWAC	ARRL More Wire Antenna Classics - Volume 2	£12.99	£11.04
VACS	ARRL Vertical Antenna Classics	£12.99	£11.04
YAGI	ARRL Physical Design of Yagi Antennas	£12.99	£11.04

TECHNICAL

AH04	ARRL Handbook 2005 NEW	£27.99	£23.79
VOIP	VoIP Internet linking for RA's NEW	£11.99	£10.19
RFCC	RF Components & Circuits	£22.50	£19.12
COMM	CoMmand	£16.99	£14.44
PRAC	Pratical Projects	£12.99	£11.04
DMFO	Digital Modes for all Occasions	£16.99	£14.44
RECB	Radio & Electronics Cookbook	£16.99	£14.44
TEC1	RSGB Technical Compendium	£17.99	£15.29
PMRC	PMR Conversion Handbook	£16.99	£14.44
RDRB	Radio Data Reference Book	£14.99	**£5.00**
TTSB3	Technical Topics Scrapbook 1995-99	£14.99	£12.74
TTSB2	Technical Topics Scrapbook 1990-94	£13.99	£11.89
TTSB	Technical Topics Scrapbook 1985-89	£9.99	£8.49
SET	Technical Topics Scrapbook - Three Volume Set	£34.99	£29.99
TERA	Test Equipment for the Radio Amateur	£12.99	**£5.00**
RIGG	Rig Guide (inc Post and Packaging)	£3.99	
EMRD	Experimental Methods in RF Design	£34.99	£29.74
HIKI	Hints and Kinks for the Radio Amateur 16th Ed.	£10.99	£9.34
AICH	The ARRL Image Communications Handbook	£19.99	£16.99
PSCB	Power Supply Cookbook	£26.99	£22.94
DSPT	Digital Signal Processing Technology	£34.99	£29.74
HFDH2	HF Digital Handbook (3rd Edition)	£13.99	£11.89
IRFD	Introduction to Radio Frequency Design	£29.99	£25.49

LF

LFTD	LF Today NEW	£11.99	£10.19
LEHB	LF Experimenters Guide	£18.99	£14.24

RSGB BOOK ORDER FORM

PLEASE PRINT ALL DETAILS

NAME: _____ CALLSIGN/MEMBERSHIP Number: _____

ADDRESS: _____

_____ POSTCODE: _____

TELEPHONE: _____ E-MAIL: _____

QUANTITY	CODE	DESCRIPTION/TITLE	PRICE	TOTAL
		Plus P&P		

PLEASE CHARGE MY CREDIT/DEBIT CARD

EXPIRY DATE

SIGNATURE _____ ISSUE No. START DATE

Order on the internet at www.rsgb.org/shop

Cheques and Postal orders crossed and made payable to Radio Society of Great Britain or telephone your credit card order to **0870 904 7373**

HQ open 9.15 - 5.15 (Mon-Fri)

Send no cash

POST & PACKING

£1.75 (1 item)
£3.30 (2 or more)

Overseas

surface £2.50 (1 item), £5.00 (2 items) & 60p for each extra item.

Airmail

£5.00 (1 item)
£10.00 (2 items) & £1 for each extra item

POST THIS COMPLETED FORM ENCLOSING ANY REMITTANCE, TO THE RADIO SOCIETY OF GREAT BRITAIN, LAMBDA HOUSE, CRANBORNE ROAD, POTTERS BAR, HERTS, EN6 3JE

Our Full Book Range

LOW POWER (QRP)

LPCM	ARRL Low Power Comms 2nd Ed NEW	£12.99	£11.04
QRPB	QRP Basics	£14.99	£12.74
LPSB	Low Power Scrapbook	£12.99	£11.04
QRPP	ARRL QRP Power	£12.99	£11.04
QRPN	ARRL W1FB's QRP Notebook	£8.99	£7.64

VHF/UHF BOOKS

YGUV	Guide to VHF/UHF Amateur Radio	£8.99	£7.64
VHFM	The VHF/UHF Handbook	£19.99	£16.99

RADCOM

RC5363	RadCom 1953-63 Set CD-ROMs	£29.99	£25.49
RC6469	RadCom 1964-69 Set CD-ROMs	£29.99	£25.49
RC7075	RadCom 1970-75 Set CD-ROMs	£29.99	£25.49
RC7680	RadCom 1976-80 Set CD-ROMs	£29.99	£25.49
RC8185	RadCom 1981-85 Set CD-ROMs	£29.99	£25.49
RC8690	RadCom 1986-90 Set CD-ROMs	£29.99	£25.49
RC9195	RadCom 1991-95 Set CD-ROMs	£29.99	£25.49
RC96	RadCom 1996 CD-ROM	£19.99	£16.99
RC97	RadCom 1997 CD-ROM	£19.99	£16.99
RC98	RadCom 1998 CD-ROM	£19.99	£16.99
RC99	RadCom 1999 CD-ROM	£19.99	£16.99
RC00	RadCom 2000 CD-ROM	£19.99	£16.99
RC01	RadCom 2001 CD-ROM	£19.99	£16.99
RC02	RadCom 2002 CD-ROM	£19.99	£16.99
RC03	RadCom 2003 CD-ROM	£19.99	£16.99
0RCB	RadCom Back Issues		£3.95
BV03	RadCom Bound Volume 2003		£39.99
EAZI	RadCom Easi-Binder		£7.99

MAPS

LOCE	Wall Locator Map of Europe (B+W)	£1.99	£1.69
LOCD	A4 Locator Map of Europe (B+W)	£2.99	£2.54
RAMW	World Prefix Map (Colour)	£4.99	£4.24

IOTA MERCHANDISE

IOTM	IOTA Mugs	£4.99	
ID40	IOTA 40th Anniversary Directory	£9.99	£8.49
	IOTA Polo Shirts (M-XXL)	£9.99	

HISTORY

SNWB	Secret Wireless War Book	£29.99	£25.49
WOEN	Without Enigma	£19.99	£14.99
GNCB	German Naval Code Breakers	£24.99	£18.74
FOHY	Amateur Radio ~ the first 100 years	£49.99	£29.99
WATF	World at Their Fingertips	£9.99	£8.49
RIRB	Reflections in a Rosebowl (G3PJT)	£15.99	£13.59
DDAY	D-Day Piercing the Atlantic Wall	£24.99	£18.74
TSNS	Titanic: The Ship That never sank	£9.99	£7.49
TIPP	Titanic in picture postcards	£19.99	£14.99
WSLP	White Star Line in picture postcards	£19.99	£14.99

OPERATING & DX

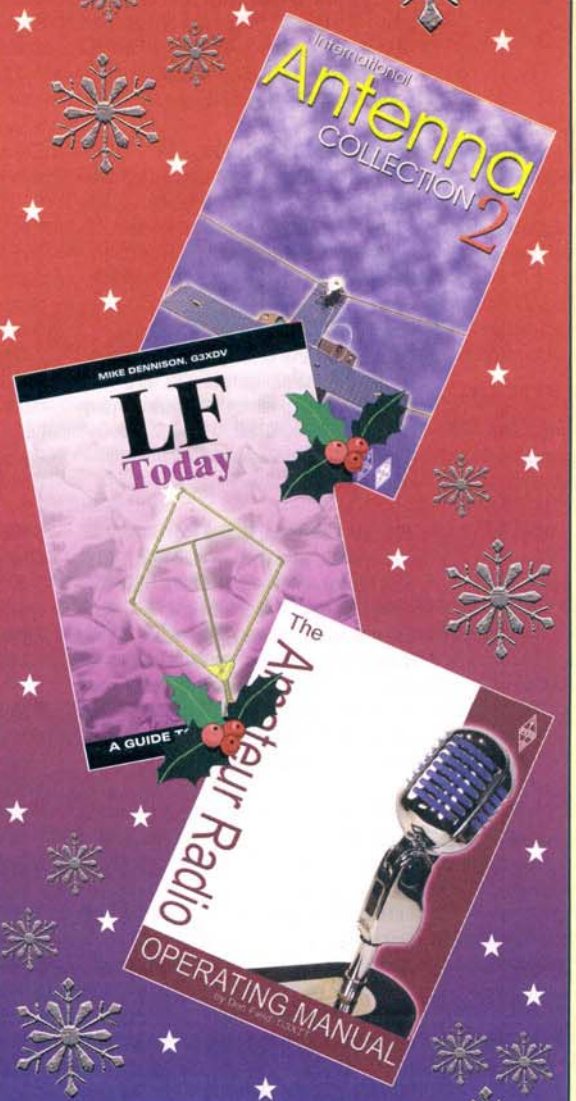
OPM6	The RSGB Operating Manual NEW	£19.99	£16.99
AOPM	ARRL Operating Manual NEW	£19.99	£16.99
HFAR	HF Amateur Radio	£13.99	£11.89
MOHB	Amateur Radio Mobile Handbook	£13.99	£11.89
PREG03	RSGB Prefix Guide	£8.99	£7.64
DXCC	The DXCC Countries List (ARRL)	£3.99	£3.39
DOTE	ARRL DXing on the Edge	£27.99	£23.79
YASM	ARRL YASME	£19.99	£16.99
RPPP	Propagation-Principles & Practice	£14.99	£12.74

MICROWAVES

MICP	Microwave Projects	£14.99	£12.74
IMHB	International Microwave Handbook	£24.99	£21.24
MHB3	Microwave Handbook	£16.14	£11.39
YGTP	Your Guide to Propagation	£9.99	£8.49
UMEM	ARRL UHF/Microwave Exp. Manual	£17.99	£15.29

OTHER MONTHLY PUBLICATIONS

QST1	ARRL Subscription 1 Year	£34.00
QST2	ARRL Subscription 2 Year	£63.50
QST3	ARRL Subscription 3 Year	£90.00
	ARRL Subscription CD only 1 Year	£28.00
	ARRL Subscription CD only 2 Year	£52.50
	ARRL Subscription CD only 3 Year	£74.50



MEMBERS PRICES SHOWN IN WHITE. ALL PRICES PLUS P&P

RSGB SHOP

RSGB
Lambda House
Cranborne Road
Potters Bar
Herts. EN6 3JE
Tel. 0870 904 7373
Fax. 0870 904 7374

ORDER 24 HOURS A DAY ON OUR WEBSITE www.rsgb.org/shop

FOR A FULL RANGE OF OUR CLOTHING AND MERCHANDISE PLEASE VISIT OUR ONLINE SHOP OR RING 0870 904 7373 FOR DETAILS.

RSGB BOOKS ARE AVAILABLE IN BOOK STORES ASK FOR 'GARDENERS BOOKS WHOLESALE'

Members' ads

FOR SALE

APPLE Power Mac G5 computer, dual 1.8MHz, 160GB HDD, DVD/CD superdrive, 512MB memory, Airport Extreme and Bluetooth fitted, o/s 10.3, 17in TFT Apple studio monitor, keyboard, mouse etc. Very rarely used and as new, £1250 ono. Ken, 01582 670 592 (Dunstable).

BIRD 43 Thru-line wattmeter with 50H, 1000H and 2500H elements, £250 ono. Bird 43 Thru-line wattmeter in leather case with 50H, 100H, 250H, 500H, 1000H, 5000H and 10000H elements, £480 ono, 01908 618 809 eve, w/e (Newport Pagnell). E-mail: g4vmx@lineone.net

BIRD Thru-line wattmeter with six elements. Trio R-600 rcvr. Nevada TM-1000 ATU. Audon miniscope. BC-348 rcvr. Optoelectronics 3000 freq meter. No 10 xtal cal, class-D wavemeter. Offers please to, G3ZBM, 01270 568 893. (Crewe). E-mail: g3zbm@supanet.com

CHALLENGER II by Linear Amp UK, 3CX-1500A7 model, £760. Buyer collects. 01484 654 650 (Huddersfield).

SILENT KEYS

We regret to record the passing of the following radio amateurs:

G0APZ	Mr E L Killip	18/09/04
G0NLI	Mr C Macham	04
G0SCB	Mr J Langridge	07/10/04
G2FRO	Mr E B H Woolley	04
G3BCI	Mr V Cotton	04
G3DZW	Mr S T Chrees	04
G3FHW	Mr N Ratcliffe	08/10/04
G4NAA	Mr J Bain	04
G4UWY	Mr S Ince	04
G5IJ	Mr I J P James	03/04
G7EID	Mr M J Jacobs	02/10/04
G7MVO	Mr M Armfield	04
G8RSD	Mr G M B Corry	05/10/04
G8VXQ	Mr B P Hayward	26/10/04
GM4YZU	Mr J C Borland	18/10/04
GW0MAW	Mr N Davies	13/10/04
M0DGN	Mr N Smith	24/09/04
M1EUT	Mr G Johnson	19/08/04
M3ARI	Mr R W Coggle	04/09/04

We apologise for mis-quoting the callsign of Mr R L Halls in last month's list. It should have been G3EIW.

ELECRAFT K2 parts. Unopened ATU kit KAT-2, £85. K2 top panel with battery and RS-232 interface, £85. Postage at cost. Reason for sale, went to 100W. Richard, G3RWL, QTHR, 020 8366 4297 (Enfield). E-mail: g3rwl@amsat.org

ELECRAFT K2/100 tcvr with options 100W, SSB, 160, NB and DSP, fully working. Also c/w Heil MH-2 hand mic, £800. Buyer collects or pays postage. GM0VRP, QTHR, 01786 811 658 (Stirling). E-mail: gm0vrp@btinternet.com

FREE to good home! 13.8V 50A home-brew PSU. Based on Practical Wireless 'Marchwood' design. Collect only, heavy! G6PSO, QTHR, 024 7646 7265 (Coventry). E-mail: ianrussel@bushinternet.com

HEATH SB-200 linear amp, 80/40/20/15/10m, pair 572Bs. Fitted new W8CQ boards – softstart, soft key 1V 1.5mA, new HV diode/capacitor board, replacement transformer, h/book, £250. G3JFC, QTHR, 01529 413 547 (Sleaford).

HEATHERLITE Hunter amp soft start, recent new valve & service, £300. Daiwa 4-way antenna c/o switch, £20. MFJ-722 CW/SSB external filter, £20. Collect or pay carriage. G4SKX, QTHR, 01642 895 890 (Cleveland). E-mail: david.fields43@ntl-world.com

JRC rcvr collection. NRD-515, memory unit, h/book, workshop man, £350. NRD-525, h/book, original box, £350. NRD-535, h/book, original box, £400. Icom IC-746, gen cov mods, h/book, original box, £650. Non-smoking owners. Constructor's shack clearance. Phone or e-mail for list of good equipment, antennas etc. David, G8PPR, QTHR, 01274 651 486 (Bradford). E-mail: david.bancroft8@btinternet.com

KENWOOD /Trio TR-751E. 2m multi-mode boxed with man, £200. Plus carriage or collect. G1ZBM, 01761 413 151 (nr Bath).

KENWOOD AT-230 ATU, £135. AVO signal gen HF-135, £40. Kenwood SP-50B speaker, £15. Heathkit V7A/UK valve voltmeter, £35 plus p&p. Mel, 01274 817 178 (Clayton Heights). E-mail: melslateruk@yahoo.co.uk

LINEAR Heathkit SB-1000, 1 x 3-500Z, 1000W SSB, 850W CW. All bands 160-10 inc. WARC. Full Heath documentation, had light use only, vgc, prefer buyer collects, £500. Alinco EMS 14 desk mic, £30. G3UZM, 01395 273 090 (Exmouth).

MARCONI TF-144 sig gen, free to good home! Buyer collects. 0161 969 6904 (Cheshire). E-mail: leigh@vk6wa.demon.co.uk

MQ4 mini-beam. 6, 10, 12, 15 17, 20m, used outside 12 months, £250. John, 2EOBOT, 01789 764 889, 07802 156 819 (Alcester).

OLD age and deafness force QRT complete station, very little used recently, for sale. Kenwood tcvr TS-570D, Watson PSU W-25AM, Ameritron linear AL811, MFJ tuner III, Philips Hi-Fi headphones. SG-230 Smart Tuner. Tennamast, 10m standard, £1000 ono. Buyer collects and dismantles with help from me. G3EFK, QTHR, 01305 852 134 (Dorchester).

SILENT key sale, G3EKX. About 400 domestic and communications sets (all photographed), 1500 books and manuals, heaps of old magazines, aligned and untested HRO coils, about 2500 valves and many spares unlisted. Everything must go! Have no space! All prices are negotiable. The more you buy, the better the deal. Phone for lists 01872 862 575 (Truro).

SINGLE-trace oscilloscope, 20MHz, mint. Crotech 3031, sensitivity 2mV/div to 10V/div, sweep range 0.5µsec to 0.2 sec/div. Offers? G6WTD, 024 7630 6382 (Ryton-on-Dunsmore). E-mail: robin.kenward@btinternet.com

SSB Electronic SP-7000 Superamp, brand new in June. Installed for four weeks, but 70cm unusable due to local (incurable) QRM, £140 onvo, or will exchange for SP-2000 in mint condition. G0UYC, QTHR, 01362 688 142 (Dereham). E-mail: doughrolph@lineone.net

TENNAMAST 12m, perfect cond with safety winch, £300. Buyer collects. Yaesu G-450C rotator complete, £275. 01749 673 591 (Wells). E-mail: ham@keying.co.uk

TRIO comms rcvr model 9R-59D. Yaesu FT-230 2m tcvr. Altai 5A PSU. Open to offer. G6DJE, 01296 660 936 (Beds). E-mail: wsmart159@aol.com

CONGRATULATIONS

to the following, whom our records show as having reached 70, 60 or 50 years' continuous RSGB membership:

70 years	
G6RJ	Mr A Robinson CBE
60 years	
ZL1AOA	Mr J R Whitney
50 years	
GM3JQJ	Mr G Moore

YAESU 2100Z linear, £300 ono. Also H/B 400W linear. Built to a professional standard, £150. See or hear them working on air. G3MDM, 01980 862 215 (Salisbury). E-mail: g3mdm@btinternet.com

YAESU 847 (22h tx), £800 ovno. PSU-30A, £70. Triplexer, £30. Yaesu VR-5000 rcvr, £450 ovno. AOR-8600 MkII rcvr, £450 onvo, all boxed, manuals, bought from new, little used in as-new condition. Non-smoker. Racal RITL + LF adaptor. VEC manuals and all cables. 01977 616 505 (Hemsworth). E-mail: mholbrook@msn.com

YAESU ATAS-100 automatic mobile antenna for FT-847 or FT-100, as new, £100. MFJ-224 2m FM rig analyser, many functions including deviation, £100. Icom 24ET 2m/70cm h/h with UT-50 CTCSS board, boxed with soft case, battery boxes, charger, PSU, lapel speaker/mic, £90. Piccolo 6m FM rig, £15. FT-2400M, dead PA, £10. Buyer collects or postage at cost. Eric, G0ORD, 0161 427 1027 eve, (Stockport). E-mail: eric.chantler@man.ac.uk

YAESU cabinet, grey, includes speaker, W81/4 D111/4 H7in with built-in PSU 12V 5A stab, circuit, £15. Collect please. G3MBL, QTHR, 01284 827 379 (Bury St Edmunds).

YAESU FC-102 ATU. Boxed as new, £250. Yaesu SP-102. Speaker vgc, £70. Postage to be paid. MW0DVM, 01443 686 281 (Porth).

YAESU FT-1000MP, vgc with box, mans, etc. Little used, which is the reason for sale. Previous RadCom ads have suggested £1000, and I'd prefer cash and collection as you can see it working and can ensure safe transport. Chris, M0HMR, 01453 832 725 (Nailsworth). E-mail: chris.harmer@v21mail.co.uk

YAESU FT-101ZD c/w mic and man, £200. Also Star Masterkey with Bencher paddle key, £100. David, G4OCK, 07711 895 152 (Retford). E-mail: dave@gipp.freeserve.co.uk

YAESU FT-101ZD, £150. AR-146, 2m mobile/base, tcvr, £95. Kenwood TH-79E, Lowe mod, needs battery, £95. Nissei, 2-15VDC, 30A, PSU, £55. Astatic Silver Eagle, T-UP-9-D104, mic. Adonis, AM-508E, mic, £10. G4XIY, 01629 636 364 (nr Matlock).

YAESU FT-480R, mint cond, £120. Automatic antenna tuner Z-100 by LDG Electronics new, boxed, £115. Prefer buyer collects. G4WLI, 051 327 4280 (Wirral). E-mail: ashtree02@boltblue.com

YAESU FT-77 with FM, man, mic, wooden carrier. H/B 40m dipole with balun. Mobile ants for 20/40/80m, Mag mount, vgc. No split, £250. BNOS LPM 432-10-50 70cm lin amp, £110. Icom IC-U101 12ch UHF simplex and rptr, mic fixing bracket, bargain at £35. Heatherlite mobile mic (Kenwood 8-pin), toneburst, never used, £12. Kenwood HMC-2 headset, VOX/PTT, (has headstrap repair), £8. All cash. Heavy items for collection, others plus postage. Derek, G0OEW, 01270 668 111 (Nantwich). E-mail: drooke73@speed-mail.co.uk

YAESU FT-77 with FM, mic, man. Wood carrying box. H/B 40m dipole wire balun, mag mount, verticals for 20/40/80m. All vgc. No split, £250 buyer collects, cash only. Heatherlite mobile mic. Kenwood 8-pin toneburst. Tx/rx switch. F-change buttons. Leaflet. Never used, £10 + post. Kenwood HMC-2 headset. VOX/PTT. Has headstrap repair, so £8 + post. Derek, G0OEW, 01270 668 111 (Nantwich). E-mail: drooke73@speed-mail.co.uk

YAESU FT-847 complete with MH-31 B8 mic and Shure 444D desk mic, £800. Yaesu FT-920 with MH-31 B8 h/m and Kenwood 85 desk mic, £700. Les, M0LFB, QTHR, 020 7359 3841 (London).

YAESU FT-847 fitted Collins filter. With 25A PSU box, man and mike. Genuine reason for sale, £785 ono. Inspection invited if required. G8ILD, QTHR, 0161 430 2010 (Stockport, Cheshire). E-mail: roger.g8ild@virgin.net

YAESU FT-847 HF to 70cm plus satellite (work ISS). Superb cond, £775. 2 x Collins YF-1155 filters to suit 847, £60 each or both £100. 36A power supply (linear), £60. Nissei 3kW swr/pwr/mod meter, £60. 144 MHz masthead preamp, Microset PRH-145A, £80. Can deliver South/SE. 07903 661 512 (Haywards Heath). E-mail: mark@rodgers.fsworld.co.uk

YAESU FT-847 HF to 70cms plus satellite (work ISS!) Superb cond, £775. 2 x Collins (YF-115S) filters to suit 847, £60 each or both, £100. 36A power supply (linear), £60. Nissei 3kW SWR/pwr/mod meter, £60. 144MHz masthead preamp, Microset PRH-145A, £80. Can deliver south/SE. 07903 661 512 (Haywards heath). E-mail: mark@rodgers.fsworld.co.uk

YAESU FT-857 HF/50/144/430MHz mobile. Little use, boxed, mans, extension car kit, mobile antenna, £625. 07818 017 149 day, 01954 212 989 eves (Cambridge).

YAESU FT-857, HF, 6m, 2m, 70cm tcvr with DSP fitted warranty till Jan 2005, never been out of shack. Buyer pays p/p, £600 ono. Bill, M3IVI, 0191 385 5603, or 07946 292 311 (Houghton-le-Spring).

WANTED

CIRCUIT for little scope, has 5 EF91s and one Z77. Sign on back is three Ls, which is the maker. 020 8374 9070 (London). E-mail: den49@tiscali.co.uk

ELECRAFT K2 built and working with SSB. Good quality HF sig gen for rcvr measurements. John, G3GTJ, 01963 240 319 (Somerset).

FT-102 Frequency display or dead FT-102 with working display. Can collect. Phone weekends only. Tibbert, GW3RKZ, 01248 722 041 (Anglesey).

KANTRONICS KAM plus TNC. GW4HAT, QTHR, 01792 290 770 (Swansea). E-mail: philip@gw4hat.demon.co.uk

MORSE Keys wanted by private collector, straight and bug keys, sounders, relays, Morse inking machines, heliographs, all telegraph related items. For a friendly chat ring, Gerald, 01189 834 307 (Reading). E-mail: gerald.beaver@btinternet.com

YAESU FL-7010 linear for FT-790, also FTS-7 CTCSS board for FT-790R. Icom IC-T81E with 23cm. All must be in good cond. Geoff, G3KIW, QTHR, 0118 971 3644 (Reading).E-mail:g3kiw@btopenworld.com

EXCHANGE

BENDIX RA-1B (WWII rcvr) in orig cond. Hammarlund HX-50 transmitter, also Hammarlund receivers. WWII BC-312-342 rcvr. For exch 1.5kW Marconi transmitter. 01380 859 088 (Chippenham). E-mail: G0LJS@arrl.net

GB CALLS

These callsigns are valid for use from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 – 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Please send operational details of your special event station to the RadCom office at least five weeks before publication. The only QSL Bureau sub-manager for special event station callsigns is as follows: GBxAAA-MZZ – Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntl world.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

2 Dec **GB2OTH: Opening The Headquarters. LH2 (G0NTH)**
9 Dec **GB2ATC: Air Training Corp. 2 (G4PSH)**
10 Dec **GB4TBL: Trearddur Bay Lifeboat. TLH2 (MW0AQZ)**
16 Dec **GB4YOU: Youlbury (Scout & Guide Radio). TLH27P (G0REL)**
GB4YOU: Youlbury (Scout & Guide Radio). TLH27P (G0RJX)
27 Dec **GB6BOB: Battle Of the Bulge. LHV2 (G0SWY)**

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.

4 DECEMBER 2004

ROCHDALE & DARS Traditional Radio Rally – St Vincent de Paul Catholic Church, Caldershaw Road, off the A680 Edenfield Road, approx 2 miles W of Rochdale. Follow the orange arrows from the M62 jn 20. Please note that this is a Saturday rally! OT 10.15 / 10.30am, £1. CP free, TS, B&B, C, TI on 145.550MHz. John, G7OAI, 01706 376 204 (eve), radars@mbc.co.uk [www.mbc.co.uk/radars]

5 DECEMBER 2004

BISHOP AUCKLAND RAC Rally – Spennymoor Leisure Centre. OT 10.30 / 11am, £1, accompanied under-14s free. B&B, C, CP, LB, MT, DF, FAM, TI on 144.550MHz. Mark, G0GFG, 01388 745 353, or Brian, G7OCK, 01388 762 678.

WEST MANCHESTER RADIO CLUB Red Rose Winter Rally – Lowton Civic Centre, just off the A580 East Lancs Road. OT 10am. TS, B&B, SIG, CP free, LB, C, RSGB bookstall, DF, and large social area. TI on 145.550MHz. Steve, 01942 895 198. [www.wmrc.org.uk]

21 - 23 JANUARY 2005

CONTEST CLUB FINLAND 10th Anniversary – Aboard Viking Line MS Gabriella, on circular trip Helsinki – Stockholm – Helsinki. LEC, C, LB. Proceedings in English. [www.qsl.net/ccf/ and www.vikingline.fi/onboard/gabriella/]

23 JANUARY 2005

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.

RSGB MEMBERS' ADVERTISEMENTS

RSGB Members wishing to place an advertisement in this section should use the official form printed in *RadCom* each month. No acknowledgment will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due. An advertisement longer than 60 words will be charged *pro rata*. **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 and no correspondence will be entered into.

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. 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, eg 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 manner.

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

Free Entries

Town

E-mail

Phone

Full details and maps on website. [www.oarc.org.uk]

30 JANUARY 2005

FENLAND REPEATER GROUP Horncastle Winter Amateur Radio Rally – Horncastle Youth Centre, The Old School, Cagthorpe, Horncastle, Lincs (nr Horncastle Police Station). OT 10 / 10.30am, £1. C, Horncastle bacon butties, TS. Tony, G3ZPU, 07717 312 558.

6 FEBRUARY 2005

SOUTH ESSEX ARS Radio Rally – The Paddocks, Long Road, Canvey Island, Essex, at the southernmost extremity of the A130. Radio, computers and electronics. OT 10.30am. C (home-made), CP free, DF, TS. Brian, G7IIO, 01268 756 331 or briang7iio@yahoo.com [www.southessex.ars.btinternet.co.uk]

13 FEBRUARY 2005

HARWELL ARS Rally – Didcot Leisure Centre, Mereland Road, Didcot, Oxon. Signposted from A34. OT 10.15 / 10.30am, CP free. B&B, C, LB, TS, SIG, DF, TI on 145.550MHz. Ann, G8NVI, 01235 816 379, ann.stevens@btinternet.com. [www.hamradio.harwell.com]

WAKEFIELD & DRS 14th Northern Cross Radio Rally – Thornes Park Athletics Stadium, Wakefield, W Yorkshire. Just out of town on the Horbury Road. Easy access from M1 jns 39 and 40 – well signposted. OT 10.15 / 10.30am, £2.50. B&B, TI on 145.550MHz. John, G7JTH, 01924 251 822 or g7jth@wdrs.org.uk [www.wdrs.org.uk]

20 FEBRUARY 2005

SOUTHGATE ARC Stevenage Radio & Electronics Show – Stevenage Arts & Leisure Centre, Lytton Way, Stevenage, Herts. Close to A1 & GNER mainline. OT 9.30 / 10am, £3. TI, CP, DF, TS, SIG, B&B, LB, C. Steve G4UKR, 07950 327 822, stevenageshow@dsl.pipex.com [www.stevenageshow.dsl.pipex.com]

27 FEBRUARY 2005

SWANSEA ARS Amateur Radio & Computer Show – Afan Lido, Aberavon seafront, Port Talbot, 1 mile from jn 41, M4. OT 10.30am. TS, B&B, SIG, repeater groups, TI on 145.550MHz. Roger, GW4HSH, 01792 404 422.

6 MARCH 2005

TYNE & WEAR REPEATER GROUP Auction – Nancy, 0191 477 0036, or 07990 760 920, or nancybone2001@yahoo.co.uk

13 MARCH 2005

BREDHURST RECEIVING & TRANSMITTING SOCIETY 18th Rainham Radio Rally – Mike, 01634 313 905.

20 MARCH 2005

CAMBRIDGE & DARC Rally – John, G0GKP, 01954 200 072.

NORTHERN AMATEUR RADIO SOCIETIES' ASSOCIATION (NARSA) Norbreck Blackpool Rally – Peter, G6CGF, 0151 630 5790, g6cgf.peter@ntlworld.com

3 APRIL 2005

Northern Mobile Rally (Harrogate) – Gerald, G0UFI, 07734 478 080. [www.harrogaterally.co.uk]

10 APRIL 2005

21st Yeovil QRP Convention – George Davis, 01935 425 669, george@mudford.fstnet.co.uk

24 APRIL 2005

ALDRIDGE & BARR BEACON ARC Annual Surplus Radio & Electrical Sale – Doug, 01543 571 269. [www.goneq.co.uk]

2 MAY 2005

DARTMOOR RC Radio Rally – Ron, G7LLG, 01822 852 586.

15 MAY 2005

MID-CHESHIRE ARS Rally – David, G4XUV, 01606 77787.

MIDLAND ARS Drayton Manor Radio & Computer Rally – Norman, G8BHE, 0121 422 9787 or 07808 078 003, nlgutteridge@aol.co.uk [www.midamradio.co.uk]

5 JUNE 2005

SPALDING & DARS Annual Rally – Ambrose, M0DJA, 07989 636 520, or John, 07946 302 815. [www.sdars.org.uk]

19 JUNE 2005

NEWBURY & DARS Car Boot Sale – [www.nadars.org.uk]

26 JUNE 2005

SEVERNSIDE TV GROUP West of England Radio Rally – Shaun, G8VPG, 01225 873 098. [www.westrally.org.uk]

3 JULY 2005

NORFOLK ARC Barford Radio Rally – David, G7URP, 01953 457 322 or 01953 458 844, radio@dcpmicro.com [www.norfolkamateurradio.org]

7 AUGUST 2005

FLIGHT REFUELLING ARS Hamfest – Mike, M0MJS, 01202 883 479, hamfest@frars.org.uk [www.frars.org.uk]

12 AUGUST 2005

COCKENZIE & PORT SETON ARC Annual Junk Night – Bob, GM4UYZ, 01875 811 723, bob.gm4uyz@btinternet.com

The last word

Letters published in 'The Last Word' do not necessarily reflect RSGB policy. 'Last Word' letters may be e-mailed to radcom@rsgb.org.uk Please note that letters submitted for 'The Last Word' may not be acknowledged. The RSGB reserves the right to not publish any letter, with no reason being given. It is a condition of publication that all letters may be edited for grammar, length and / or clarity. Due to the limited space available, please keep letters as short as possible. Additional letters may be published on the RSGB members-only website at www.rsgb.org/membersonly/lastword

The letters from Ian Bevan, G0YAP, and K B Monaghan, M3HKM, published in 'The last word' last month produced a huge postbag, with a ratio of over 4:1 opposed to the views of Messrs Bevan and Monaghan. There is insufficient space here to publish more than the following two representative samples:

From: Graham Lindsay, G8BZL

May I congratulate Peter Kirby on his response to letters from G0YAP and M3HKN ('The last word', November 2004). What a load of old claptrap they both wrote. I know Mr Bevan is a comparative newcomer with only 15 years experience under his belt, but surely he does not think repeater abuse started with the recent licence changes?

And what is this rubbish about "ex-class Bs paying to upgrade to M0s broadcasting their egos and hogging the repeaters with their childish and embarrassing QSOs"? He then rants on, making wild accusations about elderly amateurs propositioning young girls over the air. The elderly amateurs around here spend most of their time on air discussing what treatment works best for haemorrhoids. Now that is embarrassing!

Then poor Mr Monaghan thinks the amateur bands have been taken over by a network of paedophiles and we are all about to be sued.

So well done RSGB, I think we are going in the right direction. There will always be dissenters and there will always be those who abuse the hobby and its privileges, but these people have been managed in the past and will continue to be managed. Please continue to expose tirades from the likes of Messrs Bevan and Monaghan. You have to admit that it is marginally more interesting than reading the same old adverts every month from ML&S and W&S. Sorry guys, only joking.

From: Jacqui Johnson, M3JQY

. . . As a newly-licensed M3 I was appalled by the letter from Ian Bevan, G0YAP. I couldn't believe the generalisations that he has made about M3s and so-called 'class B' operators. Who does he think he is? How can passing a Morse test make him either any better an operator, or any more knowledgeable technically?

My husband is a G7, he has been licensed for 14 years and had been into electronics since he was 8 years old (now 41). He is very knowledgeable in valve technology, transistors, integrated circuits and has realigned many sets for many people (some G4s!). He is as qualified as many so-called 'class A' operators, if not more so

Many a time we have listened to groups of 'old timers' on HF who 'waffle away' (nothing wrong with that), but their operating procedure is terrible. These so-called 'class A' operators, who are "better qualified", talk and talk and then after 15 minutes (only), give everyone's callsign - all on top of one another. The amount of 'doubling' is awful!

When our son (now 12) became interested, we both took our Foundation tests - he was 11 at the time. My son's operating is first class; he has been complimented on this by many local amateurs, those further afield in the UK, and those he has contacted using HF on more distant shores - and yes, Mr Bevan - using his allocated 10 watts! We are both very fortunate having an experienced amateur in the family - this being the case for many newcomers to the hobby.

We have all become so involved in the hobby, we regularly help our local club run special event stations, so much so that our son is one of the 'star' operators, usually making more contacts than any of us. He is a pleasure to listen to as he has so much enthusiasm and operates admirably. I have also become more involved as I am now club secretary.

Excess power?

From: Peter Chadwick, Sen MIEEE, G3RZP, Past President

I was interested in the letter from G4ZRZ ('The last word', November) on the use of excessive power. Many of us still quote input power: on CW, "kw" is easier to send than "400w". At 1kW DC input, I get about 550 watts out of my linear, and with 180 feet of coax, that's well under 400 watts at the antenna on 20m. Again, if there's a VSWR on the feeder of 2:1 - quite acceptable at HF, even with 30kW transmitters - 450 watts measured output is 400 watts at the antenna, assuming no feeder losses. If you have a wire antenna and a tuner, it's quite easy to lose another 1dB. Finally, you need to take into account the measurement uncertainty. Professional standards require measurement of conducted power to ±0.75dB for a certainty of 99.9%. Put another way, under lab conditions, that 400 watts is anything between 337 and 475 watts - without considering feeder loss and SWR on top. Anyone interested in pursuing measurement uncertainty can find a very interesting report from ETSI, the European Telecommunications Standards Institute, ETR 028, which is available at www.etsi.org

I am certainly not condoning the use of excessive power but I think one has to be a bit careful in judging whether the guy who says he's running 50 watts on 160 or 1kW on 40 really is breaking the licence rules - especially if he's running an old valve rig and talking in terms of input power.

Small loops

From: Mike Underhill, G3LHZ

Having seen the 'Technical correspondence' on small loops (*RadCom* November p100) my first reaction was "No comment needed - the results simply speak for themselves". But then I realised that all the comments were based on my results and not on any measured results from the critics themselves! So the likelihood of the critics actually conducting any 'real', not simulated, experiments is very low.

So I throw out another challenge: please devise a practical experiment that uses traditional physics to demonstrate that the efficiency of a small transmitting tuned loop on its own is less than, say, 10%. Please ensure that losses from any adjacent environment are not included. Then we can ask an independent person or team to (a) verify that the pro-

posed experiment is within the laws of physics as at present understood, and (b) conduct the experiment. I will of course conduct any reasonable experiment myself as a cross check. Remember I have to be convinced as well, or we will have got to a true impasse and the question will never be resolved. Where the 'truth' of science is involved, I also will stand my ground or change my mind as the 'truth' dictates.

This letter is also intended for those at least prepared to keep an open mind on the topic of small loops. So can I urge you to re-read what the critics have said in the 'Technical correspondence', in order to answer the following two questions: 1. Do the arguments put forward by the critics actually stack up with all of traditional physics? 2. How much of what the critics say I said is actually in my articles?

In his letter Ben Edgington ('The last word', November) has also challenged the 'simulators' to produce computer programs that are not so misleading about loop radiation resistances or at least explain the discrepancies. This I firmly support. How can they have been so wrong for so long? The damage done just does not bear thinking of! But perhaps no-one cares about this in the cosy world of simulation?

The time to lay this topic to rest is when the real, not simulated, 'truth' and not just 'opinion' has been placed on the table, and not before!

7.1 - 7.2MHz

From: Brian Alderson, G3KJX

Re: 7.1 - 7.2MHz, many thanks to all for the work involved in obtaining this additional allocation.

'The Ultimate DX'

From: Pat Hawker, G3VA

The article by John D Heys, G3BDQ, noting the 80th anniversary of 'the ultimate DX' UK - New Zealand contact (*RadCom* October 2004) provided an excellent account of an event hailed at the time by *Wireless World* as "Amateurs girdle the world - American papers please copy". It was a remarkable achievement by the young Cecil Goyder, as an authorised operator of the Mill Hill School station, 2SZ. At the time he made that indelible mark on the history of short-wave radio he was a student at the City & Guilds Institute, Imperial College, London University.

Cecil Goyder provides an excellent example of the way in which, in the '20s, a youthful interest in amateur radio frequently led to a professional career in radio communications or broadcast engineering.

To add to G3BDQ's article, it may be worth recalling that in the 1930s, Cecil Goyder became engineer-in-charge of All India Radio and post-war became first a technical consultant to BOAC and then with the United Nations communications and broadcast radio services, a post he held until his retirement. He died in February 1980 as a result of being knocked down by an automobile in Princeton, New Jersey.

Another achievement in the field of Amateur Radio by the youthful Cecil Goyder was his building of the 30m, 1.5kW transmitter with which Gerry Marcuse, G2NM, made his pioneering broadcasts to the British Empire from 1 September 1927 - the first authorised short-wave broadcasts from the UK, some weeks before the less successful BBC first experimental broadcasts on G5SW.

[It was not only in the 1920s that a youthful interest in amateur radio could lead to a professional career in radio communications or broadcast engineering: it still happens today! - ***Ed***.]

HF from a flat

From: Nigel Booth, M0CVO

I read David Wright's, G4BKE, letter ('The last word', November) asking for advice on an HF antenna in a flat. I have lived in three flats, all ground floor with others above. From the first I only operated VHF as I was then a B-class amateur. In the second, my first HF set was an FT-102 feeding a half-size G5RV. This was set up as an inverted-V in the small enclosure behind the property. I later went QRT for a while and then moved to Germany.

After I returned to England I had to live in a shared house for a while. Here, no external antennas were permitted whatsoever. However, deciding to get back into amateur radio, I purchased an FT-101ZD, again with a half-size G5RV. No external antennas! I merely wrapped the G5RV around the inside of the bedroom creating, effectively, a loop. As impossible as this may sound, it actually worked and I made some reasonable contacts.

I am now at my present QTH, where I have no garden. No antennas or extensions are permitted. I am again in a ground floor flat with two others above me and more to either side. The solution? I have an AE270 duoband collinear on a 20ft mast bracketed to the wall, an MTD-1 trapped wire dipole (10, 15 and 20m) fixed to the mast using a bracket just 10ft above ground, just above my windows and fastened at each end to downpipes, and an EVX4000 four-band vertical sitting on a 10ft pole bracketed to the wall next to the other, about 3ft apart. This set-up works fine. It is no major DX station but it gets me out OK.

Details withheld

From: Phil Stevens, G3SES

Thank you for the publication of the latest *RSGB Yearbook* which is, as usual, an excellent source of information for the radio amateur. I expect many purchasers of the book obtain a copy, primarily, to look up details on currently-licensed amateurs and must be frustrated when they find no information next to the callsign. I realise that there is no obligation for an individual to supply his / her address and there must be many amateurs who, for perfectly valid reasons, do not wish to provide their addresses.

What does concern me is that the proportion of stations omitting details is increasing annually. A simple analysis shows that 10% of G3S** stations have elected to have their details withheld whereas 38% of M3S** stations show no details.

Perhaps now is the time to delete all *Yearbook* entries which give no details as they are, in my view, a waste of paper. My bookshelf is groaning under the weight of a complete set of Callbooks / Yearbooks from 1980 to 2005 and earlier editions are useful for providing details of some amateurs who have now become part of the Details Withheld set.

I am interested in what both the RSGB and other members think of my suggestion.

[The existence of a callsign in the *Yearbook*, even without any details, at least indicates that the callsign is still valid and therefore that the holder has renewed his / her licence. The lack of a callsign in the *Yearbook* suggests that the holder has either lost interest in amateur radio or perhaps has become a Silent Key. However, in order to make the *Yearbook* as useful as possible to your fellow amateur, you are encouraged to instruct RLC in Bristol to release your details unless you have a genuine reason for them not to appear in print - *Ed*.]

Experienced operators not always best

From: John Young, GM6LYJ

I have recently been listening around 40m through the day, being on long-term sick leave, and I have to say that in some instances I am dismayed at the operating standards being displayed by some longer-standing amateurs on nets. In particular one of the military nets has a net controller who seems to think that their net is the only show in town, and woe betide anyone who strays within a few kilohertz of their chosen frequency. With constant remarks about "crud" interfering with their QSOs, does he not realise it is the same for everyone on a crowded band? Is this the example that inexperienced new operators should be shown upon induction to the hobby, and on to nets, members of the particular society or not? This net controller lowered himself to an all time low, when in his opinion a French station had strayed too close, and the remark was made that maybe the French operator would

drop dead with a heart attack. Quite apart from the disgust I felt, being off work having recently having suffered a heart attack myself, I'm sure there are other operators and SWLs out there who have lost friends and relatives through such events. Our licence states that we should not send messages which are of an offensive nature. I would suggest that, even if other members of the particular society don't feel it appropriate to stand up and make the comment, such a net controller would be better to stand down from the position, save his own exasperations and allow someone to control the net who can do so without resorting to verbal abuse of others. The constant remarks of the particular net controller also seem to gee up other net members to the point where they switch in linears with the intention of, as one put it, "giving them some stick", and that was a G3!

From what I have witnessed, it appears that the net in question does not suffer so much from mic keyers and deliberate QRM when a different controller is in the chair. I hate to say it, but is there not a lesson to be learned if that is that case?

Alternative address

From: R C Hills, G3HRH(/P)

I believe that the question of which suffix to use at an alternative address needs to be looked at again. I write from our second home where I have a permanent station. To me it seems quite ridiculous to have to sign /P when the station cannot by the wildest stretch of imagination be called 'portable'. Using the public AC mains supply is just one example. The old suffix /A properly describes that situation and I really think that it should be re-introduced. I understand that it was dropped because of the confusion in some minds as to whether to sign /A or /P when using a 'handie' in the house for example. The definition of /A should surely be for a situation in which the installed station is every bit as permanent as that at the "main address". In other words the alternative address could equally qualify as the main address.

I understand that by prior notification to Ofcom it is possible to drop the /P but that would be unhelpful to those using the Yearbook to find the station location. I have talked to quite a few other licensees who all share this view so perhaps the responsible committee could please take another look with a view to having it included in the licence schedule?

Hughes discovered radio waves

From: S F Brown, G4LU

Mr Gregory, in his eulogy of Sir Ambrose Fleming (October *RadCom*) says the Branly tube was the first detector of radio waves. The experiment that Branly describes in his book *La Télégraphie Sans Fils* shows that he received signals between two rooms over a distance not much greater, if at all, than Hertz had previously achieved with his resonator.

Both had been preceded by Professor David Hughes in 1879 using the indifferent contacts of his microphone. Unfortunately, when Hughes demonstrated his discovery to members of the Royal Society they disillusioned him by declaring that his results were due to induction or conduction. Consequently, he did not publish his findings until much later when they had been confirmed by the experiments of other researchers. Hughes, though disappointed, was later magnanimous and said that these following researchers should have the credit. Blake in his History of Wireless Telegraphy and Telephony, quoting from another publication, says "Hughes' experiments of 1879 were virtually a discovery of Hertzian waves before Hertz, of the coherer before Branly, and of Wireless Telegraphy before Marconi and others".

DXpedition frequencies

From: David Fryer, M0COM

The frequency 14195kHz is normally set aside as a 'DX window' for expeditions; there is no written agreement on this but it is an understanding amongst stations around the world. Sadly, due to the actions of one Sicilian station, IT9RYH, contacting DX stations is now very difficult due to persistent jamming of this frequency. The station in question does not recognise this agreement and is now preventing use of this frequency by occupying it and transmitting jamming signals. This is extremely unfair to the many DXpeditions who would like to make use of this frequency for transmitting from rare locations.

Many stations including myself have contacted the station initially politely and then quite clearly to request that the frequency in question is left open for DXpeditions around the world. However, all our efforts have been unsuccessful and he continues to transmit and jam the frequency even over the top of some DXpeditions, eg the Lord Howe Island expedition, VK9LA.

I am unfamiliar with the Italian amateur radio system, however, I would appeal for your assistance in trying to resolve this matter which is causing a lot of bad feeling amongst the amateur community world-wide.

[No-one 'owns' any frequency, whether it be a DXpedition, regular net, or individual. Any station, including IT9RYH, is perfectly entitled to use 14195.0kHz if that frequency is not in use at the time he starts operating. However, if it is in use he should, of course, go elsewhere. Most courteous amateurs will move to accommodate a DXpedition or regular net if asked politely to do so - but sadly not all operators are so gentlemanly - *Ed.*]

Rusty bolt effect

From: Don Pinnock, G3HVA

I disagree with Dick Marshall, G3SBA, regarding harmonics due to the 'rusty bolt effect'. While acknowledging that unwanted signals could be generated in the receive mode, the chances of it being the prime source of interference to 405-line BBC 1 TV (42MHz sound /45MHz vision) was very unlikely. The principal cause of the harmonic problems afflicting amateurs in south-east England during the '50s and '60s was not the rusty bolt effect, but the transmitter itself. To permit operation on HF, in particular 14 and 21MHz, the 2nd and 3rd harmonics had to be virtually eradicated, since even a microwatt of RF on the outside of the transmitter cabinet or coaxial feeder would inevitably be transmitted and cause interference to nearby TV receivers. A transmitter had to be shielded and filtered 100%, and even commercial rigs fell down badly in this respect. It was not surprising that very few stations in south-east England operated on 14 and 21MHz during TV hours.

During the 60s, I spent several years developing and testing a transmitter with minimal harmonic output, and demonstrating it to grateful, but highly sceptical, members of radio clubs all over southern England. It eventually became the subject of an article in the Jan / Feb 1970 *RadCom* entitled 'Where TVI is a problem, build this topband to ten SSB transmitter'. This rig was as harmonic-free as it was possible to achieve using home-brew equipment, and clearly showed that 150W of SSB could be used on 21MHz with no QRM whatsoever, even with minimal spaci9ng between transmitting and TV antennas. However, it was impossible to design an antenna for 14MHz which was efficient at that frequency, but which would block the transmission of residual harmonics between 42 and 45MHz. A low-pass filter made no difference whatsoever, since the harmonics would by-pass it via the outer braiding of the coaxial feeder.

During this period, I discussed harmonic interference in detail with thousands of amateurs. Of those affected, none had managed to overcome the problem completely, none had experienced the rusty bolt effect, and none had found a low-pass filter that worked. The problem was not their filters or rusty bolts, but harmonic 'leakage' from their rigs! The point of my letter is that 14MHz operation was almost impossible, at that time, during TV hours in fringe areas like Harpenden where Dick lived and Luton where I lived. Any difficulties he had with his neighbour would almost certainly have been due to harmonics. ♦.

CLASSIFIED

Classified advertisements 58p per word (VAT inc.) minimum 14 words £8.12. All classified advertisements must be prepaid. Please write clearly. No responsibility accepted for errors. Latest date for acceptance is 1st of the month prior to publication.

Copy to: Chris Danby G0DWV, Danby Advertising, 299 Reepham Road, Hellesdon, Norwich, NR6 5AD
Tel: 0870 904 7377 Fax: 0870 904 7378 E-mail: adsales@rsgb.org.uk

Payment to: RSGB, Lambda House, Cranbourne Road, Potters Bar, Herts, EN6 3EP

FOR SALE

ISOLATED INTERFACES For PSK-SSTV-RTTY-WSJT-CW. Suitable for SOUND-BOARD PROGRAMS. INTERCHANGEABLE LEAD MODELS AVAILABLE. Also NEW CW model. Registered with PAYPAL. See www.g3liv.co.uk johnny@melvin.com Tel 0191 2843028

PSK31 INTERFACE COMsTRANSFORMERS
Suitable for construction of DATA isolated interfaces. 1:1 600ohm HIGH QUALITY PCB mount. £6.50 per pair inc. www.g3liv.co.uk johnny@melvin.com Tel 0191 2843028

FIBREGLASS TUBE High strength tube, square box, rod, and other sections all from stock in 6m lengths. Engineered Compositions, Chester. Tel: 01244 676000 e. barbara@engineered-composites.co.uk www.engineered-composites.co.uk

DUE TO ILLNESS ALL TO GO including FT767 GX and Roller Tuner all mint condition plus lots more. G0VFX 01527 837296

YAESU FRDX400 and FRG7 condition OK working unknown, Strattford upon Avon 01789 293649

SCANNER POUCH CASES for all hand-helds. £9.95. Details 0161 3682544. email cases@homeprods.freeserve.co.uk

CHRISTMAS OFFER FROM SOTABEAMS The new WaterLog is the ideal solution for portable log keeping. See it at www.sotabeams.co.uk. Just £7.50 for the WaterLog complete with 10 waterproof double-sided logsheets. A great stocking filler for the portable radio operator! Cheques to SOTA Beams, 89 Victoria Road, Macclesfield, SK10 3JA

EQUIPMENT

VHF/UHF ACCESSORIES AND AERIALS, PMR equipment and spares, Garex Electronics, P O Box 52 Exeter EX4 5FD www.garex.co.uk Phone 07714 198374

G2DYM ANTI-TVI, ANTI INTERFERENCE AERIALS outperform any other commercial wire aerial. Information, testimonials, Large S.A.S.A.E:- G2DYM, Uplowman, Devon, EX16 7PH. 01398 361215 Anytime.

REPAIRS to all amateur and vintage RX/TX cost effective service phone or call in for details. Medway Aerials rear of 14 Luton Road, Chatham, Kent, ME4 5AA 01634 845073

TRIO 9000 complete with a system base, all in working order £250.00 ono, ADI 147 2mtr fully working. Contact Danny 07753538410

COMPUTER SOFTWARE

SHACKLOG 5.6 – probably the most popular UK written logging software. £32.00. With IOTA addons £42.50. Alan Jubb, G3PMR, 9 Quidditch Lane, Lower Cambourne, CB3 6DD. www.shacklog.co.uk

AMATEUR RADIO ELECTRONICS Colourful, highly interactive - Foundation, Intermediate and Advance! exams. FREE. www.eptsoft.com

MEMORY MANAGEMENT SOFTWARE for YAESU rigs.
FT-817/ND, FT-847, FT-857/D, FT-897/D, FT-7800, FT-8800, FT-8900, VR-5000.
9 South Avenue, New Milton, Hants BH25 6EY. Website: www.g4hfq.co.uk
Email: bob.freeth@g4hfq.co.uk
Phone: 01425 618092

CARDS & DESIGN

QSL FACTORY - quality full colour QSL cards. Single and double sided, ready-made and custom. From £24. Fast turn-round. www.qslfactory.com Large SAE for samples: 13 Lumley Flats, Pimlico Road, London SW1W 8NQ

G4TJB QSL CARDS printed to your specifications, send a large SAE for samples and full product list. Unit 6, Worle Industrial Centre, Coker Road, Worle, Weston-Super-Mare BS22 6BX. Tel/Fax: (01934) 512757.

LZ1YE QSL PRINT SERVICE, prices from £20 per thousand inc. p&p.
One, two, or full colour glossy cards, the choice is yours.
More information via: qsl@qslprint.com or m0mja@aol.com.
Samples at www.qslprint.com

QSL'ERS For all your QSL needs, FREE samples with your callsign. 100 cards form £10.00, Stock cards with overprinting, Shirts and Caps also available. Free quotes Contact Chris MØDOL, PO Box 184, Northampton, NN3 9JH, England

MISCELLANEOUS

-PATENTS - TRADE MARKS - DESIGNS. Kings Patent Agency (Est 1886).J.B.King (G5TA) Regd. Patent & Trade Mark Attorney, 73 Farringdon Road, London, EC1M 3JQ. 020 7404 7788 www.kingspatent.co.uk

BUSINESS CARDS

WATERS & STANTON AUDIO

GENERAL ENQUIRIES: 01702 206835/204965
FREEPHONE ORDERLINE: 08000 73 73 88

HEIL USA- QUALITY AUDIO PRICES DOWN!

HEIL PROSET HEADPHONES & BOOM MICS

New Even Lower Prices!

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.

PRO-SET-PLUS	Large H/phones with HC-4 & HC-5	**£155.95**	B
PRO-SET-PLUS-IC	Large H/phones with IC & HC-4	**£169.95**	B
PRO-SET-4	Large H/phones with HC-4 element	**£109.95**	B
PRO-SET-5	Large H/phones with HC-5 element	**£109.95**	B
PRO-SET-IC	Large H/phones with ICOM element	**£124.95**	B

PRO SET QUIET PHONES £189.95 B

NEW!

* HC-4, HC-5 or Icom elements.
* Noise cancelling on/off
* PTT button
* Phase reversal switch

Transceiver interfaces: (8-pin)
AD-1 Yaesu, Kenwood or Icom **£14.95**
Modular types **AD-1M £14.95**

The latest release from Heil, a traditional boom-mic headset with headphone acoustic noise cancelling to exclude outside noises and phase reversal to improve the received image heard between head pieces.
PSQP-4 (DX) mic capsule **£189.95**. **PSQP-5** (normal)capsule **£189.95 PSQP-IC** (Icom) **£199.95**

SM-1 SHOCK MOUNT

£44.95 B

This shock mount decouples the microphone from the boom and prevents vibration noises. The mic is suspended in an 8-point nylon band and comes with the standard 5/8in - 17mm fitting.

HEIL GOLDLINE HAND MICS

PRICES DOWN

Goldline professional quality dynamic microphone. Three versions available, GM-4 with Studio & HC-4 elements, GM-5 with Studio & HC-4 elements and GM-V Vintage Goldline with Vintage Studio high impedance element, for older valve rigs such as Drake & Collins. Includes stand threaded holder. Requires CC-1 adaptor £29.95 A.

GM-4	Goldline HC-4 hand mic	**£109.95**	B
GM-5	Goldline HC-5 hand mic	**£109.95**	B
GM-V	Goldline Vintage Hi-z hand mic	**£129.95**	B

TB-1 MATCHING DESK STAND

£23.95 A

This smart desk stand perfectly matches the HM stick series of microphones. Base diameter is approx 120mm and total height of stand is approx 110mm.

HEIL CLASSIC DESK MICS

PRICES DOWN

The Heil Classic studio quality microphone, exact replica of the 1930's RCA 74B type of broadcast microphone. Inside it has the benefit of modern technology. Two inserts are provided, one for broadcast studio quality and a choice of one other Heil insert. Includes base stand, soft-touch PTT back panel switch and cover for microphone. Requires CC1 adaptor.

HCL5	Classic retro-look HC-5 desk mic	**£199.95**	B
HCL4	Classic retro-look HC-4 desk mic	**£199.95**	B
HCLic	Classic retro-look IC desk mic	**£199.95**	B

CB-1(H) MATCHING DESK STAND

This desk stand has been designed specifically for the Heil Classic & Heritage microphones.

PRICE DOWN *£49.95 A*

FS-2 PTT FOOT SWITCH

£39.95 B

Ergonomically designed to require less effort to operate. The hinge is under your heel instead of away from your foot. It can control two devices from a single operation.

LINEAR AMP RANGER 811H ATU £945 D

**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 *Size 355 x 240 x 405 mm *Weight 25kg*

The Ranger 811H uses four vertically-mounted 811A valves to produce 800W on the Amateur HF bands. Each band has its own tuned I/P and the O/P Pi network has a nine-position bandswitch for better tuning. To aid tuning there are 6:1 reduction drives on the tune and load capacitors. The valves are cooled by a 120mm, low noise Papst fan which gives excellent cooling but is so quiet that you will hardly know its running. Front panel features include two backlit, flush-mounted meters for plate current and grid current.

AVAIR VSWR/POWER METERS

AV-20	**£29.95 B**
AV-40	**£29.95 B**

- *3.5-150MHz* **(AV-20)**
- *144-470MHz* **(AV-40)**
- *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*

TOKYO HY-POWER HL-100BDX NEW

Turn your QRP rig into a base station transceiver by the addition of this 100W Linear Amplifier.

Following on from the successful HL-50B is the new HL-100BDX. Instead of 50W out you can now get 100W for only 5 or 10W input. The HL-100BDX is ideal for the FT-817, boosts RF out to base station power levels. Powered from 13.8V DC the HL-100BDX is easily attached to your QRP transceiver. Has auto band switching & ALC output. **£429.95 B**

bhi NES10-2 DSP SPEAKER £99.95 B

NES10-2 Combined speaker and programmable DSP unit. Offers dramatic noise reduction, even reduces annoying hetrodynes. 8 Ohms, 8 filter settings, 3.5mm plug, 12-24V DC

NES5 basic plug & go model - **£79.95 B**
A fixed level of DSP noise cancellation with the same dramatic noise & heterodyne reduction.

bhi NEIM1031 £129.95 B

NOISE ELIMINATING IN-LINE MODULE

** Noise attn -20dB (typical) * Noise Attn levels 8 * Audio output power 2.5W RMS max (8 Ohms) * Audio connections: Line level in/out (RCA Phono), Audio in/out 3.5mm mono jack * Line i/p impedance 10K * Line o/p impedance 100 Ohms * Line in sensitivity 300mV -2V RMS * Headphone socket 3.5mm mono jack * Power 12-24V DC 500mA*

WATSON HP-100 HEADPHONES £19.95 B

Excellent lightweight communication headphones with tailored response ideal for the modern tranceiver or receiver.
**8 Ohms 200-9,000Hz *Adjustable headband *3.5mm stereo plug *1/4" stereo adaptor.*

WATSON HP-200 HEADPHONES £22.95 B

Superb headphones with tailored response for radio comms. Excellent sound proofing, can pull in the weak DX.
**Mono 8 Ohm 200-10,000Hz *Padded Ear pieces *3.5mm stereo plug *1/4" stereo adaptor.*

SGC SPECIAL OFFER

Buy an SG-2020 or SG-2020ADSP transceiver with any SGC Coupler (except SG-239) and receive a *FREE* SGC Multimeter (worth £19.99) *PLUS* £30 (inc Vat) *OFF* the price of the pair.

SG-2020 £499.95 C
1.8-30 MHz 1W-20W

SG-2020ADSP £589.95 C
1.8-30 MHz 1W-20W + DSP

PRICES DOWN!

SG-237 Auto ATU

1.8 - 60MHz. 3 - 100W pep (40W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 300mA.

£299.95 c

SG-231 Auto ATU

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

£349.95 c

SG-230 Auto ATU

1.6 - 30MHz. 3 - 200W pep (80W CW). Min wire length, 7m. 50 Ohm feed. Needs 12V at approx 500mA.

£339.95 c

High Sierra "Sidekick" from USA

As featured in Radcom by G3LDO

New 80m-6m Hi-Q variable tune Mobile antenna.

Mounts on 3-way magnetic mount Handles 200 Watts

Supplied with cables and switch box - can run from cigar lighter.

£239.95 C

HS-1800 PRO

80-10m Mobile Antenna

The HS-1800/Pro is High Sierra's very latest version of their "all-band" 80m to 10m variable frequency mobile whip. With a coil nearly 5cm (2in) diameter, and a matching unit built into the Universal Mount Bracket, nothing out performs it and nothing approaches its standard of engineering. This really does radiate a potent signal. With 100 Watts, contacts are as easy as from a base station. The secret is in its amazing efficiency. We measured up to 6dB power gain compared with a simple helical - and you don't have to get out of the car to change bands! **£379.95 C**

WEB ORDERING
www.wsplc.com

PRICE MATCH

THE ONLY THING WE CUSTOMER SERVICE WON'T DISCOUNT

WATSON W-10AM PSU £59.95 C

One of our best selling power supplies due to its versatile spec.
*Output 0-15V DC, 10A
*Over current protected
*Dual meters *3 sets of terminals *Front panel fuse
*Supply 230V AC 50Hz.

WATSON W-25SM PSU £79.95 B

Very popular budget switch mode power supply. *Output voltage 13.8V DC *Output current of 22A (25A peak) *Front panel output terminals *Over current & voltage protection *Quiet operation

WATSON W-25AM PSU £89.95 C

DC power supply for the shack & esp. for use with 100W transceivers. Separate voltage and current meters. *Output voltage 0-15V DC *Output current of 25A (30A peak). *3 sets of output terminals *10A cigar socket. *Over current protection

WATSON W-5A PSU £29.95 B

DC power supply for the shack and low power QRP transceivers.
*Output voltage 13.8V DC
*Output current of 5A (7A peak) *Front panel output terminals *Over current protection

MANSON EP-925 PSU £99.95 C

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

AVAIR VSWR Meters ALL NEW

AV-201 £49.95 B

Ideal for HF and VHF operation. It features high power handling up to 1kW
* 1.8-160MHz * 5W, 20W, 200W, 1kW * Av or PEP

AV-601 £69.95 B

Two sensors used for HF and VHF/UHF operation.
* 1.8-160MHz, 140-525MHz
* 5W, 20W, 200W, 1kW * Av or PEP

AV-1000 £79.95 B

* Covers 23cm * 2 Sensors
* 1.8-160MHz, 430-450MHz, 800-930MHz, 1240-1300MHz
* 5W, 20W, 200W, 400W
* Av or PEP

NEW SGC Master Antenna Controller

MAC-200 £259.95 C *New Low Price!*

* Automatic ATU
* 1.8-60MHz
* 5-Way Selector
* Coax or Balanced
* Long Wire

The MAC-200 will work with any HF transceiver up to 200W output. It has 3 outputs for coax and one each for wire and balanced - all switch selected. 168 revolving memory bins lets it remember for quick QSY. With an impedance range from 2 - 5000 Ohms, and built-in VSWR and power metering, it is all you are ever likely to need! Requires 12V DC.

WEST MOUNTAIN RIGBLASTERS

RIGblaster pro	Data interface 8-pin/mod, Cd & cables	**£209.95**	B
RIGblaster Plus	Data interface 8-pin/mod, Cd & cables	**£119.95**	B
RIGblaster M8	Data interface 8-pin, software & cables	**£89.95**	B
4T8-KIT *NEW*	Conversion Kit from M8 or Plus to 4pin	**£19.95**	A
RIGblaster nomic	Data interface 8-pin/RJ-45, software & cables (Extra Cables available.)	**£59.95**	B
FT100-CBL	Adapts all units to FT100 input	**£12.95**	A
RB-CD	Standard RIGblaster program CD	**£9.95**	A

FREQUENCY COUNTERS

WATSON

The **FC-130** is an ideal frequency counter for the shack, mobile or portable use. Supplied complete with Ni-Cads, charger and telescopic whip.

Super Searcher	RF finder & freq. cnter 10MHz-3GHz	**£99.95**	B
Super Hunter	Frequency counter 10Hz-3GHz	**£149.95**	B
Hunter	Frequency counter 10MHz-3GHz	**£49.95**	B
FC-130	Frequency counter 1MHz-3GHz	**£59.95**	B

OPTOELECTRONICS

Top-of-the-range product from Optoelectronics, the **X-Sweeper** is a fully featured nearfield receiver that displays frequencies analogue signals in spectrum format on a 64x128 graphical display. It has 20 memory banks storing 100 freqs in each.

X-Sweeper *NEW*	Nearfield Receiver 30MHz-3GHz	**£1399.95**	C
Xplorer	Freq. cnter / CTCSS/DTMF decode	**£659.95**	B
Digital-Scout	Digital Freq. counter 60MHz-2.6GHz	**£429.95**	C
Scout	Freq. finder 10MHz-1.4GHz	**£299.95**	B
M1	Freq. cntr 50Hz - 40MHz	**£229.95**	B
M1-TCX0	M1 + temp controlled crystal oscillator	**£249.95**	B
Cub	Mini counter 1-2.8GHz	**£129.95**	B

COAX SWITCHES

CS-600 2-way coax switch rated over 1kw (HF) and up to 600MHz @100W. Fitted SO-239 sockets. **£12.95 A**

MFJ-1704 4-way coax switch rated over 1kw (HF) and up to 600MHz @100W. Fitted SO-239 sockets. **£69.95 A**

CON-K COAX CONNECTOR KIT £49.95 B

Kit comprises:

2 x N sockets	2 x N plugs
2 x BNC sockets	2 x BNC plugs
2 x SO-239 sockets	2 x PL-259 plugs
2 x SMA sockets	2 x SMA plugs
2 x mini UHF sockets	2 x Mini UHF plugs
2 x TNC plugs	2 x TNC sockets
	6 x interconnectors

The kit comprises a set of coax cable connector adaptors. Six threaded interconnectors enable any of the supplied plugs and sockets to be assembled back to back to form the adaptor of your choice. The centre pins of all the connectors are gold plated.

W2IHY 8-BAND GRAPHIC EQUALISER NEW

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.

- *8-Band Graphic Equaliser (Bands below)*
- *59/100/200/400/800/1600/2400/3200Hz*
- *Noise Gate (adjustable level/delay)*
- *Mic input impedance 200/600 Ohms or High*
- *Headphone monitor*
- *LED level indicators*
- *Input: 8-pin, phono or XLR*
- *Straight through options*
- *Supply: 12V DC*
- *DC cable included*
- *Size 207 x 70rear/40front x 130mm*
- *Weight 750g*

Output leads for Yaesu, Kenwood or Icom £19.95

£229.95 C

NEW New Tailored Audio Base-Station Speaker

Designed for radio communications and speech. This heavy duty unit is built into a black cast alloy case and has a tailored frequency response which is ideal for SSB. It matches the colour of branded HF transceivers and is supplied with 3.5mm lead.
Size 12W x 18H x 11D cm.
Weight 0.85kg.

SP-2B **£29.95 C**

New Graphic Equaliser & Mixer 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.**

£54.95 C

In/out adaptor sets for 8-pin mics: K-802, Y-802, I802 £19.95

WATSON NEW W-25XM £99.95

Carriage £10

New compact, variable voltage, switch-mode power supply. About the size of an IC-706, this hunky low-noise supply will power any 100 Watt transceiver. Weighing just 1.65kg it operates from either 230V or 115V AC.

*9.7 - 17V DC (13.8v notch)
*Input 230V or 115 AC
*25 Amps peak
*22 Amps continuous
*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

PERFECT PARTNERS

FC-40

Automatic Matching 100 Memory Antenna Tuner

Automatic Matching for FT-857/897

Compact Size 236 x 175 x 53mm

Rugged Waterproof Case

100W Power Handling

FT-857

Ultra Compact

Rugged, High Output

High Resolution Display

High Performance Receiver

Wide RX Frequency Coverage

Enhanced Performance (DSP)

HF, 50MHz, 144MHz and 430MHz

YAESU

Choice of the World's top DX'ers

www.yaesu.co.uk