www.rsgb.org

The Radio Society of Great Britain Members' Magazine

RadCom

0705

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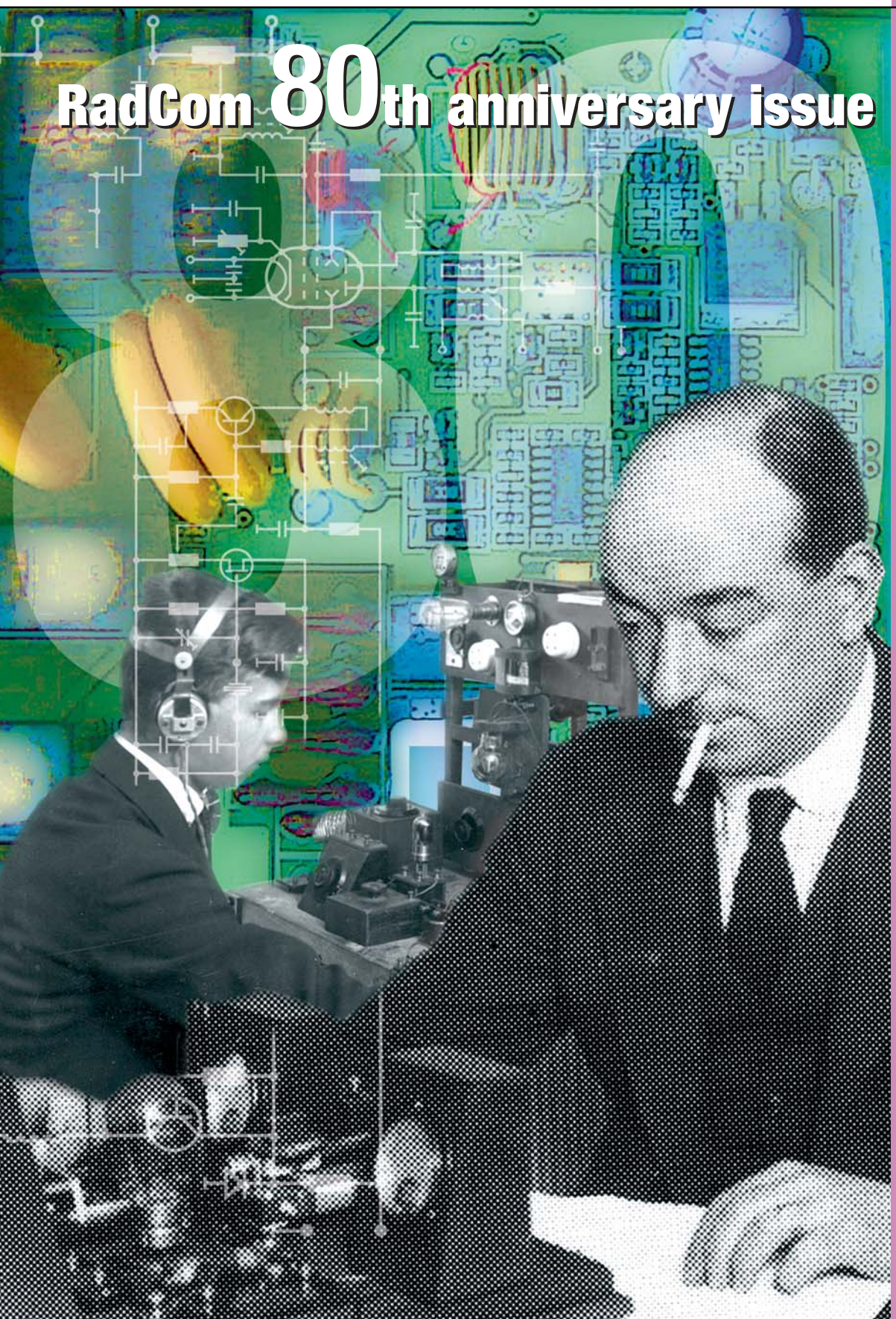

RadCom 80th anniversary issue

INSIDE


T. & R. BULLETIN

THE RADIO SOCIETY OF GREAT BRITAIN.

GAMBRELL WAVEMETER

TYPE C

Complete as Illustrated £4 10s.

GAMBRELL BROS. LIMITED.

FREE INSIDE
Facsimile copy of Volume 1 Number 1 of the *T. & R. Bulletin* from July 1925

WATERS & STANTON UK'S L

New Matlock Opening Hours: 9am-5pm Tuesday to Friday, 10am-4pm Saturday, Closed Monday

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Panasonic RF-D1
DAB / FM Radio

We have purchased Panasonic UKs entire "B" stock inventory and are offering them at a really crazy price. Includes all accessories and **Panasonic UK's 12-month warranty**

This is a current model and normally sells for £99.95.

This item is only available from Hockley store

£69.95

Carriage £6.00 **SAVE £30!!**

PRICEMATCH!

We will match or beat any UK advertised price on UK sourced and UK guaranteed stock. Items must be in stock with the competitor and brand new - not B-Stock or old stock clearance.

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Go to www.wsplc.com then click on the link to our eBay shop

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OR

29.8% APR REPAY £31.53 PER MONTH FOR 36 MONTHS, AFTER THE 12 MONTH PERIOD . TOTAL AMOUNT DUE £1135.08. INTEREST IS CALULATED FROM THE DATE OF THE AGREEMENT.

ALL FINANCE SUBJECT TO STATUS WRITTEN QUOTATION ON REQUEST.

W&S CLUB CARD

Interest Free up to five months! PLUS

Get free entry to any rally we attend up until 30th September 2005. Simply pay your admission then come to the W&S stand and show us your ClubCard and we will reimburse your money!

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

SPECIAL OFFER

WISP-150 £16.95 ~~£22.95~~

AC Inverter DC - 230V 150 Watts!
Now you can run all your AC mains adaptors, laptop, and other small supplies from your car! Just plug into cigar connect to 13 Amp socket on WISP-150. Much cheaper than dedicated 12V adaptors for every item you own!!

W-50 £39.95 ~~£49.95~~

Dual-Band Colinear 2m/70cms
Take advantage of this special price on this fibre-glass base antenna. 4.5/7.2dB gain 1.8m long, 200W capacity - SO-239 plus mounting bracket

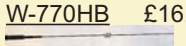
WSMA-7000 £9.95 ~~£14.95~~

2m/70cm Handy Antenna
Get the power and efficien-cy of this antenna - replaces standard antenna. SMA fit 18cm long 10W handling.

WHX-7000 £9.95 ~~£14.95~~

2m/70cm Handy Antenna
Get the power and efficiency of this antenna - replaces standard antenna. BNC fit 18cm long 10W handling.

W-770HB £16.95 ~~£24.95~~



Dual Band 100W Mobile Antenna
This is a highly efficient mobile antenna 2m/70cms 3/5.5dB 1.1m long. PL-259 base.

W-627 £24.95 ~~£34.95~~

6m/2m/70cms
2 - 7dB gain!
A magnificent triple band antenna 1.6m long 120W power handling. PL-259 base

WEP-501 £16.95 ~~£24.95~~

Earpiece with boom mic.
Yaesu Kenwood or Icom versions. Swivel boom, Earbud and Clip, In-line PTT, Very lightweight. Fittings for all modern rigs - same price!

WCT-421

£14.95 ~~£19.95~~

Lapel Talker
Beige coloured earpiece with in-line microphone and PTT. Clips on lapel or pocket. Fitting s for all modern handhelds

These offers end 31st July 2005
All subject to stock availability

FAST SAME-DAY DESPATCH

www.wsplc.com

GREAT AFTER-SALES SERVICE

FREEPHONE ORDER LINE 08000 73 73 88

NEW HANDS-FREE MOBILE SYSTEM

Supplied with easily detachable lead to match your radio - so you can change radios in the future with ease!

Delivery expected in July

More Great Ideas!

£39.95

Code WM-S

An economical way of staying legal. Flexible boom microphone mounts under sun vizor bolt and PTT box mounts on gear changer. All powered from rig mic socket!

PTT Box

Icom
HF Transceivers

ICOM IC-756 PRO MkIII

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

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

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

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

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

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

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

Going HF Mobile?

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

Kenwood
HF Transceivers

KENWOOD TS-2000

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

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

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

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

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

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

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

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

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

Yaesu
HF Transceivers

YAESU FT-1000 MKV

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

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

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

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

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

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

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

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

FT-817DSP £589 C

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

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

LOWEST PRICES

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Icom
VHF/UHF Mobile/Base

ICOM IC-E208

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

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

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

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

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

Kenwood
VHF/UHF Mobile/Base

KENWOOD TMD-700E

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

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

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

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

Yaesu
VHF/UHF Mobile/Base

YAESU FT-7800E

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

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

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

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

Watson
Mini Mag Antenna

WSM-270 **£19.95 B**

Dual Band 2m/70cm mobile whip. 2.5dB gain and 1.5:1 VSWR.).8m long. Complete system including 3.5m cable. No drilling involved. Powerful micro magnet in base. Simple and very effective.

Icom
VHF/UHF Handhelds

ICOM IC-E90

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

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

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

Kenwood
VHF/UHF Handhelds

KENWOOD TH-F7E

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

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

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

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

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

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

Yaesu
VHF/UHF Handhelds

YAESU VX-7R

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

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

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

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

Alinco
VHF/UHF Handhelds

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

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

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

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

Linear Amp UK
HF Linear Amplifiers

RANGER 811H

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

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

Ameritron
HF Linear Amplifiers

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

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

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

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

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

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

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

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

SGC
HF Linear Amplifiers

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

Yaesu
HF Linear Amplifiers

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

Tokyo Hy-Power
HF Linear Amplifiers

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

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

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

NEW STOCK & OFFERS

W&S European Locator Map

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

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

YAESU FT-60E

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

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

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

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

Watson
Mobile Antenna's

ANTENNAS

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

BASES

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

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

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

WATERS & STANTON

Freephone Orderline
08000 73 73 88
Enquiries 01702 206835
www.wsplc.com

UK'S LOWEST PRICES!

NEW STOCK & OFFERS

MANSON SDC-2010

NEW

£9.95 A

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

POCKET MORSE READER

MFJ-461

Reads CW
Just hold near receiver speaker

£84.95 B

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

SG-2020ADSP QRP 20W HF Radio

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

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

£589.95 B

Antenna Accessories

Dipole Bits

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

Diamond 50 Ohm Balunas

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

Antenna Traps (pairs)

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

German Made High Quality Baluns

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

Remote 4:1 1.5kW Balun

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

Patch Leads

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

SGC External Auto ATU's

SGC SG-231

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

£349.95 C

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

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

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

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

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

Icom External Auto ATU's

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

Alinco External Auto ATU's

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

MFJ Internal Auto ATU's

MFJ-993

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

£249.95 C

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

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

SGC Internal Auto ATU's

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

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

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

Yaesu Internal Auto ATU's

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

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

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

Icom Internal Auto ATU's

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

Kenwood Internal Auto ATU's

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

Cushcraft HF Antennas

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

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

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

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

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

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

MA5B
£369.95 C

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

Diamond HF Antennas

DIAMOND CP6

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

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

£239.95 C

Radio Works HF Antennas

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

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

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

CWS-80 £109.95 C

Compact 7-band 80m - 10m dipole with 22ft vertical radiating feeder. 1.5kW. Balun fed. 66ft long.

G5RV Plus £59.95 C

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

Hustler Base Antennas

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

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

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

Butternut Antennas

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

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

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

Buddipole Products

HF Portable at its Best

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

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

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

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

Super Antennas

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

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

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

High Sierra Mobile Whips

HS-1800/PRO
£379.95 C

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

SIDEKICK As used by Peter Waters G3OJV/M
£249.95 C

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

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

RadCom
RADIO COMMUNICATION

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RSGB MEMBERSHIP – Annual Rates

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Special arrangements exist for blind and disabled persons. Details and membership application forms are available from RSGB HQ.

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

JULY 2005

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RSGB matters

OFCOM CONSULTATION ON FUTURE OF LICENSING

The RSGB welcomes the statements made by Ofcom in its consultation on a proposal to reform amateur radio licensing which recognise the important role amateur radio plays in providing the stimulus for technical careers and the part radio amateurs play in radio communications research and development. They also pay tribute to the work of radio amateurs during emergencies such as the Boxing Day tsunami in South-East Asia [see *RadCom* May 2005 p31 - *Ed*]. This is a very welcome change of tack by Ofcom, who earlier this year failed to recognise the role amateur radio and radio amateurs play in the field of technology and in the service they provide to the community at large.

The consultation runs until 18 August and whilst urging all amateurs to take part in the consultation, the RSGB also asks amateurs to take some time to digest the contents of the document before responding to Ofcom. The RSGB will be providing guidance notes to assist amateurs. These notes will be published on the RSGB website. Copies of the consultation can be obtained from Ofcom post free by ringing 020 7981 3000.

♦ The RSGB Spectrum Forum has published responses to Ofcom on the subject of 24GHz car radar on its website at www.rsgb-spectrumforum.org.uk/

REGIONAL MEETINGS IN JULY

Important regional meetings on the future of amateur radio licensing will be held in July. The meetings will be presented by RSGB President Jeff Smith, MI0AEX; and/or General Manager Peter Kirby, G0TWW, with the Regional Teams.

The RSGB believes that amateur radio could be at a 'crossroads' in its history and wants to involve all amateurs in the discussions and to canvas their views. The meetings will be open to everyone, members and non-members alike. We would like your input and views on this issue, so be sure not to miss this very important event in your region. Refreshments will be available. The timetable is as follows:

5 July, Region 3 Preston Meeting: 7.30pm at Tickled Trout Hotel, Preston (near M6 junction 31)

6 July, Region 3 Manchester Meeting: 7.30pm at Astley & Tyldesley Miners' Welfare Club, Meanley Road, Astley, Tyldesley, Manchester.

7 July Region 9 London Meeting:, 7.30pm at Whitton Community Centre, Percy Road, Whitton, Twickenham.

12 July, Region 12 Maidstone Meeting: 8.00pm at YMCA Sports Centre, Melrose Close, Maidstone, Kent.

14 July, Region 12 Peterborough Meeting: 7.00pm at National Centre for Deaf-blindness, Cygnet Park, Hampton, Peterborough.

19 July Region 10 Hampshire Meeting: at Bishop's Waltham, Hants (yet to be confirmed at the time of going to press, please listen to / look at GB2RS news or contact Region 10 Manager Ivan Rosevear, G3GKC QTHR, or e-mail: ivangkc@btinternet.com)

20 July, Region 5 Birmingham Meeting: 7.30pm at the Great Hall, Old Swinford Hospital School, Heath Lane, Stourbridge, West Midlands.

25 July, Region 11 Cornwall Meeting: 7.00-9.30pm at Penhaligon Building, Cornwall College Camborne, Trevenson Rd, Pool, Redruth, Cornwall.

26 July, Region 11 Exeter Meeting: 7.00pm at the Gipsy Hill Hotel, Gipsy Hill Lane, Monkerton, Exeter.

27 July, Region 11 Bristol Meeting: 7.00-10.00pm at the United Reform Church, Rock Street, Thornbury, Bristol.

28 July, Region 7 Swansea Meeting: 7.30-9.30pm at Main Engineering Building, Swansea University, Swansea.

RADCOM IS 80!

Our cover photograph this month shows J A J Cooper, 5TR, the editor of the first *T. & R. Bulletin* in July 1925 (in the days when smoking was somewhat more socially acceptable than it is today!) This July 2005 issue of *RadCom* therefore marks the 80th anniversary of the RSGB's members' magazine.

The first *T. & R. Bulletin* was a slim 12-page publication (with a cover consisting of four pages of advertising), a far cry from the 100 full-colour pages of today's *RadCom*. To mark this anniversary, we are republishing *T. & R. Bulletin* Volume 1, Number 1 with this issue of *RadCom*, for today's generation of radio amateurs to keep as a souvenir.


T. & R. BULLETIN
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THE TRANSMITTER AND RELAY SECTION
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THE RADIO SOCIETY OF GREAT BRITAIN.
53, Victoria Street, S.W.1
For "T. & R." Members Only. No. 1—July, 1925. Price 1/-
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The *T. and R. Bulletin*, Vol 1, No 1, free inside this issue of RadCom.

To complement this, we take a look back at the launch of the *T. & R. Bulletin* (page 35) and feature an article by Pat Hawker, G3VA, who discusses the early days of the Amateur Radio Service (page 30). Bringing us bang up to date, we take a look at the KK7P DSP board which can be used to learn about DSP technology (page 18) and a practical, if experimental, receiver project using this DSP board (page 78).

Here's to the next 80 years!

HFC2005

The RSGB HF Convention Committee has just released the provisional programme for this year's Convention which takes place from Friday 7 October to Sunday 9 October at the Gatwick Worth Hotel. Details can be found at www.rsgb-hfc.org.uk Tickets are now on sale at prices even lower than last year!

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

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

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

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

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Peter Kirby, FCMI, MISM, G0TWW

HONORARY TREASURER:
Position vacant

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Details of the Society's volunteer officers can be found in the RSGB Yearbook 2005

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

RSGB HQ IN IARU CONTEST

Once again a team of operators in 10 different locations around the UK will represent the Society as GB5HQ (www.gb5hq.com) in the IARU Radiosport contest on 9 / 10 July. An article in the July 2003 *RadCom* described the first multi-multi GB5HQ operation, but the team now faces increasingly tough competition from Poland and France as well as German HQ station DA0HQ, who are frequent winners of the contest. A key to DA0HQ's success has been the incredible number of German stations that come on and work their HQ station. The organisers of the RSGB entry ask for as many stations as possible to contact GB5HQ on all bands 160 to 10m, SSB and CW, during the 24-hour contest period starting at 1200UTC on 9 July. If you call GB5HQ on one band / mode the operator should be able to let you know the frequencies of the other stations operating as GB5HQ. Awards are available for working GB5HQ on three, six, nine and all 12 band / mode slots. New QSLs will be produced and all direct, bureau or e-mail requests will be honoured (direct QSLs to G3TXF, QTHR).

NEW COMMITTEE CHAIRMEN APPOINTED

Two new RSGB Committee Chairmen have recently been appointed. The new Chairman of the Repeater Management Committee (RMC) is John McCullagh, MBE, GI4BWM, while the new chairman of the Amateur Radio Direction Finding (ARDF) Committee is Bob Titterington, G3ORY.

Former RMC Chairman Carlos Eavis, G0AKI, and interim RMC Chairman Andrew Barrett, G8DOR, as well as former ARDF Chairman Geoff Foster, G8UKT, are thanked for their years of service to the RSGB.

TRADE ORDERS ONLY

It has been brought to our attention that Mushroom Components, mentioned in the May 'WWW' (p66), supply components to the trade only and not to individuals. On behalf of the author, Jeremy Boot, G4NJH, we apologise to readers who have tried to order and to Mushroom Components for being inconvenienced by these enquiries.

NOMINATIONS INVITED FOR LF EXPERIMENTER'S AWARD

Nominations are invited for the LF Experimenter's Award, also known as the Nevada Cup from its sponsor Nevada Communications Ltd. The award is for the most significant contribution by an RSGB member towards scientific or engineering development of receiver and / or transmitter design, modulation technique or propagation on the 136kHz amateur band. Nominations must either be a full description of the work or references to where it is published, and must indicate aspects that are original. Nominations should be addressed to 'Nevada Cup' at RSGB HQ, or preferably e-mailed to John Gould, G3WKL, at g3wkl@btinternet.com by Monday 5 September. Full details of the award, and its past winners are at www.rsgbspectrumforum.org.uk/Nevadacup.htm

VHFCC VACANCY

After many years of service to VHF Contesting, the work / contesting balance has finally become too much for Steve Redfern, G4AEQ, and he has chosen to step down from the VHF Contests Committee. Sincere thanks to Steve for all the time and effort he has given. This leaves a vacancy on the VHFCC for an enthusiastic and active contester who is keen to help the Committee grow the participation levels in VHF contesting. The new committee member will be responsible for adjudicating a selection of contests and will join in the regular discussions around rule setting and the day-to-day management of VHF contests. Access to the Internet is essential as almost all committee work takes place by e-mail and a basic degree of computer literacy is needed to run the computer-based adjudication process.

If this excites you, please send an e-mail to the VHFCC Chairman, Andy Cook, G4PIQ, chairman.vhfcc@rsgb.org.uk, including a brief summary of your contesting experience and what you think you would bring to the role. You can also reach Andy by telephone on 0870 740 7909 most evenings and weekends.

RSGB BACK AT NEC

The RSGB West Midlands regional team held a bookstall at the National Vintage Communications Fair at Birmingham's NEC on 1 May. The event was well attended with most visitors to the stand welcoming the return to the event after a period of absence of over 10 years. The RSGB bookstall was manned by Mike King, G8XDX, DRM for Hereford and Worcester; Arnold Matthews, G3FZW, DRM for Shropshire and Staffordshire, and Roy Clarke, G8AYD Regional Manager, West Midlands.

The event is held twice yearly, and we will be attending the next event at the nearby National Motorcycle Museum (rebuilt after the recent fire) on 2 October, where it is hoped to put on a working demonstration of a vintage amateur radio station. The regional team will furnish a contemporary operator in the form of Arnold Matthews, G3FZW, DRM for district 51, who recently celebrated his 90th birthday, and is probably the oldest active volunteer of the Society.

If any member can help with this project, please contact the West Midlands Regional Manager, Roy Clarke, G8AYD, tel: 01952 820 838 or e-mail: g8ayd@rsgb.org.uk

PHOTO PETER BRAIDWOOD, M1TCP.

The RSGB stand has Arnold Matthews, G3FZW; Mike King, G8XDX; Peter Braidwood, M1TCP (all DRMs) and Roy Clarke, G8AYD, Regional Manager.

CONGRATULATIONS!

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

Cary Massey, M3DDB; Lewis Larkins, M3FZJ; Trevor Parsons, M3GQV; Karyn Andrews, M3GSJ; John Ferris, M3HUQ; Peter Cox, M3IKK; Alan Emmerson, M3IQX; Rodney Chapman, M3KCK; John Knott, M3KNJ; John Naylor, M3NTT; Pamela Batson, M3PBN; Stephen Inman, M3SBJ; Philip Probst, M3SKN; Stephen Bryan, M3TIV; Andrew Hayes, MI3FVP; Ralph Gault, MI3IID; Steven Montgomery, MI3SHM; Derek Gartshore, MM3HLH; Robert Towers, MM3KDZ; Iain McGlynn, MM3VLF; Edward Burton, MW3GZC; Martin Allen; Vivian Bowkett; Patrick Duckles; Joseph Fletcher; Stephen Gilmour; Andrew Hodgkinson; Andrew Nall; Keith Raistrick; Andy Richardson; Geoffrey Whittle; Havie William; Ronald Williamson.

Congratulations also to the following RSGB members who successfully upgraded to the Full licence by taking the Advanced exam on 17 May:

Glyn Henshall, 2E0AVV; Robert Killington, 2E0AXO; Alistair Morrell, 2E0AYN; Michael Shurley, 2E0AZE; Alan Penzer, 2E0DFX; Edward Erbes, 2E0EFE; Geoff Murphy, 2E0GCX; Paul Hickman, 2E0HKN; Ken Hawes, 2E0KLH; Mark Bull, 2E0MHI; Nigel Warner, 2E0NWW; Peter Oxby, 2E0PJO; Bernard Lupton, 2E0RXZ; Steven Elliott, 2E0SEL; Marc Giffin, 2E0SRA; Eoin Russell, 2E0STS; Trevor Hurren, 2E0TAH; Samuel Traynor, 2I0JBT; James Morris, 2M0AYL; Carl Taylor, 2M0TYR; John Wilson, 2M0VEG; Madeline Roberts, 2W0MCR; Lee Jessup, 2W0ROK; John Hine; Damien Hardy.

Apologies to Barry Cooper, whose callsign was M3OOC, and not as published in the June *RadCom*. Also to Robert Stokes, 2E0RWS, who upgraded from Intermediate to Full licence by taking the Advanced exam on 16 March and whose name was omitted from the listing in the June *RadCom*.

RADIO COMMUNICATIONS FOUNDATION

July: a busy month for GB4FUN

Scientific community launches GB4FUN-type 'Lab in a Lorry' to raise profile of science in schools.

GB4FUN will be at the AMSAT-UK Colloquium at the University of Surrey in Guildford from 29 to 31 July. This is one of the few opportunities during the course of the year for all radio amateurs to see the GB4FUN van in action. At most of its engagements, GB4FUN is visiting schools and colleges, which are, of course, not open to the general public.

Earlier in the month, GB4FUN is at Downdales School in Cumbria (4 July); Harrington Primary School, Cumbria (7 July); Thornhill Primary School, Cumbria (8 July); Eggbuckland Commercial College, Plymouth, Devon (14 July); Dover School, Kent (18 July); and Pontlanfraith Comprehensive School, South Wales (20 July).

GB4FUN with the AMSAT-UK Colloquium delegates at the University of Surrey in 2004.

LAB IN A LORRY

It looks like the scientific community has been copying the idea behind GB4FUN in an attempt to increase awareness of science in schools. The website www.labinalorry.org.uk describes the 'Lab in a Lorry' programme, a partnership between the Institute of Physics and the Schlumberger Foundation.

Lab in a Lorry is a fleet of three mobile science laboratories intended for young people. The scheme was launched on 18 May at the Institute of Physics in London. Designed to inspire the next generation of scientists and engineers, Lab in a Lorry will offer 11 - 14 year olds the opportunity to explore science through specially created interactive experiments. The three 44ft lorries will visit schools, youth organisations, supermarket car parks, major events, and communities free of charge across the UK and Ireland from 2005 onwards. Each lorry is a self-contained experience - it rolls up and is ready to go, just like GB4FUN.

Each lorry is fitted with three distinct lab areas where groups of up to six young people can take part in each of the fun and informative experiments. The programme is delivered by volunteers - all practicing scientists and engineers. These are the Lab in a Lorry's greatest asset: working physicists who are willing to share their time, enthusiasm and knowledge of science with young people.

Schools, youth organisations and communities can invite Lab in a Lorry to visit them through the website www.labinalorry.org.uk, which also contains information on how to become a volunteer. ♦

Supporters of the Radio Communications Foundation

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

RCF 'Big Hitters'

J W Bluff, G3SJE
Lincoln Short-Wave Club

A K Hamer, 2E0AKH
M Walsh, 2E0AYQ
S Palmer, 2E0ESP
C T Ashley, AA4A
H K Gall, DK3YD
G Beuche, DL6AB
V Climente Valero, EA5OO
D K McDermott, EI4DW
D S S Fraser, G0BDL
D G Hooper, G0CYU
J A Frost, G0DCR
E Webster, G0ERN
R J Baldock, G0FFQ
J A Pears, G0FSP
E R Flower, G0GCN
J R M Bumford, G0GTN
W G C Bowles, G0KCZ
Peterlee Radio Club, G0KVJ
V Denecker, G0LMX
Mrs S F Poulter, G0PNT
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M J Crimes, G0RCY
A D Heeles, G0RWB
R E Fisher, G0UEB
S H Barthorpe, G0UVM
C L Thomas, G0VTE
D J Austen, G1EHF
T Mitchell, G1JZY
M G Foulkes, G1XJV
L J Mackenzie, G1XUO
B L Underhay, G1YES
Appledore & DARC, G2FKO
K B Levitt, G2FSJ
B G Meaden, G3BHT
W J Omer, G3DOJ
B O Leach, G3DXY
B D Ivory, G3EYB
G A Livesey, G3FIB
P J Simpson, G3GGK
B Hummerstone, G3HBR
A D Brooks, G3IDB
H A Gray, G3LTT
A R W Cake, G3MOJ
G L Quarterman, G3NHX
J H G Allsop, G3OGX
D W Trowell, G3RML
H L W Bellfield, G3SBV
R A Bravery, G3SKI
M L Baker, G3SUK
D S Woods, G3TGC
A Turner, G3UFP
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D A Bailey, G3ZNR
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G W Hibberd, G4OTX
A A E Carter, G4TBR
C E Jay, G4TDR
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S A Vaughan, G4WXC
M H Day, G4ZKI
J H Broughton, G4ZSV
S J Cocks, G4ZUL
H R Heap, G5HF
B W Staton, G6UJI
R M Saunders, G6VAX
J T Pinson, G6VJN
W Carter, G6WSX
N F Daniels, G6WYH
T Jarvis, G6XTZ
A H Mutimer, G6YYU
S Hughes, G6ZVU
A R Grundy, G7DEC
A Chauhan, G7OEQ
M A King, G7SFD
D H Hardy, G8AJA
K Holdway, G8DYI
P F T Redman, G8ELX
W J Pearce, G8OJR
A Philips, G8PVI
N R Doe, G8TBU
A J Wills Browne, GD4XWB
M H McFadden, GI3VCI
J H Sander, GI4BUJ
W J Watson, GI4NRB
E E Richey, GI8LDM
C Urquhart, GM3JUD
W McGill, GM3LGM
D W Clouting, GM3YGS
A L Dick, GM6KKP
J W Struthers, GM8CVN
J M Thomson, GM8GUX
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A R Pursglove, M0TRP
Z Ritter, M0ZOL
A Ruston, M1AZG
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Mrs E M Wheeler, M3DPM
H J Edwards, M3HCX
M Morton, M3XIS
A D Waddington, M5AMN
G B Allison, M5GBA
K Sharples, M5KEN
S H P Spence, MM0DGI
W P Mc Conachie, MM0WPM
T M D MacDonald, MM3GOE
J Robinson, MW3KHY
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T Coates, RS177805
S G Jeynes, RS180563
K McCarthy, RS185961
G D Mills, RS185975
P Weymouth, RS186112
E G Biggerstaff, RS21990
D E Buchman, RS93222
L Olsson, SM3AVQ
A C Doty Jr, W7ACD

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.

Great Titles

£16.14 plus p&p

Shortwave DX Handbook

By Enrico Stumpf-Siering, DL2VFR

The DX Bible!

This indispensable book is a goldmine for anyone interested in DXing or operating on the HF Bands. Originally published in German the Shortwave DX Handbook is a bestseller that has been expertly translated into English by Martyn Phillips, G3RFX.

Starting from the question "So you want to be a DXer?" and tackling subjects such as how to really listen, pile-up techniques (both on CW and SSB), DX information (Clusters, bulletins, websites, news broadcasts), propagation etc, the 'Shortwave DX Handbook' is full of useful information and techniques for the newcomer and the experienced DXer. Over 400 pages comprise what must be one of the most comprehensive amateur radio guides ever published. Virtually every conceivable piece of information the HF operator or DXer is ever likely to require is here from "DX etiquette" to "how to". This book also contains extensive appendices covering subjects such as Morse code; phonetic alphabets and numbers; NCDXF beacons; IARU band plans; CEPT licensing information; ITU country prefixes; DXCC entities; Russian prefixes and districts; IARU member societies' names, addresses and websites; overseas QSL bureaus and much more.

Expertly written and compiled this book is the modern reference work for beginners or old hands who chase DX on the HF bands. The 'Shortwave DX Handbook' has its place in every DXer's shack and DXpedition suitcase.

418 pages, 210 x 147mm, paperback ISBN: 3-88692-045-3
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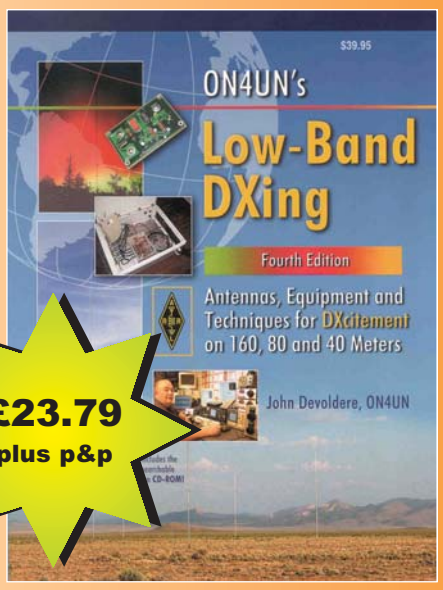

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Contesting in Africa

This is Roger Western's second book associated with HF DX and contesting. Roger is probably the UK's best-known CW DXpeditioner and contest operator. Together with some buddies from the USA and the UK he formed the 'VooDoo Contest Group', a loose formation of like-minded individuals who have operated the CQ World Wide DX CW contest from different locations in West Africa each November for the past 10 years. This book is not a series of DXpedition articles; rather it is a record of the group's combined wisdom gleaned through almost a complete sunspot cycle-worth of radio activity from the tropics. There are chapters on multiplier-hunting, logging accuracy and pile-up tactics.

190 pages, Size: 228 x 151mm, paperback.
ISBN: 0-9617577-4-4 Non members price £11.99 plus p&p

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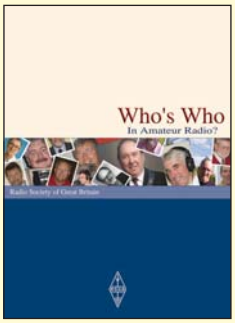

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This book provides a comprehensive guide to operating across the amateur radio spectrum. Packed with information and tips this book has long been a standard reference work found on the bookshelf of radio amateurs.
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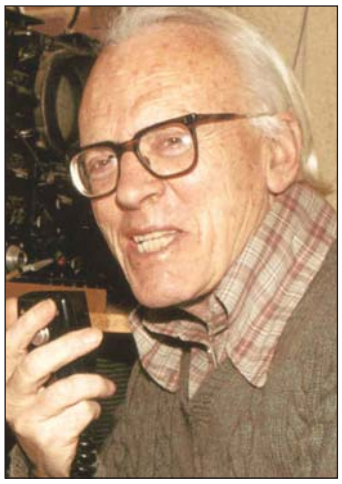


Les Moxon, G6XN, inducted posthumously into the CQ Amateur Radio Hall of Fame.

CQ Hall of Fame

The American *CQ Amateur Radio* magazine announced on 22 May the induction of 17 new members into its Amateur Radio, Contesting and DXing 'Halls of Fame'. Among the new members of the Amateur Radio Hall of Fame are the late Les Moxon, G6XN, well-known antenna experimenter and author of the RSGB book *HF Antennas for All Locations*, and Phillip Smith, 1ANB, the inventor of the Smith chart.

MSF to continue until at least 2017

The MSF standard frequency and time signal is one of the most widely used sources of time in the UK. It is transmitted on behalf of the National Physical Laboratory by BT plc from its Rugby Radio Station on 60kHz. The current contract to broadcast the signal finishes at the end of March 2007, and recently the DTI has commissioned studies to consider the longer-term future of the signal. As a result, DTI has given the go-ahead for NPL to procure the MSF broadcast for a further 10 years. It is possible that MSF will need to be transferred to another site, but if that proves to be the case, a key aim will be to ensure that reception is the same or better than it is at present over the whole of the UK.

Raynet in Welsh tunnel exercise

Gwent and South Glamorgan Raynet Groups have participated in an exercise based around the 2km-long Caerphilly railway tunnel. It was part of a Network Rail Joint Agency Emergency Planning Group exercise dealing with major incident control and management in the tunnel. The exercise, involving participants from British Transport Police, South Wales Police, Gwent Police, South Wales Fire and Rescue Service, Welsh Ambulance Service and Network Rail, allowed all the participants to test communications both inside and on the tunnel approaches. Arriva Trains (Wales) provided the train for the event.

Previous experience on 70cm and 23cm suggested that the higher band was better for tunnel communications and this was confirmed by Raynet at Caerphilly. 1297.375MHz FM was used with the on-train operator using a 0.5W handheld with its own integral antenna. The operators at Caerphilly used a 0.5W handheld to 5/8-over-5/8-wave mobile aerial and magnetic mount on the overbridge. The operators at Cefn Onn station used a 1W mobile to an 11-element vertically-polarised Yagi aimed directly at the Lisvane-end tunnel portal. General external links between sites used 145.225MHz and 433.775MHz FM. Communications to and from the train used only 23cm and were maintained throughout all train movements.

The exercise was later repeated with different 23cm equipment and the Gwent and South Glamorgan Groups were again able to prove to User Services their tunnel communications ability.

♦ A further constructive meeting took place at the beginning of June between representatives of Raynet, the Central Sponsor for Information Assurance (CSIA) and the Civil Contingencies Secretariat (CCS). The purpose of the meeting was to review the action points from the first meeting in December and to report on progress to date.

Telford rally on the move

After five years at the RAF Aerospace Museum at Cosford, Shropshire, the organisers of the Telford rally have had to change location, as an extensive re-building scheme is taking place over the next two years at Cosford. The new venue is the West Midlands Show Ground in Shrewsbury and the rally will be held on Sunday 4 September, with all the usual attractions. The town centre is within walking distance of the rally site, but it is also hoped to organise a mini-bus shuttle for those who want to give their legs a rest! A particular feature of this rally is the arena feature, which this year is focusing on test equipment, and a 'rig clinic' will be available to undertake a range of transmitter and receiver checks. There will be lots to look at - see www.telfordrally.org.uk for more information.

Happy winner of the top prize of an MFJ-259B antenna analyser at the 2004 Telford Rally was Peter Hampton of Red Hill, Worcester. Another one is up for grabs this year!

Space news

ARISS-Europe has received the go-ahead to put an amateur radio station on board *Columbus*, the European ISS laboratory presently under construction. Antennas for UHF, L-band and S-band are being developed to permit ARISS operations on these bands for the first time. *Columbus* will be located some distance from the other ARISS stations, allowing for two operations simultaneously. The new frequencies will permit ATV facilities for school contacts for the first time, as well as continuous transponder operation. The new antennas will be installed in the autumn. The European Space Agency has kindly agreed to cover the cost of installation, but a sum needs to be raised quickly to cover the cost of development and manufacture of the antennas (see www.ariss-eu.org/columbus.htm). Thanks to ARISS-Europe chairman Gaston Bertels, ON4WF, for this news story.

♦ The launch date for SSETI Express and three 'cubesats' has been confirmed as 25 August. The satellite has completed its pre-launch tests and is in the clean room where the cubesats are being loaded into their launchers. SSETI Express will automatically downlink general telemetry at 9K6 on 70cm. It is planned that the 38K4 telemetry transmitter on 2.4GHz will also be available for amateur voice operation as a Mode U/S transponder after initial tests on the satellite have been completed. AMSAT-UK (www.uk.amsat.org) provided the 2.4GHz transmitter for the satellite and a presentation on SSETI Express will be given at the AMSAT-UK Space Colloquium to be held 29 - 31 July at the University of Surrey in Guildford. All amateurs and SWLs are welcome to attend.

The UK SSETI Express team.

GMDX Convention

Star-prize winner Nigel, G3TXF (left), receives the FT-817 and ATAS-25 from Tom, GM4FDM, and Rob, GM3YTS.

The GMDX Convention which took place in April in Stirling was attended by a significant number of the UK's top DXers and contesters. The speakers - Roger Western, G3SXW, on Modern DXpeditioning; Peter Hart, G3SJX, on HF radios for DXing, and Mark Haynes, M0DXR, on the FT5XO Kerguelen DXpedition - provided an informative and entertaining day. The DX Dinner in the evening was fully subscribed and a great time ensued. The raffle star prizes donated by Yaesu, an FT-817 and ATAS-25 portable aerial, went to Nigel, G3TXF, and the door prize - also donated by Yaesu - an MD-200 desktop microphone, went to Willie, GM4ZNC. Next year's convention will be on Saturday 1 April 2006.

Queuing up for the W&S open day.

Big crowds at W&S open day

There was a long queue along Main Street in Hockley, Essex, before the 10.00am opening of the Waters & Stanton open day on 29 May. The event was supported by Icom, Kenwood, Yaesu, bhi, Essex Repeater Group, Kent TV Group and Robert Snary, G4OBE. The earliest arrivals were Jim, 2E0JTC, and John, 2E0JGG, who started queuing at 5.00am as they wanted to be the first through the doors! Next to arrive was David, G6UEB, who cycled all the way from Kent, 35 miles each way, followed by SWL Dave; Mike, M1MOG; John, M0ELS; and Pat, G0NMP, who all arrived soon after 7.30am. Furthest travelled were two visitors from the Philippines in the UK on holiday.

W&S director Jeff Stanton said, "I counted in over 150 visitors in first 10 minutes and we had about 300 in total. Certainly we gave out well over 300 teas and coffees!"

NEWS BRIEFS

- According to the Vnunet website (www.vnunet.com/news/1163028), Ofcom has awarded a £500,000 contract to QintetiQ to develop a system for pinpointing illegal radio transmissions. "QintetiQ will be charged with combating wilful abuse of the spectrum from pirate radio stations, but will also be looking to identify accidental use by poorly configured wireless LANs and outdated CB and radio equipment," the website reported.
- The Summits on the Air scheme recently launched a new facility called *SPOTlite* to allow summit activators to post real-time information on their activities to the Internet using mobile phones. The information is disseminated to the whole SOTA community using *SOTAwatch*, a system similar to the *DXCluster*. *SPOTlite* was created by Jon, GM4ZFZ.
- From 1 October 2005 the Japanese Ministry of Internal Affairs and Communications will reduce the requirements for First and Second class licenses to 5WPM (solid copy for two minutes). The previous requirements for these licences were 12 and 9WPM respectively. The MIC will drop the Morse requirement, now 5WPM, for the Third class licence. (ARRL.)
- Amateur radio retailer Haydon has announced that its Thurrock showroom will no longer be open on Saturdays, in order to give staff more time to process orders placed via its website (www.haydon.info). The Thurrock is open Monday to Friday 9.00am - 4.00pm, and the West Midlands showroom will continue to be open on Saturdays.
- The moderator of the HF Mobile Enthusiasts Yahoo! Group James, M0BOV (www.m0bov.co.uk), would like to boost the group's activity. If you're interested in HF (and VHF) mobile operation using radios such as the IC-706 and FT-100, take a look at http://groups.yahoo.com/group/hfmobile/

- The 11th Island Games will be held in Shetland 9 - 15 July 2005 (see www.shetland2005.info). Lerwick Radio Club will be running GB2IGS over this period from 80 to 10m and, if conditions are suitable, also on 6m. The station may also be heard on other days between 1 and 28 July.

PHOTO: BRIAN VAUGHTON, G0HRH.

Brian Vaughton, G0HRH, poses the question, "Is this the ultimate /MM station?" The ship pictured in Funchal harbour, Madeira, is the 21,040 tonne, 230m long French vessel *Le BEM Monge*, part of the Naval Trials and Evaluation Group. She has been specifically built for space surveillance by the French Space Agency (CNES) and provides the resources necessary for the observation of ballistic missiles in flight. The measuring apparatus on board covers radar equipment, telemetry, optical and meteorological observations.

Club and regional news

1 Scotland South & Western Isles

COCKENZIE & PORT SETON ARC
1, No meeting.
2, VHF Field Day.
8, Meeting postponed from 1 July.
30, GM2T in RSGB IOTA contest from Tiree. Bob, GM4UYZ, 01875 811723.

2 Scotland North & Northern Isles

MORAY FIRTH ARS
29, BBQ at Fochabers Scouts. Geoff, MM5AHO, 07770 726759.

3 North West

CHESTER & DARS
5, 'Key holders of the Reich'.
26, Pie and pint night. Derrick, M1SUM, 0151 356 1572.
SOUTH MANCHESTER R & CC
1, Discussion on PC hardware.
8, 'Clinical nebulisers and their applications', Dave, G0BJK. Ron, 0161 969 3999.
15, 'The new electrical regulations', Ged, G8RSI.
22, Members' favourite websites.
29, Technical topics. Ron, 0161 969 3999.
STOCKPORT RS
5, Outdoor fun evening, inc satellite demo.
19, Quiz, Nigel, G0RXA. David, M1ANT, 0161 456 7832.
WIRRAL & DARC
6, D&W *Devon Doorway*.
13, BBQ.
20, D&W *Fox & Hounds*.
27, Revenge DF, G8PMF trophy. Tom, G4BKF, 07050 291850.

4 North East

GOOLE R & ES
6, Contest offload, LWC Selby.
13, Debrief BBQ at Barmby.
20, Social evening at *Black Swan* Asselby.
27, On air from Barmby Tidal Barrage. Richard, G0GLZ, 01405 769894.
GREAT LUMLEY AR & ES
6, On air.
13, Talk TBA.
20, 27, On air. Nancy, 0191 477 0036, 07990 760 920, nancybone2001@yahoo.co.uk
GRIMSBY ARS
7, HF on air.
21, 80m data contest. Brian, G4DXB, 01472 231383.
HALIFAX & DARS
19, Construction, Esde, G0AEC. Tom, M0TKA, 01484 715079.
HORNSEA ARC
6, 'Foxhunt' start at 7.45.
13, 27, Activity night. Richard, G4YTV, 01964 562498, g4ytv@aol.com
KEIGHLEY ARS
28, Visit to Bradford City CCTV unit. Kath, G0OSA, 01535 656155.
SHEFFIELD ARC
2, VHF NFD.
11, Portable evening Whiteley Woods.
18, Internet linking update, Stephen, M1ERS.
25, 'Foxhunt' and meal. Nick, G4FAL, 0114 255 2893.
WAKEFIELD & DARS
5, Contest preparation.
9, 10, IARU contest at Woolley Edge.
12, Pitch and putt at Thornes Park, Wakefield.
19, BBQ at G7JTH QTH.26, On air. Dave, G4CLI, 07748 221 855, g4cli@hotmail.com

5 West Midlands

BROMSGROVE & DARC
1, Radio Clubs in the West Midlands, Bill, G3CAQ.
8, 'Hills on the air'.
15, BBQ.
29, 'Foxhunt'. Chris, M0BQE, 01905 776869.
CHELTENHAM ARA.
1, DXing Africa, Lee, G0MTN. Pat, G3IKR, 01386 792542.
COVENTRY ARS
1, Informal run through of indoor DF, on air, Novice class, CW practice.
8, BBQ.
10 (Sun) Alternate date for trip to Rutland Water [if not 19 June].
15, On air, Novice class, CW practice.
22, Pedestrian DF.
29, On air, Novice class, CW practice. John, G8SEQ, 024 7627 3190.
GLOUCESTER AR & ES
4, Sked 'Lundy calling'.
11, On air HF, workshop.
17, Set-up for LP field day.
18, On air HF, workshop. Tony, 01452 618930 daytime.
HILLCREST ARS
4, On air.
7, RSGB Regional Manager Roy Clarke, G8AYD.
18, On air.
21, Informal. Stuart, M0SJV, 01384 232457, m0sjvstuart@supanet.com
MALVERN HILLS RAC
12, Workshop practice for the radio amateur, Dave, G4IDF. Mike, G3TGD, 01905 830752.
MID-WARWICKSHIRE ARS
12, 'Foxhunt' on 145.350 (horizontal).
26, 'Memoirs of a service engineer', George, G8AIM. Bernard, M1AUK, 01926 420913.
SALOP ARS
7, Club trip to Sleap Airfield and museum.
14, Construction competition.
21, 4th 2m 'foxhunt'. Fred, G3NSY, 01743 790457.
STAFFORD & DARS
7, Planning for GB2VEJ Stafford Castle event, Nelson Room.
10, GB2VEJ Stafford Castle.
14, The history of Cannock Chase.
28, Demonstration of portable mast MkII, Derek, G0EYX, Chetwynd Room. Graeme, G4NVH, 01785 604 534, graeme.boull@ntlworld.com
STRATFORD UPON AVON DRS
11, Surplus sale.
25, Construction competition. Terry, G3MXH, 01789 294387.
TELFORD & DARS
2, VHF NFD, 10.00am near Long Mynd spot height, Church Stretton. Mike, G3JKX, 01952 299677, mjstreetg3jkx@aol.com

6 North Wales

NORTH WALES RS
7, 14, Free evening and Foundation.
21, Battle of Britain, Victor, GW0MOJ. Ted, GW0DSJ.
WREXHAM & DARS
5, AGM.
19, 2m DX, Mike, GW6NLP. Mark, MW1MDH, markmdh@btopenworld.com

7 South Wales

ABERYSTWYTH & DARC
9/10, Beacons challenge, Chris, GW7FYG, at Brecon. Ray, mwmg01@aber.ac.uk
SWANSEA ARS
28, RSGB meeting on future of amateur radio, Gareth, GW3MMP. May, GW3OMN, mj33@btinternet.com

8 Northern Ireland

No club news details provided.

9 London & Thames Valley

AYLESBURY VALE RS
13, BBQ hosted by Gerry and Mandy. Roger, G3MEH, 01442 826651, roger@g3meh.com
CHESHAM & DARS
6, General meeting.
13, 6m on air.
20, Shack & rig training session.
27, On air. Terry, G0VFW, 01442 832169, terry.g0vfw@ntlworld.com
COULSDON ATS
11, DF hunt. Steve, G7SYO, 01737 354271.
CRAY VALLEY RS
2, VHF NFD.
7, Canada 2004, G3SXE.
21, Isles of Scilly 2005, G0VJG and team.
24, DXpedition to Isles of Scilly. Richard, G7GLW, 07831 715797, rcains@btinternet.com
CRYSTAL PALACE R & EC
1, Evening of mini talks by M3FUB, G8DIU, and SWL Jim. Nick, 020 8689 2145.
HODDESDON RC
5, BBQ.
19, Video evening, Adrian, M0ABY. Don, G3JNJ, 020 8292 3678.
READING & DARC
14, Digital amateur television, Noel, G8GTZ. Pete, G8FRC, 01189 695 697.
SHEFFORD & DARS
2, VHF NFD.
7, Mobile DF.
14, Club BBQ. David, G8UOD, 01234 742757.
SOUTH WEST HERTS UHF GROUP
12, BBQ. Paul G6MNJ, 07771 747700.
SOUTHGATE ARC
14, 4m Internet linking; 4m transportable and mobile evening. Mike, M0ASA, 020 8366 0698.
STEVENAGE & DARS
5, Build a 1750Hz toneburst, circuits and information available.
12, Video.
19, Home-brew receivers and transmitters (bring and demo night).
26, VHF operating. Neil M0ARH, 01438 217077.
SURREY RCC
4, BBQ at G4XAT QTH. Ray, G4FFY, 020 8644 7589.
WIMBLEDON & DARS
29, Summer camp. Jim, M0CON, 020 8874 7456.

10 South & South East

ANDOVER RAC
5, Antenna refurbishment.
19, HF listening night. Terry, G8ALR, 01980 629346.
BASINGSTOKE ARC
2, 3, VHF NFD.
4, HF radios for successful DXing, Peter Hart, G3SJX.
17, Alternative Scout Radio "O" Fleet.
31, 'Foxhunt', BBQ. Frank, M0AEU, barc@2lo.info
CRAWLEY ARC
27, Surplus equipment sale. John, G3VLH, 01342 714402.
FAREHAM & DARS
6, On air.
12, 'What am I?', fun packed evening, Andrew, G0AMS, and Mick, G4ITF.
20, Junk sale.
27, History of the TV man by the members. enquiries@fareham-darc.co.uk
FARNBOROUGH & DRS
13, Caught in time, Sharon Cross. Alan, M5AMN, 01252 682447.
HARWELL ARS
2, NFD BBQ, Malcolm, G8NRP.
12, DF hunt, Ron, G0BNC. Angus, G0UGO, 01235 522858.
HASTINGS E & RC
20, Auction at William Parker School. Gordon, 01424 431909, gordon@gsweet.fsnet.co.uk, www.g4cus.freeserve.co.uk
HORNDEAN & DARC
26, Radio controlled model flying, Mike, G8UYY. Stuart, G0FYX, 023 9247 2846.
HORSHAM ARC
7, 'All you need to know about aerials', Tony Wadsworth, G3NPF. David, G4JHI, 01403 252202.
ITCHEN VALLEY RC
8, Quiz, Brian, G0UKB, Terry, G8ALR.
22, Building 2m 'foxhunting' Yagi, Brian, G0UKB. Sheila, G0VNI, 023 8081 3827, sheila.williams@ivarc.org.uk
MID-SUSSEX ARS
1, Preparation for NFD and Seaford Fun Day.
8, Radio night.
15, Radio night and table top sale.
22, Boule evening, Crown at Newick.
29, Radio night. John, G6XTW, 01273 588556.
SOUTHDOWN ARS
4, BBQ, activity night, from G1KAR Beachey Head site. John, G3DQY, 01424 424319, vaughdqy@aol.com
SWINDON & DARC
7, DF hunt.
21, Building and operating the Elecraft K2, Jan, G0BBL.
28, IOTA contest preparation. Mike, M5CBS, 01793 826465.
TROWBRIDGE & DARC
6, 2m DF hunt 19.30BST start from Southwick.
20, Informal. Ian, G0GRI, 01225 864698 evenings / weekends.

WORTHING & DARC
6, Visit from RSGB Regional Manager.
13, Evening excursion.
20, 21st DXpedition, Roger Western, G3SXW.
27, Setting-up and running your station. Roy, G4GPX, 01903 753893.

11 South West & Channel Islands

APPLEDORE & DARC
18, Feeder fallacies, G4CHD. Brian, M0BRB, brian.jewell@ic24.net
BOURNEMOUTH RS
1, Summer buffet, Wendy 01202 709850.
15, RF & materials testing, Mike, G3TOI. Note new contact: David, G4BKE, 01202 697338.
CORNISH RAC
7, Main meeting.
10, CRAC rally at Penair.
11, Computer section meeting. John, G4LJY, 01872 863849.
HOLSWORTHY ARC
6, RSGB Regional Manager, Barry, G4ACK, and Pam, G7SME. David, 01288 353561, m3eoq@hotmail.com
PLYMOUTH RC
2, Rooster breakfast Tesco Lee Mill.
6, Rooster breakfast Sainsbury's Marsh Mills. Frank, G7LUL, frank@foxonezero.fsnet.co.uk
SOUTH BRISTOL ARC
6, Working Lundy Island DXpedition.
13, Debriefing of VHF NFD team.
20, Digital camera night.
27, On air. Len, G4RZY, 01275 834282.
SOUTH DORSET RS
12, BBQ & car boot sale at new club venue: Chickerell Youth Centre. Carol, 2E1RBH, 01305 820400, carolonfraggle@tiscali.co.uk
TAUNTON & DARC
1, QRP rigs and accessories, John, G3GTI.
15, On air. William, G3WNI, 01823 666234, g3wni@btinternet.com
THORNBURY & S GLOUCESTERSHIRE ARC
6, Night at the flying club.
13, On air.
20, Video.
27, On air. Stan, G0RYM, stang@talkgas.net
TORBAY ARS
22, Visit from Torbay hospital physiotherapist showing how we can remain fit and healthy. Dave, G6FSP, g6fsp@tars.org.uk
YEOVIL ARC
3, GX3CMH from Castle Cary Cavalcade of Motoring.
7, 'My most interesting QSO', club members.
14, Classic receivers from Icom IC-R70.
21, 'The Kilve', G3PCJ.
24, BBQ at Ham Hill, on air and astronomy star party.
28, On air. Adrian, G4JBH, 07834 922 858, g4jbh@btinternet.com

12 East & East Anglia

BRAINTREE & DARS
4, 18, Award Operating Evening. John, M5AJB, 01787 460947.
CHELMSFORD ARS
5, Battle of Arnhem comms, Tom Robinson, G0SBW. Martyn, G1EFL, 01245 469008.
DOVER RC
6, On air.
13, 'The work of Raynet'.
20, On air.
27, 2m 'foxhunt'. Brian, G4SAU, g4sau@bcuff.freeserve.co.uk
FELIXSTOWE & DARS
3, Darrell Day special event station GB2FX Felixstowe Museum, Landguard Fort.
13, BBQ, on air. Tony, G4EYE, 01255 886065.
HILDERSTONE R & EC
8, Dayton show, John, G3YCV.
22, 2m mobile 'foxhunt'. Ken, G3JIX, 01304 813175, mick.howland@btinternet.com, www.g0hrs.org.uk
LEISTON ARC
5, 'Arnhem: What Went Wrong?', Peter Best, G8BLS. Paul, M3MIG, 01728 746044, m3mig@aol.com
LOUGHTON & EPPING FOREST ARS
8, Preparation for club field weekend.
9, Club field weekend.
22, BBQ. Marc, G0TOC, 020 8502 1645, info@lefars.org.uk
NORFOLK ARC
3, Barford rally.
6, Briefing for members' trophy DF contest.
13, Members' trophy DF contest.
17, Low power field day at W Runton.
27, Waters & Stanton, Mark Francis. Reg, G0VDO, 01603 429269.
SOUTH ESSEX ARS
6, Informal.
20, HF radio operating, Brian, G7IIO. Dave, southessex.ars@btinternet.com

13 East Midlands

EAGLE RADIO GROUP
12, QRP from Mallorca with FT-817, Nevil, G3VDV. Terry, G0SWS, 07979 733 640.
HUCKNALL ROLLS-ROYCE ARC
1, Preparation for Field Day.
8, Forum.
15, Visit to BBC radio & TV studio Nottingham.
22, History of TV, Ian, G6ROC.
29, HF on air. Keith, G6NHY, 07929 916 642, hrrarc@ntlworld.com
LEICESTER RS & CC
2, VHF field day and BBQ. Tom, G1IUT, 0116 286 3949, tomchristmas@ukonline.co.uk
MELTON MOWBRAY ARS
17, HF CW Low Power Field Day.
30, IOTA Contest HF SSB/CW. Phil, G4LWB, phil@croxtonkerr.fsnet.co.uk
WORKSOP ARS
2, GB2WVG Whitewell Village Gala.
16, GB2SF Sherwood Forest. Clive, M0HHF.

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.

WIGTOWNSHIRE ARC

After the success of its popular weekend Foundation courses, Wigtownshire ARC (www.gm4riv.co.uk) ran an Intermediate course. The exam was on 25 April; four candidates sat the exam and all passed. Another Intermediate exam will be held at the end of June followed by another weekend Foundation course in July.

NEW VENUE

The South Dorset Radio Society is changing its venue as from 12 July: to the Chickerell Youth Centre in Chickerell, on the other side of the village from the old club site. This will be the venue for the foreseeable future. Further information from the secretary, Carol Hodges, e-mail: carolonfraggle@tiscali.co.uk

PAYING THE RENT

With spring well and truly upon us it was time for the Braintree radio club (www.badars.org.uk) to start paying this year's rent for its 70cm repeater GB3BZ. Payment consists of cutting the grass during the year and keeping the site generally tidy. The area is quite large and there are brambles that abound, so quite a lot of hard work is needed, especially if (as happened last year) it is left a bit late to get started!

2005 is the club's 30th anniversary, so it will be holding a number of special evenings and events to mark the occasion.

PHOTO: DAVE, G0DEC

The GB3BZ grass cutting team: Ben, M3EUO; Steve, G8YVR; John, M5AJB; Keith, G4MIU; Melvin, G0EMK; and Owen, M3OIL.

RAYNET VISITS HAVERING CLUB

On 6 April, Phil Williams, G6AQP, the London Zone Coordinator for The Radio Amateurs Emergency Network (RAEN), and Paul Harrison, G8MJH, the NE London Group Controller, visited the Havering & District Amateur Radio Club as guest speakers. There was also a special guest in the audience, Councillor Jeff Stafford, the Deputy Mayor of the London Borough of Havering. Councillor Stafford had a communications background with BT so he was no stranger to the technical matters that were covered in the lecture.

Phil's lecture was presented in a most professional fashion, and the Havering & District Amateur Radio Club would like to thank him, and Paul, G8MJH, for their time, making possible this lecture on a very important subject. The club would also like to thank the Deputy Mayor, Councillor Jeff Stafford, for attending the meeting to foster closer liaison with the borough Council and the radio amateur radio movement.

L to r: Phil Williams G6AQP, London Raynet Zone Coordinator; Paul, G8MJH, NE London Group Controller; Cllr Jeff Stafford, Deputy Mayor, London Borough Havering.

LICENCE TRAINING IN SOUTH LINCOLNSHIRE

Training courses are available for the Foundation, Intermediate and Advanced licences at the Spalding & DARS (www.sdars.org.uk). The courses are held on a regular basis at the clubroom at the swimming pool in Spalding. Courses can be on Monday, Tuesday or Wednesday evenings, depending on how it suits the majority of the students for each course. John Hill, G4NBR, has been teaching since 1978 and keeps the groups to a maximum of six people at a time. For more information ring John on 07946 302815 or visit the website.

CHARLIE DELTA ARC

The Charlie Delta ARC held another successful Foundation course, this time with its youngest candidate yet. Ben, at 7 and a half years of age, was the dark horse of the weekend, being a complete whiz at Morse Assessment. He has already said he will be using his dad's (Paul, G1DCU) radio as soon as he gets his call. The candidates would like to thank Dave, M0DCM, and Pete, M0PET, for running the course, and also thanks go to Geoff, G7NZM; Tony, 2E0TBA, and Pete, M1PTE, for invigilating.

The club will be running another Foundation course in the West Midlands area soon, and everyone interested in taking the plunge should please contact Dave, M0DCM, tel: 01902 635244 or e-mail: m0dcm@blueyonder.co.uk

MUTINY ON THE BOUNTY

The Isle of Man Scarlett Point Radio Group is celebrating the Isle of Man's 175th Maritime Anniversary Year and the Mutiny on the *Bounty* by operating GB5MOB on 30 and 31 July. Peter Heywood RN, who was on board the *Bounty*, was born on the Isle of Man. The station will be operated from the Old Nunnery (IO74RD) on all HF bands, VHF / UHF and *Echolink* and there will be live real time Internet video and audio streaming of all stations and operators. For further details go to www.scarlettpoint.com

DUNDEE AMATEUR RADIO CLUB

Dundee Amateur Radio Club held its second Foundation exam of the year on 28 April with just one candidate: Andy Traynor, who passed. Similarly, the club held its second Intermediate exam of the year on 25 April, again with only one candidate: Donald Suttie, MM3XDS. Donald also passed. Congratulations to both Andy and Donald!

DOUBLE CELEBRATION FOR NORTH WAKEFIELD CLUB

The North Wakefield Radio Club recently had nine candidates pass the Intermediate licence course, followed by 15 candidates passing their Foundation licence course. Chairman and lead instructor John Muzyka, G4RCG, said, "We are delighted that so many of our members are passing through the licence structure, and they will be a real asset to the club. We are also very pleased that we have been able to attract so many new licensees, and that they are all so keen on the hobby. Our membership is now over the 100 mark, and it is good to see that so many want to progress."

Two of the Foundation licensees took the course directly as a result of the North Wakefield club being featured on BBC Radio Leeds [see *RadCom* June 2005, p14 - *Ed*].

WELSH DRAGON AWARD FOR RAYNET GROUP

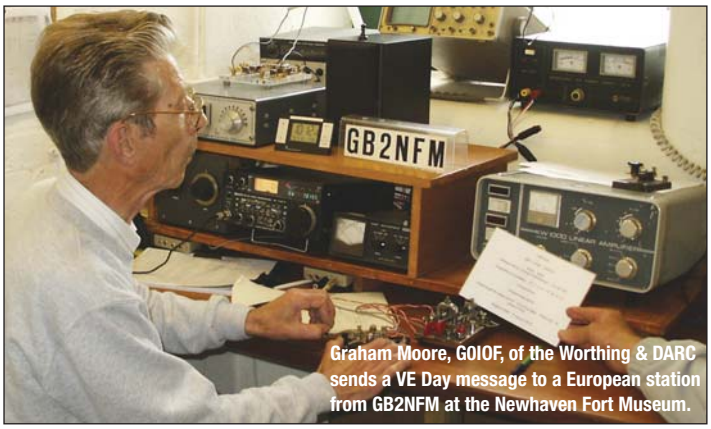
The South Gwynedd Raynet Group was recently awarded the Welsh Dragon Trophy by its donor, Simon Lloyd Hughes, GW0NVN, at a special joint meeting of the Porthmadog ARS and the Meirion ARS held in the Porthmadog Yacht Club. Simon said that the award, designed by his wife, was to give recognition to the group of radio amateurs that had given the best benefit to the community in Wales in the past year. The award was accepted on behalf of the Raynet group by its chairman, Gervaise Chavasse, GW4URJ.

South Gwynedd Raynet chairman Gervaise Chavasse, GW4URJ, receives the Welsh Dragon Trophy from Simon Lloyd Hughes, GW0NVN.

RADIO FANS MEET ENIGMA

Members of the Kidderminster & DARS (www.communigate.co.uk/worcs/kdars) heard two visiting speakers describe wartime radio interception and code-breaking at the club's meeting in May. Charles Tranter, G3BQQ, served in the Y-Service during WWII and spent some time working in Station X at Bletchley Park. He gave a talk on his experiences and outlined the important part that secret wireless and signals intelligence operations played in the conflict. Dr Mark Baldwin, an historian from Cleobury Mortimer and an acknowledged expert on the subject, attended the meeting to meet Charles and hear his story. Dr Baldwin also kindly brought and demonstrated an original German military Enigma coding machine, one of only 200 still thought to be in existence out of 100,000 originally manufactured. Club members were able to operate the machine to encode and decode messages.

The Kidderminster & DARS holds monthly meetings and activity nights. All are welcome; further details on the website or from the secretary Tony Saunders, G1OZB, tel: 01299 400172.



Graham Moore, G0IOF, of the Worthing & DARC sends a VE Day message to a European station from GB2NFM at the Newhaven Fort Museum.

BARRY ARS

Members of the Barry ARS (Wales) operated GB750CC to commemorate the 750th anniversary of Cowbridge being granted a town charter. The station was set up in a prison and the town's mayor asked that the members involved in operating the station be remembered in a 'time capsule'. The QSL cards of the eight operators were sealed in a lead box and buried in the condemned prisoner cell. It is scheduled to be opened in 250 years time.

The Barry ARS meets every Tuesday at 8.00pm at the Sully Sports & Leisure Club, Vale of Glamorgan. Further information from chairman Glyn Jones, GW0ANA, tel: 01446 774522.

AWARD FOR ALL IN MOLD

Mold & DARC has recently been awarded a substantial grant from Arian I Bawb Cymru (Awards For All Wales), part of Lottery funding [see also *RadCom* April 2005 page 44 - *Ed*]. Plans for a new shack are now at an advanced stage and construction work has already begun. The club will be purchasing HF and VHF stations, ancillary equipment and AV equipment in the near future. The AV equipment will be used for courses - a recent Foundation course run by its President, Edwin Hewins BEM, GW3GSJ, resulted in passes for both candidates.

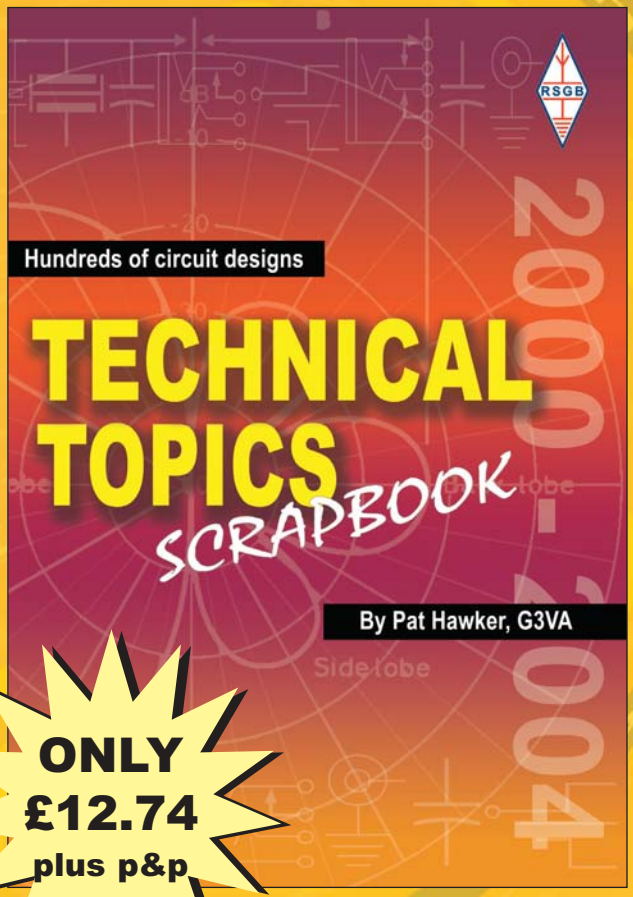
Mold & DARC meets every Thursday evening at the Rugby Club, Chester Road, Mold, Flintshire, and Edwin, GW3GSJ (tel: 01352 754088), or Les, MW0ELC (tel: 01244 545369), can be contacted for further details.

NEW

Technical Topics Scrapbook 2000 - 2004

This forth compilation of the pages of Technical Topics covers the five years from 2000 to 2004. It includes all the words, pictures and line drawings from the most popular column in the RSGB's magazine RadCom. Pat Hawker's blend of clippings from other publications and contributed material is linked byhis own unique commentary, enriched by a lifetime of fascination for the technical aspects of radio, bothprofessionally and as a radio amateur.The pages are presented exactly as they appeared in RadCom. An index has been added for your convenience. This invaluable collection of experiemental antennas, circuit ideas and radio lore is a must for anyone keen on radio and electronics.

Non Members price £14.99 plus p&p



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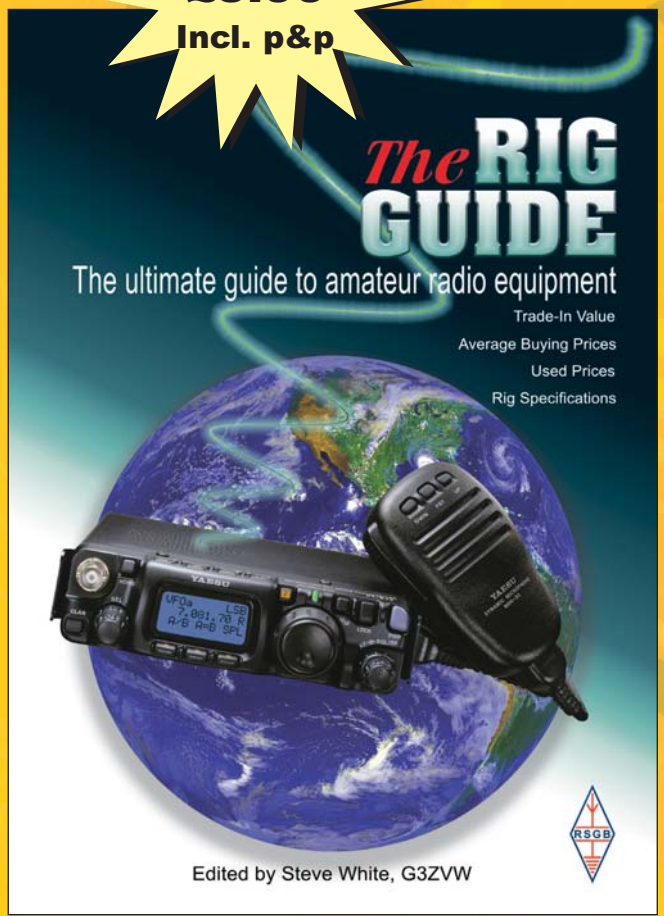

The Rig Guide:

The Ultimate Guide to Amateur Radio Equipment

Edited By Steve White, G3ZVW

If you are thinking of buying new or used equipment, the fully updated and completely revised RSGB Rig Guide is here to help.

The guide is packed with details of over 300 items of equipment from 11 different manufacturers. Current and older rigs are covered and there are equipment reviews from the last year. A handy guide to buying and selling is also included along with lots of helpful hints.

This A4 guide lists against each product:

- Average Buying Prices
- Trade-In Value
- Used Prices
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At only £3.99 including the postage this 80 page guide is excellent value and a must for every Radio Amateur!

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Technical Topics Scrapbook 1995-99
This is the third compilation of 'Technical Topics' articles, produced by popular demand. 'Technical Topics' is by far the most successful regular column in the RSGB's journal RadCom and we are pleased to be able to present the article's pages in this handy book, together with a new index.
£12.74 members
£14.99 non members

Technical Topics Scrapbook 1990-94
This second compilation of the pages of Technical Topics covers the five years from 1990 to 1994. It includes all the words, pictures and line drawings from the most popular column in the RSGB's magazine RadCom. Pat
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Technical Topics Scrapbook 1985-89
A collection of all of the very popular Technical Topics articles by Pat Hawker, G3VA, published in Radio Communication magazine during the years 1985 to 1989.
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Hints & Kinks for the Radio Amateur is the first place hams turn for information about new modes, new projects, and the latest tips. You'll find something on every page to solve problems, improve your operating, and simply have more fun on the air
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NEW LOWER MFJ PRICES!

MFJ

MFJ-259Z *NEW*

The famous antenna analyzer from MFJ has had a revamp. Now you get the analyser plus built-in Ni-MH battery pack and AC charger and also a "dip meter" type coupling coil that can check trap resonances.

MFJ-259Z Turns hours into minutes and Ideas into Antennas!

Brief Specification: ** 1.8 - 170MHz * Built-in Ni-MH pack * AC charger and power supply * Dip Meter coil * DC Voltage display * VSWR digital and analogue * Resistance and Reactance * Coax diagnostics including dB loss * Capacity in from a few pF to several thousand pF * Inductance from 1uH to 60uH * Distance to coax fault * Resonance mode * Velocity factor * RF transformer and balun testing * Frequency counting mode.*

INTRODUCTORY PRICE £199.95 B

AL-811XCE £699.95 C

This amplifier uses three AL-811A tubes to give up to 600W PEP output. Built-in 230V AC supply and dual meters. Quiet cooling and instant by-pass switch. Get your signal heard around the world!

MFJ-948 £119.95 B

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

MFJ-914 £56.95 A

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

MFJ-910 £22.95 A

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

MFJ-991 *New Auto ATU* £179.95 B

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

MFJ-1026 £149.95 B

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

MFJ-417 £49.95 B

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

MFJ-704 £42.95 B

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

MFJ-969 £169.95 C

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

MFJ-901B £72.95 B

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

MFJ-902 £65.95 B

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

MFJ-974 £159.95 C

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

MFJ-16010 £46.95 B

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

MFJ-382 £39.95 B

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

MFJ-260C £33.95 B

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

MFJ-1704 £59.95 B

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

MFJ-949 £135.95 B

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

MFJ-971 £89.95 B

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

MFJ-904H £109.95 B

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

MFJ-993 *New Auto ATU* £209.95 C

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

MFJ-392B £22.95 A

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

MFJ-418 £69.95 B

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

MFJ-267 £129.95 B

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

MFJ-269 £269.95 B

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

Telephone Enquiries 01702 206835/204965

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Choice of the World's top DX'ers

OUT & ABOUT

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FT-817

If you are looking for a new challenge and some real fun summer operation, then the FT-817 has what it takes. 160m to 70cm all-mode in one package with internal Ni-MH pack that produces 2.5W (5W on external supply).
Order from this advert and get FREE 20m Mini whip worth £20.

FT-857

Currently it is our best selling mobile radio and rightly so. Up to 100W output on all bands from 160m - 6m, 50W on 2m and 20W on 70cms. The detachable head unit makes it easy to install and you get everything you need to install and use the radio.
Order from this advert and get FREE
3-way antenna magmount (choose 3/8" or SO-239) worth £39!
PLUS - Order High Sierra Sidekick electric HF antenna system at same time for just £219.95 saving £30!

£579

£269

FT-8800

You have total control with this fabulous 2m/70cm mobile transceiver. It's packed with features and offers a punchy 50W out on 2m and 35W on 70cms. The detachable head unit makes installation so easy and the dual-band mirrored control layout with dual display, makes 2m/70cm operation easy and intuitive.
Order from this advert and get FREE
Watson W-770H dual band antenna worth £24.95

FT-8900

Here's a very unique radio that offers 4-band coverage of 10m, 6m, 2m and 70cms. A chance to work world DX as well as local stations. A full 50W on all bands (35W on 70cm) gives you a very effective mobile station. And you can work full duplex as well. You also get a remote head feature with lovely big display. **Order from this advert and get**
Diamond CR-8900 10m - 70cm antenna for just £59.95 saving £20!

£339

£229

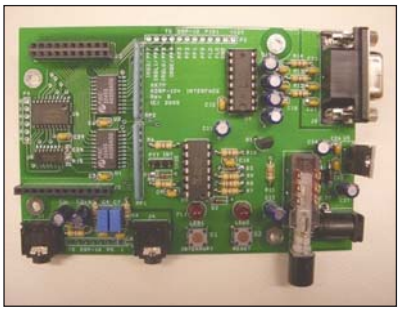
FT-7800

If you are looking for a dual band mobile unit that is a real bargain, we have to say that the FT-7800 is unbeatable. A rock bottom price for a rock solid radio. And the head even separates! 50W out on 2m and 35W out on 70cms makes sure that you have an effective signal.
Order from this advert and get
Watson W-770H dual band mobile antenna for just £10 saving £15!

UK'S LOWEST PRICES

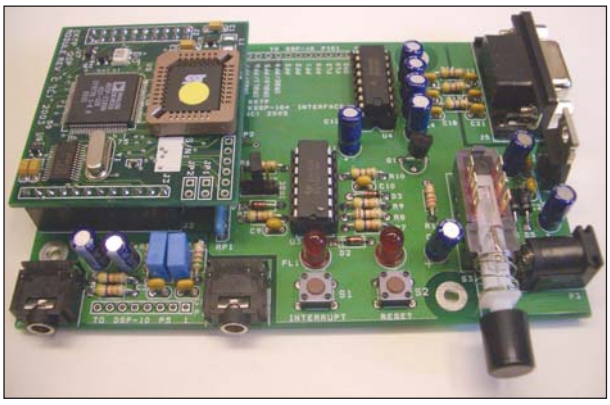
The KK7P DSPx and

There is a growing number of radio amateurs who are experimenting with digital signal processing (DSP). But how do you get started? This experimenter's DSP kit from Lyle Johnson, KK7P, is a new hardware design based on Analog Devices DSP chips and including a CD of software, data sheets and working examples to start people off. Bob Whelan tries it out



Top left:
The KK7P DSPx DSP module.

The KDSP10 interface module without the DSPx board fitted.



Above:
The DSPx board fitted to the KDSP10 interface module (top left).

Digital Signal Processing (DSP) is a key technology in modern radio design and for software defined radios in particular. It is ubiquitous these days: there are DSP filters, de-noisers, spectrum analysers, digital modems, the list seems endless. But just how *do* you get started? Many have taken advantage of DSP evaluation or development hardware and software from the main semiconductor manufacturers such as Analog Devices, TI, Motorola. But whereas a few years ago these boards were available at low cost, today the price can seem to be out of reach. The EZ-KIT LITE board from Analog Devices was one of the more popular and indeed practical designs that appeared using this board. These boards are not now readily available and further with the progression to Windows XP much of the free DOS software no longer runs or is not supported.

It seemed that amateurs would be faced with constructing the DSP hardware themselves. But many would find the complexity of dense small-scale circuitry too challenging. However, in 2003 Lyle Johnson, KK7P, decided to produce an experimenter's DSP kit. This is a new hardware design based on Analog Devices DSP chips and which is compatible with the original DOS software.

DESCRIPTION

The kit has two parts. The DSPx is based on the ADSP - 2185N with CODEC and Flash memory. This Flash memory offers greatly enhanced performance over similar designs. The KDSP-10 Interface Adapter kit provides power, voltage level shifting, and convenient interfaces for software development and experimentation.

DSPx is an 80MIPS DSP module (4.6 x 5cm). The CODEC is a dual 16 bit ADC and DACs which can sample to 96 kHz. It has two sets of interfaces - one for digital the other for analogue signals. The SST39VF040 4MBit Flash memory, socket mounted in a PLCC, provides a way of storing quite large programs and data, such as coefficient tables. The Flash memory can be removed for programming or upgrading. The DSPx is laid out so that it can be plugged into a motherboard which could part of your own design. Power dissipation is 240mW.

KDSP 10 Interface module (11 x 7.5cm) facilitates the use of the DSPx. It includes a pair of sockets to accept the DSPx, an on-board 12 to 5V regulator, and signal voltage translation between the 3.3V digital levels of the DSPx to and from the 5V levels required by external electronics. A MAX232 provides a true RS 232 (DB9) port for loading software or for control of applications. Two push buttons provide 'reset' and 'interrupt' signals for development purposes. There are three outputs which can be used to control external devices. Only two of these outputs are brought out to pads. A further port of eight I/Os can be used for either input or output as set by the application software. Analogue signals are available either direct from pads on the board or via a pair of 3.5mm stereo sockets. The KDSP-10 board has space for a DAC which can be used for other analogue purposes, such as AGC etc. The KDSP-10 is laid out with edge pad areas to facilitate interfacing to designs such as the W7PUA DSP-10 2m transceiver (*QST* September 1999) or the PIC-A-STAR transceiver by G3XJP (*RadCom* 2003 - 2004).

APPLICATIONS

This section is by way of an illustration of the sort of projects you might use the DSPx for and where you might get more specific application information.

The most useful source of ideas

Bob Whelan, G3PJT

36 Green End, Comberton, Cambridge CB3 7DY

E-mail: g3pjt@btinternet.com

KDSP-10 modules

including a general appreciation of DSP is the ARRL's *Experimental Methods in RF Design* (*EMRFD*) Chapters 10 and 11. The ARRL CD which comes with the book contains other articles and programs but most of these programs did not run (in 2003) on the DSPx. However, the versions of the same programs on the DSPx CD *will* run. Note that although the DSPx uses an Analog Devices processor it does not use an Analog Devices CODEC, which means that applications software designed for the EZ KIT LITE board with not run on the DSPx without modification to the CODEC initialisation in the source code.

The RSGB *Command* book also has chapters on DSP.

The Scientist and Engineer's Guide to Digital Signal Processing by Steven W Smith (published by Analog Devices) is valuable and is available in full on the Internet (see 'Web search'), from where there are some useful DSP design links.

We all have to start somewhere, so I have listed here a few examples I have run on the DSPx:

Simple applications: pure tones / noise/ two-tone generators. This might seem a trivial application but the fact is that pure audio tones are very useful for the adjustment of transmitters and receivers. DSP provides a way of generating extremely pure tones and thus in conjunction with an audio spectrum analysis program you can quickly find the causes of distortion - quite illuminating when you look at the performance of audio amplifiers.

Filters: all sorts of filters can be designed in DSP and there are plenty of examples to play with. It is a very good exercise to design a filter for yourself. I found it a good way to check that you really understood what was happening! The KDSP2 module for the Elecraft K2 is based on the DSPx and the open source code with interfacing information is available.

Receiver back ends: the Buccaneer receiver in this issue of *RadCom* [see pages 78 - 83 - *Ed*] is a good example of a reasonably straightforward DSP receiver design. As the software is freely available it can be modified to add new features quite easily.

The 18MHz transceiver in *EMRFD* Section 11.4 represents a further step up in complexity. The W7PUA software for this has been ported to the DSPx by myself and could form the basis of other simple transceivers.

Advanced applications: One of the most complex DSP based transceivers and the starting point for other designs is the W7PUA DSP10 2 meter transceiver. As has been mentioned earlier, Peter Rhodes's, G3XJP, PIC-A-STAR transceiver is another design which can use the DSPx. No doubt other designs will start to appear. The American QRP club will be making PSK31 software available shortly.

I have made no comment here on the use of the DSPx in instrumentation as I have no direct experience of this.

ASSEMBLY

The DSPx is supplied fully assembled. The KDSP-10 is supplied in kit form as a complete set of components, less case. The instructions are clear and are written in the now famous 'Elecraft' style. Most components are through hole except for three surface mount chips and provided these are accurately positioned they should not present any problem to the experienced constructor. Assembly time was about two hours. The instructions indicate which components to omit if you are intending to embed the KDSP-10 into your own design or a radio such as the DSP-10 or PIC-A-STAR. Further, the companion CD contains datasheets, circuit diagrams etc if you need them.

DSP electronics can be prodigious generators of RF so if you are intending to build the module into a radio you will need to fit the DSPx / KDSP-10 into a screened box. A tin plate one might be the best.

SOFTWARE

The DSPx is supplied with a companion CD which carries a good set of the basic software needed. The CD contains:

- Analog Devices Hardware and Instruction Set references
- Analog Devices software toolkit
- Assembler, Linker and PROM Splitter
- Data sheets for the various devices
- DSP 10 software for the W7PUA radio
- A freeware filter design program (DSPLAY)
- DSPx schematic diagram and the monitor source code
- EZFAST - a DOS loader to upload files
- A Windows text editor (PFE)
- Application software for the ARRL *EMRFD* book.

The DSPx Flash memory comes preloaded with a short program called the 'Monitor'. At switch on or reset this program undertakes some basic checks and sets up the communication through the RS232 interface so that other programs can be loaded. DSP applications programs are written in 21xx assembler using a text processor like *Notepad* or *Wordpad*. It is worth noting in passing that although at first sight the complexity of DSP programs appears daunting, in practice very much use is made of generic blocks of code copied from earlier designs. When you have a look at some examples you will see what I mean. The programs have then to be assembled, linked and processed

into a form which can be executed by the DSPx. All the software tools needed for this are included.

DOS ASSEMBLER / LOADER TOOL SET ETC

This comprises the complete Analog Devices software tool kit for the ADSP 21xx family of processors. All of this is DOS based and is no longer supported by Analog Devices. However, it seems to be robust software. Almost any old PC running DOS will run this software. I rescued my old 486 MS-DOS 6.22 machine and it all runs fine. They will run in a DOS Window under Windows 98 SE. The simulator, which is not supplied, but a download from the Analog Devices FTP site) will not run under Windows. Instructions are given as to the directory structures needed and the new lines to insert in Autoexec. Much more is available for download from the KK7P website, including programs which run under Windows.

RUNNING THE SOFTWARE UNDER WINDOWS XP

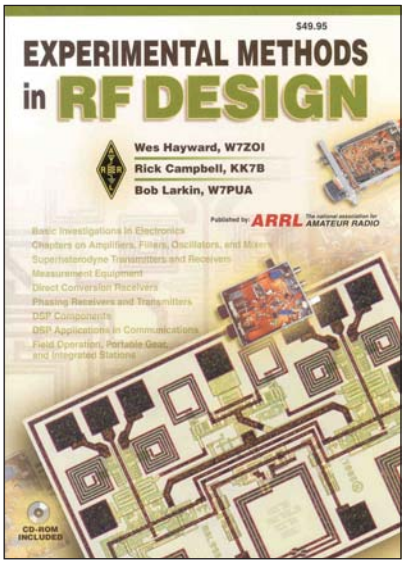
KK7P has reported running these DOS tools under XP by using a program known as 'DOSBox'. This program is freeware and available for download. There are set up details on the KK7P website.

HOW TO SET UP THE 'TOOL CHAIN'

The convenient way to set up the file structure is to make good use of DOS batch files. There are a number of files and processes to be done in the right order if a successful DSP software design is to be turned into working code. I created a directory called 'work' with project sub directories. For general projects I made up a standard batch file sequence which processed a file called 'Job'. In any project after the design is coded I copy the file to a file called 'Job.dsp' and then run the assembler, linker and PROM splitter with the Job batch file. In such a way I avoid a lot of typing errors. Judging by questions I have been asked one problem is actually getting the assembler process to run for the first time. Although all of the required information is contained in either the DSPx or the Analog Devices documentation supplied, a step by step explanation would probably be useful, especially as familiarity with low level language processes is less prevalent these days. However, you do learn by doing and this is an experimenter's product.

LOADING INTO THE DSPX

The output from the assembler is loaded into the DSPx via the RS232 port on the KDSP-10. The loader is supplied on the CD but a better Windows version EZLOAD (by KA7EXM) can be downloaded from the KK7P website. I wrote my own DOS loader in QBASIC. All seem to work satisfactorily.



Recommended by Bob Whelan: the ARRL book Experimental Methods in RF Design.

USING THE FLASH MEMORY

Flash memory is one of the key features of the DSPx since it provides a very flexible facility for the storage of programs and data files. With an applications program loaded into Flash the DSPx can run that application immediately at switch on or reset, a major advantage. The Flash has to be loaded with your applications program and there are two ways to do this. Your application is first run through the PROM Splitter, which is one of the parts of the Assembler program suite, to create a file in the correct format, Motorola S or Intel Hex.

PROGRAMMING FLASH

A number of PIC and Flash memory programmers are available inexpensively. I built such a programmer and used software from the Willem site. The procedure will not be described here but applications were successfully programmed into the Flash memory and ran on the DSPx. Your applications program will have overwritten the monitor program in Flash. However, the Flash can be re-written many, many times, but how much better if the Flash could be programmed in situ.

PROGRAMMING FLASH IN SITU

It is now possible to program the DSPx Flash without removing from it the DSPx. The procedure involves first loading a special Flash utility program. This program enables Flash to be selectively erased and written to at will using a standard terminal program such as *Procomm* or *Tera-Term*. Two special jumpers on the DSPx protect parts of the Flash memory from accidental erasure or over writing. Using the Flash utility a portion of Flash is first erased. Your application is loaded and written into the erased memory space. A jumper is then inserted into DSPx. When next switched on or reset the DSPx monitor detects the jumper and immediately boots your application program in Flash. If you remove the jumper the DSPx boots the monitor only, but your application program is still retained in Flash. This is clearly the best way to use the Flash memory. In practice you can debug your program by loading into RAM directly and when you are satisfied you can write it into Flash.

CONCLUSIONS

The DSPx and KDSP10 represent an excellent way for the experimentally minded person to start to get to grips with DSP technology. The modules and software would be a great place to start to put DSP into your next communications project. The quality of the kit is first class and the CD brings together software information which would take an age to glean from the web. The DSPx and KDSP10 can be ordered from the TAPR website under the 'Kits' link.

The price for the DSPx DSP Module is US $99.00 and the KDSP10 Adapter Kit is $39.00 (prices do not include VAT etc). Note that while the TAPR site does accept credit card information, it is not a fully secure site. Orders can be mailed, phoned, or faxed to TAPR, PO Box 852754, Richardson, TX 75085-2754, USA; tel: +1 972 671 8277; fax: +1-972 671 8716. Those ordering from outside the USA will need to contact the TAPR office to receive a quote on the shipping costs to your country. TAPR uses Insured Air Mail, unless the purchaser requires something else. ♦

FURTHER READING

Experimental Methods in RF Design, by Wes Hayward, W7ZOI; Rick Campbell, KK7B; and Bob Larkin, W7PUA (ARRL).

Command, by Andy Talbot, G4JNT (RSGB).

Digital Signal Processing Technology, by Doug Smith, KF6DX (ARRL).

All above available from RSGB Shop, www.rsgb.org.uk/shop

WEB SEARCH

There is a very large amount of DSP information on the web including a number of reflectors, the PIC-A-STAR one on Yahoo and DSP-10 in particular.

DSPx main site KK7P	www.kk7p.com
TAPR information and purchases	www.tapr.org
DSBOX	www.dosbox.sourceforge.net/
W7PUA DSP-10 2 metre transceiver	www.proaxis.com/~boblark/dsp10.html
Analog Devices	www.analog.com
Willem	www.willem.org
PIC-A-STAR interfacing	sblakmo.nerim.net/kk7p_DSPx_PicaSTAR.pdf
Elecraft KDSP2 code	www.elecraft.com
NJ QRP club kits	www.njqrp.org
American QRP club kits	www.amqrp.org
The Scientist and Engineer's Guide to Digital Signal Processing	www.DSPguide.com

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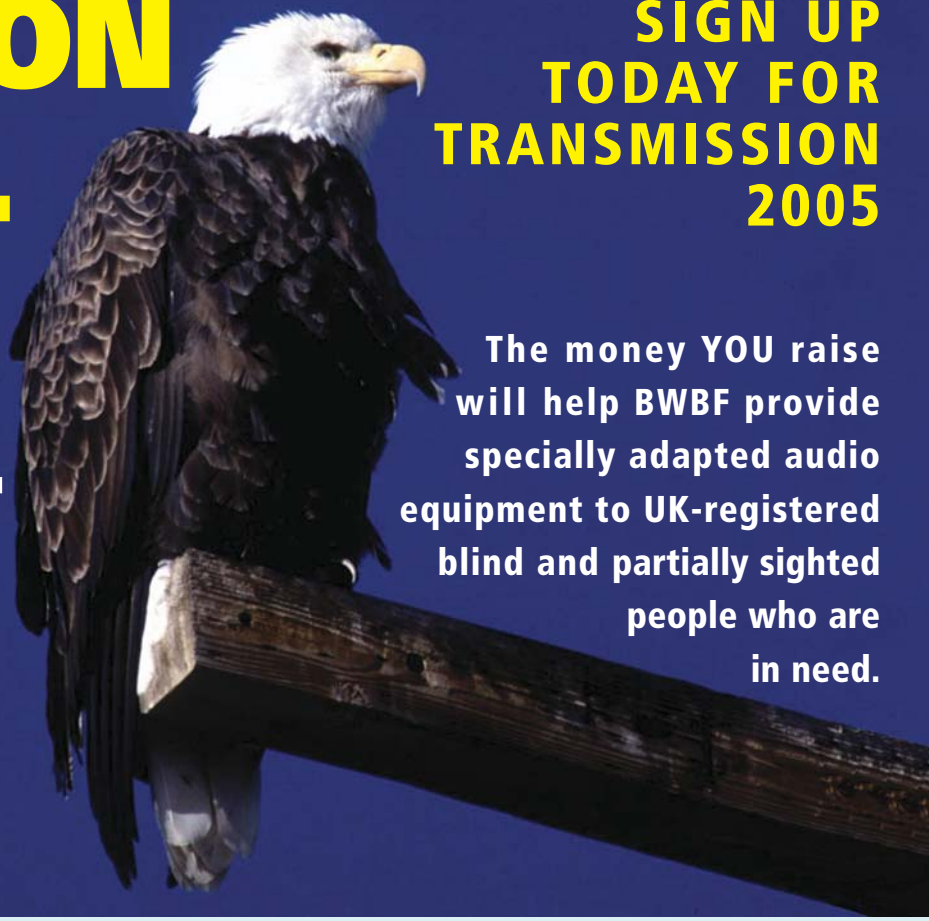

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BWBF

REG. CHARITY No: 1078287

www.blind.org.uk

ALL ABOUT TRANSMISSION 2005

'Transmission' is the annual amateur radio fund-raising event for the British Wireless for the Blind Fund (registered charity number 1078287). This year, 'Transmission 2005' takes place over the weekend of 24 – 25 September.

All radio amateurs are encouraged to take part in order to raise funds for this very worthwhile charity. The idea is that you ask your friends, family, workmates - anyone in fact – to sponsor you for contacts made during the weekend of 24 – 25 September.

Trophies will be awarded to the individuals and clubs/groups who make the most contacts or raise the greatest amount of money for the charity. Certificates will be sent to all individuals and groups/clubs who either raise more than £10 for BWBF or who make a donation of at least £10 to BWBF. In order to qualify for one of the trophies you must be a current member of the RSGB and resident in the UK. However, overseas amateurs and non-members of the Society are also invited to join in the fun and raise funds for BWBF (they simply do not qualify for the trophies, although they are eligible for the certificates).

Rules:

1. Obtain an official sponsorship/pledge/donation form from: 'Transmission 2005', British Wireless for the Blind Fund, Gabriel House, 34 New Road, Chatham, Kent ME4 4QR; tel: 01634 832501; fax: 01634 817485; e-mail: info@blind.org.uk; or download one from the BWBF website at www.blind.org.uk

2. Ask as many people as you know – family, friends, workmates, other radio amateurs – to sponsor you for contacts made during 'Transmission 2005' on 24 –25 September. Sponsorship can be for either a certain amount per contact or for a single sum, irrespective of the number of contacts made.

3. Sponsored contacts can be made at any time between 0000UTC on Saturday 24 September and 2400UTC on Sunday 25 September.

4. The definition of a "contact" for the purposes of 'Transmission' is a two-way exchange of callsign and signal report. Each station may only be contacted once per frequency band *per day*. In other words, every station contacted on 24 September may be contacted again, on the same frequency band(s), on 25 September and that second contact may also be counted towards the overall number of contacts made.

5. This is *not* an amateur radio contest, so sponsored contacts can be made on any band for which you are licensed, including 10, 18 and 24MHz.

6. Sponsored contacts may be made with your own callsign, a club callsign or a GB special event callsign. (Applications for GB special event callsigns must be made in the normal way at least 28 days prior to the event. Full details from AR Dept, RSGB, Lambda House, Cranborne Road, Potters Bar EN6 3JE; tel: 0870 904 7373 or e-mail: ar.dept@rsgb.org.uk).

7. Trophies will be presented to:

(a) the individual raising the most funds for BWBF;

(b) the group or club raising the most funds for BWBF;

(c) the individual making the greatest number of contacts during 'Transmission 2005'; and

(d) the group or club making the greatest number of contacts during 'Transmission 2005'.

Certificates will be awarded to *all* stations raising at least £10, or making a donation of £10 or more to BWBF. Please send cheques made payable to 'British Wireless for the Blind Fund' to the address in 1. above.

All donations are gratefully received, no matter how small, but the minimum amount to be raised to qualify for any trophy is £50. The minimum number of contacts to qualify for an award in category (c) or (d) is 50 contacts.

8. An "individual" is when only one person operates a station callsign, whether that callsign is a personal callsign, club call or GB special event station. The definition of a group or club is any operation of a callsign by more than one individual. Groups and clubs are invited to operate on more than one frequency band simultaneously.

9. To qualify for the trophies, you *must* return the sponsorship form *and a cheque for the amount raised*, made payable to 'British Wireless for the Blind Fund', to arrive *not later than* 31st October 2005.

To qualify for the trophies for the greatest number of contacts you must state how many contacts were made during 'Transmission 2005' and enclose a copy of the log. Either a *photocopy* of a hand-written log or a hard-copy print-out of a computerised log is acceptable. Please do *not* send the *original* of hand-written logs as they cannot be returned, and do *not* send computerised logs on disk. The minimum information required is the date, time, frequency band, and callsign of station contacted. The log should be signed by the licence-holder (or NoV-holder in the case of GB special event callsigns) as follows: "I certify that this is a true copy of the log-book entry for (callsign) during the period 24 – 25 September 2005. (signature)." Sponsorship forms and cheques returned without log copies will only qualify for the trophies for raising the most funds for BWBF.

To qualify for any trophy you *must* be a current member of the RSGB on 24 September 2005 and be resident in the UK. (However, special certificates will be sent to *all* stations raising more than £10.)

10. The trophies will be presented at the Kempton Radio Fair, which this year takes place at the Kempton Park Race Course on Sunday 13th November 2005. The trophies may be taken home by the winners but must be returned as arranged with BWBF for presentation to the winners of 'Transmission' next year.

Chris Lorek, G4HCL

PO Box 400, Eastleigh SO53 4ZF.

E-mail: g4hcl@rsgb.org.uk

bhi NEDSP1062-KBD
in-speaker noise reduction module

The UK firm bhi has achieved a good reputation for its DSP noise reduction unit, available as a self-contained mobile speaker, an external in-line unit, or a small PCB for fitting inside a receiver or transceiver. Because many amateurs use a dedicated external speaker for their shack radio, bhi has now come up with a unit that's specifically designed to be retrofitted into such a speaker. Chris Lorek tries it out.

The bhi unit provides up to 35dB of white noise cancellation and up to 65dB of audio tone reduction, with switchable levels in eight stages. For this review, bhi provided the module itself as well as the module fitted into a Yaesu SP-8 speaker.

Unlike the 'in-rig' module which operates on low audio levels, this one is designed to handle a higher input level from an external speaker socket, and has an on-board power amplifier to provide 3 watts of audio output into a 4Ω speaker. The audio in and out connections are pre-wired on to a pair of leads, the power lead also comes pre-wired on to a 2.1mm connector to fit on the rear of your speaker. You'll need to provide a DC supply of 12 - 18V to this, typically either from your rig's 13.8V DC supply or an external supply (bhi can also supply a small plug-top DC supply for this if you need one).

To operate the module, a small front panel keyboard unit consisting of two buttons and a tri-colour LED is used, a front panel label is supplied for you to fit over these. The 40-page user manual gives comprehensive fitting instructions as well as handy drilling templates for you to use.

The module itself can fitted internally to your speaker in a number of ways. Firstly, the 'quick and simple' way is to use the supplied self-adhesive foam pad, and simply stick the PCB down on to a flat surface inside your speaker. For more permanent mounting, the module has four fixing holes which allows it to be fixed to pillars and again a drilling template is provided for this. Finally, for better heat dissipation as well as good mechanical fixing, the on-board heatsink can be reversed and used as a mounting bracket and fixed on to a metal panel inside your speaker. The heatsink is at 0V DC potential so you'll need to ensure that your speaker cabinet is either isolated or is also at 0V DC potential. Alternatively, if you've not much space available, you can remove the heatsink and mount the module directly on to your speaker chassis using the power semiconductors for fixing - you'll need to add an insulator on the voltage regulator here. Finally, a small circular piezo-electric sounder which is wired to the unit is fixed to an appropriate place within the speaker cabinet using a small piece of the supplied self-adhesive foam, making sure that the small hole in the middle of the sounder isn't covered. As well as 'generic' installation instructions, specific details are also included for mounting into the Yaesu SP8 and Kenwood SP31 speakers, including suggested locations for the power socket and keyboard.

The module PCB measures 37 x 55mm and is supplied with full fixing and wiring kits - all you need to supply are the drills for making the appropriate holes.

SPECIFICATIONS

Noise and tone reduction parameters provided

Four Level

Setting	Noise Reduction	Tone Reduction
1	11dB	5dB
2	15dB	8dB
3	20dB	21dB
4	35dB	65dB

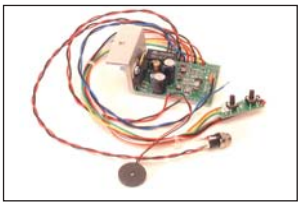
Eight Level

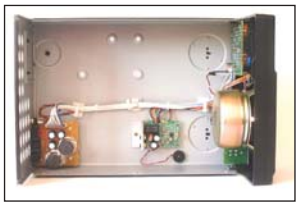
Setting	Noise Reduction	Tone Reduction
1	9dB	4dB
2	11dB	5dB
3	13dB	6dB
4	15dB	8dB
5	17dB	16dB
6	20dB	21dB
7	24dB	25dB
8	35dB	65dB

SETTING UP & OPERATION

Once installed, the module needs just a few of adjustments to set it up. Firstly, you adjust the volume on your receiver to a typical audio level and adjust the input potentiometer control until the 'overload' LED on the module lights, you then back off the control by around a quarter turn. Then set the output potentiometer to a suitable level, and finally hold down the DSP button and adjust the volume of the beeps from the piezo sounder. That's it.

In use, the DSP unit is switched on and off by a press of the left-hand momentary 'Power' button, and in the 'off' position the receiver audio is routed directly to the speaker. The momentary-operation 'DSP' button switches the DSP on and off and sets the level of noise and tone reduction, this cycling through the various levels. Once it reaches the maximum level a further press switches it back to the first level. You can choose between either four or eight selectable levels. To do this, you hold down the DSP button and switch the unit on, and keep the button pressed until the module's piezo sounder emits either four beeps (four levels) or eight beeps (eight levels). With the DSP switched off, the LED glows red on the four level setting and orange for eight levels, reverting to a green display when the DSP is switched on. When you switch between levels, the LED flashes with the number of flashes indicating the level selected, the sounder also beeping the appropriate number of times to give an audible indication.





Above left:
The DSP unit as supplied for in-speaker fitting.

Above right:
Here's the unit fitted in a Yaesu SP-8 speaker.

Right:
The small DSP operation keypad is fitted to the speaker front panel (bottom, centre).

The performance of the bhi noise and tone reduction system has already been well documented in earlier *RadCom* reviews [1, 2, 3]. The performance was similarly excellent and something I'd certainly recommend for HF and weak signal VHF/UHF SSB use. The module can be fitted into the speaker path of older receivers or tranceivers, giving them a new lease of life. I invariably left the DSP switched on, usually set at around level four of the eight-level selection, increasing this as needed in very noisy reception conditions and finding it very useful in picking out signals which were sometimes otherwise unreadable.

CONCLUSIONS

The module comes with excellent fitting instructions and the on-air performance in improving readability of weak SSB signals or those in noisy conditions was excellent. I already use a bhi unit (how's that for a recommendation!), but if I hadn't already got one this would not have been returned to the supplier - instead I would have bought it for use in my station.

The NEDSP1062-KBD is currently priced at £99.95 and our thanks go to bhi Ltd (tel: 0870 2407258) for the loan of the review units. ♦

REFERENCES

[1] 'bhi NES10-2 noise eliminating speaker', by Chris Lorek, G4HCL, *RadCom* December 2002.

[2] 'bhi DSP noise reduction module for Yaesu FT-817', by Chris Lorek, G4HCL, *RadCom* December 2003.

[3] 'bhi noise eliminating in-line module and switch box', by Chris Lorek, *RadCom* March 2004.

WIN a bhi NEDSP 1062-KBD
See page 61

Martin Lynch & Sons open day

Summer BBQ and boot fair - 30 July

ML&S is holding an open day with BBQ and boot fair at its premises in Chertsey, Surrey, on 30 July

Martin Lynch and his team are gearing up for another open day at their new premises in the town centre of Chertsey in Surrey on 30 July. Following the popularity of the mid-winter hog roast at their last open day, this time there will be a summer BBQ with hot dogs and beef burgers.

The whole day is being sponsored by Yaesu, Icom and Kenwood and representatives of 'the big three' will be there to display and demonstrate their latest products. In addition, the Barenco antenna hardware range, well known from rallies around the country, will be available for purchase 'over the counter'.

There are three dedicated areas for new Yaesu, Kenwood and Icom equipment, plus additional areas for other manufacturers such as Linear Amp UK, MyDEL, Miracle Products, MFJ, Diamond, SGC, bhi and many others. The roof of the building now has HF, VHF and UHF verticals and dipole aerials, as well as the Arno Elettronica E-H antennas, allowing you to try out the transceivers as well as the aerials in a real life on-the-air situation before you buy.

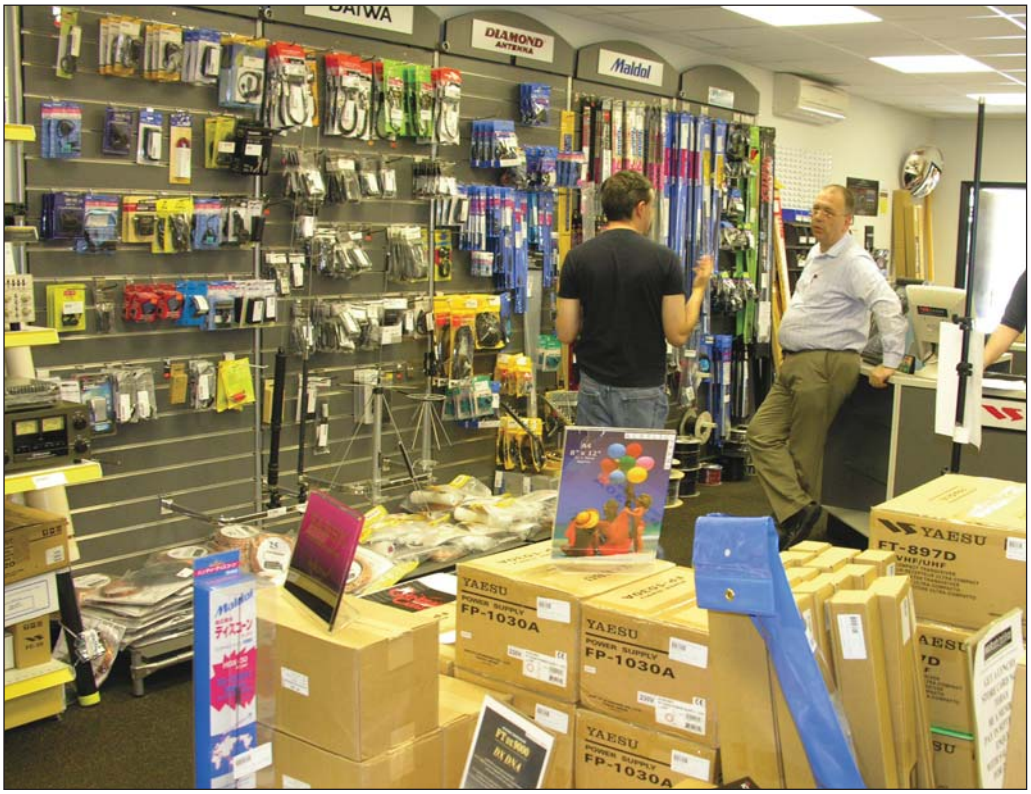
Equipment from a nylon antenna insulator or PL259 plug up to a £6000+ transceiver - and everything in between - is available from the ML&S store and Martin has promised plenty of bargains on the day.

CAR BOOT FAIR

If you want to sell some of your own equipment, you can bring one table free of charge and set up in the car park behind the ML&S store (traders will be charged £10). The car boot fair, as well as talk-in (on 145.550MHz) are being organised by members of the Whitton Amateur Radio Group. 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 Martin Lynch & Sons Open Day takes place between 9.00am and 4.00pm on Saturday 30 July at ML&S, Outline House, 73 Guildford Street, Chertsey, Surrey KT16 9AS. The venue is 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. ♦



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NewsFlash!

General Electric Rangr 6Mtr

The GE Rangr was designed jointly between the General Electric Company (USA) and the Japanese Radio Company (Japan). The main radio unit was manufactured by JRC to the highest standard as the majority of the radios we destined for the internal security forces of the USA. The radio is available in three bands Lowband 50Mhz Midband 150Mhz and UHF 440Mhz. The Rangr is available in two models (The Rangr and the Rangr 89) with two versions in each band (60w and 110w) Radios with 50 within the serial number are earlier than those with 51 within the serial number (Rangr and Rangr 89 respectfully). P7 denotes 60w P8 denotes 110w.

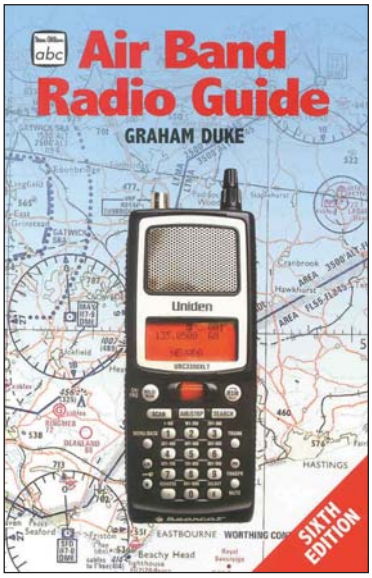
All of the units that we are supplying are the following type P19C852051P8 110w model with 32ch (The radios will be set at 50w ONLY) The radio is in fact a 64ch however the control head has only the facility for 32ch. I am sure that before very long some brainy person will find a modification to throw a switch to give the extra 32ch (We will keep you informed) These radios are ALL USED with only one owner and have been removed fully operational from New York Police Department Vehicles mainly Police Cars (95%). FYI They have gone to 800Mhz (!!!)

We have learnt our lesson on the supply of the FM1200 4Mtr radios, so the price of the Rangr on any 32ch of your choice with in the 6Mtr band is £75.00 plus £7.50P & P you send us a cheque or ring with your card details (you may visit and we will accept cash) we will then select your radio give it a number and by means of a post card or E-Mail send you a confirmation. We will also keep your name and address & call sign (Data Protection Thingy) with your permission so that we may update you on delivery and also any modifications that the brainy person comes up with.

CASH / CHEQUE / DOLLARS / EURO's / VISA / MASTERCARD / AMEX

If you have any questions regarding the above then you are welcome to give me a ring on
01604 234333 or 07836 600700 Gary G6NYH
TETRA Communications Ltd, Victoria Chambers, 1 Victoria Road, Northampton, NN1 5EB
Or by the written word to G6NYH@AOL.COM www.tetra.tv

Book review



abc AIR BAND RADIO GUIDE (6th Edition)
By Graham Duke
Reviewed by HQ Staff

First published in 1992 and with new editions and additional impressions regularly since then - most recently the fifth edition in 2001 - *abc Air Band Radio Guide* is an indispensable handbook for all aviation enthusiasts which has already become one of the most successful titles in Ian Allan's popular series of aviation 'abc' titles. The book examines in detail the technology involved - the equipment available, airfields, radio frequencies and much else.

After a brief introduction to air traffic control in the UK, Chapter 2 covers 'the legal position' in some detail and advises that "it is illegal to listen to anything other than general reception broadcasts..." although it concludes: "at the present time, the authorities appear not to take very much interest in people who choose to listen to Air Traffic Control frequencies, but there is a risk that a blatant disregard for the law may well result in the position changing to the detriment of all those who pursue the hobby with no more than innocent interest. If any person chooses to disregard the law and listen to non-broadcast frequencies, then this must be at the risk of being found out and prosecuted." The author advises readers to contact Ofcom for more detailed information on the legal position.

Other chapters in the book examine topics such as the nature of the transmissions that can be heard, the features of the equipment available and what to look for when seeking to acquire such equipment, antennas and high frequency radios. In addition, the book also includes comprehensive appendices that provide an airfield directory (which lists all the up-to-date frequencies for each of the airfields covered), the ICAO four-letter airfield codes for British and major overseas airports, the ATC reporting points and radio navigation aids, airline callsigns and much else.

This book is ideal for those holding, or studying for, a private pilot's licence (PPL), who wish to learn a little more about aviation radio communications and the technology behind them. To the 'ordinary' radio enthusiast keen to get the maximum enjoyment and knowledge from their hobby it also provides essential information. This sixth edition of the *abc Air Band Radio Guide* has been fully revised and will be eagerly sought out by the many thousands of air band enthusiasts. It is available to RSGB members at a very special 25% off the list price, making it a real bargain.

abc AIR BAND RADIO GUIDE (6th Edition)
By Graham Duke
112 pages, 184 x 120mm, paperback
Ian Allan Publishing, 2005
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Members' price £6.74 + p&p
(Non-members' price £8.99 + p&p)
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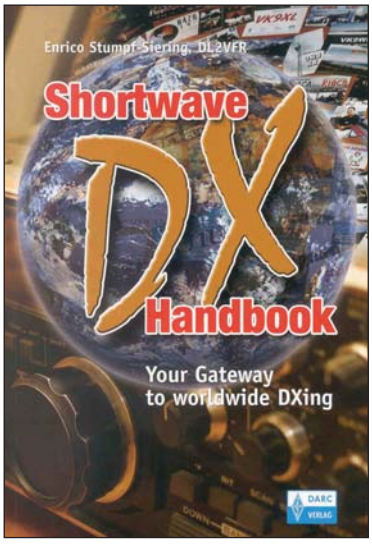

SHORTWAVE DX HANDBOOK
By Enrico Stumpf-Siering, DL2VFR
Reviewed by HQ Staff

The practice of DXing has been around since the earliest days of amateur radio: Marconi himself strived always to make longer distance contacts. DXing has developed a lot since Marconi's day and indeed in recent years it has gone through some major changes. This new book on DX and DXing covers all these recent developments in a comprehensive and entertaining fashion.

Starting from the question "So you want to be a DXer?" and tackling subjects such as how to *really* listen, pile-up techniques (both on CW and SSB), DX information (*Clusters*, bulletins, websites, news broadcasts), propagation etc, the *Shortwave DX Handbook* really is a goldmine of useful information and techniques for both the newcomer and the experienced DXer.

Its 12 main chapters make up some 250 of the 418 pages; the remaining 150+ pages comprise what must be one of the longest and most comprehensive amateur radio appendices ever published! Virtually every conceivable piece of information the HF operator or DXer is ever likely to require is there: the Morse code; English, German, Spanish, Italian, Portuguese and Russian phonetic alphabets and numbers; NCDXF beacons; IARU Region 1, 2 and 3 band plans; CEPT licensing information; ITU country prefixes; DXCC entities; Russian prefixes and districts; IARU member societies' names, addresses and websites; overseas QSL bureaus and very much more.

While much of the information in this 'mega-appendix' is available in various other publications, it is certainly useful to have it all collated in one place. Where the *Shortwave DX Handbook* really stands out, though, is in its practical *how to* advice: how to listen, how to get through the pile-ups, how to find information on propagation and how best to make use of it, even how to design your QSL card.

If you followed the BBC2 TV series *Holidays in the Danger Zone* (about 'places that don't exist'), you will especially enjoy chapter 12, entitled 'Curiosity Corner', which looks at the 'X Files' of radio countries: those places in the world that claim independence but which are not recognised by other governments or even by DXCC. These include the Principality of Seborga, Northern Cyprus, Mustang (an 'independent' kingdom within Nepal), the Sealand fort in the North Sea and several others.

There is also a section on DX 'etiquette' which should be required reading for everyone who intends to join a pile-up. All too often the unruly behaviour that can be heard on the bands is caused by ignorance. With such excellent books as the *Shortwave DX Handbook* now available, there should be no excuse for this at all.

The *Shortwave DX Handbook* was originally published in German and has been expertly translated into English by Martyn Phillips, G3RFX. It provides essential advice for everyone from beginners to old hands at DXing and should be on the bookshelves of all those who chase DX on the HF bands.

SHORTWAVE DX HANDBOOK
By Enrico Stumpf-Siering, DL2VFR
418 pages, 210 x 147mm, paperback
Published by DARC, 2005
ISBN: 3-88692-045-3
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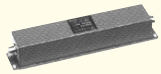

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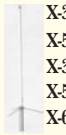

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The first '*RadCom*' (The T. & R. Bulletin Vol 1, Number 1) was published 80 years ago this month, in July 1925. Pat Hawker, G3VA, discusses the Amateur Radio Service in those far-off days, starting with a Post Script to his '90 Years - Serving amateur radio' article published in *RadCom* July / August 2003.

The early years of the

Above right: A view of 'The Experiences of an Amateur', as seen in the November 1913 issue of *The Wireless World*: "With 20ft of ordinary copper wire, a garden rake, a bicycle, a few odds and ends valued at 5s. and a pair of telephones, I easily read wireless time signals from Eiffel Tower" - from a suburban correspondent.

In compiling the two-part potted history of the RSGB and amateur radio published in *RadCom* in July and August 2003, it was necessary to condense or omit a number of noteworthy events involving the Society and the contributions of members now silent keys. Similarly, there can be little excuse - other than that the RSGB played little part - for omitting any mention of the historic Washington conference of 1927 that brought amateur radio into the domain of the international *Radio Regulations* and convinced the Society that it must always actively participate in future conferences of the International Telecommunication Union. There were also a couple of errors.

First, Jim Searle, RS190172 (formerly ZL4THH), surprised me by showing that the UK was not the first, as I claimed, to have a Wireless Telegraphy Act (1904). New Zealand passed an "Act to provide for the Establishment and Control of Stations for the Purpose of Wireless Telegraphy" on 26 September, 1903 - short title 'The Wireless Telegraphy Act, 1903'. Jim points out that the Act was not to curb hams but to prevent possible loss of revenue from the government-owned telegraph land lines. There had been amateur transmissions in Dunedin before 1903.

Second, as G3SZJ and G7GJI / M3DPS have reminded me, the Derby Wireless Club (now Derby & District Amateur Radio Society) lays claim to be the country's first 'wireless club'. It was formed officially on 11 October 1911 (not 1912). One of the founder members was Alan Trevelyn Lee, LYX (later G2AT). More recently, a leading light was the late Fred Ward, G2CVV, who compiled an extensive file on the club's activities and was prominent also in national RSGB activity.

EXPERIMENTAL FORM 1

David Pratt, G4DMP, sent a facsimile copy of 'Experimental Form 1' the original "License (sic) To use Wireless Telegraphy for Experimental Purposes", a flowery six-page document that opens: "To all to whom these presents shall come I THE RIGHT HONOURABLE SYDNEY CHARLES BUXTON MP, His Majesty's Postmaster General send greeting: Whereas Maurice Child of ..... and The London Telegraph Training College .... Is desirous of establishing installing working and using a system of wireless telegraphy as defined in section 1 (7) of the Wireless Telegraphy Act 1904 with the sole object of conducting experiments in such telegraphy . . ." The introductory preamble, complete with several "And whereas" continues for some 350 words before the first full stop! G4BWP, however, notes that some of the wording in the main part of the licence is still recognisable in today's BR68! And even more so in the four-page licence issued October 1938 to my father, naming me "as his agent".

The early licence, issued 6 July 1907, was to establish a receiving station on Cumford Cliffs, Bournemouth, with the sections relating to transmitting crossed out in ink. Maurice Child (later 2DC) played a prominent role in the Society in the 1920s and was elected its first Vice President. He took an active part in the classic RSGB '6ZZ' experiment involving the first transmissions from a moving train. In the 'thirties, he organised various portable DF events, and later donated early equipment from the London Telegraph Training College to the Society. [The collection can be seen today in the National Amateur Radio Museum at RSGB HQ - see *RadCom* June 2005, pages 38 - 40 - *Ed.*]

In the '90 Years' article (*RadCom* July 2003) I made a brief reference to the first message sent across the Atlantic on 11 December 1921 from 1BCG, the special station erected by the Radio Club of America for the Transatlantic Tests. Greg Munton, G4XMS, recalls visiting (with Ted Schimenti, K2LBJ) a stone plaque commemorating this historic event erected at Greenwich, Connecticut, in 1950 at the site of 1BCG. As the plaque makes clear, 1BCG transmitted the very first complete message (amateur or professional) across the Atlantic on "short waves".

As Ray Herbert, G2KU, has shown (*RadCom,* February 2003, pp28-30), the first transmission of (low-definition) television across the Atlantic was

Pat Hawker, G3VA

37 Dovercourt Road, Dulwich, London SE22 8SS

Amateur Service

from the amateur station of Ben Clapp, G2KZ in 1928.

In 1933, George Jessup, G6JP, and Douglas Waters, G5CV, made VHF (56MHz) transmissions between aircraft and also to ground stations. There can be little doubt that these demonstrations encouraged the RAF to change to VHF for the control of fighter aircraft in time for WWII.

The reaction by the authorities to the successful opening of HF by the amateurs in the early 1920s was very different in Europe from that in the United States. Quick off the mark was the US Navy which sought the collaboration of amateurs in proving that HF offered an opportunity to communicate world-wide with its ships.

The GPO sought the advice of Gerry Marcuse, G2NM, in connection with the establishment of a commercial radiotelegraphy service with Japan, seeking details of the power and wavelengths he was using. A senior GPO engineer wrote: "If the limitations of your licence have been exceeded in the tests, steps will be taken, if possible, to amend the licence to regularise such tests." His rapport with the GPO was such that they were willing to authorise his proposal to broadcast regularly to Empire listeners in 1927. A high spot of his broadcasts proved the regular transmission of the midday striking of Big Ben - the first time these familiar sounds had ever been heard by listeners in the far-flung British Empire of the 1920s.

THE 1927 WASHINGTON CONFERENCE

But Gerry's experience was an exception. European authorities, always anxious to retain state regulation of telecommunications, viewed the growth of international amateur operation with misgivings, enhanced by the right of American amateurs to handle 'third-party' messages on a voluntary basis - with the ARRL encouraging the relay of traffic along organised transcontinental networks of stations.

In 1912, American amateurs had been banished to '200 metres and down', thought at the time to be useless for commercial exploitation. For the next 12 years, the standard American amateur licence permitted transmission on 200 metres ±25% (ie 150 to 250 metres). They could, however, make special application to use lower wavelengths.

By 1924, the success of transoceanic working by amateurs had revealed that 'short waves', far from being useless, could be of great value for international telecommunications and military applications.

A new provisional form of American licence was introduced permitting the use of one or more of the following bands: 75 to 80m (3500 - 4000kHz); 40 to 43m (7000 - 7300kHz); 20 to 22m (13600 - 15000kHz); and 4 to 5m (60 - 70MHz). Applicants for the new licence had to declare which bands were to be used. The use of the existing licence covering 200m ±25% continued.

European amateurs were also required to seek special permission to use wavelengths below about 180m. Amateurs soon found it convenient to concentrate international operation around specific bands. One of the secrets of successful DX working was knowing on what wavelength to look for particular countries: 23, 33, 37, 43, 80, 110 and 150 - 200 metres were the favourites but by no means the only spots. There was still no international regulation of the short waves. The British Post Office was by 1924 becoming increasingly concerned with the growth of international working by amateurs and attempted to close it down.

By the mid-twenties, such working was becoming more organised, although the days were fast ending when amateurs could blithely claim a right to "all wavelengths below 200 metres" or "all wavelengths that do not interfere with commercials".

There were also still no official international prefixes for amateurs although the habit of using unofficial 'intermediates' (as they were called) had spread. In this system a station in 'G' (UK) would call a station in 'U' (United States) by sending, for example, "1MO 1MO UG 2OD 2OD" indicating that 1MO in the United States was being called by 2OD in the UK. If 1MO replied he would reverse the intermediates and call: "2OD GU 1MO". Gradually intermediates gave way to unofficial prefixes often includ-

Above centre: Prominent amateurs of the day taking part in the Society's pioneering of wireless transmissions from a moving train with station 6ZZ. Left to right (standing) Leslie McMichael, 2FG (founder member); Philip Coursey, 2JK (*Wireless World*); Frank Haynes (*Wireless World*); (sitting) Maurice Child, 2DC; H Andrews.

Above right: A youthful (Dr) Eric Megaw, G6MU, and his Belfast station in the 1920s. Like many of the early pioneers he was to become a distinguished professional radio engineer. In the 1930s he wrote articles in the *Bull* on early microwave devices. At GEC in 1940 he played a key role in bringing the experimental 10cm cavity magnetron, developed at Birmingham University, into production, and was awarded the CBE.

ing a Continental indicator - 'E' for Europe, 'O' for Oceania etc - so that 2OD became G2OD or EG2OD and 4AA New Zealand became Z4AA or OZ4AA (*not* in Denmark!) with the standard intermediate 'de'.

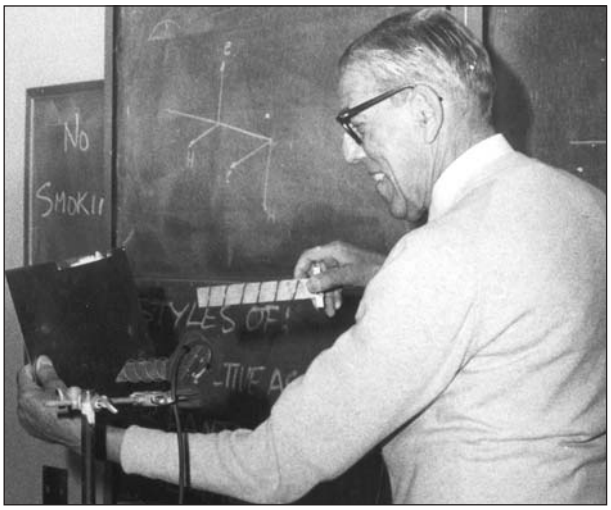
The first official list of international prefixes for short-wave stations came from the International Radiotelegraph Convention, held in Washington, DC in 1927 (the first since 1912 and the first to consider the regulation of the short waves).

The Washington conference came near to proving disastrous for amateurs. The international aspects of the hobby might have ended had it not been for the support of the American delegation and the valiant effort of K B Warner, W1EH, ARRL Editor and Business Manager, representing also the recently-formed but by no means flourishing IARU. Pre-convention meetings of Warner with the official American delegates, backed up by the work of the amateurs in connection with the US Navy, ensured American backing for a far more liberal approach to frequency allocations than those suggested by European countries in the 'Book of Proposals' drawn up by the Berne Bureau. The book was issued in May 1926 in advance of the conference.

The RSGB had played no part in drawing up the UK proposals and made no plans to send an observer - the first and last time this was to happen. The UK, Germany, France, Hungary and Switzerland all proposed severe restrictions. The (European) International Broadcasting Union wanted amateurs to be "assigned very low power" and certain narrow bands . . . that would not be able to offer any further obstacle to the development of broadcasting."

The UK initially proposed authorising experimental stations with an input of only 10 watts on waves between 150 and 200 metres, adding: "In exceptional cases" the stations might be authorised to operate on specified waves outside that band and / or with greater power than 10 watts, but no station should have more than two wavelengths and "emissions from private experimental stations shall be limited to signals necessary for the experiments in progress, and shall not include the communication of any news or other message."

When the delegates arrived in the USA, Warner discovered that the British delegation was ignorant of the work of their own amateurs. He warned the RSGB of the danger, and set to work to try to win over the UK delegates. They were persuaded to soften the UK position to the extent that they then proposed amateurs should have six narrow bands (each 100kHz wide) at 109.33, 82, 54.66, 27.33, 13.66 and 6.83 metres, a total of 600kHz compared with the American support for their existing amateur allocations totalling 12,000kHz.



'Dud' Charman, G6CJ, demonstrating one of his model antennas. His 'antenna circus' was presented to hundreds of clubs in the UK, Australia and New Zealand.

In the outcome, the more anti-amateur countries were persuaded to modify their stance, albeit reluctantly. It was agreed that amateurs should use 1715 to 2000kHz, 3500 to 4000kHz, 7000 to 7300kHz, 14000 to 14400kHz, 28 to 30MHz and 56 to 60MHz, a total of 7485kHz, although it was clear that these allocations would come under threat at future conferences. It was also left to individual countries to allot or withhold these bands or parts of them; but they all had to observe the international table of frequency allocations and could not authorise other services to use exclusive amateur bands.

The Washington conference also introduced, less controversially, a table of international prefixes (still the basis of the current table); and a revised international Q-code. The new *Radio Regulations* came into force on 1 January 1929.

LESSONS LEARNED

While amateurs world-wide had reason to be thankful for the staunch support of the Americans, the near-disaster of Washington was not lost on the RSGB. In future it was determined that its own representative would be actively concerned with future international conferences. This policy was followed at Madrid (1932) and Cairo (1937) with Arthur Watts, G6UN, attending both on behalf of the Society. Pressure on the amateur frequency allocations, particularly the exclusive 7MHz allocation, continued from European countries. Frequency revisions, with broadcasting permitted within the 7MHz band, were agreed at Cairo but had not been implemented officially before the outbreak of WWII. A forecast of the problems this would give rise to arose with a rash of Spanish low-power propaganda stations invading 7MHz during the Spanish civil war.

Although all signatories have to abide by the Frequency Table set out in *Radio Regulations*, this did not - and does not - mean that every country has to authorise their use by amateurs. In the UK during the 'thirties only a few well-established amateurs had access to the 3.5MHz band, initially for only part of each year. The GPO also insisted on 'guard bands' at the edges of all bands, and ruled that licensees should have either a reliable frequency meter, accurate to within 0.1% tolerance, or the transmitter should be crystal controlled. Crystal calibration certificates had to be submitted for inspection. A single7MHz certificate secured both 7 and 14MHz, but a separate 1.7MHz certificate had to be submitted to get access to '160 metres'. Special justification had to be shown to be allowed to use the 28 and 56MHz bands. Radiating antenna elements could not exceed 100ft (later 150ft).

My own 'Licence to Establish Wireless Telegraph Station for Experiments in Wireless Telegraphy' issued in October 1938 to my father, naming me as his agent, permitted only the use of 10 watts (measured at the anode of the valve delivering power to the aerial circuit) from 1720 to 1995, 7005 to 7295 and 14005 to 14395kHz, continuous wave and telephony. Voluntary band-planning was not introduced in the UK until post WWII, although on 14MHz CW tended to concentrate towards the ends of the band, with AM telephony in the middle.

COMING UP TO DATE

It needs to be stressed that the RSGB is the recognised national society for UK amateurs. The costs of national and international (IARU) negotiations etc all fall on the RSGB members - the benefits apply to *all* UK amateurs. Whether or not one agrees with every aspect of its policies - and few of us do - the Society deserves the support of *all* UK licensed amateurs, not just the present minority.

Finally, I feel that mention should be made of the contributions to amateur radio made over many years by Arthur Milne, G2MI. In the 'thirties he was active in the production of the *Bull* including redrawing many circuit diagrams and later acting as Honorary Editor. Post-war he took over responsibility for running the Society's QSL bureau from his home in Bromley and later for the 3.5MHz GB2RS news bulletins (London Region), which had been launched in the 1950s by Frank Hicks-Arnold, G6MB. In my 2003 article I also omitted any mention of the famous table-top model antenna lecture / demonstrations [the famous 'antenna circus' - *Ed*] given by 'Dud' Charman, G6CJ, to countless clubs and societies. Many others deserve mention but space forbids.

The Society, even in its modern, more commercially-orientated form, with the Council replaced by an elected Board and Regional Managers, has always been highly dependent on its many volunteer workers. Long may this continue! ♦

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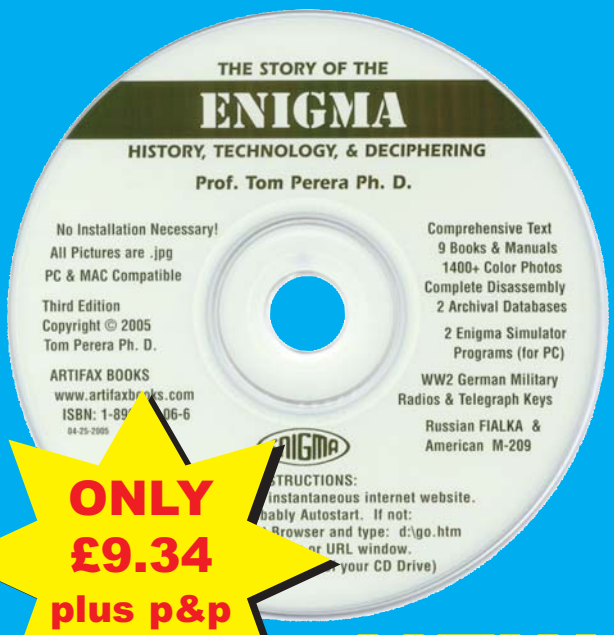

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RadCom's 80th birthday

It is 80 years since Volume 1, Number 1 of the *T. & R. Bulletin* was published

July 2005 marks the 80th anniversary of *RadCom* or, to be more precise, of the Society's own publication, for *RadCom* has been through a number of name changes in its 80-year history. Enclosed with this issue of *RadCom* is a facsimile reproduction of the *T. & R. Bulletin* number 1, dated July 1925.

We hope you find 'the first *RadCom*' makes for interesting reading. For my part, I was surprised to see the use of the word "ham" in the very first *T. & R. Bulletin*. Far from being a Johnnie-come-lately Americanism as many of us may have believed, "ham" was obviously common parlance here in the UK as far back as 1925.

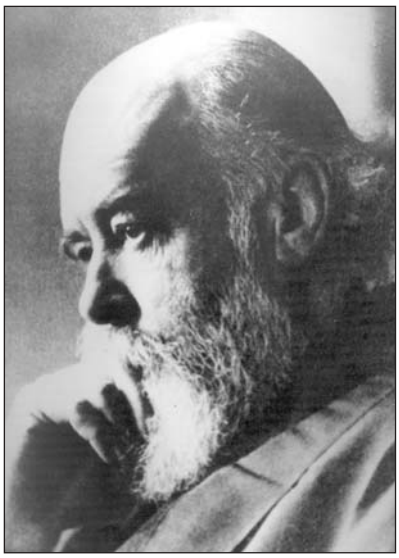
42 years later, John Clarricoats, OBE, G6CL, wrote about the birth of the *Bulletin* in his book, *World at their Fingertips*. His words make interesting reading today, almost four decades further on:

BIRTH OF THE *BULLETIN*

No-one could have brought greater distinction and dignity to the young Society than did that great scientist Sir Oliver Lodge when in 1925 he accepted the office of President. True he was but a name to the majority of the humble experimenters who made up the bulk of the membership and for many, his Presidential Address on "The Radiation of Matter" must have been a source more of wonderment and mystery than of enlightenment.

Nevertheless, the recognition of the Society by one of the greatest scientists of all time, gave a prestige and standing which one hopes will illuminate the history of the RSGB for ever.

Up to the end of 1924 *Wireless World and Radio Review* was the official Journal of the Radio Society of Great Britain, having fulfilled that task with enthusiasm from the days immediately after World War I. No history of the Society would, therefore, be complete without acknowledgement being paid to the important part played by the publishers, editor and staff of that magazine in helping forward the work of the Society during those momentous years. In December 1924 as the result of a change in the proprietorship of *Wireless World and Radio Review* another magazine of established merit, but somewhat more technical, *Experimental Wireless and the Wireless Engineer* became the Official Journal of the Society. The arrangement was however short-lived, because during the summer of 1925 the Committee of the T and R Section decided the time had come to produce a monthly publication which would be devoted exclusively to the interests of the transmitting amateur and which would circulate only amongst the members of that Section.



Left:
Sir Oliver Lodge, President of the RSGB in 1925 when the *T. & R. Bulletin* was launched.

Lower left:
Henry Bevan Swift, G2TI, Chairman of the 'T and R Section' in 1925 and the man responsible for the launch of the *T & R Bulletin*.

The first issue of the *T and R Bulletin* appeared in July 1925, having been edited by J A J Cooper, G5TR (recently appointed Honorary Secretary of the T and R Section), but chief credit for the launching of this new venture - the first of many by the Society into the realms of publishing - must go to Henry Bevan Swift, G2TI, at that time Chairman of the T and R Section. Bevan Swift was a chartered electrical engineer whose interest in wireless dated back to the years before the war. He had been an early member of the Society and an ardent experimenter. In his long association with the Society he held, at different times, every office, culminating in a wise and earnest Presidency (1931-33), but in the year 1925, and previously, he had done much to steer the newly-formed T and R Section along a path chosen to avoid friction with the parent body. Being older than most of the members of the Section his advice was sought after at every turn and almost always accepted.

Milestones in the life of the Society's Journal.

July 1925	*T. & R. Bulletin*, Vol 1, Number 1, published
July 1942	Name of publication changed to *RSGB Bulletin*
January 1964	First use of a single ('spot') colour on cover of *RSGB Bulletin*
January 1968	Name of publication changed to *Radio Communication*
January 1981	*Radio Communication* first published in A4 format
November 1981	First full-colour advertisement on *Radio Communication* back cover
January 1992	Full colour introduced inside *Radio Communication* for the first time. Most of the magazine still in black and white.
January 1995	Name of publication abbreviated to *RadCom*
January 2003	Full colour introduced throughout *RadCom*

Under his skilful direction the *Bulletin* was born, although it had not been an easy matter to persuade the Council of the RSGB of the seriousness of the venture. Bevan Swift, with the backing of Gerald Marcuse [G2NM - *Ed*], virtually guaranteed the financial side of the venture. Neither Bevan Swift nor Cooper had had previous experience of editorial work but from the first issue they struck the right note with the slogan "Written by and for the radio amateur". The third member of the original editorial team - Ralph Royle, G2WJ, was an expert in the art of block making. His own and his firm's [W R Royle & Sons, Government Printers] association with the Society has been a happy one from that time until the present day [ie, 1967 - *Ed*]. Ralph Royle was one of the first to work across the Atlantic during the winter of 1923-4 and his station was as well known then as it was more than forty years later.

Writing in the first issue the editor had this to say: "The *T and R Bulletin* is a new departure of the Section, mainly with the object of keeping those members who are unable to attend meetings in touch with the work carried on. It also has the object of informing members of programmes of transmissions, tests and results. It makes no attempt to pose as a commercial radio journal but to meet a want which is not met by any of the present publications, very few of which are able to do much for the transmitter on account of the far greater number of receiving interests. The success or otherwise of *The Bulletin* is entirely dependent upon the support it will receive from the members of the Section."

Any doubts Cooper, Swift and Royle may have had in the summer of 1925 as to whether their venture would be favourably received, were instantly dispelled. They did not know it at the time but the publication for which they were responsible undoubtedly ranks as one of most important developments in the history of the Society.

Contributors to the first issue were E J Simmonds, G20D, who described a circuit for the reception of 20 metre signals and Royle, who described and illustrated his 23 and 45 metre breadboard transmitter using the reversed feed-back type of circuit and a Mullard 0-150 valve. Another early amateur, Fred Mayer, G2LZ, contributed an account of the experimental work he had recently carried out with Captain Durrant and others stationed with the Royal Air Force in Mosul, Iraq. The first "Letter to the Editor" came from an illustrious Past President, Admiral of the Fleet, Sir Henry Jackson who, as Chairman of the Radio Research Board, invited amateurs to assist in the extensive programme of research currently being conducted by the Board into the propagation of short waves with special reference to the part played by the upper atmosphere. Gerald Marcuse described the events which led up to the formation of the International Amateur Radio Union and the decisions reached on April 17, 1925 when the Union had been established in Paris. The first list of Calls Heard was contributed by Ralph Royle, G2WJ, who reported logging more than fifty US stations on 45 metres and twenty-five on 23 metres.

The second issue of the *Bulletin* - "The Bull" as it then became and has been so described ever since - carried much eulogistic comment from enthusiastic readers of Vol 1, Number 1. For example, G20D - "a splendid effort and should do much to consolidate the Section". G6LJ - "you have given us the exact style we want". G60H - "a great start in the right direction".

A good start it had been and without doubt the decision to launch the *Bulletin* had been a wise one...

Above left:
J A J Cooper, 5TR, first editor of the *T. & R. Bulletin*, in 1925.

Above:
Preparing the *T. & R. Bulletin* at 53 Victoria Street, London, ca 1928.

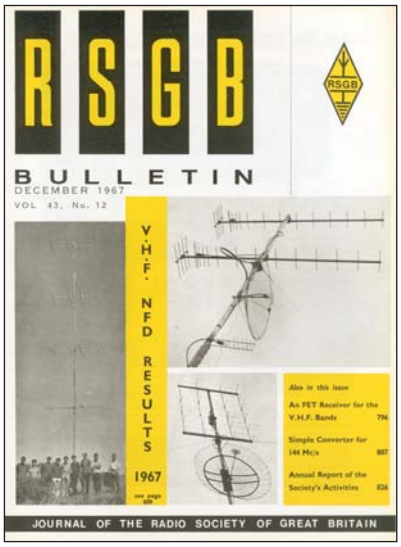
Top right:
The final RSGB Bulletin: December 1967.

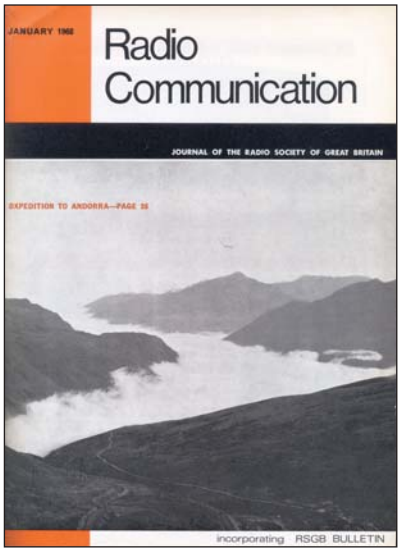
Middle right:
The first *Radio Communication*: January 1968.

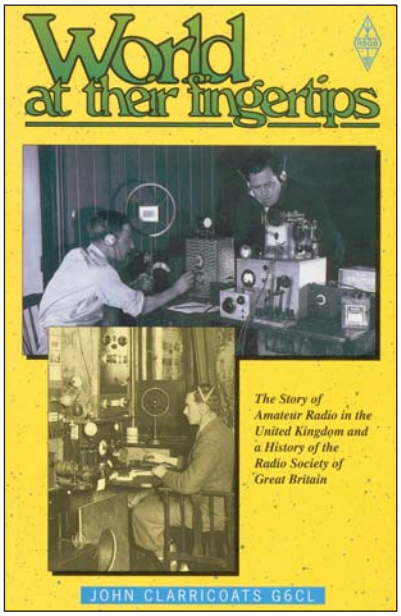
FURTHER READING
World at their Fingertips, John Clarricoats, G6CL, RSGB 1967. Available from the RSGB Shop.

WORLD AT THEIR FINGERTIPS

The above is a quote from the first part of the chapter entitled 'The Birth of the Bulletin' from *World at their Fingertips* by John Clarricoats, G6CL. This book, written in 1967, and reprinted twice since then, is still well worth reading by anyone interested in the history of the RSGB and of amateur radio in the UK, as it is *the* definitive history of the Society. ♦







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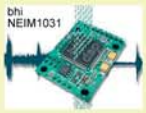

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Gain 2.15/6.2/8.4dB
Power 200W (50W 6m)
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£69.95

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Butternut HF-6V
Bands: 80/40/30/20/15/10
Height (Adj): 26 ft (7.9 m)
Weight: 12 lbs (5.4 kg)
Impedance: Nom 50 ohms
VSWR: 1.5:1 or less
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5 Bands - 80-10m
Height 7.64m - Weight 7.7kg
SWR 1.15:1 - Power 1kW
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23cms (1296 Mhz) 55 element 21.5 dbi gain "N" 4.64m long.

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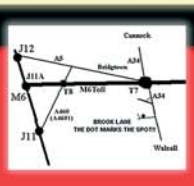

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Tune - Approx SWR Rating of 10:1

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Speaks Fwd - Rev power in Watts & SWR
Continuous tone for amplifier adjustments
Power range: 0 – 2000 watts PEP

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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

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£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.

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

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

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

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

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

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Wonder Wand MonoBand Antenna. Mono Band QRP antenna High Quality Mono Band antenna. Available for 3 x Bands.

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Icom SP-21 loudspeaker SH SP-21 54.00
Jil SWR Meter SH Jil SWR 15.00
JPS NIR-10 Noise Unit SH NIR 10 99.00
JRC NRD-525 SH NRD-525 399.00
Junker Pump Key SH JP Key 75.00
Kamtronics KAM Multimode TNC SH KAM TNC 140.00
Kent RA Paddle Key SH KP KEY 40.00
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Kenwood F7E 2 / 70 Handheld SH F7E 189.00
Kenwood IF232 SH IF232 50.00
Kenwood MB-201 SH MB201 20.00
Kenwood MC-60A SH MC-60A 80.00
Kenwood PS-31 Power Supply SH PS-31 129.00
Kenwood PS-430 Power Supply SH PS-430 109.00
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Kenwood TH-D7E Dual Band Handheld SH TH-D7E 220.00
Kenwood TH-F7E SH TH-F7E 189.00
Kenwood TH-G71E Dualband Handie SH TH G71 129.00
Kenwood TH-K2E 2m Handie SH TH K2E 99.00
Kenwood TM-G707E Dual Band Mobile SH TM-G707E 189.00
Kenwood TM-V7E 2 / 70 SH TM V7E 250.00
Kenwood TMG 707 2m 70cm mobile SH TMG 707 199.00
Kenwood TR-751E 2m Multi-mode trx SH TR-751E 325.00
Kenwood TS-50 SH TS-50S 399.00
Kenwood TS-570 DGE HF Mobile SH TS 570 DG 639.00
Kenwood TS-570S HF / 6 100w SH TS 570S 825.00
Kenwood TS-850S /AT SH TS-850SAT 650.00
Kenwood TS-870S SH TS-870S 899.00
Kenwood TS-950SD HF Transceiver SH TS-950SD 1099.00
LDG Z-11 QRP ATU SH Z11 89.00
Linear Amp UK Challenger SH LAUK CHAL 1200.00
LinearAmp UK Hunter 750 SH Hunter750 699.00
M/Mods 144/100 SH MML144/10 119.00
M/Mods 432/50 SH MML432/50 99.00
Magnum 257 SH MAG 257 139.00
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MFJ-948 ATU SH MFJ 948 89.00
MFJ-949E SH MFJ-949E 109.00
MFJ-969 ATU SH MFJ 969 130.00
Microset PT 135 PSU SH PT 135 120.00
Microset R50 2m Amp SH R50 79.00
MML432-30L SH MML432/30 89.00
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Nissei DC 300 GL 30A PSU SH DC 300 80.00
Nissei MS-1228 Power Supply SH MS-1228 59.00
Nissei RS-402 2/70 SWR Meter SH RS 402 40.00
Palstar PS-30N PSU SH PS 30N 79.00
PK-900 SH PK 900 200.00
President Lincoln 26-30 mhz SH PRES LINC 165.00
Pro-2006 SH Pro-2006 99.00
Pro.Sis.Tel Rotator and Head Unit SH PST 289.00
Proset-Plus SH-PROSET-PL 109.00
Realistic DX-394 SH DX-394 119.00
Realistic Pro-2006 Scanner SH Pro-2006 129.00
Realistic PRO2042 Base Scaner SH PRO 2042 140.00
Standard C-156E 2m Handheld SH C-156E 125.00
Target HF3 HF3 RX SH HF3 99.00
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TenTec RX-350 HF Receiver SH TT RX 350 799.00
Timewave DSP9+ External DSP Unit SH DSP9+ 99.00
Timewave PK-12 Packet SH PK12 99.00
Trio PS-430 Kenwood PSU SH PS 430 100.00
Trio R2000 HF Receiver SH R-2000 220.00
Trio TR-9130 2m multi mode SH TR 9130 220.00
TS-480HX SH TS480HX 799.00
TS-480S / AT TS-480S/AT 649.00
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Yaesu FT-1000MP AC HF Base SH FT-1000MP 1199.00
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Yaesu FT-690Rmk2 6m Multi mode SH FT 690 MK 275.00
Yaesu FT-7100M 2m / 70cms Mobile Transceiver SH FT 7100M 220.00
Yaesu FT-736R 2-70 Base SH FT 736R2 550.00
Yaesu FT-736R 6-2-70 Base SH FT 736R3 750.00
Yaesu FT-747 HF Trx SH FT 747 299.00
Yaesu FT-767GX SH FT-767GX 599.00
Yaesu FT-76R 70 cms Handheld Transceiver SH FT 76 99.00
Yaesu FT-7800 2/70 mobile SH FT 7800 199.00
Yaesu FT-790 SH FT-790R 159.00
Yaesu FT-817 SH FT-817 375.00
Yaesu FT-840 SH FT-840 299.00
Yaesu FT-847 SH FT-847 849.00
Yaesu FT-857D SH FT-857D 499.00
Yaesu FT-8800E Dual Band Mobile SH FT-8800E 220.00
Yaesu FT-8900 SH FT-8900 279.00
Yaesu FT-890AT HF Transceiver SH FT-890 425.00
Yaesu FT-897 Portable SH FT 897 549.00
Yaesu FT-900AT HF Transceiver SH FT-900 549.00
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Newcomers' news

Another mixed postbag for Steve Hartley's Newcomers News this month!

First of all a correction from the May column. Martyn Medcalf, M3VAM, was quick off the mark to point out my mistake over the weight of the Buddistick antenna. The total weight is a little under 1.5kg, not 7kg as stated. As Martyn points out, "The weight is an important factor as it can go in your hand luggage".

I trust this sets the record straight.

HELP FOR NEWCOMERS

Steve Bainbridge, M1SWB, is running a *Yahoo* help group for M3 licensees (and indeed all beginners). On his website you can also find QSL information for all Foundation licence holders (Steve is the M3 QSL sub-manager). See 'Web search' below.

GLOUCESTER INSTRUCTOR

After a little gentle persuasion, and a little arm twisting I suspect, Cliff Powlesland, G8CQZ, agreed to register as an instructor for the Gloucester Amateur Radio and Electronics Society (see 'Web search' below). Having received his confirmation of appointment as a registered instructor, Cliff asks if there is any sample course material, information on what order other tutors take the topics and any details of a 'train the trainer' pack?

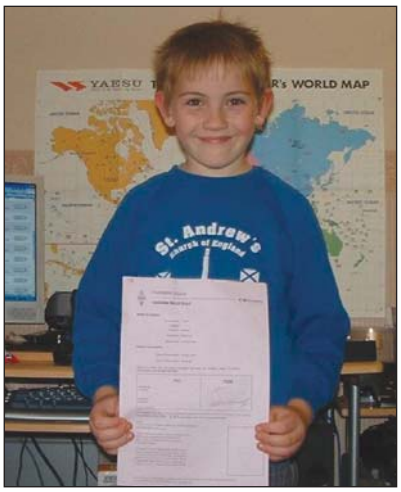
Whilst there are no 'official' course materials for tutors, there are several sources of information. First of all there are official Ofcom syllabus guides that expand on what the syllabus requires, setting some boundaries to make sure tutors, and students, don't go too deep into any one topic. These are posted on the Ofcom website (see 'Web search').

There are RSGB 'Train the Trainers' courses available where tutors are walked through the syllabus and given tried and tested hints on how to deliver the more tricky subjects. It is hoped that all clubs and training groups will have at least one tutor who has attended this course in the not-too-distant future.

There is also an RSGB tutor's e-mail group where good ideas are exchanged and there is ample opportunity to seek guidance from those who have more experience. To enrol with that group tutors should send an e-mail to brian.reay@virgin.net Brian is the chair of the group, chair of the Amateur Radio Development Committee and organiser of 'Train the Trainers' sessions. An all round good egg, as they say.

Finally, the Chelmsford club website has *PowerPoint* slideshows, if you can use that sort of thing, and the BRATS club also has a nice set of interactive lessons (see 'Web search').

I hope this shows that tutors are most certainly not on their own and anyone who is thinking of becoming a tutor can be assured of strong support.



Niall Massey is clearly pleased with his Foundation result (see 'Weston Super Success' above).

WESTON SUPER SUCCESS

Cary Massey, 2E0DDB, asks if I could give a mention to his son Niall Massey, M3WVZ, aged 8, and his wife Nancy, M3YTT, who passed their Foundation exams in April. Cary also joined in the success by passing the Intermediate exam at the same time.

The Massey family studied with the help of the Weston Super Mare Repeater Group (see 'Web search'). Well done to all concerned!

INTERMEDIATE KITS

One of the most common questions I am asked about Intermediate level training and assessment is "do you know of any kit manufacturer producing kits specifically intended for students doing the Intermediate licence syllabus?"

The short answer is "no", there are no specific kits but there are lots of kits around that fit the bill. Some clubs / trainers have made up their own kits. We did a medium wave broadcast receiver last year but often students have their own ideas about what they want to build: receivers, test equipment, PSK31 transceivers, we even had one student build an oscilloscope!

I have an information sheet for students that sets out the more popular kits, sources, etc. I am happy to share that with any readers who might find it helpful. The *RSGB Radio and Electronics Cookbook* is another terrific source of ideas with lots of simple radio-related projects.

INTERMEDIATE PRACTICE

About 18 months ago I made a couple of Intermediate practice papers available through this column, one that I had compiled and another by Don Lamb, G0ACK. These were later joined by a third by the Dragon Amateur Radio Club on Anglesey. I have lost count of the number of copies I have sent out but judging by the feedback, these have proved very helpful in helping students prepare for the written exam.

The papers are still available for anyone who sends an e-mail or an SASE to the addresses at the top of the page.

ADVANCED BOOK UPDATED

In the January edition of *RadCom* I mentioned that the *Advance!* text book was to be revised. I am pleased to say that the second edition is now available. The key changes are a reordering of topics, some additional material on circular polarisation and a couple of pages on 'how to drive a scientific calculator' for those who fear the maths.

Another change reflected in the book is the updating of the data contained in *Reference Levels for UK Amateur Radio Bands*. This is a summary of guidance on exposure to electromagnetic fields at radio frequencies. This was originally produced by the National Radiological Protection Board (NRPB) but they have been absorbed into the Health Protection Agency.

For Advanced examination purposes, the lowest Reference Level is 28V/m for the bands between 10 and 146MHz. Exposures above this level do not necessarily mean that you are in danger, but the reasons for the exposure should be investigated further. Calculation of field strengths is covered in the Advanced book and full details of the reference levels can be found in the source document (see 'Web search'). ♦

WEB SEARCH

Newcomers help	**http://groups.yahoo.com/group/M3Newcomers**
M3 QSL Information	**http://myweb.tiscali.co.uk/amateur/qsl.htm**
Ofcom Syllabus Guides	
www.ofcom.org.uk/radiocomms/ifi/licensing/classes/amateur/technical/#content	
Chelmsford Radio Society	**www.g0mwt.org.uk/**
Bredhurst Receiving and Transmitting Society	**www.darleys.pwp.blueyonder.co.uk/Radio/**
Gloucester Amateur Radio & Electronics Society	
http://dialspace.dial.pipex.com/prod/dialspace/town/estate/lf79/g4aym/	
Weston Super mare Repeater Group	**www.gb3wb.com/**
HPA Reference Levels	
www.hpa.org.uk/radiation/understand/information_sheets/amateur_radio.htm	

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E-mail: Lee.@seatcupra.net

From pirate to licensed amateur

Lee Shand is a very newly licensed amateur and member of the RSGB. But around 10 years ago he was given a five-year ban and had his equipment confiscated after operating illegal high-power CB. Here's his story...

After a very short time as an amateur radio operator and with the small amount of knowledge I have gained over the two months I thought I would write an article about my journey in the hobby and the pitfalls I came across.

I have also heard it mentioned throughout my limited time in the hobby that we need more young radio enthusiasts to keep the pastime alive. So without further ado, here are my experiences (with a little background on me) of the last two months.

I have always been a fan of gadgets, expensive gadgets normally - the range of hobbies that I have taken part in has always cost me a fortune - so it was with some surprise about 10 years ago that I bought myself an old second-hand CB rig and antenna. I was into fish-keeping at the time and had a good friend in the next town who was also a fish-keeper. We spent hours on the phone to each other, me trying to get advice on what to do next when something went wrong. After a few visits to my friend's house I saw a CB radio sitting on one of his cabinets. He had a little shack in the corner of his dinning room with the CB and a scanner connected to a long wire. Almost immediately I saw the answer to my ever-increasing phone and petrol bills. I bought a CB rig and a simple CB antenna, hooked it up without knowing what I was doing and, hey presto! after a bit of fiddling I was able to speak to my friend for free. Not only that, I was able to speak to all of *his* friends - and make new friends over the airwaves. Brilliant!

After a month or two and gaining experience with my equipment it became apparent that other CB users were speaking to foreign stations - Germany, Poland, Norway. How? I needed to find out and be able to do that too. I was now turning to the dark side of the force.

A 'President George' was purchased along with a Sirio High Gain antenna and an old desk mic. I was a DXer, making contacts all over Europe. I loved it, it was the best hobby I had ever had. There was one problem, though: I now heard people talking to other radio operators in Australia and America, the Caribbean and South America. I wanted some of this too.

Lee Shand's 'shack' - computer, two transceivers and accessories including loudspeaker, ATU, desk and fist mics, Morse key etc.

Close up of the Kenwood TS-2000 and Yaesu FT-1000MP. It should be pointed out that many even experienced amateurs would be happy with either one of these superb transceivers!

If there is one shop name I will never forget in my life it is Truck King. Heaven, a shop sent by God enabling me to contact people in America. It was also to be the start of the end of radio operating for me. The 500W amp was the business. It got hot, but it also performed very, very well. I was reaching people all over the globe - superb, the hobby had got 100% more interesting.

Of course, whilst I was having a great time on my rig I had no clue about the interference I was causing over a five square mile radius - not until the DTI turned up at my door. I was gutted. They confiscated *all* of my radio equipment, although they did leave me with my log book and QSL cards. The chap who interviewed me was actually very nice - an amateur operator who could see I was only doing what I was doing because I loved doing it. The outcome was a ban for five years and a bit of encouragement to do it the *proper* way next time round.

10 YEARS PASS . . .

I was put in contact with a chap by the name of Brian Reay, G8OSN. Brian is one of the nicest chaps I have met and he was to be my tutor, enabling me to gain my Foundation licence. Brian had made an arrangement with a local club (the MARTS) that we could use their facilities to perform the practical assessments and also the final exam paper.

From the time I first met Brian my Foundation licence took about one month to obtain. If you have some background in CB or ham radio, the full course is really not necessary. I myself am not the sharpest tool in the box, but found the Foundation exam a breeze. Most of the questions have common sense answers if you have a basic knowledge of radio.

What put me off 10 years ago was that fact that I thought you needed to be Einstein to obtain an amateur licence. This may have been the case back then and this is what probably put a lot of people off. Today it is most certainly *not* the case. You just have to see how many kids out there pass the exam with ease. If you're worried, then don't be. *Everyone* I have met in this hobby in the short time I have being doing it is more than happy to help and advise. The chaps at my club have been superb.

Once the paper has been sat you are given your results right away. This, though, does not mean you can go back home and start operating your radio equipment. You have to wait until you are issued with your callsign by the Radio Licensing

The M3WSS HF antenna: a Hustler 6-BTV vertical.

Centre. In my case (and with a bit of badgering) it took just three days.

Different people have different opinions on huge antennas stuck next to their properties. I was therefore advised not to say anything to my neighbours about the forthcoming arrival of a few lengths of metal. I chose not to take this advise and in my case it was probably the best thing to do. I advised my neighbours that I had past my Foundation exam, I also advised them of what this allowed me to do. I also told them that very shortly three antennas were to be installed on my property: one on the roof, one in the front garden and a long piece of wire running from the front of my house to the rear. Telling your neighbours is totally up to you and you need to make a call on how you go about it, if at all.

Once that chore was out of the way I could concentrate on getting the antennas erected. I am useless when it comes to DIY. I did not take up the hobby to be able to build my own radios, I did it because I wanted to talk to people all over the world. Lots of people like the technical side; I, however, am not one of these people. Finding somebody that knew what they was doing when it came to antennas was difficult, you can't just go out and ask your local TV aerial man to do the job. Firstly they will generally not install anything that you have not bought from them, and secondly they generally do not know the first thing about installing amateur radio antennas, unless of course they are a ham themselves.

The chap who fitted my equipment is now a good friend of mine. He is a Full licence holder and I trust him explicitly. He knew exactly what to do, where to place the antenna and how to tune them. Finding this gent was probably one of the most critical parts to making sure that I caused no interference.

I chose my equipment before I was licensed - perfectly legal as long as you do not transmit on it [strictly, the equipment should not be set up so that it *could* transmit - at the very least no microphone or Morse key should be connected - *Ed*]. I did connect mine to the antenna and switched it on receive only, this gave me some preparatory training before the time came to transmit myself. It got my confidence back. I initially wanted a radio that would do everything, all the HF bands and VHF too. Reading reviews on eham.net I opted for the Kenwood TS-2000. Excellent radio, excellent sound, it's a bit busy on the button front but once you *read the manual* everything falls into place. Looking back some two to three months after the purchase I may have chosen differently. Not because the radio is poor, but because I did not fully read up on what else was available. I knew I mainly wanted to operate HF and did not consider a dedicated HF rig. After purchasing a Yaesu FT-1000MP Field I changed my opinion. This is not a radio review, so I will not harp on about the benefits, all I am saying is make sure you know what you want from a radio and buy accordingly, it will save you money in the end. I for one will not get rid of either radio, and in fact having two HF rigs does have its advantages. I do, though, have more money than sense - most people don't.

I chose the antenna purely on the advice of my not-so-local radio shop. Not wanting to 'big' them up, but I owe an awful lot to Martin Lynch and his team for providing me with outstanding advice when I was looking to buy equipment, and continuing support whenever I ring them up. Believe me when I say they have given me the best customer support I have ever received. I would not know half of what I do today without them. My advice here would be to use them if you are close enough, or find someone that works to the same principles in your area. My only gripe is that they are not open 24/7. I finally decided on three antennas: a Hustler 6-BTV vertical for HF, a Maldol tribander for VHF / UHF and a Carolina Windom 80.

THE DREADED KNOCK ON THE DOOR

The dreaded knock on the door from the neighbour came. I will always be wary of interference because of my previous record, so I was sure that the precautions we had taken in setting up the shack and the antenna were sufficient. So I was somewhat relieved when my neighbour said she had no interference to any device other than her baby alarms. My neighbour was actually very nice about it and I put this down to prepping the family before I installed the radio, and the advice I gave her to contact me if she had interference. I mulled this one over for a few hours, did some research on the net and could find nothing about baby alarms and interference until I stumbled across an advert for a baby alarm that worked on 1.9GHz and not 49MHz. It all suddenly dawned on me. I use a digital hands free phone - no interference. I use a satellite dish - no interference. It would therefore make sense that a baby alarm that worked in the same sort of frequency range would have - you guessed it, no interference. The next question was, how much was this going to cost? My theory is, if I am causing a problem to her, that she would not normally have had, then it is my responsibility to cure it if possible. So £69.99 later the interference had gone. One happy mum, a happy baby, and I can get on with my hobby.

What I have tried to do here is give some advice in a roundabout way of what the whole experience has been like for me. From pirate to licensed amateur through my eyes. I am sure that the pitfalls will continue to raise their ugly heads, but in a strange way it makes the hobby all the more interesting.

So come on budding hams - come and join the *fun*! ♦

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By Don Field, G3XTT

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E-mail: don@g3xtt.com

HF

This month, Don Field asks "how much does a QSO 'cost'?"

After the disappointing conditions earlier in the year, it's been good to see the re-emergence of Sporadic E towards the end of May, with lots of loud short-skip signals on 10 and 12m (I even worked two all-time new ones on 6m, but I guess I shouldn't mention that in this column!)

HOW MUCH DOES A QSO COST?

Nowadays, with DXpedition operations almost constantly on the bands, it is easy to forget the effort and expense that goes into making them possible. We come almost to expect DX to be there and workable and a glossy QSL at the end of it, but although some of us are generous in enclosing an extra contribution with our QSL cards, it is easy to forget and take the whole thing for granted.

Even from home every contact has a cost. When I insured my station for replacement costs some years ago, I was astonished to see how quickly the figure exceeded £5000 (tower, antenna, HF and VHF transceiver, HF linear, rotator, etc). On that basis, depreciation is probably around £500 per year, then there is another £100 or so per annum for licence, RSGB membership, insurance, etc. So even if you make 5000 or so contacts a year (and many of us don't), the 'cost' of each QSO is 10p or more.

Let's consider a modest two-person, two-week expedition to somewhere reachable by air (in Africa or Asia, for example). Air fares will probably be around £600 - £700 each, reasonable hotels in such places cost typically something like $50 per room per night, and then add another $50 per day for food and incidentals (licensing is often quite pricey, too). That adds to about £1500 per operator for the two weeks. Competent operators will tend to average 1000 QSOs per person per day, so that puts the 'cost' of each contact, assuming 12 days' operation (allowing setting-up and taking-down time) at around 12.5p (£1500/12,000). This doesn't take into account setting up costs, equipment wear and tear, printing of QSL cards, and various other incidentals. Obviously the costs of major expeditions, where ships have to be chartered, equipped sea- or air-freighted ahead of time, etc work out a lot higher.

These are just examples and every case is different. But when you work a rare one on, say, half a dozen band slots, do remember what it has cost the DX operators. Yes, they wouldn't go if it was something they didn't want to do. And, yes, they may well have received some assistance from one of the DX funds or Foundations (though this is usually quite small in terms of overall costs). Then all too often when the DXpeditioners actually appear on the bands it is to be met with deliberate QRM, rude comments on the *Cluster* about their operating habits, and similar. One wonders sometimes why any of them bother!

DX NEWS

Geoff, M5GAC, will be operating MM5GAC/P from the **Isle of Mull** (IOTA EU-008) from 23 July to 2 August daily on 40, 20 and 15m. WAB NM73, QRA IO76DK, IOSA NH15. All contacts will receive a QSL card and full details will be on qrz.com

The Casual DXpedition group plans to operate from **Svalbard** around 17 July. They also have their eyes set on Antarctica, South Georgia and the Falkland Islands in the late 2005 early 2006 time frame. They are in the planning stages of going to Pacific islands between Easter Island and Papua New Guinea during next year. Check out their website.

3V8SM will be on the air from Djerba Island (IOTA AF-083), **Tunisia** from 26 to 29 July. This operation will be by Canary Islands DX Society members EC8ADU, EC4DX, and EC8AUA, plus some Tunisian operators. QSL via EC4DX.

K5LBU and others will be in **Swaziland** from 8 to 18 July. Look out for the following calls: 3DA0KDJ (W5KDJ), 3DA0CF (K5LBU), and 3DA0JR (ZS6JR). They were hoping for another two operators to join them, and will be on all bands and modes. In the IARU Contest (9/10 July) they will sign 3DA5HQ.

Bob, G4VGO and ex-9V1GO, is now active as YB5AQB. Bob thinks he will be there for at least two years. Bob will have two stations in **Indonesia**. Look for him on the weekends from Batam and during the week from Jakarta. In Batam, he has a complete station for the low bands which is operational. In Jakarta, his apartment is on the 21st floor and the antennas are being put up for the low bands, and it is not operational yet. He states, "So, during the week, all bands, all modes and not much 160/80 until I get QRO in Jakarta. Weekends when I fly back (1 hour 20 minutes from Jakarta) to Batam, low bands mostly". QSL via OK1DOT, direct only.

W8GEX, K8LEE and W9IXX plan to operate from **Sable Island** as CY0AA from 27 July for about 10 days, all bands and modes, including operation in the IOTA Contest (Sable Island is NA-063). QSL to K8LEE. They have a web page up and running.

PHOTO: BOB BEEBE, GU4YOX.

The new shack of John Kennon, N7CQQ, well known for his operations from Clipperton (FO0CI and FO0AAA) and as a team member of the XR0X San Felix and D68C Comoros DXpeditions.

IOTA CONTEST

A number of IOTA DXpeditions have already been announced for the RSGB Islands on the Air Contest (30/31 July). These include the Westman Islands (TF7) by G3ZAY M0TDG and M0TJH; K5M Mustang Island (NA-092) by members of the South Texas DX and Contest Club; GB5MOB (Isle of Man, EU-116) by the Scarlett Point Radio Group to mark the Isle of Man's 175th Maritime Anniversary Year (QSL via MD0IOM, and note that there will be real-time internet streaming video and audio via their website); J48KW by HA8KW from Zakynthos (EU-052);

NA-081 by VE9GLF and VE9MY; Harbor Island (NA-110) by resident amateur W4YO (skeds available via palaver@islc.net); M8C from the Isles of Scilly (EU-011) by operators from the Cray Valley Radio Society (QSL via G4DFI); G2XV/P by M1KTA, also from the Scillies; MM3M from Arran (EU-123) by members of the Sheffield Amateur Radio Club; 9K2F Faylakah Island (AS-118) by 9K amateurs; DF6QC Helgoland (EU-127); DH6GD/P Fehmarn Island (EU-128); DL0KWH/P Usedom Island (EU-129); IM0/IZ0EJQ San Pietro (EU-165); K1VSJ Martha's Vineyard (NA-046); MM0ECG and MM0LON Shetland by DL1ECG and DF1LON (EU-012); OZ8MW/P Anholt Island (EU-088); TM4Z Ouessant Island (EU-065) by multinational team; TM0EME Brehat (EU-074) by Belgian team. Check the DL2VFR, NG3K and RSGB IOTA websites for possible other operations.

ZD8AD REPORT

Andy Digby, G0JLX, writes that he went off to Ascension Island at the end of February, and was granted the call ZD8AD. He took an FT-897 and, using a low G5RV, was able to start working the bands. One of the resident amateurs, Ian, ZD8I, then offered to erect his 9-element Optibeam on top of a 45ft high mast, and make that available, along with a room designated as an office in a nearby building to use as a 'shack'. Not surprisingly, this did a great job. A low bands doublet was strung just below the beam. Andy was amused that not all amateurs seem to have heard of Ascension Island; one operator was convinced that, as Andy was in the middle of the South Atlantic, he must therefore be maritime mobile! Some of the most successful contacts were made during the afternoon sessions from 1600-1800 and the 10m band was often found to be wide open to the UK and mainland Europe during this time. Pirates operating on 12m out of South America spoiled that band to a large extent, but a few QSOs were made. 17m was particularly productive. Unfortunately the Optibeam had to come down in late March, as the site was required for other purposes. As an experiment, a huge commercial omni-directional Spiracone antenna was tried for a couple of evenings from Andy's work location which, although several hundred feet closer to sea level, performed very well. All in all, well over 2000 QSOs were made in the almost seven weeks of operations, running 100 watts. Andy is now back in the UK (QTHR and listed on qrz.com), but hopes to be back in ZD8 in the near future. All contacts will be QSLd.

POPE JEAN PAUL II - DXPEDITIONER OF PEACE AWARD

This new award has been introduced by the Sala Consilina (SA) section of ARI to honour Karol Wojtyla, Pope Jean Paul II. The awards are available to all amateurs and SWLs for working or hearing at least 40 countries for the basic award of the 131 countries visited by Jean Paul II during his pontificate; 80 countries worked or heard for the silver award and 131 countries worked or heard for the gold award. Awards can be for Mixed Mode, Phone, CW or digimodes. QSL cards need not be sent but must be to hand, and may be requested for verification. An application form and the list of 131 qualifying countries, can be obtained from the award manager Erminio, IZ8AJQ (iz8ajq@amsat.org). The fee is 10 euros or $12. The address for applications is ARI Sezione Sala Consilina, Casella Postale N 11, Cap 84036 Sala Consilina (SA), Italy.

ANNUAL 'DX MARATHON'

CQ magazine recently announced the revival of the long-dormant *CQ* DX Marathon, last run in 1948. The new *CQ* DX Marathon will essentially be a year-long DX contest, with stations competing to contact as many different countries ('entities') and *CQ* zones of the world as possible over a full year period, then starting again at zero at the beginning of the next year. The new *CQ* DX Marathon is part of *CQ*'s broader 'Waking Up DXing' programme (see also the *CQ* Magazine Field Award, described in my May column), whose goal is to reinvigorate DXing. The programme was outlined for the first time at the International DX Convention in Visalia, California, on 16 April. Complete details and rules for the new *CQ* DX Marathon were published in the May issue of *CQ* magazine and are on the *CQ* website. The first running of the event will be in 2006. Readers may just be reminded of our own Annual Tables which have been running for many years!

CORRESPONDENCE AND TABLES

Terry, G1UGH, reports some good conditions to Japan on 17m, with several stations worked, along with VR2XMT and 8Q7BR on the same band. 20m gave him BG7LHY and VU3SPQ, 15m produced V51AS and 9K2RA while best on 12m was TZ9A. Peter, G3JFS, comments on the awful conditions but had some interesting contacts such as YI1OM on Hellschreiber and YK1AO on MFSK, both on 20m. On 30m he worked A6/ON5NT, CO8LY, OJ0J and OY/OK2EC. As he says, "This band is well worth watching when the higher bands are in poor shape".

I was delighted to receive a first communication from Paul, M3NCG, who is 15 years old, at school and with a part-time job. Nevertheless, with 10 watts from a TS-120V to various dipoles and verticals he managed TZ9A, 3DA0TM, S01MZ and S79QK (which both he and his dad, M3YYD, were able to work) on 15m and II0ESA (special event station for the European Space Agency) and 4J60AAon 20m. Paul says, "In my opinion the secret to working DX is perseverance, keep try-

COUNTRIES WORKED, 2005

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

CALL	CW	SSB	DATA	MIXED
G4PTJ	125	119	0	203
G4WFQ	163	40	60	181
G3JFS	148	115	134	180
GM4FAM	155	84	0	178
G0KBL	175	0	0	175
G4OBK	138	32	74	156
G3TBK	149	24	10	152
G4KFT	145	0	0	145
G3LHJ	116	54	67	136
GM0EGI	86	83	0	136
M5GUS	0	135	0	135
M0BKV	65	104	29	130
G3YMC (QRP)	129	0	0	129
M0AWX	27	112	24	126
MU0FAL	111	78	0	125
G4WXZ	78	75	0	120
G0RTN	111	18	0	114
GM0TGE	54	98	0	110
G1VDP	0	96	0	96
MM0BQI	31	40	73	95
GU0SUP	0	0	93	93
MM3AWD	65	85	18	93
G3HQT	92	0	0	92
G3YVH	57	58	0	90
M0BVE	89	0	0	89
G1UGH	0	88	0	88
M3NCG	0	88	0	88
G4FVK	31	75	0	84
M0CNP	7	42	68	84
G4NXG/M	0	83	0	83
G0LGJ/M	0	80	0	80
G4DDL	56	33	1	62
G6HOU	0	32	46	62
G4RQI	59	0	0	59
G6CSY	0	37	55	59
G4IDL	57	0	0	57
GM8OEG	45	8	36	56
G7CLY	0	34	0	34

ing! Often QSB will bring your station up over a pile-up! And also, being in the right place at the right time helps as well!" Absolutely right, Paul, you're obviously learning fast! Paul wonders whether he is the first M3 station to achieve DXCC in under a year (last confirmation came in on 25 April, the licence having arrived on 17 May 2004, and the worked total now stands at 145). The cards are now with the ARRL for checking and, by the time this appears, Paul and his dad should have brand new Intermediate licences (2E0NCG and 2E0YYD), a TS-570DGE for home operation and an FT-857 for mobile.

Stan, G0KBL, has found some nice DX on 40m, including VK9NS, ZL7/KH0PR, V73NS and KH6KW. Mark, G0LGJ/M, managed ZK1JD on 20m for a nice one from the mobile, and has also managed a number of South American QSOs during the evening hours.

Cris, GM4FAM, sends another long list of DX worked, including 12m CW PY2XB/PY0F, SSB TZ9A; 15m CW 9G5ZS, ST2BF, T6KBLRM; 17m CW 3B8CF, 9M2FB, BV4CT, CU7/G3TXF, PY2XB/PY0F, RU3HD/ANT; 17m SSB 7V2SI (AF-097), S79QK, T88KL, VR2XMT; 20m CW 3V8SM (AF-083), 4F3CV/1 (OC-128), 9M2FB, 9N7JO, 9N7SZ, ST2BF, T6KBLRM, ZK2QQ, SSB 7V2SI (AF-097), BI4Q (AS-135); 30m CW A71BX; 40m CW 7V2SI (AF-097). The T88 was an all-time new one.

Three of the Brits at this year's Visalia DX convention in California: Bob, GU4YOX; Roger, G3SXW, and Fred, G4BWP

Derrick, G3LHJ, had a quiet month on the bands, but did manage to catch ZL7/KH0PR on 30 and ST2BF on 20m.

Eddi, DK3UZ, takes me to task on my usage of the term 'HF' to include all bands 160 through 10m. Eddi points out that topband is, strictly, MF (300-3000kHz or 1000-100m). I stand duly chastised!

Chris, G1VDP, is still working on getting his station going on the data-modes, but is now equipped with an amplifier which he is finding makes a big difference on SSB. Recent DX includes, 20m HS0/IK4MRH (AS-053), BD4XA, 8Q7BR, 3DA0TM, HV0A, 9N7JO, 9M2MT; 17m V25OP, 8Q7NB; 15m 9G5OO, ST2T, ZD8Z, 8R1K, D4B, VR2XMT, V8NOW, 5V7BB; 10m TZ9A and D2DX.

Damian, M0BKV, reports SSB contacts with (20m) ZF2UJ, VR2XMT, 9V1OA, HS1PDY, JT1BV; (15m) 5Z4DZ, V51AS, A71A; (10m) ST2BF. On 20m CW V85SS and on SSTV UN5A. S79GG was a tough one, working by numbers with propagation disappearing before he got to zeroes, but Damian made it the following day on 15m PSK.

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 **September** issue by **23 July**. ♦

WEB SEARCH

Casual DXpedition Group	**www.casualdx.com/**
CQ Magazine	**www.cq-amateur-radio.com**
CY0AA	**www.wb8xx/sable**
DL2VFR	**www.iota-post.de/iotatest/hauptteil_iotatest.html**
GB5MOB	**www.scarlettpoint.com**
NG3K	**www.cpcug.org/user/wfeidt/Misc/iota2005.html**
RSGB IOTA	**www.rsgbiota.org**

HF F-Layer, Propagation Predictions for July 2005

Compiled by - Gwyn Williams, G4FKH

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** EUROPE								
Moscow	6.....688	8751..147899	783221228988	..787767886.	.....	.....	.....	.....
*** ASIA								
Yakutsk	.....	.....	665443467777	567777788775	.....	.....	.....	.....
Tokyo	.....	.....11..	.....245..	.....24242.	.....2.....	.....	.....	.....
Singapore	.....22.	6762	47624	.....254..2	.....23....	.....	.....	.....
Hyderabad	.....1.	2677	4.....48888	.3...147788 5	..666768....	...344.....	.....	.....
Tel Aviv	81.....2888	882....38999	.885326899 97	..76656789..	...4334.....	.....	.....	.....
*** OCEANIA								
Wellington	.....	.....	.....	.....	.....	.....	.....	.....
Well (NZ) (LP)	.....	482.....42	785.....287	55.....87	.....4.	.....	.....	.....
Perth	.....	3515	.....32.5	1	.....	.....	.....	.....
Sydney	.....	.....56..	.....1661.	.....2.2.	.....	.....	.....	.....
Melbourne (LP)	.....	..2.....	.14.....	.....	4	.....	.....	.....
Honolulu	.....	.....	..221.....	..344.....	....2.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....2...	.....3...	.....2...	.....	.....
W. Samoa	.....	.....	...1.....	..2443.....	.....	.....	.....	.....
*** AFRICA								
Mauritius	1.....121	2.....5775	17752	.....463..	.....3....	.....	.....	.....
Johannesburg	78.....688	67.....8988	.....2974.	..51..278...	..3322363...	...2.234....	.....	.....
Ibadan	63.....145	881.....2888	8881...48999	..98.357999 6	..89666.99..	...8.....8..	.....	.....
Nairobi	4.....33	72.....2777	36.....7887	.641..268883	..765567 86..	..3566678...	.....6...	.....
Canary Isles	881.....788	9982....6999	886621258889	..763227 9998	...87777997.	.....78..	.....	.....
*** S. AMERICA								
Buenos Aires	66.....1	998.....79	767.....78	3.3.....576	.....2..4886	.....22.476.	.....6..	.....
Rio de Janeiro	22.....3	771.....178	65.....688	2.....775	53336986	....5332687.	.....7..	.....
Lima	21.....	766.....17	646.....67	..2.....65	.....3..268.	.....2...66.	.....	.....
Caracas	.....	662.....16	7661.....67	2.3.1....377	.....22.367.	.....42.	.....	.....
*** N. AMERICA								
Guatemala	.....	665.....3	544.....6	24	.....	.....	.....	.....
New Orleans	.....	651.....1	665.....5	46	.....44557.	.....	.....	.....
Washington	4.....	885.....6	8862.....168	25445688	.....334457.	.....	.....	.....
Quebec	83.....	984.....48	634.....357	....2...3677	.....68.	.....	.....	.....
Anchorage	.....	.....	22.....2	.....25.	.....	.....	.....	.....
Vancouver	.....	.....	.2.....	.....	.....	.....	.....	.....
San Francisco	.....	.31.....	.21.....	.....	.....	.....	.....	.....
San Fran (LP)	.....	.....	.....	.....	.....	.....	.....	.....

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

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at http://members.aol.com/g4fkhgwyn The page is updated monthly. The provisional mean sunspot number for May 2005 issued by the Sunspot Data Centre, Brussels, was 42.6. The daily maximum / minimum numbers were 82 on 11 May, and 13 on 21 May respectively. The predicted smoothed sunspot numbers for July, August and September are respectively: (SIDC classical method - Waldmeier's standard) 21, 20, 19 (combined method) 28, 27, 26. 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.

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- 2 x outputs: 25A Binding Posts, 7A Cigar Socket
- Fan cooled, speed variable to voltage supplied
- Two huge back-lit meters, Volts/Amps
- Fully protected, supply shut off if more than 25A is drawn, re-setable by switching off for 25 seconds.

MyDEL MP-4128
Another new switch mode PSU from MyDEL. Similar in spec to the MP-250A but without meters or cigar lighter o/p. 22-25 AMP output with heavy duty binding posts on the front panel and push on terminals for lower current output on rear. Fully protected. **£69.99**

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A power supply for Life? Probably.
25-30 Amp power supply
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Tigertronics Sound Card - Radio

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

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

Apply now for your very own ML&S Store Card

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

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ML&S are excited at being appointed the UK stockist of BARENCO antenna hardware in the UK.

For over 20 years BARENCO have been the only quality manufacturer for hardware associated with antenna installation. Our new premises allows us to stock their entire range, from chimney lashing kits to ground spikes for HF verticals and much much more.

See our web site under accessories.

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W3-BP Buddipole Compact Portable Dipole 40m-2M.....£199.95
W3-BM Buddipole Mast for Buddipole £49.95
W3-BPT Tripod for Buddipole.....£89.95

For the full range see the website.

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MP-817 The smallest retractable paddle key - ever!.....£59.95
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Daiwa Meters

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

Hustler 6-BTV Only £229.95

FREE GROUND EARTH ROD (THIS MONTH ONLY)

The best performing H.F. Vertical - ever!

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

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

6 Bands: 10, 15, 20, 30, 40, 80m. VSWR 1.6:1 or better. 10-40m Bandwidth up to 100kHz 80m. Power: 1kW

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

MyDEL MultiTrap

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

£99.95

MyDEL MegaTrap

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

£109.95

Important Announcement

ML&S + Ten-Tec

ML&S are pleased to announce their appointment for the sale of the famous Ten-Tec 565 Orion Transceiver.

Aimed at the user who wants ultimate RF performance, when Peter Hart commented the Orion is a one horse race when it comes to close in dynamic range performance at a recent CDXC dinner, we knew we had to add this important transceiver to our product range.

Available in two different versions (with and without the internal auto ATU), we currently have one on demonstration in our main showroom.

Ten-Tec 565 Orion Transceiver

With ATU: £2799.00 Without ATU: £2499.00.

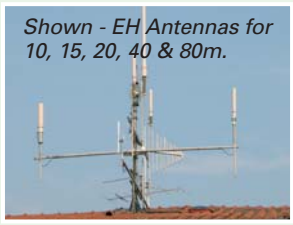
Available from stock. **Or £99 deposit & 36 x £98.10 p/m.**

Trade-ins a pleasure.

Please see our web site for full details and list of accessories.

Small Garden? No Garden?

Install an EH Antenna for HF today.



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

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

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

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

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

NCS Multi Switcher £279.95

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

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

Connecting cable for any Yaesu, Icom or Kenwood Radio £19.95 each *For more details and the complete range of NCS products see our web site.*

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MFJ-902 Tiny Travel Tuner.
Tiny 4½ x 2¼ x 3 inch tuner handles full 150 Watts! Covers 80-10 Meters, has tuner bypass switch, tunes nearly anything! ~~£74.95~~

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

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

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

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

MFJ-969 Roller Inductor Antenna Tuner.
The MFJ-969 Antenna Tuner gives you MFJ's superb AirCore Roller Inductor and full 6 meteres through 160 Meter coverage! 300 Watts PEP SSB full featured antenna tuner, widest matching range, full size lighted Cross-Needle SWR/Wattmeter reads true peak forward power, QRM-Free PreTune, 8 Position antenna switch, built in 50 Ohm dummy load, heavy duty 4:1 balun. ~~£199.00~~

MFJ-259
Range: 1.8-170MHz. MFJ's favourite Antenna Analyser with HF frequency coverage. It's simple to operate and keeps your antennas in check. MFJ-259B gives you a complete pictures of your antenna's performance. You can read antenna SWR and Complex Impedance 1.8 to 170MHz. ~~£269.94~~

MFJ-269
Range: 1.8-450MHz. MFJ's latest Antenna Analyser with UHF frequency coverage. Based on the successful MFJ-259B it combines all of the features plus more. ~~£349.95~~

*(must be UK approved & in stock at the time of ordering)

Maldol Maldol Maldol

Maldol HVU-8

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

HVU-8 Specifications

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

Maldol HMC-4

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

Only £69.95

Maldol VK5-Jnr.

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

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

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

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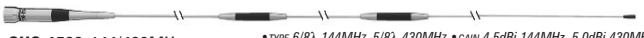
Super High Gain Range

SHG-900 144/430MHz — •TYPE 1/2λ. 144MHz, 5/8λ. 430MHz •GAIN 2.15dBi 144MHz 5.5dBi 430MHz •MAX POWER INPUT 130W •CONN. M-P •LENGTH 960mm •WEIGHT 265g — **£27.95**

SHG-510 144/430MHz — •TYPE 1/4λ. 50MHz, 1/2λ. 144MHz 5/8λ. 430MHz •GAIN 3.5dBi 144MHz, 6.0dBi 430MHz, •MAX POWER INPUT 130W •CONN. M-P — **£39.95**



SHG-1500 144/430MHz — •TYPE 6/8λ. 144MHz, 5/8λ. 430MHz •GAIN 4.5dBi 144MHz, 5.0dBi 430MHz, •MAX POWER INPUT 150W •CONN. M-P •LENGTH 1500mm •WEIGHT 360g — **£39.95**

THE BIG ONE!

SHG-2100 144/430MHz — •TYPE 5/8λ. 144MHz, 5/8λ. 430MHz •GAIN 6.0dBi 144MHz, 8.5dBi 430MHz, •MAX POWER INPUT 150W •CONN. M-P •LENGTH 2120mm •WEIGHT 650g — **£69.95**

HMC 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**

HFC Range

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**

Maldol Mounts

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

Power Amplifiers from Tokyo-HyPower

NEW! HL-100BDX Latest HF & 6M all-mode amplifier. 5-10W i/p, upto 100W o/p. Ideal for FT-817 & IC-703..... **£429.95**

HL-1Kfx A sturdy 240 volt powered 500W linear amplifier all mode with protection against over-drive, over heat, high drain voltage, and faulty band setting. ALC out. Remote TX control, all for a very attractive price. **Only £1399.95**

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Miracle Antenna Products

Miracle Whip Others try & copy it but never quite get there. £129.95

Miracle Ducker Like the Miracle Whip but has BNC socket in lieu of whip to connect random wire. £129.95

Miracle Ducker IL Latest model! Identical to Ducker but has BNC plug for mounting instead of PL-259. £129.95

QPAK The best QRP ATU money can buy. £149.95

Tim Kirby, G4VXE

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Contest

This month, Tim Kirby provides details of contest logging programs including the G0GJV software written specifically for RSGB VHF contests, and *Win-Test* – some new contest software from France.

Over the last few months, a new piece of contest logging software has started to get great reviews in some post contest write-ups. *Win-Test*, written by Olivier, F5MZN, supports a good number of contests, including the RSGB 80m Club Championships, RSGB 160m and Commonwealth Contests as well as the international contests that you would expect. For VHF contesters there are options for generic European contests as well as the IARU Region I VHF and UHF contests.

From everything I've heard, the people that have used the software in 'anger' have been very impressed and how robust the software is. The snag? Unlike some of the other software we've covered from time to time, it's not free. Hardly a problem at 35 euros - but you have to work out for yourself whether it's worth paying for, when there are free products such as *SD* and *N1MM* around. It may be a worthy competitor for *Writelog*, however. Fortunately, there's a trial version so you can try before you buy. Download it from Olivier's website (see 'Web search' below) and see what you think.

PHOTO: MARTIN ATHERTON, G3ZAY

At the recent Visalia DX convention in California, Dominic, M0BLF, gave a presentation on the World Wide Young Contesters, WWYC (see 'Contest', *RadCom* June 2005).

G0GJV SOFTWARE FOR VHF CONTESTS

Although it's been around for a while, I'm conscious that I've never covered the G0GJV Contest Software that has been developed by Mike Goodey, G0GJV, to cover the VHF contests organised by the RSGB. I had cause to look at the program recently and found it easy to setup and use – and it's free. It's not a *Windows* program in terms of look and feel, which you may regard as a good or a bad thing, depending on your perspective! However, the shortcut keys are well thought out and it seemed to me that it would be fun to use - which is the main thing. The program will generate files that can be sent to the RSGB VHF Contests Committee. Download it from Mike's website (see 'Web search') - there is also a mailing list for users of the program to discuss issues, improvements etc. Send a blank e-mail to G0GJVList-subscribe@yahoogroups.com to join.

CONTEST HIGHLIGHTS THIS MONTH

This month, there's the flagship HF contest run by the RSGB, the IOTA contest. Plenty of activity - and good fun even if you're not an IOTA enthusiast. During the IARU HF Championship, remember to support GB5HQ on as many bands and modes as possible. On VHF, there's VHF Field Day - a great event to join fellow club members in some VHF portable activity. If you fancy a simpler approach to VHF contesting, there are some 50 and 144MHz Backpackers events to get involved with. Or, for the simpler approach to HF contesting, there's Low Power Field Day. All in all, plenty of reasons to get out and about and operate! ♦

Contest calendar

HF Contests

Date	Time	Contest	Mode	Bands	Exchange
1 Jul	0000-2359	RAC Canada Day	CW/SSB	1.8-50	RS(T)+SN
4 Jul	2000-2130	RSGB 80m Club Championship	CW	3.5	RST+SN
9/10 Jul	1200-1200	IARU HF Championship	CW/SSB	1.8-28	RS(T)+ITU Zone (eg 27)
13 Jul	2000-2130	RSGB 80m Club Championship	SSB	3.5	RS+SN
17 Jul	0900-1600	RSGB Low Power Field Day	CW	3.5/7	RST+SN+ Power
21 Jul	2000-2130	RSGB 80m Club Championship	Data	3.5	RST+SN
30/31 Jul	1200-1200	RSGB IOTA Contest	CW/SSB	3.5-28	RS(T)+SN+ IOTA

VHF Contests

Date	Time	Contest	Mode	Bands	Exchange
2/3 Jul	1400-1400	RSGB VHF Field Day	ALL	50-1.3GHz	RS(T)+SN +Locator
3 Jul	1100-1500	RSGB 144MHz Backpackers	ALL	144	RS(T)+SN+ Locator
5 Jul	2000-2230*	RSGB 144MHz Activity & Club Championship	ALL	144	RS(T)+SN+ Locator
10 Jul	1100-1500	RSGB 50MHz Backpackers	ALL	50	RS(T)+SN+ Locator
12 Jul	2000-2230*	RSGB 432MHz activity	ALL	432	RS(T)+SN+ Locator
17 Jul	1100-1500	RSGB 144MHz Backpackers	ALL	144	RS(T)+SN+ Locator
19 Jul	2000-2230*	RSGB 1.3GHz/ 2.3GHz activity	ALL	1.3G/2.3G	RS(T)+SN+ Locator
26 Jul	2000-2230*	RSGB 50MHz activity	ALL	50	RS(T)+SN+ Locator

* = Local time.

WEB SEARCH

***Win-Test* (Olivier, F5MZN)** www.win-test.com

G0GJV VHF contest logging software
www.mjgoodey.connectfree.co.uk/VHFLog.htm

ROPOCO 1, 2005

Everything was bigger and better this year than in 2004. Conditions were improved, the number of entries increased by a third and the leaders made 20% more QSOs. Most, if not all, of the old stalwarts turned up and there were several first-time entrants. Also believed to be for the first time, Derek Stanners, G3HEJ, made all his QSOs using the Verulam Silver Jubilee Trophy Key that he won in this event last year.

Some stations were reported as not sending an RST. This was not reflected in any of the logs, or points would have been deducted. There were few outrageous postcode errors this time, but a substantial number of smaller, subtle slips. This is an event where the emphasis is on accuracy and, as almost all the contacts *will* be checked, one can be sure one's sins will find one out! Why any operator, whether experienced or not, should accept a postcode sent once only and at high speed without asking for a repeat is a mystery. But accept they evidently did, with the result that only 9 of the 56 logs received were error-free.

Congratulations to Don Field, G3XTT, whose faultless log of 71 contacts earns him both the certificate for overall leader and the Verulam Silver Jubilee Trophy. Fraser Robertson, G4BJM, takes second place with 69 QSOs and two errors. Peter Hobbs, G3LET, is third with 67 QSOs and one error. Thanks to GM3UM for his useful checklog. ***Steve Knowles, G3UFY***

Pos	Callsign	Score	Pos	Callsign	Score
1 # + *	G3XTT	710	28= *	G4BVY	540
2 #	G4BJM	670	28= *	G4FON	540
3 #	G3LET	660	31	G4FAL	530
4=	G4ARI	650	32	G3MBN	520
4=	G3TBK	650	33=	G3SET	510
4=	G4OBK	650	33=	G0IBN	510
7	G4CZB	640	35	G3SQX	500
8=	G4RCG	630	36=	G3NKC	490
8=	M0AJT	630	36=	G3KKJ	490
10=	GM3WUX	620	36=	G3WRR	490
10=	G3OLB	620	39=	G0HIO	480
10= *	G3RSD	620	39=	G4BGW	480
10= *	G0MTN	620	41	G4XPE	470
14=	G0ORH	610	42=	G3RFH	460
14=	G3OOK	610	42= *	G0VQR	460
16=	G3ZGC	600	44=	G3MA	430
16=	G2AFV	600	44=	GW4HDB	430
18=	G3XSV	590	46=	G4RLS/P	410
18=	G4EBK	590	46=	GM4OSS	410
18= *	GM4AFF	590	46= *	G4BUO	410
21	G4BLI	580	49	G0WBC	400
22=	G3JJG	570	50=	G3GMS	370
22=	G3LHJ	570	50=	G3SJE	370
24=	G3HEJ	560	52	GW3SB	360
24= *	G3JJZ	560	53	GM4KGK	350
26=	G3LIK	550	54	G4KTI	330
26=	G4OGB	550	55	G3VQO	240
28=	G3JKY	540	56	G3GLL	220

+ Verulam Silver Jubilee Trophy, # Certificate of merit, * Error-free log.

4th 144MHz BACKPACKERS CONTEST, 2004

This was the closest contest so far this year in the 10W Single Operator section. Before adjudication, less than 2% of claimed scored covered the top three stations (M0LKB/P, GW8ZRE/P and G3IZD/P). Dave Hewitt, GW8ZRE/P, eventually claimed the top place due to a more accurate log, with Ivan Davies taking second place.

The other sections were not as closely contested. In the 3W Single Operator section, Charlie Jordan, GW0PZO/P, claimed top spot with Ron Price, GW4EVX/P, in second place. The 10W Multi-operator section was won by the One Man and His Dog Contest Group, G8NWM/P, with TMARG, G4HSO/P, as runners-up. The Malvern Hills 'B', GW4IDF/P won the 3W Multi-operator section with Ken Coxon and his team operating as G0HDV/P occupying the runners-up spot. Clive Warren, M3OTF/P, receives the leading Foundation licensee certificate. Thank you to G3MEH for his very useful checklog. ***Ian Pawson, G0FCT***

10W Multi-Operator

Pos	Callsign	Loc	QSOs	Mults	Total	Best DX	km	Power	Ant
1*	G8NWM/P	IO92TR	46	52	441532	DK5DQ	549	10	17el
2*	G4HSO/P	IO91QT	40	44	224708	DK5DQ	551	10	4Q
3	G0VDZ/P	IO91GI	33	37	168683	DK5DQ	608	10	9el
4	G3BPK/P	IO83QM	24	34	115464	F6IFR	506	10	13el

3W Multi-Operator

Pos	Callsign	Loc	QSOs	Mults	Total	Best DX	km	Power	Ant
1*	GW4IDF/P	IO81NV	54	51	485673	DK5DQ	705	3	17el
2*	G0HDV/P	IO93UK	43	49	393617	PA3AYD	441	3	13el
3	M0WEN/P	IO93EI	42	46	331476	DK5DQ	648	2.5	17el
4	G1WKS/P	JO01ED	42	44	265716	G8XQS/P	484	3	2x8el
5	G6ZME/P	IO82SP	9	15	14475	F6IFR	424	3	10ZL

10W Single Operator

Pos	Callsign	Loc	QSOs	Mults	Total	Best DX	km	Power	Ant
1*	GW8ZRE/P	IO83JA	84	69	973521	DK5DQ	742	10	7ZL
2*	G3IZD/P	IO84KD	66	62	882570	DK5DQ	770	10	10el
3	M0LKB/P	IO84KE	64	61	819596	PA0PVW	642	10	9el
4	GM4IGS/P	IO74NP	40	50	664450	DK5DQ	896	9.5	17el
5	G3YDY/P	JO01FQ	57	54	504306	GM4IGS/P	484	10	4el
6	G3ATZ/P	IO82KV	62	51	455328	DK5DQ	734	10	10el
7	M0BAO/P	IO80LV	19	24	100800	M0LKB/P	366	10	8el
8	M1VPN/P	IO70QO	12	21	54432	F6IFR	453	10	3el SOTA
9*	M3OTF/P	IO81TL	5	2	674	F6IFR	337	5	2el

3W Single Operator

Pos	Callsign	Loc	QSOs	Mults	Total	Best DX	km	Power	Ant
1*	GW0PZO/P	IO83ID	73	55	605770	DK5DQ	750	2.5	9el
2*	GW4EVX/P	IO83JD	49	45	294525	PA0PVW	620	2.5	9el
3	G0POT/P	IO91HH	43	45	279945	F4DCG/P	492	2.5	3el SOTA
4	G8XQS/P	IO95AG	23	34	225386	F6IFR	653	2.5	9el
5	G0BVW/P	IO91SW	31	35	138390	G8XQS/P	384	3	9el
6	G0NFO/P	IO82QJ	30	30	96180	G8XQS/P	323	2.5	3el SOTA
7	GW0HRW/P	IO72WX	24	23	64377	F6IFR	532	2.5	3el SOTA
8	G0FUW/P	IO81TK	13	19	34048	F6IFR	335	2.5	7el
9	G0OIW/P	IO91MO	10	18	26820	G3IZD/P	318	2.5	HB9CV
10	G6GVI/P	IO81TL	8	15	15915	F6IFR	337	3	HB9CV

Checklog: G3MEH.

5th 144MHz BACKPACKERS CONTEST, 2004

This contest was run alongside the September 2m Trophy (and IARU 2m) contests. The band conditions were excellent with virtually all Backpacker stations managing to exceed 500km as their best DX. Several stations commented on the high levels of QRM that they experienced during this contest when trying to compete for band space with the high-power stations of the IARU / 2m Trophy contest.

With high levels of QRM it is not surprising that the accuracy of the logs suffered. The average loss of points in this contest was 10%. However, four stations managed to submit logs with no logging errors - well done. Four stations also managed to lose more than 20% of their score due to logging errors.

In the 10W Single Operator section, Paul Selwood, G3YDY/P, claimed the top place with Tony Judge, G0PQF/P, taking second place. In the 3W Single Operator section, Neil Whiteside, G4HUN/P, claimed top spot with Michael Sansom, G0POT/P, in second place. The 10W Multi-operator section was won by Bob Edgar and his team operating as G0KYS/P, with TMARG (G4HSO/P) in the runners-up position. The Malvern Hills 'B', GW4IDF/P, won the 3W Multi-operator section with Ken Coxon and his team operating as G0HDV/P occupying the runners-up spot. Clive Warren, M3OTF/P, receives the Leading Foundation licensee certificate. All winners and runners-up will receive certificates.

Ian Pawson, G0FCT

10W Multi-Op

Pos	Group	Callsign	QSOs	Mult	Total	Best DX	km	Ant
1*	-	G0KYS/P	102	40	1279160	PA6C	762	2x10el
2*	TMARG	G4HSO/P	56	37	508676	DK3EE	629	12ZL
3	Wigan Douglas Valley ARS	G3BPK/P	52	29	391529	F6KSL	806	13el

3W Multi-Op

Pos	Group	Callsign	QSOs	Mult	Total	Best DX	km	Ant
1*	Malvern Hills 'B'	GW4IDF/P	56	32	436192	GM4ZUK/P	561	17el
2*	-	G0HDV/P	57	29	383844	EI5FK	585	13el

10W Single Op

Pos	Callsign	QSOs	Mult	Total	Best DX	km	Ant
1*	G3YDY/P	71	39	637767	GM4ZUK/P	588	4el
2*	G0PQF/P	56	37	544862	MM3ERP	539	9el
3	G8ZRE/P	66	35	525105	F6KCP/P	638	7ZL
4	M0BAO/P	50	30	388470	GM4ZUK/P	673	8el
5	G6MXL/P	42	30	316860	EA2CN/P	826	9el
6	G3NKS/P	48	27	242082	GM4ZUK/P	566	HB9CV
7	M1VPN/P	25	24	216816	GM4ZUK/P	717	9el

3W Single Op

Pos	Callsign	QSOs	Mult	Total	Best DX	km	Ant
1*	G4HUN/P	70	41	672810	GM4ZUK/P	570	9el
2*	G0POT/P	63	38	524438	GM4ZUK/P	630	3el SOTA
3	G4VRC/P	50	35	463085	GM4ZUK/P	676	12ZL
4	GW0PZO/P	76	28	435456	ON4MPA	694	9el
5	GW4EVX/P	72	29	364994	PI4RTD	552	9el
6	G3JKV/P	41	30	283170	GM4ZUK/P	655	9el
7	G8XQS/P	34	24	276984	DL0RTA	768	9el
8	MW0OPS/P	48	25	265675	PA6C	652	9el
9	G0HRW/P	44	26	222040	TM3Q	510	3el SOTA
10	G0OIW/P	38	28	194320	GI6ATZ	453	5el
11	G6GVI/P	31	24	165576	GM4ZUK/P	598	7ZL
12	G0NFO/P	34	23	150305	GM4ZUK/P	505	3el SOTA
13*	M3OTF/P	29	21	125076	PA6NL	477	HB9CV
14	G4FAA/P	25	18	90900	SK7JM	998	8el
15	G1RVK/P	17	18	82278	GM4ZUK/P	488	9el

144MHz BACKPACKERS CHAMPIONSHIP, 2004

Pos	Callsign	Normalised total	Loc	QSOs	16 May	13 Jun	4 Jul	18 Jul	5 Sep
1*	G(W)8ZRE/P	3000	IO83JA	532	2367225	1285186	554528	973521	525105
2*	GW4IDF/P	3000	IO81NV	258	0	226638	219834	485673	436192
3	G0HDV/P	2875	IO93UK	291	1004042	467625	58044	393617	383844
4	GW0PZO/P	2647	IO83ID	423	992932	457823	217791	605770	435456
5	G3IZD/P	2613	IO84KD	262	0	845524	392392	882570	0
6	G8NWM/P	2465	IO92TR	262	1278536	529830	358063	441532	0
7	G4HUN/P	2429	IO92XA	240	426944	114359	378076	0	672810
8	G0KYS/P	2385	IO80AQ	233	1105780	0	400972	0	1279160
9	G3YDY/P	2006	JO01FQ	317	427215	247359	271063	504306	637767
10	GW5NF/P	2000	IO81KR	265	0	1243242	768910	0	0
11	G1WKS/P	1949	JO01ED	207	370770	194256	373736	265716	0
12	G4HLX/P	1699	IO91FN	195	649836	240984	324464	0	0
13	G0PQF/P	1668	JO01AX	208	499730	181818	332165	0	544862
14	G0POT/P	1499	IO91HH	199	256526	67676	0	279945	524438
15	M0WEN/P	1429	IO93EI	201	265512	226642	40404	331476	0
16	G8XQS/P	1252	IO95AG	139	398688	60928	166360	225386	276984
17	G4VRC/P	1167	IO90NX	159	142970	57120	127376	0	463085
18	GW4EVX/P	1159	IO83JD	191	0	169560	0	294525	364994
19	G4HSO/P	1038	JO01CO	232	137180	113238	102880	224708	508676
20	G1ORC/P	1000	IO93BJ	96	0	469110	0	0	0
21	GM4IGS/P	970	IO74NP	80	683043	0	0	664450	0
22	G3BPK/P	939	IO83PN	232	433318	138491	115122	115464	391529
23	G0HRW/P	936	IO83RO	167	157131	85425	170205	0	222040
24	G3ATZ/P	926	IO82KV	133	0	0	254667	455328	0
25	M0BAO/P	896	IO80LV	172	288487	75062	92140	100800	388470
26	M0LKB/P	841	IO84KE	64	0	0	0	819596	0
27	G6MXL/P	659	IO80WP	118	207952	97748	0	0	316860
28	G0NFO/P	583	IO82QJ	164	201510	50724	56992	96180	150305
29	M1VPN/P	537	IO70QO	102	160960	89386	51675	54432	216816
30	G6ZME/P	500	IO82SQ	84	77562	27115	80535	14475	0
31	G0BVW/P	481	IO92QA	110	175562	99180	0	138390	0
32	MW0OPS/P	475	IO82KA	75	193212	0	0	0	265675
33	G6HOU/P	457	IO90MX	53	0	0	253725	0	0
34	GW7LQD/P	431	IO82KW	102	0	554520	0	0	0
35	G3JKV/P	420	IO91TE	41	0	0	0	0	283170
36	G0OIW/P	415	IO91HH	105	0	106845	0	26820	194320
37	GI7JYK/P	413	IO74BS	60	333960	99904	0	0	0
38	G2HDF/P	393	IO82UK	66	0	184695	0	0	0
39	M5CSM/P	385	JO01GP	98	287730	123675	0	0	0
40	G0VDZ/P	382	IO91GI	33	0	0	0	168683	0
41	G3NKS/P	379	IO81WU	48	0	0	0	0	242082
42	G6GVI/P	336	IO81PH	78	0	82290	0	15915	165576
43	G0FUW/P	331	IO81PH	82	195360	102068	0	34048	0
44	G4ARI/P	284	IO92IQ	96	0	365794	0	0	0
45	M0BPQ/P	253	IO91XG	84	0	315600	0	0	0
46	GW0VRL/P	246	IO81AR	31	0	0	136458	0	0
47*	M3OTF/P	185	IO81PH	34	0	0	0	674	125076
48	G3UFY/P	170	IO91WJ	33	169767	0	0	0	0
49	G7NBE/P	149	IO92FP	29	148640	0	0	0	0
50	G4FAA/P	135	JO01DH	25	0	0	0	0	90900
51	G1RVK/P	122	IO92TR	17	0	0	0	0	82278
52	G8XCK/P	114	IO91KG	61	109151	0	37882	0	0
53	GW0HRW/P	106	IO72WX	24	0	0	0	64377	0
54	M0BGR/P	86	JO00BT	18	0	0	32604	0	0
55	G4CZB/P	82	IO92LE	47	0	106097	0	0	0
56	G6DDQ/P	44	IO83UP	42	0	57180	0	0	0
57	GI0RQK/P	33	IO74AW	16	0	42845	0	0	0
58	G0LJD/P	23	JO01GH	29	0	29910	0	0	0
59	M3UBM/P	8	JO01CG	14	0	0	3284	0	0

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The incoming QSL Bureau

This time Marc and John look at the workings of the incoming QSL Bureau, and provide some 'dos and don'ts' to help to improve your QSL return rate.

Following on from April's 'QSL' column, where we briefly described some best practices on how to send outgoing cards via the QSL Bureau, we now examine the *incoming* service, and reveal how to go about the business of retrieving your cards.

So how does the incoming service work? Cards destined for UK amateurs arrive daily at Potters Bar from a number of different sources. The majority come from overseas bureaus, a lesser number come from other UK amateurs, and some even come directly from overseas individuals or clubs. Occasionally amateurs visiting RSGB HQ also bring in cards for distribution, and of course, some come from HQ staff and the GB3RS shack, next door.

Sorting of incoming cards is done in three stages. The initial stage is the 'pre-sort' and is perhaps the most time-consuming and laborious task that bureau staff and volunteers undertake. This process consists of sorting the contents of the boxes and packages into a defined callsign prefix order, or by groups of prefixes. The second stage entails sorting the cards by the ranges that correspond to the Sub-Managers' scope of responsibility. For example, all cards for G0TAA-G0TZZ callsigns are collated together, as are the GB or M3 cards. The cards are then boxed-up and sent to the respective Sub-Managers once there is a suitable quantity, or when requested. The Sub-Managers complete the process, by sorting the cards into individual callsign order.

The Sub-Managers, all of whom are volunteers appointed by the QSL Bureau, are the mainstay of the incoming service. Currently, there are over 75, who between them handle over 100 discrete callsign ranges. An up-to-date list of Sub-Managers is available from the members-only pages of the RSGB website. Alternatively, contact the QSL Bureau for details.

The method for retrieving your cards from your Sub-Manager is quite straightforward. In simple terms, you send him or her some envelopes and he or she sends you some cards. Let us now expand on this premise.

ENVELOPES

When acquiring envelopes to send to your Sub-Manager, 190mm (7.5in) x 130mm (5in) is the ideal size, although these are becoming increasingly difficult to find. If you cannot get hold of this size, try to ensure that whatever you purchase is no larger than about C5 size, 229mm (9in) x 162mm (6.4in), or conversely no smaller than C6 size, 162mm (6.4in) x 114mm (4.5in).

The next consideration should be their construction. Envelopes should be ideally made of sturdy material. Manila heavyweight variants are usually available in all acceptable sizes. Avoid envelopes that have self-sealing closures, the adhesive strips dry-up after an extended period. Normal gummed closures are fine; peel and seal types are better, and save a lot of time and effort.

Send your Sub-Manager batches of no more than 10 envelopes, only use 1st or 2nd class stamps, not those with a monetary value, and apart from your name and address, write your callsign, in capital letters, on the top-left corner of each, along with any instructions on how many cards to wait for, before returning, for example, "Wait 10". Failure to do this will mean that the Sub-Manager will wait until the contents of the envelope have reached the weight limit for the attached postage, 60g for 1st or 2nd class. Sequentially number each envelope, and mark one with "Last Envelope". When you receive this, you will know that you need to send your Sub-Manager some more.

DOS AND DON'TS

To keep on good terms with your Sub-Manager please take note of the following dos and don'ts:

- Do ensure when you send SASEs to your Sub-Manager, that the envelope containing them, has sufficient postage to cover the weight. Your Sub-Manager should not be expected to pay the excess postage and handling fees, or to have to recover them from his local Post Office (see photo!)
- Do not send oversized SASEs.
- Do not send more than 10 SASEs at a time.
- Do not send 'franked' SASEs. Franking, is for several reasons, not acceptable for return postage.
- Do not send outgoing cards to your Sub-Manager. Send them only to the QSL Bureau.
- Do not expect your Sub-Manager to be available to you 24/7.
- Do send some extra 1st or 2nd class stamps.
- Do inform your Sub-Manager of your new address, if you move home.
- Do remember to lodge SASEs with the appropriate Sub-Manager if you operate outside of your normal UK prefix area. Potentially, you could have SASEs lodged with up to seven different Sub-Managers.
- Do remember who is benefiting from this service. If you believe you can do a better job, stand-up and be counted.

Naturally, there will exceptions to the above guidelines and each Sub-Manager will undoubtedly have their own preferences. Additionally, high volume recipients have to make alternative arrangements with their Sub-Managers, but in general, if you adhere to the above principles, you will not go too far wrong.

Pre-sorters nightmare. Who is this 'mystery card' intended for? (The sender's callsign has been removed to spare his blushes).

Please check you affix the correct postage when sending your envelopes: don't expect your Sub-Manager to have to collect your envelopes from his local Post Office and pay excess postage.

FREE SERVICE

As stated in the past, the incoming QSL Bureau service is provided free of charge to all UK amateurs and clubs regardless of RSGB membership or affiliation. Please do take advantage of this facility because if you are at all active on the air, regardless of what you say in QSO, or publish on the internet, QSL cards *will* turn-up for you at the Bureau. If, however, you really do not want to collect these cards, please inform your Sub-Manager of this fact, he or she can then arrange for their disposal, or return to the originators.

If you feel that you have cause for concern, please try to resolve any issues amicably. If you can, contact your Sub-Manager directly to confirm that he or she has SASE for you. If this is not the issue, try to determine what the problem is. If all else fails, contact the Bureau supervisor, Jan Mair at RSGB HQ.

To conclude, we would like to thank those of you who contacted us after reading April's column; we very much appreciate your encouraging comments. In the October 'QSL' column, we will be providing you with some statistics about the Bureau, and hearing from one or two of the Sub-Managers, as well as answering any queries that you may have. ♦

WEB SEARCH

RSGB QSL Bureau www.rsgb.org.uk/membersonly
(go to 'RSGB Information', then 'RSGB QSL Bureau')

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SWLing back to basics

Bob Treacher covers the basics of how to send an SWL QSL and asks for listeners' profiles for the column.

When was the last time you wrote to tell me of your SWL activities? Although I hear from some listeners quite often, there must be a large number of you that I have never heard from. So that others can share your experiences, I would like to feature one listener per column, with a photo, details of how you came into the hobby, your favourite aspect of SWLing, what receiver and antennas you use, the best DX heard, and if you send QSL cards, the best card you've had back in return - or anything else that will interest other short wave listeners. Please keep your offering to a maximum of 300 words.

BACK TO BASICS

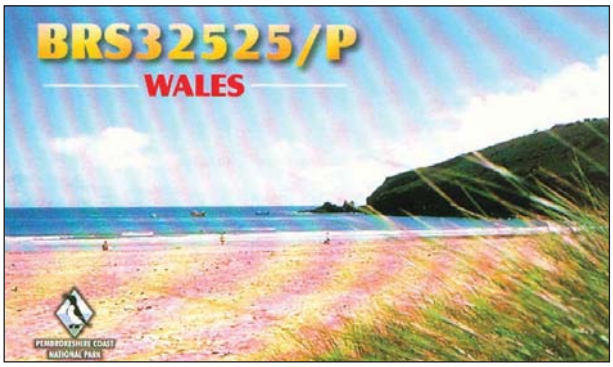
A pet subject of mine is that of listeners providing good quality, worthwhile, reports to the stations they hear. Several newcomers have asked how to send QSL cards. Let's look again at what you should be doing to send that perfect SWL report.

Firstly, you have to find a station that you want to QSL - either because it is a new DXCC country, a new IOTA, a new square etc, or because it is a special event station, or a station running low power who is a good signal with you, but not getting replies to his CQ calls. The reasons for wanting to send a QSL card are so numerous, you can probably come up with another six good reasons without too much thought. However, do not just send a QSL for the sake of it.

Once you have found a station to QSL, make your report useful and honest. If the station is the only one you've heard from, say, the Far East on that particular day, you could say so. If the station is only 53 with you but is getting S9 reports from everyone, say you are only using a basic receiver and a low long wire. If you are reporting to a DXpedition, report on more than one QSO - listing three consecutive QSOs made by the DX station shows that you heard the station and were interested in the DXpedition. Your report must include the correct callsign, stations worked, the date, time (in UTC / GMT), your report to the station, the frequency and the mode. Do not send an SWL report if you haven't got the whole of the callsign right. All of the other boxes need to be filled in correctly, too. There is nothing that will irritate more than getting an incorrect SWL report.

If the station gives a QSL manager, send your card to him, not the station you have heard. A great many stations use a QSL manager for whatever reason. QSL manager lists can be found on the Internet and some are given below. If you want a card returned direct, make sure that you send sufficient return postage and a self addressed envelope. If you use the RSGB QSL bureau, make sure you sort the cards into alphabetic order (with Gs at the top), making sure that you clearly show on the back of the card who the card is intended for [see also the 'QSL' column on p55 - *Ed*].

Assuming you get your QSL cards produced professionally, make sure they are the standard size - 5.5 x 3.5in. In that way you need only use standard C6 (114 x 162mm) envelopes.



SWLing from Wales this summer: Bob Treacher's Welsh SWL QSL.

SWL MOST WANTED COUNTRIES

Which DXCC countries do you still need? Why not share your 'wanted' list with other listeners? There are now quite a few 'rare' countries, eg KP1 and KP5, so most 'new' listeners will still need those, but what other countries have eluded you as a listener? It will be fascinating to find out. Let me know and I will feature your list in the column.

ILA - STILL GOING? . . .

Although the International Listeners' Association was disbanded earlier in the year, Ken Burnell, RS183020 / M1DZT, continues to run the ILA contest and awards programme. He also, with the help of other ex-ILA members, runs a stand at various amateur radio rallies in Staffordshire and Cheshire giving displays of radio communication software using two desktops and three laptops. If you are an SWL in these parts of the country, go along and make yourself known.

Alan Burnett-Provan, M3VAV, also commented on the demise of the ILA and wondered if he would ever get QSL cards in response to his SWL reports. If someone tells me, I'll pass on the details!

BAND REPORTS

Thanks to Robert Small, BRS8841, we have an interesting synopsis of conditions over the last two months. Robert admits to a very mixed period. Conditions at the time of the equinox were reasonably good, but since then there has been a noticeable dive, with little heard above 21MHz.

The most recent big DXpedition was FT5XO (Kerguelen I). Robert offers his compliments to the team for a job well done. He heard them on all bands and managed four new 'band slots' - new on 1.8, 10 and 18MHz, new on 3.5 and 24MHz CW. Other than the FT5, Robert heard TO7C on 1.8MHz, TT8AMO on 3.5MHz, and XT2JZ on 10MHz.

On the high bands (14MHz and above), Robert heard J68RI, WH8/F6EXV, V25OP, AL9A, EKG90GM, AH7G, D2U, LU1ZI and 7V2SI (AF-097) on 14MHz. The band was at its best early in the morning and late at night - this will continue to be the case during summer months. On 18MHz 9Y4/OM3TZZ, XE1KLP, V73JY, BV50CRA, TS3A and JW3HS had been heard.

Although he heard nothing new on 21MHz, he thought it had been the best band during the period. His highlights included XU7ADI, YB7M, HL5NLQ, YB1BAD, 8P9AM, BP0A, P29NP, BX3AC, A6/ON5NT, 8Q7EX, A71A, ST2BF, 8Q7NB and P29VR. 24MHz had rewarded some patient listening by providing 5R8GZ, TO7C and ZD8AD.

SWLING FROM GW, AGAIN

I will be holidaying in Tenby, Pembrokeshire, again this year at the end of August. I shall be looking to add to my 204 DXCC heard using my trusty Sony ICF-SW7600G receiver and simple antennas. Listen out also for Simon, MW3CVN/P, who will be looking to add to his DXCC from GW. We will be delighted if any SWLs or amateurs in the area would like to meet up for a beer or a coffee during our stay. ♦

WEB SEARCH

Buckmaster	**www.buck.com/cgi-bin/do_hamcall**
K4UTE	**www.nfdxa.com/K4UTE/K4UTE.html**
SM5ARL	**www.algonet.se/~sm5arl/qslmgr.html**
How to improve your QSL returns (although meant for licensed amateurs the tips are still good)	**http://zs6ez.za.org/tutorial/qsl-hint.htm**

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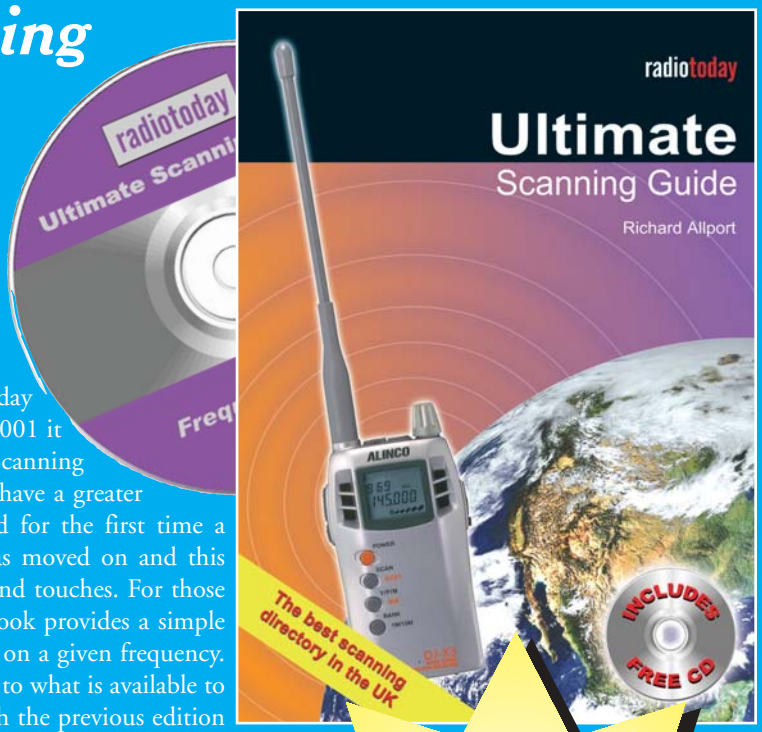

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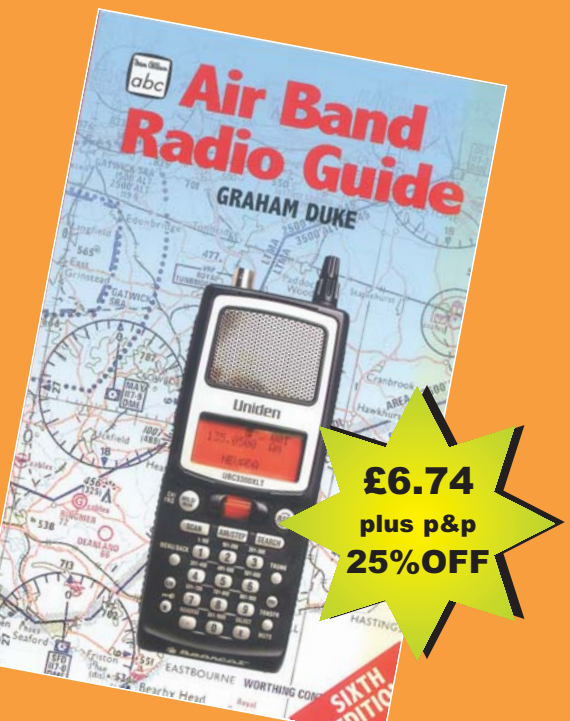

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By Graham Duke

For many thousands of aviation enthusiasts part of the fascination of their hobby is the ability to listen in to the radio transmissions made by the Air Traffic Controllers and the aircraft under their control. The book examines in detail the technology involved, the equipment available, airfields, radio frequencies and much else. Individual chapters within the book examine topics such as the legal position, the nature of the transmissions that can be heard, the features of the equipment available and what to look for when seeking to acquire such equipment, antennas and high frequency radio. In addition, the book also includes comprehensive appendices that provide an airfield directory (which lists all the up-to-date frequencies for each of the airfields covered), the ICAO four-letter airfield codes for British and major overseas airports, the ATC reporting points and radio navigation aids, airline call signs and much more.

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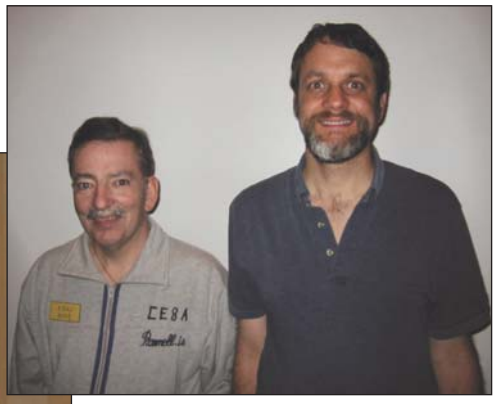
IOTA

Roger Balister has completed the 2005 IOTA 'Honour Roll', which has been posted on the IOTA website. Here, we acknowledge the top 30 and RSGB members. Plus news of an IOTA application collection point at this year's RSGB HF Convention.



Above:
Mike, K9AJ, and Bruce, KD6WW, well-known IOTA DXpeditioners, seen at Visalia.

Left:
Martin, G3ZAY, presenting a Premier IOTA Award to Ray, N6VR, one of the XF1K team that has activated several rare IOTAs in Baja California.

Last April's Visalia DX Convention saw one of the most successful IOTA gatherings ever to take place in the USA. A record 92 DXpeditioners and IOTA stalwarts, including our own IOTA Committee Chairman, Martin, G3ZAY, attended the Friday evening IOTA dinner (see photos). They were entertained with illustrated talks by XE2K, N6VR and N6JV, XE1KK, K9AJ and KD6WW on their operations in the last few months from remote IOTAs in Mexico, Chile and Canada. This IOTA dinner is gaining in popularity - next year's is targeting an attendance of well over the 100 mark.

IOTA PERFORMANCE TABLES

This year's Honour Roll and other annual listings are now on the Internet. Go and check your score at the RSGB IOTA website. An extract of the top 30 plus RSGB members is given here.

RSGB HF CONVENTION

Going to the RSGB HF Convention in October? If so, why not take your IOTA application along? There will be a collection point for cards and a promise of safe forwarding by hand to the UK checkpoints. If you submit your application this way, the RSGB IOTA Committee will pay the cost of returning the cards to you by normal post afterwards. Please make sure that the application is complete in all respects and accompanied by correct administration and certificate fees. Don't leave it too late, start preparing now. There will be no IOTA card-checking at the Convention itself. ♦

2005 HONOUR ROLL (extract)

Pos	Callsign	Total
1	F9RM	1051
2	9A2AA	1046
3	I1ZL	1045
4	I1SNW	1043
5	I8XTX	1040
5	ON6HE	1040
7	EA4MY	1038
7	ON5KL	1038
9	I8KNT	1037
10	I8ACB	1035
10	VE6VK	1035
12	F2BS	1034
13	IK1JJB	1033
14	IT9GAI	1028
15	DL8NU	1027
15	W9DC	1027
17	WD8MGQ	1026
18	ON7EM	1025
19	ON4AAC	1024
20	K8DYZ	1023
21	G3GIQ	1022
21	K9PPY	1022
23	OM3JW	1020
24	CT1ZW	1018
24	VE3XN	1018
26	IK2MLY	1015
27	G3ZAY	1014
27	GM3ITN	1014
29	I2MWZ	1013
29	OE3WWB	1013
50	G4WFZ	992
53	OZ4RT	984
66	G3ALI	973
72	VK9NS	964
81	G4SOZ	955
88	G3NUG	949
90	G4BWP	948
93	G3OCA	944
95	SM5DJZ	943
101	GJ3LFJ	937
110	G3RUV	928
110	ON4IZ	928
112	AD5A	922
117	G0APV	917
123	OH2BLD	913
125	G3XTT	912
127	G3VJP	902
132	G3TJW	895
135	GM0AGN	888
146	G0ANH	878
151	G3OAG	875
152	G0LRJ	874
181	GI0TJJ	848
186	G3HTA	842
195	GW3ARS	835
208	5B4AFB	826
211	G3SJX	824
221	G0MYC	815
223	G3TOK	813
227	GM0KCY	809
233	G3PMR	803
234	G3ZBA	802
241	G3UAS	800
250	G3HSR	789
256	G3LAS	779
260	G0WRE	775

ADDITIONS TO IOTA DIRECTORY - 40TH ANNIVERSARY EDITION

AF-097	7X	Mediterranean Sea Coast Centre group (Algeria)
OC-268	YB7	Laut Kecil Islands (Indonesia)

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VHF/UHF

Norman Fitch reports on what may be the earliest 'summer' Sporadic E opening on 2m ever. Plus comment on the level of VHF/UHF activity, and band reports from 50 to 430MHz.

Now that summer has arrived many of you will be looking forward to some portable operation away from the ever-increasing urban electronic hash. On page 22 in the January *RadCom* eight contests are listed for July, the main one being VHF National Field Day over the 2/3 weekend and the third of the 4-hour 144MHz Backpackers Contests takes place from 1100 on the Sunday. The rules for VHF NFD and the other listed events can be found on the VHF Contest Committee's website - see 'Web search'.

ACTIVITY

The comments about activity and propagation in the May 'VHF/UHF' prompted further correspondence. Bryn Llewellyn, G4DEZ (JO03), must surely be living proof that DX can still be worked. The grids and countries he has already worked this year confirm that there are plenty of stations to contact on all the bands and with all the modes. He wrote at length so here are extracts from his contribution.

"I read your column with interest but disagree with a lot of what was reported. Yes, activity has gone down so obviously it is more difficult to make contacts on SSB or CW on VHF and above (it doesn't matter which band you take they all have the same problem). The real problem is twofold:

"1. People don't call CQ anymore, everybody on the band seems to just sit and listen (or tune across the band, hear nothing and turn off). If I find the band quiet, I call CQ and within a short while a surprising number of QSOs start up, this is reported to me by many other operators in the UK and the continent.

"2. Everybody wants the easy option and does not want to work for their QSOs. If the signals are weak they tend to ignore them and everybody seems to want to work only big signals: the modern way of dumbing down everything (including amateur radio)? Please note there are some stations who will work the extra mile and go for anything that moves (or can be heard). They are the real DXers.

"Giving away the HF bands to the old Class B operators did one thing: it almost emptied the VHF bands. Thankfully many of them who have now tasted HF realise that VHF and above is much more challenging and rewarding. The ones that don't like a challenge will stay on HF complaining about the QRM!

This is the 15.1dBd gain 6m EME antenna array designed and built by Ian Williams, M0BCG, which he used to make the first British Isles to New Zealand and Alaska QSOs. The four 5-element Yagis have 22ft booms and are mounted on an H-frame. The elevator is steerable from 0° to 90°.

"Propagation has not changed for the worse, there is always something to be worked at DX range (DX being relative to site and equipment, this can be anything from 100km to 1000km or more). Already this year there have been good auroras, some reasonable tropo, good MS and EME on 6, 4, 2m and even on 70cm. On 6m there have been all those above and also Es every month this year. People just don't check the bands often enough. There has even been Es on 4m (S5). I think the people who say tropo conditions are deteriorating are the ones who hardly ever use the bands. Tell them to get on the bands and work something.

"As you know I live in a sparsely populated area, but I have not found that the background noise level has increased at all. Another problem is that today's modern operators will not optimise their systems adequately, using the barest minimum in feeder cable and minuscule antennas. They throw away most of their signal in feeder losses and some even resort to complaining about not being able to work very far when using vertical dipoles or similar vertically polarised antennas. Cross polarisation losses are not theoretical and they will be as much, if not more than, 23dB over a simple horizontal dipole, basically throwing away 199 parts in every 200 both on transmit and receive."

Admittedly Bryn is fortunate in living in a rural location and being able to put up antennas for all the bands, but I agree with his comments on improving one's station performance. Spending money on some low-loss feeder and decent connectors - N-types instead of PL259/SO239 types - will result in more power at the antenna and a better overall system noise figure.

LA8AK, SILENT KEY

We were all very shocked to learn of the death of Jan-Martin Nøding, LA8AK, at the early age of 59. It seems that he went missing on a hike on 11 April but his body was not found until the 27th. There have been many tributes to him on the Internet and as Stefan Heck, LA0BY, wrote, "Jan-Martin has been one of the pioneers on VHF, UHF and microwaves in Norway. Although he has not been very active on the higher bands in recent years, we will certainly miss his appearances at the Nordic VHF meetings, Weinheim, etc. We have lost a truly great man."

SOLAR AND GEOMAGNETIC DATA

Our unpredictable sun has surprised us again. To quote from a message on the Space Weather News website on 10 May, "*Déjà vu*? A big spot is growing on the sun again. Today sunspot 758 is almost as wide as the planet Jupiter; two days ago it was sparse and unimpressive. Like sunspot 756 in late April, this new active region reminds us how quickly big sunspots can materialise, even during solar minimum."

In the 30 days to 11 May, the 10.7cm solar flux averaged 95.2 units and at the end of the period it maximised at 125. 77 was the minimum value for three days from 20 April and 13 new regions were recorded. The sun was spotless on 24 April but by 11 May the sunspot area in millionths of the visible disc had reached 1330. The mid-latitude A-index at Fredericksburg varied somewhat erratically between 1 on 27/28 April to 38 on 8 May. There were 23 quiet days when the index was in the 1-10 range.

ANNUAL VHF/UHF TABLE - JAN TO DEC 2005

Callsign	50MHz Grid	50MHz Ctr	70MHz Grid	70MHz Ctr	144MHz Grid	144MHz Ctr	430MHz Grid	430MHz Ctr	1296MHz Grid	1296MHz Ctr	Total Points
G4DEZ	109	35	27	10	133	32	29	9	15	4	403
G8HGN	-	-	-	-	39	7	19	6	-	-	71
G3YDY	-	-	-	-	27	7	25	9	-	-	68
M0XLT	40	11	-	-	6	2	1	1	-	-	61
G3FIJ	4	1	8	2	17	5	9	2	-	-	48
G6TTL	-	-	-	-	18	6	13	6	-	-	43
M5FUN	-	-	-	-	35	7	-	-	-	-	42
G8VYK	-	-	-	-	22	12	-	-	-	-	34
G4OBK	14	6	-	-	4	3	1	1	-	-	29
G4APJ	1	1	-	-	7	3	12	5	-	-	29
G6HOU	-	-	-	-	19	6	-	-	-	-	25
G8RWG	-	-	-	-	15	6	-	-	-	-	21

The grids are the first four characters, *eg* IO91, and the countries are the current DXCC entities plus IT9.
Do not count EME QSOs this year. The next deadline is 12 July.

MOONBOUNCE

Ian Williams, M0BCG (IO91DO), wrote, "Were you not interested in my information that I sent you a couple of months ago about my making the first-ever British Isles to ZL and first-ever British Isles to KL7 6m contacts . . . via EME using JT65a, with Rod, ZL3NW, and Kevin, NL7Z? The ZL3NW QSO was a 19,002km path, which is a current IARU Region 1 6m EME distance record and most possibly a world 6m EME distance record. I was also the first fully decoded call-sign heard on 6m by the FT5XO expedition but I didn't complete a QSO with them." The ZL3NW QSO took place on 24 January 2005 and was completed at 1607. The NL7Z QSO was completed at 0434 on 27 January.

As I explained to Ian, I never received his e-mail, so am pleased to record his achievements at this late stage. He is very active on 6m EME and his initials up to 26 March were W7GJ, K6MYC, W1JJ, K7BV/1, JM1SZY, JH2COZ, ZS6NK, IW5DHN, ON4IQ, ZL3NW, NL7Z, WA4NJP, K5GW, KR7O, ZS6NK, JH2COZ, JM1SZY and K6MYC. His station comprises an IC-756 receiver and JST-245 transmitter with a 24dB gain, 0.5dB NF preamp. The amplifier is a very much-modified 36-year old Heathkit SB-220. His antenna system is an array of four home-designed and built 5-ele Yagis on 22ft booms on an H-frame with a gain of 15.1dBd. He fabricated the elevator, which is steerable 0-90°. Ian is also QRV on 2m EME with 350W and an array of four 11-ele Yagis: ODX so far is VK7MO.

Paul Tomlinson, M0EME (IO93), was QRV on 15/16 April and completed on 70cm with N9AB* for #2 and thinks he's the smallest ERP station that N9AB has worked. He was trying to get JT65 software going on his PC but wrote, ". . . the software and the comm port won't talk so I'm looking into getting a laptop to operate this mode." His station comprises an FT-847 and MGF1302 preamp to four FO19 Yagis with 100W at the feed.

On 22 April, Howard Ling, G4CCH (IO93) completed on 23cm with ON7UN*, ES6RQ* #202 and 9H1ES 559/RO and 549. Next day UT3LL* was #203. Andy Kissack, GD0TEP (IO74), is QRV on 6m using JT65a mode and lists completions with ZL3NW, a GD/ZL first, NL7Z, JG2BRI, JR2HCB, W7GJ using his 4-Yagi array, K7MYC, W7GJ using a single 6M11JKV Yagi, K7BV and JA1RJU in the 16-23 April period, "All made with a horizon-bound single 6M11JKV antenna from M^2 - the 69ft long one!)"

In April Stuart Jones, GW3XYW (IO71), completed on 2m with RV3IG (O/O) on the 14th using JT65b, with DL9MS (O/O) on the 18th and DJ7OF (O/O) on the 20th but activity was limited by a relay fault and high winds on the 22nd. On 23cm in the 16th/17th weekend he completed CW contacts with 17 stations for 15 multipliers. Jamie Ashford, GW7SMW (IO81), completed his first EME QSO on 23 March with RN6BN (KN95) using JT65 mode. On 11 April he completed with KB8RQ (EM79) for his first USA contact.

Ernie Gray, W1MRQ, who is currently QRV on 2m from Ross Island in Antarctica as KC4/W1MRQ (RB32HD), is looking for schedules. He uses 144.118MHz and transmits first on JT65b using four 5-ele Yagis and 170W. If you'd like to arrange a sked he can be reached at Ernest.Gray@usap.gov by e-mail. By now Bob Sutton, ZK1EME, should have a 160W amplifier. He calls CQ at his moonset over the ocean on 144.140MHz using JT65b and transmits first. On 10 May he completed with RN6BN and RA3AQ with his QRP set-up.

The following news comes from the May edition of the *432 and Above EME News* edited by Al Katz, K2UYH. EA3DXU's group plans 23cm operation from Andorra from 0000 on 24 August to moonset on the 27th using the callsign C31TLT. They will be equipped for CW and JT65c for both random and scheduled operation. They tested their eight 35-ele linear polarised array and 250W station from JN01 during the EWW contest on 16 April. Josep suggests that sked requests be made via K1RQG whose e-mail address is k1rqg@aol.com

Peter Blair, G3LTF (IO91), completed with RW1AW #213 on 23cm on 10 April, followed by K2UYH, OZ6OL and F5HRY. During the activity weekend (AW) on the 16th/17th he worked 42 stations on 23cm and on the 20th, a test with SM3JKU* (439/559) on 70cm brought him #387.

The next AW is over the 2/3 July VHF NFD weekend when London latitude stations will have about 33.2 hours of Moon time. The declination varies from +20.12° to +26.04° and the 144/432MHz sky temperature range is 400/28K to 463/34K. The signal degradation referred to perigee varies from -1.14dB to -147dB and the sun offset at Saturday midnight is -40°. The data for the 30/31 July week end are 33.6 hours, +23.29° to +27.6°, 405/28K to 518/39K, -1.22dB to -1.54dB and -57°.

EARLY 144MHz SPORADIC E

As G4DEZ reported earlier, he has made Es contacts on 6m every month this year but on 28 April, there was a good opening on 2m. That must have been one of the earliest 'summer' Es openings on the band for many years. In fact, without looking back through decades of logbooks, I cannot recall an April event. It gave Bryn two new countries from his present QTH, IT9 and 9H, as well as many new grids for this year's table.

Phil Catterall, G4OBK (IO94), caught this opening but found it very limited to one area. 9H1AW* (JM75) was an all-time ODX at 2339km with 559/459 reports exchanged on the SSB calling frequency. It was Phil's second QSO with a new 11-ele Yagi at 20ft AGL with 100W from the transmitter. At 1432 he also worked IW9AZJ (JM68) at 2077km. Jim Roach, G4WXZ (IO83), worked the IW9 at 1425 and copied him for about 45 minutes working Gs. Between 1400 and 1415, John Lemay, G4ZTR (JO01), completed with 9H1AW, 9H1ZC (JM75) for whom John was his first G on 2m, IT9PMZ (JM68), IW9AZJ and IW9CER (JM78) for two new grids. Tony Lord's, G8DQZ (JO02), best contacts were with IW9AZJ, 9H1ZC for best ever ODX at 2111km and 9H1AW in the 1420-1435 period. He runs an IC-910, 100W to a 13-ele Yagi at 75ft AGL.

BAND REPORTS

50MHz

G4DEZ completed 27 Es QSOs on 21 April in an opening that started at 0800 and finished at 1645 and in which JO40 was a new all-time grid. G4OBK contacted 9H1AW* on 26 April at 1251 and on the 26th Phil worked IS0GQX (JM49) at 1257 on SSB and CW. In the big opening on the 28th he worked a number of Italians and IT9. That day G8DQZ was QRV on the band and made QSOs with IK5RLP (JN52) and I1ESA.

Ted Collins, G4UPS (IO81), caught a brief Es opening on 18 April and worked I5TAT* (JN53) at 1710. Next day he contacted EH7BYM (IM56) at 1811 and EH7KW* at 1915. On the 21st from 1510 he worked OK2POI* (JN99), YT1AU* (KN04), OE6BMG,

YU1DG (KN04), S51WX * (JN75) and UZ5DZ (KN18) with fade-out at 1620. At 1824 on the 26th he contacted EH5RM (IM98) followed by EH5CLH (JM08) with fade-out at 1925. In the major opening on the 28th Ted's first QSO was with DL8NBE* (JO50) followed by lots of stations throughout the day till fade-out at 1550. Countries worked were DL, I, IT9, OE, OK, PA, SM, SP and 9H.

Steve Bunting, M0BPQ (IO91), was QRV for the Es on 26 April and worked EH7ZM (IM76), EH5RM and EH7RU (IM76) in a 6min period from 1839 and on the 30th at 0815 IW9HII (JM67). Kevin Jackson, M0XLT (IO83), contacted 12 Italians in JN52, 54, 56, 62, 63, 65, 70, 71 and 80, plus S52ID (JN56) and YT1AU on 21 April between 1406 and 1624. He lists 35 QSOs, many of them at very short distances, in the opening on the 28th between 1055 and 1553. In the aurora on 8 May he heard stations in DL, EI, F, G, GI, GM, ON, OZ, PA and SM but didn't make any contacts.

70MHz

John Roberts, G8FDJ (IO93), using 15W to a 3-ele Yagi, made SSB QSOs with GW8ASD (IO83), GM4VVX (IO78), G8TOK (JO01), GM4ISM (IO83) and G8IYG (IO82) in the aurora on 8 May at a QTE of 30°. The GI beacon was S9 for most of the afternoon.

144MHz

In the 8 May aurora, G4DEZ spent most of his time on the band. On the 11th an MS contact with SP8RHP/P (KN19) gave Bryn his 250th grid in four years of operation from JO03. Bob Harrison, G8HGN (JO01), was QRV in the UKAC on 3 May and completed 59 QSOs with stations in 19 grids and five countries. There was plenty of activity but no DX. On 8 May Mike Price, G6HOU (IO91), added six new grids and one country, LX, to his 2005 table score. In the aurora later that day he completed his first auroral QSO with a station in JN07.

Brian Oughton, G4AEZ, operating club station G8VYK (JO01), lists MS contacts during April using FSK441 mode with S51AT (JN75), HG2SF (JN87), HA5CBA (JN97), EA3AXV (JN01), IW4ARD (JN64), YU7EW (KN05), DK3WG (JO72), HA8CE (KN06), S57EA (JN76), LZ2FO (KN13) and S54T (JN75). GW7SMV was QRV in the 8 May aurora and lists 17 SSB QSOs with stations mostly at very close distances. Jamie's ODX was 9A4VM (JN85) at 1563km. M0BPQ was QRV in the UKAC on 3 May and lists seven SSB QSOs. In the aurora on 8 May Steve completed 38 CW contacts with stations in DL, EI, F, GD, HA, OM, ON, S5, SP, YU and 9A and his ODX was YU1JB (KN04) at 1700km followed by HA8CE (KN06) at 1589km.

430MHz AND UP

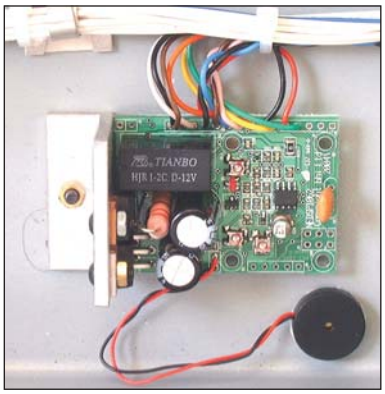
Paul Selwood, G3YDY (JO01), operates mainly in the Tuesday activity contests averaging 33 QSOs. In the Trophy Contest on 7 May he completed 46 QSOs with stations in 16 grids. Although conditions were normal to poor, more than a quarter of the contacts were over 400km, ODX being DL0WAE (JO42) at 540km. He states that activity was terrible with long gaps between contacts.

M0BPQ was QRV in the IARU Contest on the 7/8 May weekend. On 70cm Steve lists 24 SSB QSOs with stations in DL, EI, F, G, GD, GM, ON and PA. ODX was DF2VJ (JN39) at 562km. Steve runs 100W to two 13-ele Yagis. He participated as M0BPQ/P in the 23cm UKAC on 19 April and made six QSOs, ODX being ON4IY (JO20) at 346km. In the IARU event he completed 5 QSOs on CW and 16 on SSB. Most contacts were at quite short distances and ODX was GM3HAM/P (IO74) at 448km.

DEADLINES

The copy deadline for September in 12 July and for October it's 9 August. My telephone answering and fax machine is on 020 8763 9457 and my CompuServe ID is g3fpk ♦

WEB SEARCH	
VHF contest rules	www.blacksheep.org/vhfcc



WIN!

A bhi NEDSP1062-KBD module

Chris Lorek, G4HCL, reviews the bhi NEDSP1062-KBD in-speaker noise reduction module on page 23 of this issue of *RadCom*. Now, thanks to bhi, you can win an NEDSP1062-KBD module in our competition.

COMPETITION RULES

Look at the three multiple choice questions. Write your answers **on a postcard or the back of a sealed envelope** (no letters accepted) and send them to: bhi Competition, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. *Don't forget to put your own name, address and callsign or membership number on your entry!* Entries must be received at RSGB HQ by first post on Friday 29 July. You *must* be a current member of the RSGB on the closing date of the competition (29/7/05) in order to enter. The winner will be the first correct entry pulled at random out of the editorial hat on 29 July. The winner's name will be announced in *RadCom*. The full rules are listed below. (Hint: re-reading Chris Lorek's review on page 23 will help you with the answers!)

Q1. The bhi NEDSP1062-KBD is intended for fitting:

(a) instead of an existing loudspeaker
(b) inside an existing loudspeaker
(c) inside the receiver or transceiver.

Q2. How many levels of noise and tone reduction are available with the bhi NEDSP1062-KBD module?

(a) 3
(b) 6
(c) 8.

Q3. What is the maximum level of tone reduction available with the bhi NEDSP1062-KBD?

(a) 45dB
(b) 65dB
(c) 85dB.

THE SMALL PRINT

Only one entry per member (multiple entries will be disqualified). No other correspondence can be entered into. All entries will become the property of the RSGB. The competition is open to current RSGB members only. Employees of the RSGB and of bhi Ltd are not eligible to enter.

John Heath, G7HIA / M3BBX

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

E-mail: g7hia@amsat.org

Satellites galore!

HAMSAT becomes VO-52 ♦ CubeSats launched ♦ Celestrak's life extended ♦ *NOAA-18* launched ♦ News about *PCSAT2*

Following successful transponder operations, the recently-launched *HAMSAT* received its official Oscar number to become *VUSat-Oscar 52* (*VO-52 HAMSAT*). Launched by the India Space Research Organisation (ISRO) together with *CARTOSAT-1* the 45kg *VO-52* is a cube-like structure 639 x 630 x 550mm

The orbit is a near-circular Polar LEO (low earth orbit) with a mean altitude of around 620km, and an orbital period of 97.2 minutes. A slightly higher orbit, like *FO-29*, would have increased the DX potential, but that doesn't detract from this excellent satellite. The transponder has excellent audio quality and can be accessed with just a few watts into a small antenna. Using SSB there is a 60KkHz passband, and so plenty of room for multiple contacts. I regard this as a distinct benefit over the single-channel FM satellites. The frequency combination chosen is the mode UV, 70cm uplink and 2m downlink, formerly known as Mode B and of fond memory to those of us who were active on *Oscar 10* and *Oscar 13*. I have no argument with the decision of satellite builders to move us up to higher frequencies, but welcome the arrival of a new satellite with this popular mode which is easily accessible to a lot of radio amateurs who already have equipment for 70cm and 2m SSB. With an output of 1W, and a clear path from space, you don't need big antenna arrays. Two home-brew Texas Potatoes Masher Antennas from Jerry's website (K5OE) should work well and probably won't need any elevation. Based on bent wire and PVC pipe, there are full construction details on Jerry's site.

TRANSPONDER FREQUENCIES

Uplink 435.220 to 435.280MHz LSB/CW. Downlink 145.820 to 145.900MHz USB/CW. Inverting Transponder. Beacons on 145.936MHz unmodulated carrier, and telemetry on 145.860MHz.

A visit to AMSAT-India's website will provide full technical details about the satellite which is, I believe, the first amateur radio satellite to fly lithium ion batteries.

CUBESATS

A new batch of University-built CubeSats is due for launch in May 2005. Details are on the AMSAT-NA website. Choose 'satellite information' and follow the link. I would be pleased to have any reception reports in time for the next 'Space' page.

KEPLERIAN ELEMENTS UPDATE

Celestrak has been given permission by Air Force Space Command to continue to distribute element sets for the 12 months expiring 24 March 2006. It's still worth registering with Space Track as backup. If you do use space-track, it has a useful feature which allows you to create a 'favourites' list with just the satellites you want. Call this up when you visit the site and save time editing a big file.

NOAA-18 LAUNCHED

The latest NOAA polar orbiting weather satellite was launched on 20 May.

With the downlink on 137.91MHz, it operates higher up the band than the other NOAAs, so check your receiver. You may need a new crystal, or a new PIC Chip. Owners of the kit receiver RX2 can get new chips from GEO or RIG.

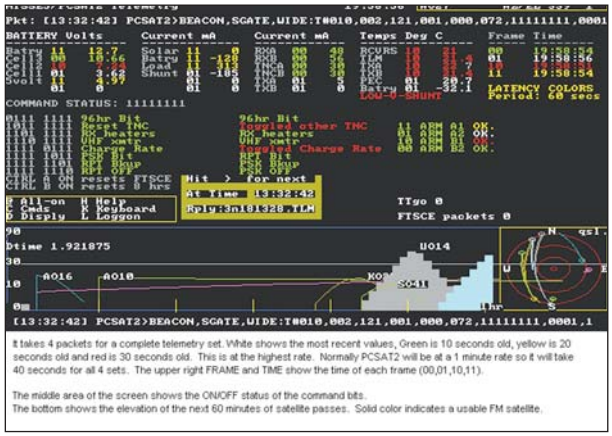
PCSAT2

Due to go to the *ISS* on the next shuttle flight, *PCSAT2* has some interesting payloads, including a UI-Digipeater, PSK-31, FM voice and telemetry data sent by packet radio. Decoding software will be available and ground stations can send their captured telemetry as part of a global project on the Internet. This one looks especially interesting for schools and for demonstration stations. Full details on the PCSAT website. ♦

Above:
HAMSAT VO-52.

Right:
K5OE's Potato Masher antennas.

Below:
Screenshot of *PCSAT2* Telemetry.



WEB SEARCH

AMSAT-India	www.amsat.in
PCSAT2	http://web.usna.navy.mil/~bruninga/pcsat2.html
CubeSats	www.amsat.org
Potato Masher Antennas	http://members.aol.com/k5oe
Space Track	www.space-track.org

ATV

News of the new ATV repeater on the Isle of Wight ♦ Changes to GB3TM on Anglesey ♦ Contest news ♦ CQ-TV 210 contents

At about 4pm on Wednesday 20 April, GB3PD at Stenbury Down on the Isle of Wight went on the air. Operated by SCART, the Solent Club for Amateur Television, GB3PD is currently using equipment hurriedly built by (and on loan from) Giles, G1MFG.The permanent equipment is still being developed by Howard, G3NZL, in association with other members of SCART. The current 'box' will then become the standby equipment in case the main gear fails.

There is a *whopping* -20dBm wideband signal at around 1285MHz on the receive aerial; it dwarfed the 1297MHz packet transmitter which shares the mast. Thankfully, there was no significant interference on the input frequency.

GB3PD is using temporary aerials, an Alford Slot for receive, and a plate for transmit. This means that the repeater is currently somewhat deaf, and at least 10dB more receive gain and a wider radiation pattern from the transmitter is expected when the permanent aerials are installed. It is also hoped to get aerials about 10m higher when a new ham mast is installed on the site later in the year. This will overcome some shadowing problems from a hill which is 10m higher about 100m north of the site.

The actual repeater equipment consists of a seven-pole interdigital receive filter followed by an G1MFG receiver. Beacon video is provided by a R T Russell test card generator, while idents are taken care of by a home-brew PIC circuit, which also contains the sync detector and A/V switch on the same board. The audio and video is then processed by a GTH Electronics 'ACE' timebase corrector with special ATV software. The transmitter is again from the G1MFG stable, followed by a DL2AM 18W PA and another seven-pole filter. Tests show that this filter eliminates any possible interference with the 1297MHz packet link on the same mast!

The ACE is a magic piece of kit for repeaters because, when it has the ATV software, it will always provide a re-timed, re-coded and re-synced signal – it will put perfect sync and burst on white noise and you can get colour lock on a P2 input! The first person through the new box was G8CKN, who put in a lovely P5 signal from his home 60km away.

The SCART group is indebted to the Isle of Wight Repeater Group for allowing us on their mast, and particular thanks to Simon, G1VGM.

NEWS FROM ANGLESEY

Last year, GB3TM, the 24cm ATV repeater in Anglesey, North Wales, had a 3cm input added on 10.340GHz, because of the delay in detecting a 3cm signal and switching it through to the repeater output (BATC I^2C logic). Some difficulties have been experienced during dish-panning for this input. Changes to the logic have resulted in an immediate beacon mode display when the 3cm input is receiving a valid signal; at the pre determined points in the beacon captions sequence, the 3cm input is switched on-air.

CONTEST RESULTS

The results of last year's international ATV contest are now on the BATC website. Top came the Severnside TV group (G7ATV) with 4341 points. The Group now has a new secretary; she is Caz Cooper, MW3LYA.

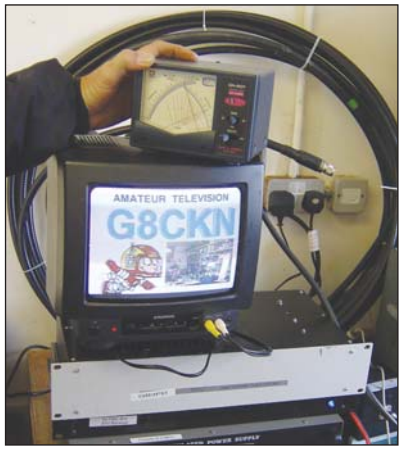
The results of the Summer Fun ATV contest are also in, with Dave, G4TIW, in first place. Dave now has a new site some 150m above the old location, but this extra height is at a price. There is no vehicular access, and the equipment has to be back-packed some 2km. Some considerable effort has gone into designing manually-transportable gear for this new location.

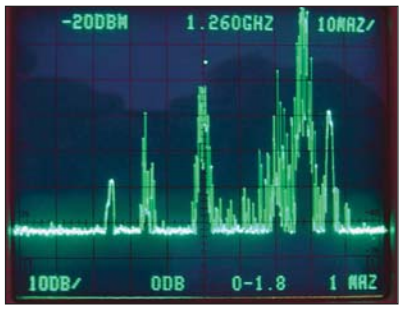
CQ-TV

CQ-TV 210 is now in print. New in this issue is a caption contest – the winning caption will receive an electronic character generator.

There is also a constructional project called 'CAT Box'. This is designed to add facilities such as talkback and cue lights to small camcorders. It also provides a video path from the camcorder back to a vision mixer desk, using either YC component or digital video, all this down a CAT 5 cable.

Mike Cox has been looking at widescreen signalling and has designed a line 23 data generator that enables external selection of 4:3 and 16:9 standards. Brian Kelly is on Part 3 of DATV in simple terms and there is, of course, much much more.





G8CKN puts the first signal through GB3PD. The meter shows 15W output and 1.5:1 VSWR.

Giles, G1MFG, makes some final adjustments to the repeater's innards.

Signals seen by the GB3PD receive antenna, with an unknown >-20dBm wideband signal dwarfing the 1297MHz packet transmitter from an aerial on the same mast, plus other big signals each side of the input frequency.

ELECTRONIC TEST CARDS

If you are interested in an electronic test card, designed on you own PC, there is a site where you can do just this; it's fun and, as most PCs now have a video output, you can use it for lining-up or even radiate it! ♦

WEB SEARCH	
BATC	www.batc.org.uk
Electronic test card	www.oodletuz.fsnet.co.uk/soft/tcmaker.htm

Sam Jewell, G4DDK

Blenheim Cottage, Kirton Road, Falkenham, Ipswich IP10 0QU.

E-mail: jewell@btinternet.com
Website: www.btinternet.com/~jewell

Microwave

Sam reviews the recent Rutherford-Appleton Laboratories' Microwave Round Table and discusses activity during the highly-successful April Low Bands Contest.

Around 70 microwave enthusiasts gathered at the Rutherford-Appleton Laboratories in Oxfordshire on 17 April to attend one of the regular UK Microwave meetings. 'Round Tables' take their name from their original format where attendees participated in discussions and made presentations relating to advancements in amateur radio operating and techniques.

A new addition to the RAL event weekend was an antenna gain-measuring session for the bands between 1.3GHz and 24GHz. This was held at the home of Brian Coleman, G4NNS. Brian, helped by John Hazell, G8ACE, had set up facilities for 2.3, 3.4 and 5.7GHz, while I provided the 10GHz and 24GHz band range equipment.

In all, some 61 antennas were measured. The results of the session were presented at RAL on the Sunday and should be published in *Scatterpoint*, the journal of the UK Microwave Group, by the time you read this column. They are also posted on the G4NNS web page. Brian has said he is interested in repeating the range again next year.

As is usual with these sessions, absolute accuracy is not claimed for the measured gains, although these should be accurate to within a dB or so. Such sessions provide the antenna owners with some confidence that their dishes, horns or Yagis are working as expected, and the tests can be very revealing about what works and what doesn't. Several antennas, of known gain, provided a useful check on the range gain accuracy. On 10GHz, a 17.1dBi horn antenna measured just over 17dBi, whilst a 20dBi commercial corrugated horn came out at 19.9dBi. These are remarkable results for a previously-untried range.

When all the antennas had been measured, Brian provided us with a demonstration of 10GHz moonbounce, working IQ4DF using his beautifully-engineered 3.7m dish and mount with 10W output. IQ4DF was a genuine 549 to 559. Very impressive! The G4NNS dish is shown in the photograph. To round-off the Saturday, we attended a splendid evening dinner at the *Bear Inn* in Wantage.

As well as the specialist microwave bring-and-buy sale, the RAL programme included talks by Peter Blair, G3LTF, on '*Galileo* and its Impact on 23cm Amateur Operation' and 'How to Build Large Dishes for 432MHz to 3.4GHz'; Sam Jewell, G4DDK, on 'A Modern 23cm Transverter Module'; Grant Hodgson, G8UBN, on 'Future Trends in Microwave Transverter Design' and Brian Coleman, G4NNS and Sam Jewell, G4DDK, on the results of the antenna-measuring session. Finally Peter Day, G3PHO, and Murray Niman, G6JYB, presented a forum on the current UK Microwave Group response to the Ofcom proposals affecting the microwave bands. Unfortunately, GW4DGU was unable to attend to make his presentation. However, he has kindly posted it on his own website. Just to complete an otherwise packed day, the microwave contest certificates and outstanding trophies were presented to the deserving winners.

The UK Microwave Group has published a set of proceedings of the previous year's round table presentations and other papers. Copies of these *Proceedings* are available through the UK Microwave Group. For details see its web page.

Some of the antenna group at the home of G4NNS.

I would like to thank the RAL club members and the Committee of the UK Microwave Group for organising a first-class meeting.

BAND ACTIVITY

Following a rather disappointing March, when microwave band propagation was not especially outstanding, the 2005 North Sea super-refraction season seems to have had a faltering start at the beginning of April, when strong signals (P5) were received by G3LQR (JO02) and G7OCD (JO01) from the Ostende TV repeater ON0OS (JO21) on 1255MHz. Several unidentified ATV test cards were also seen, apparently originating in the direction of central Belgium. One of these may have been the Antwerp amateur TV repeater.

10GHz beacon, PI7EHG (JO22), on 10,368.190MHz was received at up to S9 on the evening of 1 April and peaked over S9 at times throughout the 2nd. G3LQR again reported the PI7EHG (JO22) beacon on 24.048GHz at up to S9 during the 2nd, but exhibiting deep QSB. G4EAT (JO01) and G0RRJ (IO91) both reported on the DX Cluster that they were hearing PI7EHG beacon on 10GHz during the morning of the 2nd. There was also some overland propagation on the morning of the 2nd, as G4LDR (JO91) and G0RRJ both heard GB3MHX (JO02) on 10,368.830MHz. Propagation did not seem to extend very far inland into Europe, as evidenced by the lack of more remote beacons and very few stations heard calling on any of the higher bands.

There followed a rather quiet spell, but with propagation again improving around 21 – 24 April. This period covered the April 1296/2320/3400MHz Low Band Contest, more of which in a moment. On 21 April, many amateur microwave TV signals again appeared from the direction of Belgium and The Netherlands. On the 22nd, the Schiphol 24GHz beacon, PI7EHG (JO22), again appeared in the late afternoon. Simon Freeman, G3LQR (JO02), reports this as the fourth time the beacon has been logged by him this year. It again appeared during the afternoon and early evening of 24 April. Clearly, the extra power of the beacon, following a recent upgrade, has improved reception over this path.

APRIL LOW BAND CONTEST

The Low Band Contest was well-supported by UK stations and by many operators in France, Belgium, The

The G4NNS 3.7m dish on 10GHz.

Netherlands and Germany. The weather was rather mixed, with heavy rain in the south of England and pleasant sunshine further north and east.

Paul, GW8IZR (IO73), proved particularly popular, as IO73 has been a relatively rare locator on 1296MHz in recent years. Paul reported, on the UK Microwaves mail reflector, that he worked 10 stations on 1296MHz, with his 10W and 2m dish, with G3XDY (JO02) his best DX at 402km.

John, G3XDY (JO02), in turn, sent in a report on his results in the same contest. John reports that he believes this to have been the best-supported microwave contest outside the internationally-coordinated events that he can recollect. He reports that lots of stations were active and conditions were on the good side of normal, but without being too enhanced. Beacons from The Netherlands were good early on Sunday morning, but had dropped back again by the time the contest started.

On 1296MHz, he worked 39 stations. The best were DF6NA (JN49) at 664km and DF9IC (JN48) at 634km. Other long distance contacts included DJ5BV, GW8IZR, G4ALY, F1BZG, DL3YEE and DG1KJG, all at over 400km. He also found GW3TKH, GW3HWR, GW8ASD, and GW8IZR, plus a good sprinkling of PA, DL and F stations active during the day.

2.3GHz produced a best DX of DL3YEE (JO42) at 501km, followed by DG1KJG (JO30) and G4ALY (IO70). John made 19 contacts on 2.3GHz which included four PAs, two DLs, one F, one ON and 11 Gs. After a slow start on 3.4GHz, he ended up working 13 stations, the best again being DL3YEE and DG1KJG (JO30) at 433km. On this band, the stations worked included nine Gs, two PAs and two DLs.

DF6NA (JN49) was a very readable signal on 1296MHz, here in East Anglia, and I was able to exchange 419 reports with Rainer at 649km. He later reported a poor response to his ON4KST chat request for contacts on 1296MHz; presumably many UK operators felt that he was too far away to try? However, he ended up working several UK stations on the band, all at around 419. Never think a station is too far away to work!

Ralph Bird, G4ALY (IO70), reports working 16 stations on 1296MHz, with his best distance contact (ODX) being F5PMB (JN18) at 514km. On 3.4GHz, Ralph worked five stations, with his best contact on this band being G3XDY (JO02) at 415km.

M0EYT (IO80), operating with the Flight Refuelling Society callsign, G4RFR, reports that they managed to have quite a nice day up on Bell Hill, despite the awful weather - which at times was horizontal rain. On 3.4GHz they worked nine stations with G3PHO/P (IO93) their best contact at 360km, while on 2.3GHz they worked 12 stations. ON4IY (JO20) was a got-away at 500km. G0NZO, operating from a second vehicle, provided their 23cm station.

John Hazell, G8ACE, concentrated on 3.4GHz from his portable location at Lane End (IO80). He worked nine stations with G3PHO/P (IO93) his best contact at 327km. John comments that he missed at least four active stations and concludes that 3.4GHz activity is gradually increasing.

FIRST 47GHZ EME CONTACTS MADE

This was an achievement that has been waiting to happen for the last several years. The participants have been regularly reporting their progress on the Moon-net e-mail reflector towards this milestone in amateur radio and moonbounce in particular. It had become a matter of when, not if, because signals had been heard between several of the team on previous occasions, indicating that the path could be worked, given the right conditions.

The team of RW3BP, AD6FP, W5LUA, and VE4MA achieved the first-ever 47GHz contacts via the moon on the *Dubus* moonbounce contest weekend of 16 / 17 April. AD6FP, W5LUA and VE4MA each completed a CW contact via the moon with RW3BP.

RW3BP heard the first lunar echoes on 47GHz back in August 2004. He was heard by AD6FP, W5LUA, VE4MA and VE7CLD. Since the receipt of the first 47GHz echoes via the moon, numerous tests between RW3BP and AD6FP led to improvements by RW3BP allowing him to copy calls from the lower power signal of AD6FP in January of 2005.

The station at RW3BP consisted of a 2.4m offset-fed dish with 100W output, while the station at AD6FP consisted of a 1.8m offset-fed dish and 30W. Both W5LUA and VE4MA used 2.4m offset-fed dishes with 30W travelling-wave-tube amplifiers. Noise figures of all stations were between 3.5 and 4.7dB.

Since the Doppler shift can be as much as 100kHz at 47GHz, they had to adjust the receive frequency continuously to keep the other station centred in the passband. Precision frequency control was obtained by using GPS-controlled, Rubidium-locked, or TV sync-controlled phase-locked local oscillators. Various techniques were in use to keep the Doppler shifted frequency in the passband of the receivers.

Congratulations to RW3BP, AD6FP, W5LUA and VE4MA.

COLUMN INPUT

Please send your activity contributions to the address at the top of the page. The latest date for copy is 1 July for inclusion in the September column. My thanks to all correspondents contributing to this month's column. ♦

WEB SEARCH

UK Microwave Group	www.microwavers.org
ON4KST	www.on4kst.com/chat/start.php
Moon-net	www.nlsa.com/nets/moon-net-help.html
G4NNS web page	http://myweb.tiscali.co.uk/g4nns/AntTest.html
GW4DGU web page	www.christopherbartramrfdesign.com/blaenffos/

MOONRAKER

Manufacturers of radio communication antennas and associated products

Log Periodic

MLP32 TX & RX 100-1300MHz one feed, S.W.R. 2:1 and below over whole frequency range professional quality (length 1420mm) **£99.95**

MLP62 same spec as MLP32 but with increased freq. range 50-1300 Length 2000mm **£169.95**

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AM-PRO 10 mt *(Length 7' approx)* **£16.95**
AM-PRO 17 mt *(Length 7' approx)* **£16.95**
AM-PRO 20 mt *(Length 7' approx)* **£16.95**
AM-PRO 40 mt *(Length 7' approx)* **£16.95**
AM-PRO 80 mt *(Length 7' approx)* **£19.95**
AM-PRO 160 mt *(Length 7' approx)* **£49.95**
AM-PRO MB5 Multi band 10/15/20/40/80 can use 4 Bands at one time *(Length 100")* **£69.95**
SPX-100 'plug n go' multiband 6/10/12/15/17/20/30/40/80mtrs. Band changing is easy via a flylead and socket and adjustable telescopic whip section 1.65m when fully extended **£49.95**

Slim Jims

SJ-70 430-430MHz slimline design with SO239 connection. Length 1.00m **£19.95**
SJ-2 144-146MHz slimline design with SO239 connection. Length 2.00m **£24.95**

VHF/UHF Mobile Antennas

MICRO MAG Dual band 2/70 antenna complete with 1" magnetic mount 5mtrs of mini coax terminated in BNC **£14.95**
MR700 2m/70cms, 1/4 wave & 5/8, Gain 2m 0dB/3.0dB 70cms Length 20" 3/8 Fitting **£7.95**
SO239 Fitting **£9.95**
MR 777 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting) **£16.95**
(SO239 fitting) **£18.95**
MRQ525 2m/70cms, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cms Length 17" SO239 fitting commercial quality **£19.95**
MRQ500 2m/70cms, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8db 70cms Length 38" SO239 fitting commercial quality **£24.95**
MRQ750 2m/70cms, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cms Length 60" SO239 fitting commercial quality **£39.95**
MRQ800 6/2/70cms 1/4 6/8 & 3 x 5/8, Gain 6m3.0dBi/2m 5.0dB/70 7.5dB Length 60" SO239 fitting commercial quality **£39.95**
GF151 Professional glass mount dual band antenna. Freq: 2/70 Gain: 2.9/4.3dB. Length: 31" ..... New low price **£29.95**

Single Band Mobile Antennas

MR 214 2 metre straight stainless 1/4 wave 3/8 fitting .. **£4.95**
SO239 type **£5.95**
MR 258 2 Metre 5/8 wave 3.2 dBd Gain (3/8 fitting) (Length 58") **£12.95**
MR 268S 2 Metre 5/8 wave 3.5dBd gain Length 51" S0239 fitting **£19.95**
MR 290 2 Metre (2 x 5/8 Gain: 7.0dBd) (Length: 100"). SO239 fitting, "the best it gets" **£39.95**
MR 625 6 Metre base loaded (1/4 wave) (Length: 50") commercial quality **£19.95**
MR 614 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting) **£13.95**
MR 644 6 Metre loaded 1/4 wave (Length 40") (3/8 fitting) .. **£12.95**
(SO239 fitting) **£15.95**

Single Band End Fed Base Antennas

70 cms 1/2 wave (Length 26") (Gain: 2.5dB) (Radial free) **£24.95**
2 metre 1/2 wave (Length 52") (Gain 2.5dB) (Radial free) **£24.95**
4 metre 1/2 wave (Length 80") (Gain 2.5dB) (Radial free) **£39.95**
6 metre 1/2 wave (Length 120") (Gain 2.5dB) (Radial free) **£44.95**
6 metre 5/8 wave (Length 150") (Gain 4.5dB) (3 x 28" radials) .. **£49.95**

Mini HF Dipoles (Length 11' approx)

MD020 20mt version approx only 11ft **£39.95**
MD040 40mt version approx only 11ft **£44.95**
MDO80 80mt version approx only 11ft **£49.95**
(slimline lightweight aluminium construction)

VHF/UHF Vertical Co-Linear Fibreglass Base Antenna

SQ & BM Range VX 6Co-linear:- Specially Designed Tubular Vertical Coils individually tuned to within 0.05pf (maximum power 100 watts)

BM100 Dual-Bander **£29.95**
(2 mts 3dBd) (70cms 6dBd) (Length 39")
SQBM100 Dual-Bander **£39.95**
(2 mts 3dBd) (70cms 6dBd) (Length 39")
SQBM110 Dual-Bander **£49.95**
(2 mts 3dBd) (70cms 6dBd) (Length 39")
Unique design – radial FREE
BM200 Dual-Bander **£39.95**
(2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")
SQBM200 Dual-Bander **£49.95**
(2 mts 4.5dBd) (70cms 7.5dBd) (Length 62")
SQBM500 Dual - Bander Super Gainer **£59.95**
(2 mts 6.8dBd) (70cms 9.2dBd) (Length100")
BM1000 Tri-Bander **£59.95**
(2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
SQBM1000 Tri-Bander **£69.95**
(2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
SQBM 100/200/500/800/1000 ***are Polycoated Fibre Glass with Chrome & Stainless Steel Fittings.***

Single Band Vertical Co-Linear Base Antenna

BM33 70 cm 2 X 5/8 wave Length 39" 7.0 dBd Gain ... **£34.95**
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(Boom 63") (Gain 10dBd) **£44.95**
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(Boom 125") (Gain 12dBd) **£59.95**
2 metre 11 Element
(Boom 185") (Gain 13dBd) **£89.95**
4 metre 3 Element
(Boom 45") (Gain 8dBd) **£49.95**
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(Boom 128") (Gain 10dBd) **£59.95**
6 metre 3 Element
(Boom 72") (Gain 7.5dBd) **£54.95**
6 metre 5 Element
(Boom 142") (Gain 9.5dBd) **£74.95**
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(Boom 76") (Gain 12.5dBd) **£49.95**

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2 metre 12 Element (Boom 126") (Gain 14dBd) **£74.95**
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- Power: 3 Watts nominal/5 Watts max
- Size: 65 x 130 x 80mm
- Lead: 2m with 3.5mm jack plug fitted

PMR-712 ..... **£14.95**
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- Power: 3 Watts nominal/5 Watts max
- Size: 120 x 120 x 40mm
- Lead: 2m with 3.5mm jack plug fitted
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N-Type plug (Small entry).....**£3.00**
N-Type plug (Large entry).....**£3.00**
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SO239 Chassis socket (Square).....**£1.00**
N-Type Chassis scoket (Round).....**£3.00**
N-Type Chassis scoket (Square).....**£3.00**
SO239 Double female adapter.....**£1.00**
PL259 Double male adapter.....**£1.00**
N-Type Double female.....**£2.50**
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SO239 to N-Type adapter.....**£3.00**
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BNC to N-Type adapter (Female to male).....**£3.00**
BNC to N-Type adapter (Male to female).....**£2.50**
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HBV-2 2 BAND 2 ELEMENT TRAPPED BEAM FREQ:20-40 Mtrs GAIN:4dBd BOOM:5.00m LONGEST ELEMENT:13.00m POWER:1600 Watts.....**£399.95**

ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM
FREQ:10-15-20 Mtrs GAIN:8 dBd
BOOM:4.42m LONGEST ELE:8.46m
POWER:2000 Watts.....**£329.95**

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

HF Verticals

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

VR5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 4.00m RADIAL LENGTH: 2.30m (included). POWER: 500 Watts.....**£189.95**

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POWER: 500 Watts (with optional radials).....**£119.95**
OPTIONAL 10-15-20mtr radial kit.....**£39.95**
OPTIONAL 40mtr radial kit.....**£14.95**

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OPTIONAL 10-15-20mtr radial kit.....**£39.95**
OPTIONAL 40mtr radial kit.....**£14.95**
OPTIONAL 80mtr radial kit.....**£16.95**

EVX6000 6 BAND VERTICAL FREQ: 10-15-20-30-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 5.00m RADIAL LENGTH: 1.70m(included) POWER: 800 Watts.....**£299.95**

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

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MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts.....**£54.95**
MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts.....**£99.95**
MTD-4 (3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts.....**£44.95**
MTD-5 (5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER:1000 Watts.....**£89.95**
(MTD-5 is a crossed di-pole with 4 legs)

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

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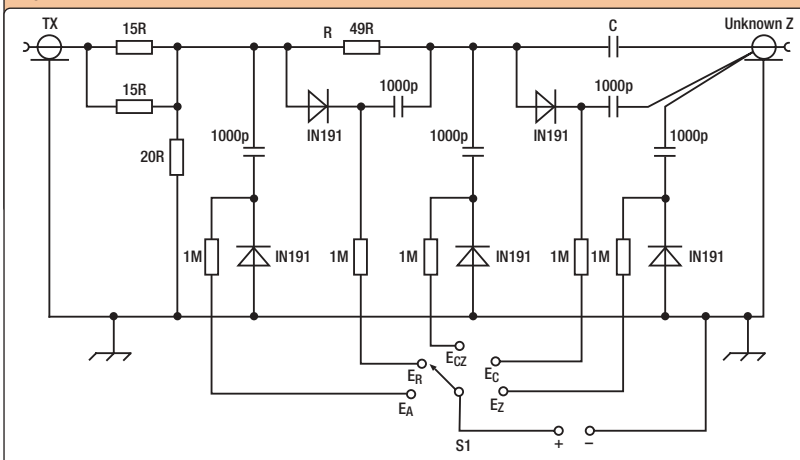
Antennas

G3LDO bemoans the fact that some types of computing don't appear as easy as they used to be, but he has found a way of running some of his early BASIC programs with more modern operating systems. He explains how.

FIG 1 © RADCOM 514



It is often convenient in the course of antenna construction or experimentation to make calculations of such things like the resonant length of a dipole or the length of wire necessary to make a quad loop. Most of these calculations are very simple and can be done on the back of a used envelope with a pencil; or more likely these days, with a digital calculator.

Some calculations are more complex, particularly if you wish to juggle with two or more of the variables. The answer to these types of problems seemed to met in the early days of Personal Computers when everyone seemed to have learned BASIC and was able to transcribe the formula found in antenna publications to something that was actually usable. Computers were being used for computing.

These days things are more complex. We now have PCs that have a far greater power than the early large mainframes. These PCs have applications that are wonderful for writing this column, for obtaining and editing photos and diagrams and communicating with the outside world.

But what about computing? *Windows 97* still allowed *DOS* programs to be used, so we were still able to use programs such as *GW-BASIC* and *Q-BASIC*, but this may not be the case with *Windows XP*.

One of the applications to be found on a modern PC is *Excel*. These spreadsheet programs are excellent for working out accounts and VAT returns. This is number crunching - is it not? I have seen Excel used in amateur radio articles to solve certain problems, but they are presented in a form of how they look and are used when the programming is completed. I have not seen a description of how the program was set up.

Recently, I tried to transcribe a program that I had originally written in *BASIC* to run on *Excel*.

After half an hour, I was aware of a large increase in blood pressure and after one hour I was feeling positively homicidal. Why should this be? I don't recall having this sort of problem with my early BBC computer!

It might be the additional complexity. It is so easy in software engineering to add extras *ad infinitum* to meet the marketing department's wish list; you then finish up with a package that has more bells and whistles than a troupe of Morris dancers. The same goes for many modern radios. Try operating an unfamiliar one of these without the instruction manual and see how far you get.

Now, back from the Grumpy Old Man digression, (as a >70 G3, I am privileged to be one of these) how can I use a modern PC to do amateur radio calculations?

While giving a talk at the Worthing Radio club some months ago, I was describing the three-meter method of measuring impedance. Unlike most impedance-measuring methods, which use calibrated resistance and reactance variables in the bridge, this method uses fixed variables as shown in **Fig 1**. It has the advantage of being very easy to construct, and is fairly accurate because it is easier to control stray reactances with small fixed components; it is self-calibrating. The 3M box is energised via a QRP transmitter source and the unknown Z is connected to the antenna or component under test. Although the instrument is called a three-meter measuring device, five voltage measurements are required to get an unambiguous impedance measurement.

The down side is that you need a sheet of graph paper to convert the voltage readings to impedance in the form of R ± jX, see **Fig 2**. This procedure was much simplified using a simple *BASIC* program written by the late Tom Lloyd, G3TML, and described in [1]. During this talk, I was bemoaning the difficulties of the modern computer in this context and the club computing guru, Matt Wilson, G8XIT, pointed me to a simple solution to be found on the Internet.

It is called *BBC BASIC for Windows* and is a version of the *BBC BASIC* programming language, which is fully integrated into the Microsoft *Windows* operating environment (*Windows 95/98/Me/NT4/2000/XP*). *BBC BASIC for Windows* can be obtained from **www.rtrussell.co.uk**. An evaluation version is available for free although the user's program and data is restricted to 8KB (quite large enough for the program shown in the screen-shot). The 'Compile' command, used for the creation of stand-alone executable files, is only available with the full version.

I was able to scan in some of my early *BBC BASIC* listings as text files and insert them into the program; they require just a little tweaking to get them going. The construction and use of the 3M box is covered in [1], although I will describe it in a later 'Antennas' column if there is enough interest. ♦

Fig 1
Circuit diagram of the three-meter impedance meter.

Values for C

3.5MHz	1000pF
7MHz	560pF
14MHz	390pF
21MHz	180pF
28MHz	100pF
50MHz	49pF
144MHz	22pF

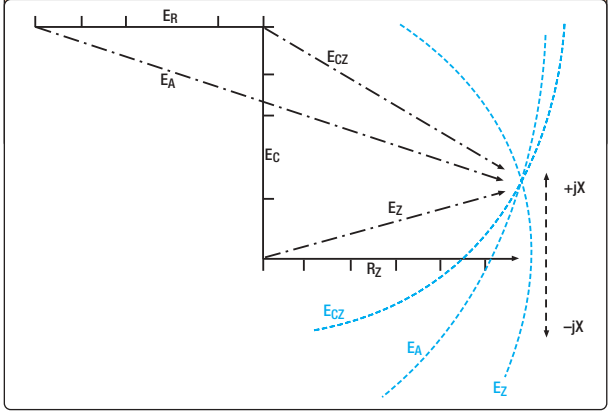
Fig 2
Graphic method of converting meter readings to R ± jX impedance.

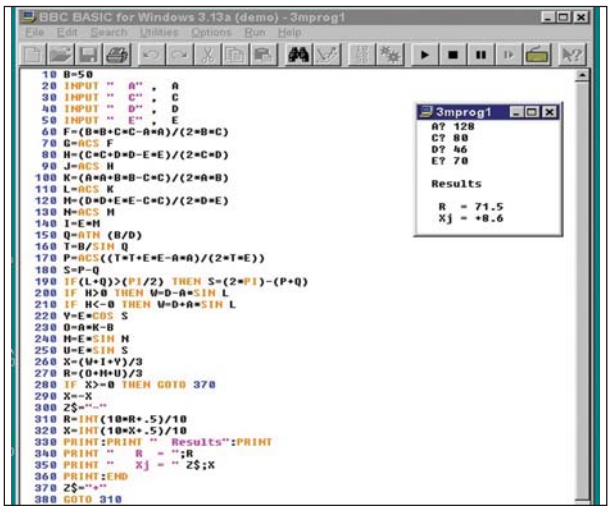
Below:
Program for extracting R ± jX from meter readings. To simplify the program, E_A, E_R, E_{CZ}, E_C and E_Z have been assigned A, B, C, D and E, respectively. The inset shows an example of the display when 'Run' is selected.

REFERENCE

[1] *The Antenna Experimenter's Guide*, 2nd Edition, RSGB.

FIG 2 © RADCOM 515





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Whatever next

Using gas pipes for domestic broadband distribution ♦ Broadband in the air ♦ The next generation

The delivery of broadband Internet services at ever-increasing data rates to homes and offices is big business, even though the price that the end user pays is constantly falling. Now a company has come up with a novel solution that permits RF over an enormous range of frequencies to be used, without causing interference to – or being subject to breakthrough from – services on the same frequencies. As you might imagine, it's all down to shielding, but what company would choose to install a network that is guaranteed 100% fully shielded and secure? In these days of cut-throat competition in the telecommunications market, surely the cost would be prohibitive? So American corporation Nethercomm went looking for an existing fully-shielded network into which they could introduce and extract RF. They found it in the network of pipes that feed our homes with natural gas. Broadband in Gas (BiG) neatly sidesteps the broadband industry's obstacles of expensive cable/fibre investments, limited allocation of wireless spectrum and costly (and noisy) PLT alternatives because they can re-use the whole of the RF spectrum in the fully shielded environment of underground gas pipes.

And so it was in May that Nethercomm announced the development of technology designed effectively to multiply the current available bandwidth of cable television and all other broadband systems with data capacities exceeding 10Gb. They claim that Broadband in Gas can deliver unmatched levels of connectivity by making use of Ultra Wideband technology to broadcast information wirelessly in a way that is both safe and reliable by using the "private spectrum isolated within natural gas pipelines". As **Fig 1** shows, signals are introduced into the pipes at a 'hub' and extracted by terminal equipment in the home to deliver connectivity over the last mile or so of a broadband network.

Nethercomm's technology requires no modification to existing natural gas distribution infrastructures and by not requiring the installation of cable or fibre, broadband is set to become substantially more affordable while increasing end-user bandwidth to unprecedented levels. "Our Broadband-in-Gas technology represents a completely new era of low-cost access to broadband services, and a completely new alternative to cable video, phone and data services," said Ann Nunally, President and CEO of the San Diego-based corporation. She went on to say, "We believe we are the only company with an Intellectual Property portfolio which addresses wireless broadband communication in natural gas pipelines and have been extremely tight-lipped about this innovation until our Patent Portfolio foundation was completely in place."

Nethercomm is currently developing natural gas, broadband and consumer electronics partnerships to validate and certify its revolutionary technology.

FLYING BROADBAND

Gas pipes might work for distributing broadband services on the ground, but they won't help to deliver broadband to those who want Internet access while flying. The Federal Communications Commission (FCC) has now proposed rules that address the growing demand for two-way broadband data and communications capabilities onboard aircraft. In a Notice of Proposed Rulemaking, designated as IB Docket 05-20, the Commission has proposed a regulatory framework for licensing the operation of Aeronautical Mobile Satellite Service (AMSS) systems to communicate with fixed-satellite service networks in the Ku-band (10.7 – 12.75GHz). The service would replace that currently being supplied by INMARSAT on approximately 1.5GHz.

The FCC says that AMSS potentially offers consumers the benefits of broadband services while travelling by air, both domestically and internationally. Aircraft earth stations in the AMSS could be used to provide broadband services to passengers and crew on commercial, government, executive and even private aircraft.

The Notice responds to an emerging marketplace need by *potentially* permitting more flexible use of Ku-band while protecting existing fixed terrestrial and satellite services from interference.

THE NEXT GENERATION

Having previously established that the transceiver should be computer-controllable, we moved on to decide how it should be implemented. There are now so many ways in which computer-controlled equipment can be connected to other devices, there wasn't a consensus on any one method to adopt. Consequently the Next Generation transceiver ought to have a 9-pin D-type connector for RS-232 control, a USB socket, an IEEE 1394 (Firewire) connector and an RJ-45 network connector. The rig definitely needs its own MAC address. Data and control of the IF output, plus the transmit input, should be possible via a data connection.

An XLR connector was seen as no bad thing for connecting the microphone, but it wasn't thought essential. The 8-pin connector that most of us are accustomed to is fine. CAIRO (Common Audio Interface for Radio Operators) was considered highly desirable by those involved with emergency communications groups, but others at the meeting didn't see it as a priority. I would suggest that:

1 as CAIRO has been around for years but hasn't been adopted by the major manufacturers yet, it isn't likely to be adopted now, and
2 making an adapter lead isn't difficult.

When it came to antenna sockets, it was simply a case of wanting more then one. Most premium transceivers these days offer at least two main antenna sockets; some offer as many as four. Adding some extra sockets and the circuitry necessary to switch between them shouldn't be a costly issue, so let's have them.

Having decided which connectors were considered desirable/essential, the delegates spoke as one when they decided what kind of connector they *didn't* want to see on the Next Generation transceiver – the DIN.

Next month, the final part – Facilities. ♦

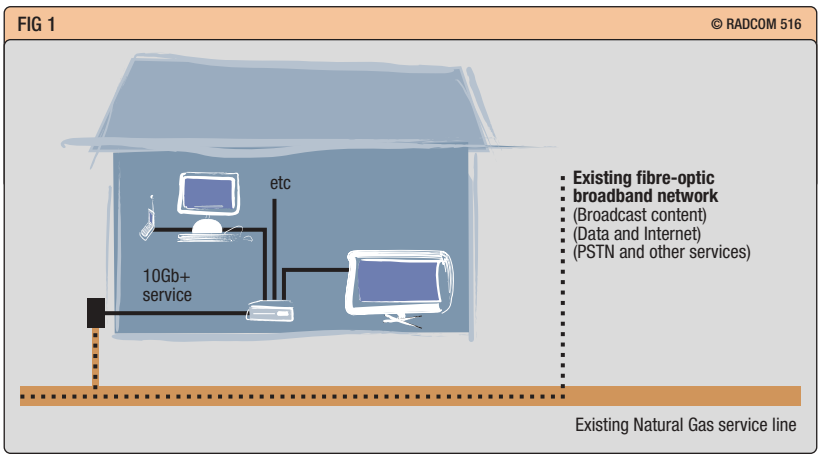
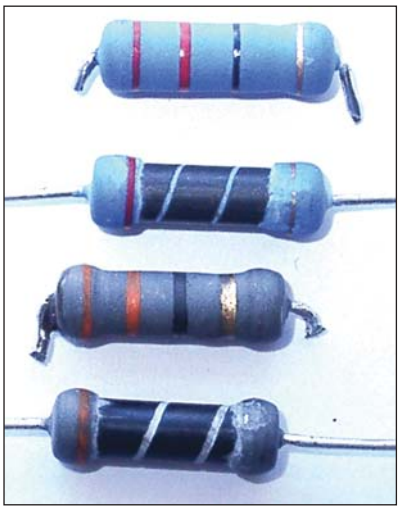


Fig 1
The 'Broadband in Gas' concept.

WEB SEARCH	
Broadband in Gas	www.nethercomm.com

In practice

Low-inductance resistors



Metal film resistors revealed. The dark material is the metal film, and the light helix is the underlying ceramic.

Q Are metal-film power resistors suitable for RF?

A As well as having resistance that you can measure with a DC ohmmeter, all real-life resistors have some parasitic ('stray') inductance as shown in **Fig 1**. If that inductance is large enough – or more accurately, if its reactance is large enough – the component will no longer behave as a pure resistance. Because inductive reactance, X_L, is proportional to frequency, such problems become more noticeable as the frequency increases. Components that are fine for audio may be completely useless at RF; and components that are usable at HF may need special techniques at VHF and above.

So the question really is: can metal-film resistors be used for RF applications, without having to think about it too much? Generally the answer is: yes, almost always. But you need to know why that is only *generally* true, or else the odd exceptions may catch you out.

In Days of Old, there were only two major types of resistor: carbon composition and wirewound (**Fig 2**). Carbon composition resistors were essentially little rods made from a mixture of carbon dust baked with a clay binder. They were used for signal circuits and other low-level applications, but were unsuitable for high-power applications because they don't like to run hot. High-temperature operation tends to cause the resistance to rise, often way beyond tolerance [1]. Wirewound resistors are used for power applications, and consist of a helix of resistance wire that is wound on a ceramic former to permit high-temperature operation. (However, wirewound resistors have reliability problems of their own, and I'll return to those in a future column.)

The reason why wirewound resistors are almost always unsuitable for signal-frequency applications is because they have significant self-inductance – after all, they *are* coils. If you need a low-value power resistor, for example a 4Ω load for testing an audio amplifier, or a 50Ω load for a transmitter, you would like that test load to be a pure resistance. If the inductive reactance is a significant fraction of the resistance, it can lead to invalid test results because you are not testing the amplifier into the load for which it was designed. In extreme cases the inductance can cause incorrect operation (eg many transmitters will start to shut down if operated into a load that is significantly different from 50Ω). And unless you include the inductive reactance in any calculations you make, all your numerical test results will be incorrect.

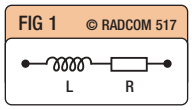


Fig 1
All resistors have some parasitic inductance, which may affect their RF performance.

But we don't have to talk in generalisations here. If you can get inside a wirewound resistor to count the number of turns in the coil, and measure its diameter and length, then you can calculate the inductance using the usual formula:

$$L(\mu H) = d^2n^2/(18d + 40b) \quad \text{(inch dimensions)}$$

$$L(\mu H) = d^2n^2/[25.4(18d + 40b)] \quad \text{(mm dimensions)}$$

where d = diameter of coil,
n = number of turns,
b = length of coil.

This shows that the inductance of the coil increases dramatically with both the diameter and the number of turns (with the squared value in each case). So even if you can't see inside a wirewound resistor, you can be pretty sure that a physically large component will have a significant self-inductance. For example, a resistor with a body diameter of 10mm, body length of 50mm and 100 turns of wire will have an inductance of 18μH. This inductance appears in series with the resistance, and of course the inductive reactance, X_L, is

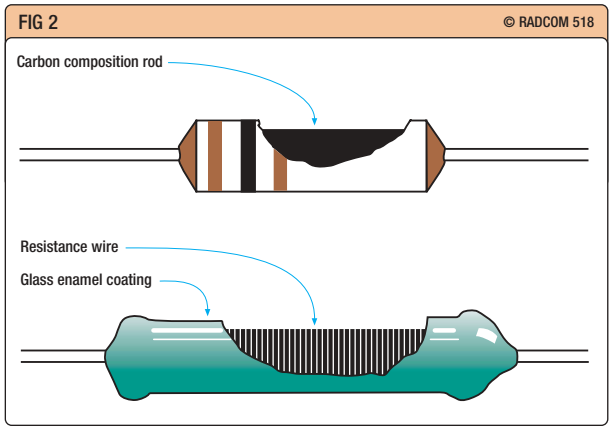


Fig 2
Construction of carbon composition (obsolete) and wirewound resistors.

Ian White, GM3SEK

c/o RSGB HQ.

E-mail: gm3sek@ifwtech.co.uk
Website: www.ifwtech.co.uk/g3sek

proportional to frequency. Even at 136kHz, the inductive reactance is 15Ω, so if you tried to use a 50Ω resistor of this construction as a dummy load, the SWR would be almost 1.4 [2]. At higher frequencies, such a component is hardly a 'resistor' at all – it's better described as a very lossy inductor.

One of the few advantages of carbon composition resistors was that they were substantially non-inductive – essentially because they do *not* contain a helical winding. Even a short, straight rod of material still has some inductance [2] though typical values are only a few nanohenries, which is far too small to worry about at HF unless precision measurements are involved. However, carbon composition resistors are now obsolete, and have been replaced by carbon film (CF) and metal film (MF) components. In most respects that represents real progress, because these modern resistors are much more stable and reliable, even though they are typically much smaller and therefore tend to run hotter. But when you scrape the paint off one of these modern wonders, what do you see? A helical winding!

Don't panic. Look more closely at the photograph. The dark grey material is the resistive metal film, which is deposited on the surface of a ceramic body as a continuous tube. Then a very narrow helix is cut away, exposing the ceramic as the photograph shows. The helix reduces the available width of the current path and increases its total length, thus increasing the total resistance. By varying the total number of turns in this helix, the same tubular 'blanks' can be made to yield a range of resistance values. The number of helix turns seems to vary from about one (which is really an almost continuous tube with just a narrow slit in it) up to 10 or more. For even higher resistances, the manufacturing process steps up to a higher-resistance blank and starts again from a small number of turns. Thus the inductance of an MF resistor will depend on the manufacturer – you cannot tell from the resistance value alone whether a particular MF resistor will have a small or a large number of turns.

Duncan Munro, M0KGK, kindly provided the specimens shown in the photograph for me to measure. But first, what does the standard inductance formula say? As you see, these are spirals of about 1.5 turns (though it is difficult to judge the exact number) and this gave an estimated inductance of about 3 – 4nH. I then made some careful measurements on the second samples, with the leads cut very short in an effort to measure only the inductance of the resistor body. The measured value was close to 4nH for both resistors, showing that even if you have no test equipment, the standard formula gives quite a reasonable estimate – certainly good enough to show that the resistor is essentially 'non-inductive' for HF applications. Even in the probable worst case of about 10 turns, the inductance would only be about 150nH, which is still low enough for many applications. In a 50Ω resistor, this inductance would increase the SWR at 30MHz to only about 1.75 [2], decreasing towards 1 at lower frequencies.

Now you may have noticed that 50Ω is not actually one of the standard 'preferred' resistor values. This is actually a Good Thing, because it encourages us to make 50Ω loads by paralleling two standard-value 100Ω resistors. Paralleling resistors will halve both the effective resistance and the stray inductance, so connecting two 100Ω, 150nH, 3W MF resistors in parallel would give us 50Ω, 75nH and 6W of power dissipation. The SWR at 30MHz drops to 1.3, so this looks like a good strategy. Also remember this is probably close to the worst case – some 100Ω MF resistors may have fewer spiral turns.

Taking this strategy further, you can parallel several more resistors to increase the power dissipation and reduce the effective inductance. The main requirement is to avoid introducing too much stray inductance in the extra wiring. A classic arrangement is shown in **Fig 3**, with four or more resistors sandwiched between two metal discs, (readily available for 2p each), which provide a low-inductance connection and help dissipate the heat. One good combination uses five 330Ω 3W MF resistors and one 220Ω, to give an effective resistance

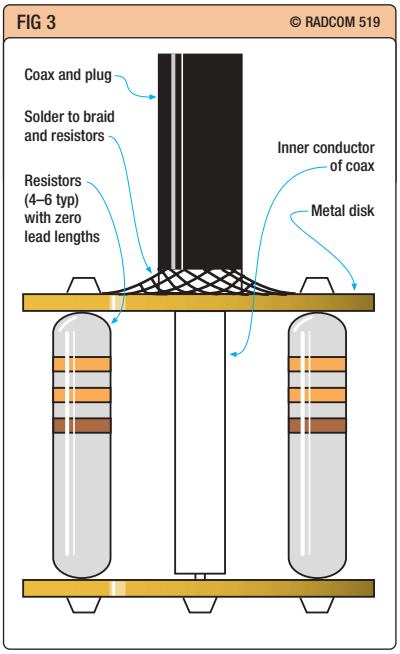


Fig 3
Classic construction of a dummy load using paralleled resistors.

very close to 50Ω. The total power dissipation is limited by the 220Ω resistor, and is 13W – work it out [2].

In situations where the self-inductance can be tuned out, MF power resistors can be used well into the VHF region. This makes them very suitable for applications such as grid input swamping in tetrode power amplifiers up to at least 144MHz. Once again, use multiple resistors in parallel, with zero lead lengths. Paralleled MF resistors are also the components of choice for use in the VHF parasitic suppressors of HF power amplifiers. Resistors in this situation can have significant power dissipation, especially when operating at 28MHz, and the carbon composition resistors used in older HF amplifiers may have increased in resistance as a result. This makes the amplifier less stable against VHF parasitic oscillation, so it might be a good precaution to replace the old carbon resistor with two or three 2 – 3W MF resistors, paralleled to give the correct original value. ♦

REFERENCES

[1] Some carbon composition resistors also tend to increase in value with advanced age, even if stored unused.
[2] See the 'In Practice' website for details of calculations.

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SteppIR Fluidmotion Antennas (RadCom review Feb 04)

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

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

Back in stock - The GAP Titan Vertical. This is an excellent performer, only 25ft tall, with coverage of all bands from 80-10m and no radials, or lossy and fault-prone traps. At only £349.95, it won't break the bank either.

New from ACOM - ACOM 1010 - 160-10m - 700W pep - £1195

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Still available - ACOM 1000 (160-6m) now back in stock at £1,599. ACOM2000A automatic 2KW no-tune (160-10m) £4,295. ACOM 1006 (6m only) £1,299

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NEW FROM INRAD - Roofing filters for FT1000MP series.

The FT1000MP is a great radio but has a fairly wide front end to permit FM operation. The new INRAD roofing filter narrows the front end and improves the radio. FM is still possible on the sub-receiver. We also offer **I.F. Filters** for nearly all transceivers and kits to improve the **FT1000MP noise and gain performance** for £54.95 inc postage.

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TT

LA8AK, silent key ♦ HF transmitter limitations ♦ Measurements professional and amateur ♦ CDG2000 H-mode mixer modifications ♦ Why clean variable capacitors? ♦ Compact DC-DC converter ♦ Here & there

JAN-MARTIN NØDING, LA8AK, SK

Experimental amateur, VHF DXer and QRP enthusiast, professional engineer, prolific 'TT' contributor for some 30 years, Jan-Martin Nøding, LA8AK (and sometime holder of G5BFV) has fallen silent at the early age of 59 years. In April, he went for a walk in the Norwegian hills close to his home between Søgne and Kristiansand. but did not return. After being missing for just over a week, he was found dead on 27 April, the victim of a massive heart attack.

LA8AK was a notable pioneer on VHF, UHF and microwaves in Norway, but as his many contributions to 'TT' and to the Norwegian journal, *Amatør Radio*, show, his interests were catholic. I can trace his 'TT' contributions back to at least October 1976 (linear CMOS gates). There quickly followed such items as Wien bridge oscillators (August 1977), stable BFO using CMOS (August 1977), IC voltage regulators (July 1978) etc. Over the following years, contributions continued right through to the short Here & There item in this year's May issue commenting on the frequency coverage of the German military receiver type Torn E.b.

LA8AK was always interested in oscillators using crystals or ceramic resonators and in showing how far they could be 'pulled' in VXO designs. I believe that professionally he was concerned with Norwegian television transmitters. In the 1970s he undertook building the amateur beacons LA3UHF and LA3VHF. In this project he found that the noise sidebands of most oscillators – with the exception of one originally developed by DJ2LR ('TT' February 1976) as a 144MHz variable-frequency signal source – resulted in poor CW signals. LA8AK adopted elements of DJ2LR's design to form a VHF source incorporating an IC regulator. He appreciated, even then, that it is important for a low-noise oscillator to have a very 'clean' supply voltage. A reminder of this basic principle turned up again in the May, 2005 'TT' p77, Fig 3, with W4ZCB recommending the use of a Wenzel Associates design of an IC regulator with an additional shunt AC-coupled regulator section. W4ZCB echoed the 1979 comment from LA8AK by stating: "A perfect oscillator will not be perfect with a noisy source of power."

As a reminder of the practical work of LA8AK, who will be so sadly missed, **Fig 1** reproduces his 1979 extremely low-noise crystal oscillator likely to be useful when attempting to modify a transistorised FM or AM transmitter for CW operation.

FIG 1 © RADCOM 520

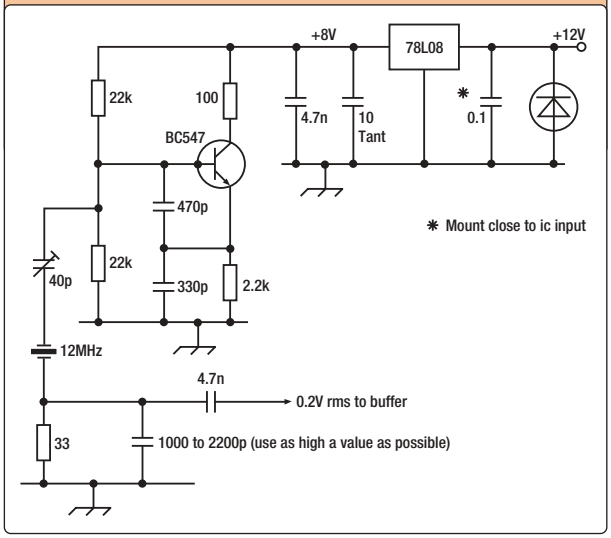


Fig 1
LA8AK's version of the DJ2LR extremely low-noise crystal oscillator that he developed in the 1970s for use in the Norwegian VHF and UHF beacon transmitters in order to provide a good CW note.

HF TRANSMITTER LIMITATIONS

The May 'TT' discussed some important aspects of HF receiver performance and specification. In particular, the question of specifying third order intermodulation and the related instantaneous dynamic range was discussed including the effect of close-in oscillator phase noise as affecting reciprocal mixing. It was shown that there are marked differences in the instantaneous dynamic range of a receiver when two-frequency noise measurements are made with wide or narrow frequency separation of the input signals. Published measurements made on current top-of-the-range transceivers show that the third-order intercept (TOI) can change from better than +30dBm with 20kHz spacing to about -18dBm with 5kHz spacing. But it was also pointed out that oscillator phase noise affects both transmitted and received signals. IP3 from multiple highpower transmitters is received as interference or usually an artificially-raised noise floor.

Receiver close-in TOI characteristics is significantly more important to an operator using CW and narrow-band modes than to the SSB operator. A letter from Karl-Arne Markström, SM0AOM, puts the case clearly for reducing transmitted wideband noise from its effect on adjacent channel interference – although, apparently, he does not consider the case of the cumulative effect of the whole batch of high-power 7MHz broadcast transmissions that can produce an artificially high noise level, even on receivers that have reasonably good IP3 performance. Peter Chadwick, G3RZP, in his *QEX* (May/June 2002) article 'HF Receiver Dynamic Range – How Much do we Need?', emphasised that when considering reciprocal mixing, the assumption that only the strongest incoming signal needs to be considered is invalid: "The phase noise of all [incoming strong] signals will add directly. Ten incoming signals at a level 10dB below the strongest signals will add as much phase noise as one signal in the top signal level." While G3RZP concluded: "Do our receivers have adequate intercept points and ILDR (intermodulation-limited dynamic range)? The answer is apparently 'Yes', but only if you can move the dynamic range up and down to suit conditions. A not-too-distant future job at the G3RZP station is to build a finely-variable step attenuator to go in the antenna line to the receiver." It is his view that once an IP3 of some +20dBm is reached, the main receiver limitation becomes the phase-noise generated in the receiver synthesiser or VFO.

SM0AOM writes: "I have read with interest the May items about HF receiver specifications. I just want to add that, in my opinion, the receiver is no longer the limiting factor when assessing overall HF system performance.

"Current high-end receivers appear to be able to deliver a 90 – 100dB SSB adjacent channel rejection or dynamic range, limited by either IMD or by synthesiser phase noise. However, the chances of finding a current transmitter having a corresponding adjacent channel rejection in order to obtain full advantage from improved receiver performance seems remote. For this reason, I question the emphasis put on receiver IP3 specifications by many manufacturers of amateur radio equipment.

"To obtain full advantage from the now attainable receiver performance, the transmitter in the adjacent channel would be required to have an IMD or noise floor suppression at, say, 5kHz spacing of more than 100dB relative to the on-channel power level, which corresponds to -135dBc/Hz. Even if we could assume noise and IMD-free amplification in the transmitter signals paths, the requirement would be to generate an RF signal with noise and distortion products in the closest adjacent channels at least 100dB down from full power. The effort

needed to design and produce such signal quality would be difficult even to imagine.

"Measurements on high-priced commercial HF MOSFET power amplifiers [(a) Nygren, 'A New Generation of HF Power Amplifiers', *Proc HF89 Nordic Shortwave Conference;* (b) Sabin et al, *Single Sideband Systems and Circuits* Chapter 11] point to a *best-case* amplifier noise figure of around 20dB that would correspond to a wideband noise level of -180dBc/Hz for 1kW output power in SSB bandwidths. To this, the noise power contributions of all the translation oscillators, baseband signal processing and power control loops will have to be added.

"The best tunable oscillators currently available appear to have phase noise levels around 150dBc/Hz at 5kHz spacing, which would be further degraded by the noise contributions of the baseband and frequency translation circuits. A recent paper on HF naval system component performance [Hubbard 'A High Dynamic Range VLF to HF Active Receive Whip Antenna', *ProcHF04 Nordic Shortwave Conference*, Faro, Sweden] quotes a wideband noise plateau from a 1kW transmitter of -165dBc/Hz at ±5% frequency offset. It is conceivable that one could design a very low-distortion low-power SSB exciter with a noise-related 5kHz adjacent channel suppression of -140dBc/Hz, or 105dB relative to the output signal in an SSB bandwidth.

"This leaves us with the adjacent channel suppression attainable in the transmitter signal-path due to amplifier non-linearities. A two-tone IM3 ratio of -50dB relative to one-tone can perhaps be obtained in production equipment by using RF negative- or envelope-feedback techniques, and maybe another 10dB by the use of cartesian-feedback linearisation. This would still be 40dB less than the suppression required to co-exist on equal terms with the best HF receivers.

"Another aspect is the dynamic influence on the adjacent channel spectrum that comes from gain control and ALC loops. Current research by Dr Leif Asbrink, SM5BSZ, [**www.sm5bsz.com/dynrange/alc.htm**] using the Linrad measuring system, points in the direction that ALC actually *worsens* the adjacent channel spectrum due to uncontrolled amplitude and phase modulation of the output signal by the power control loops. The ALC loops also seem to be used in improper ways to set the output power level and transmitter gain across the operating frequency range.

"From my point of view, it appears that the amateur radio community at large is quite uninterested in the actual output spectrum of their transmitters, happily trading increased adjacent channel interference for a S-unit more in the signal reports, or a 'lively' ALC meter indication. I will end this letter with a 'plea' on two counts. First, to the amateur equipment manufacturers – that they invest more engineering man-hours in optimising the transmitter spectrum. Second, to radio amateurs – to take the adjacent channel suppression specifications into serious consideration when making system design and purchase decisions."

It seems to me that SM0AOM makes a number of valid points, and it is much to be hoped that both amateurs and manufacturers will take note of his 'pleas'. Most of us are well aware of the problems caused by 'splatter' resulting from over-driving a linear amplifier, etc but are less aware of the problem of the various forms of wideband noise that emanate from our transmitters. But I would stress that the aim of reducing receiver phase noise and improving TOI is not primarily to cope with the inevitable noise and splatter from a transmitter using the adjacent SSB channel. Rather, it is to cope with the cumulative effects of all the very strong signals reaching the first mixer stage, of especial importance in coping with HF broadcast signals. There is at present, as SM0AOM implies, little expectation that we can, in the foreseeable future, expect interference-free reception of a weak signal when there is a strong local or broadcast transmission in the adjacent channel. SM0AOM is right to emphasise that this represents a limiting factor to overall HF system design.

MEASUREMENTS PROFESSIONAL & AMATEUR

There is an old but still valid adage that a measuring instrument should have a performance that is an order of magnitude better than that of the device it is measuring. This is increasingly difficult to achieve when making critical measurements on receiver intercept points, oscillator phase noise etc, of high-performance receivers. In the May 'TT', G3RZP suggested that "Intercept points are notoriously difficult to measure with accuracy... you can easily get to ±2.5dB overall uncertainty in the absolute level into the receiver, and this reflects a ±7.5dB uncertainty in intercept point." G3SBI and others feel that this is an unduly pessimistic appraisal. With professional laboratory instruments, they believe, accuracy should be within better than ±1dB.

There have been several mentions in 'TT' of the American firm of Wenzel Associates Inc of Austin, Texas. For example, in April 2001, in connection with a 'Wide-Span Tuned-Toroid VCO' and, more recently, in May 2005 (Fig 3, p77) with regard to the removal of power supply 'noise' from oscillators, as used and recommended by W4ZCB.

Wenzel Associates has become one of the leading American firms in the supply of high-cost, state-of-the-art components for professional and laboratory use. Colin Horrabin, G3SBI, has sent along some details of an 81.25MHz SC Ultra Low Noise Crystal Oscillator unit as purchased recently by the CLRC research laboratory at Daresbury. Such a 'clean' signal source has great potential for signal generation in measuring instruments etc. The plug-in unit illustrates what can now be achieved in reducing the noise output of a professional VHF crystal oscillator having an integral temperature-stabilised 'oven' in a unit measuring 2.94 x 1.75 x 1in. The phase noise (measured by Wenzel Associates) of this oscillator is a remarkable -130dBc/Hz at 100Hz, -158dBc/Hz at 1kHz and -176dBc/Hz at 10 and 20kHz. These figures clearly represent current professional state-of-the-art.

Most of us, of course, have to be satisfied with less-costly devices and test instruments. Dr G L Manning, G4GLM, draws attention to an article 'Passive Component Testing', by Mike Tooley in *Everyday Practical Electronics* (May 2005). G4GLM writes: "Most of the article describes how a palm-sized device (Peak Atlas LCR40 Analyser) rapidly provides L – C – R measurements of components out of circuit, replacing bridge techniques at the touch of a button. As I was lucky to win one in a *Practical Electronics* competition, I can vouch for the device's practical usefulness. The article mentions that a simple calculation will estimate the characteristic impedance of coaxial cable. Two quick measurements are all it takes, provided the cable is reasonably long and there is access to both ends. Furthermore, best-case *Q* may be estimated for inductors, although the author rightly cautions that RF losses are not taken into account. I suppose it's back to the microwave oven test if in doubt!"

The Atlas LCR40 is available through the usual distributors (Maplin, Farnell, etc) or direct from Peak Electronic Design, Atlas House, Kiln Lane, Harpur Industrial Estate, Buxton, Derbyshire SK17 9JL. Tel: 01298 70012.

CDG2000 H-MODE MIXER MODIFICATION

Mention was made in the March 'TT' that Colin Horrabin, G3SBI, has found that a simple modification can improve the FST3125M H-mode mixer as used in the home-constructable, world-class CDG2000 transceiver as described in a series of *RadCom* articles during the year 2002. G3SBI writes: "This is a simple modification that gives IP3 performances of 42dBm on 30MHz, 45dBm on 21MHz, 48dBm on 14MHz and 50dBm on 7MHz for an input noise floor of -130dBm, achieving on this band an IP3 dynamic range in the region of 120dB. On 7MHz, the IP3

performance of the Loadstone Pacific coils in the bandpass filter and that of the crystal roofing filters 'bottom out' at the same point.

"The modification involves the use of AC-coupled drive from the AC74 or AC109 flip-flop that provides the local oscillator drive to the Fairchild FST3125 fast bus switch used as the mixer and the use of a balance potentiometer to adjust the switching thresholds between the two pairs of switches in the mixer: **Fig 2**. Full details of the original FST3125 H-Mode Mixer and its fundamental frequency squarer (Fig 6) are given in 'TT', September 1998, pp58 ff] and in *Technical Topics Scrapbook 1995 – 1999*, pp234 – 235.

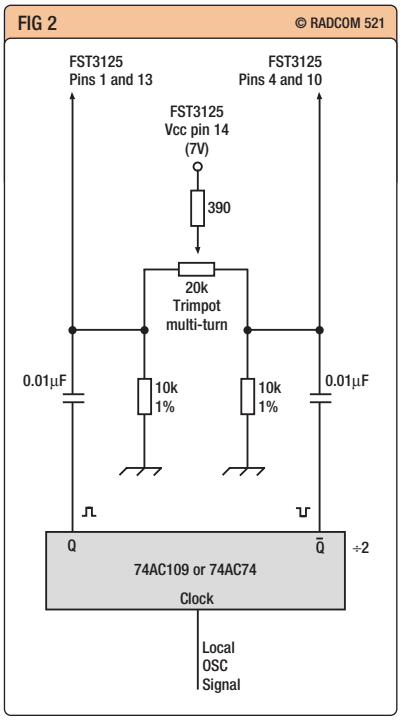
"One of the nice features about the use of the FST3125M as a mixer is that, with absolutely no circuit adjustments, the mixer delivers an IP3 in the region of 40dBm. I clocked the AC109 at 78MHz so that the receiver was effectively tuned to 30MHz, put in a 9MHz signal and tuned the balance pot for minimum feed-through at 9MHz. This gave a null of 70dB and coincided with maximum IP3. A similar test on 14MHz gave the null as only 50dB but, again, coincided with maximum IP3.

"In the CDG2000 receiver one could link-out one of the bandpass filters to do this and use a 9MHz signal generator as the input and, turning the multiturn pot with a trimming tool set the trimpot for minimum S-meter deflection. It is important to use a trimming tool, since the capacitance of a small screwdriver makes it difficult to set the trimpot accurately. Another method may be to tune the receiver to the 10MHz band where the 9MHz trap is only 50dB, put in a 10dBm signal at 9MHz and tune the trimpot for minimum S-meter deflection. In an ideal situation, this balance adjustment of the mixer should coincide with IP3 maximum and, in practice, this does seem to be the case. Very few radio amateurs are able to measure IP3 so the fact that the feed-through null ties up with maximum IP3 makes it an easy adjustment to make.

"The modification involves the use of two 0.01µF monolithic ceramic capacitors, two 10kΩ 1% fixed resistors, a 20kΩ multiturn trimpot and a 390Ω resistor as a safety precaution in case of failure to set the trimpot to mid-scale before fitting the modification. The 390Ω resistor connected between the trimpot wiper and the 7V supply is to prevent the bistable used as the divide-by-two squarer seeing a short circuit should the trimpot be adjusted to one limit or the other of its track.

"Before fitting the modification, the best approach is to set the trimpot to mid-scale using a digital multimeter. If this is done, the balance point for minimum feed-through will probably be within two turns if the AC109 or AC74 bistable is presenting a 50:50 waveform. Apparently some manufacturers of these devices are, in this respect, better than others. I know Harris parts are OK."

Fig 2
The simple AC-coupled modification from the divide-by-two squarer to the FST3125 H-mode mixer in the CDG2000 or other applications of this state-of-the-art G3SBI mixer originally published in the September 1998 'TT' (see text). The text shows how the balance can be obtained simply by means of presetting the multiturn trimpot.



WHY CLEAN VARIABLE CAPACITORS?

Recent 'TT' notes and queries on cleaning variable capacitors in 'TT' March and May 2005 continue to attract comments from readers well-conversant with the chemical effects of the various cleansing agents that have been suggested, as well as adding further suggestions.

But, first, what are the reasons for this concern with cleaning variable capacitors – a class of component that is fast disappearing from modern equipment, other than for ATUs and some high-power linears? For virtually all small-signal applications they have been replaced by electronic tuning diodes (varactors) or, for RF filters, by fixed capacitors. Varactors are low-cost, take up very little board area and are convenient to place, since the variable control takes the form of a potentiometer that can be sited remote from the diode. Progress indeed.

Yet Patrick Hutber once laid down his law: "Progress means deterioration". Certainly the change to electronic tuning diodes rather than using old-fashioned air-dielectric variable capacitors has it disadvantages as well as its advantages, Havelock Ellis once claimed that "What we call progress is the exchange of one nuisance for another nuisance."

Many of the early limitations of electronic tuning diodes have been overcome or reduced by improved devices or by careful design. The use of two diodes instead of one is now widely used. There can still be problems: limited capacitance variation: limited reverse breakdown voltage; limited *Q* values; possibility of introducing non-linearity into signal-frequency tuned circuits leading to intermodulation on strong signals; etc. There remain worries about using tuning diodes in oscillatory circuits where a major objective is to achieve the lowest possible phase and amplitude noise.

In such circumstances, there is much to be said for mechanical tuning systems. But variable capacitors are subject to deterioration – poor and variable contact to the rotor vanes leading to ohmic resistance, jerky movements, dirty vanes etc. I recall that, at one time, at least one manufacturer of military radio equipment routinely cleaned tuning capacitors in an ultrasonic bath.

There is also one specific application where variable capacitors are subject to very high voltages and required to pass large RF currents. That is when used as the tuning resonator in small transmitting loops. For this application the requirements are extremely demanding. Professional loops use high-cost vacuum capacitors generally considered too expensive to use in amateur loops.

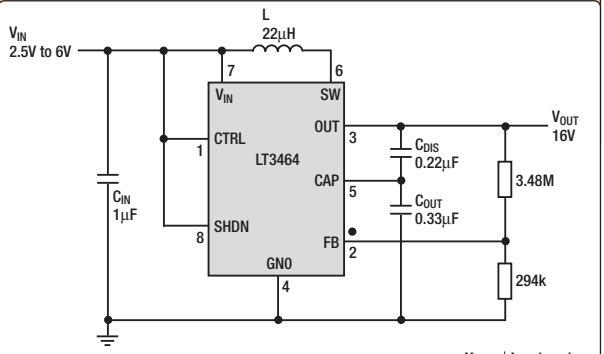
Looks rather than performance is often the requirement for those restoring old equipment, particularly where these are required only for display.

While the "baking powder in hot water" procedure as outlined in the May 'TT' seems to provide a useful way of cleaning capacitor vanes without causing adverse chemical reactions, etc, Dick Biddulph, M0CGN, writes:

- "'TT' mixes up 'baking powder' with 'baking soda'. It is baking soda, not baking powder, which is sodium bicarbonate whereas the former is a mixture of this with sodium acid tartaric.
- "If you heat baking soda in water, it liberates carbon dioxide and becomes washing soda which will attack aluminium.
- "If you heat soda solution with the component in contact with aluminium foil, the tarnish, which is silver sulphide, will slowly disappear being replaced by silver. 'Silver Dip' dissolves the tarnish (it makes a short circuited cell liberating hydrogen at the silver electrode).
- "I've never heard of the use of lemon juice (citric acid) for this sort of cleaning.
- "In *all* cases the component should be rinsed in distilled or de-ionised water and dried in a low oven.
- "Finally, when dry and warm, a little Vaseline should be applied to bearings and to any rubbing surface."

M0CGN continues: "I have used washing soda solution plus a little washing up liquid or even washing detergent, both hot, followed by rinsing in distilled water and treating as in the last item above. I have also

FIG 3 (a) © RADCOM 522



		VIN	IOUT (max)
C_{IN}	TAIYO YUDEN LMK107BJ105MA	2.5V	4.5mA
C_{OUT}	TAIYO YUDEN GMK212BJ334MG	3.5V	6.5mA
C_{DIS}	TAIYO YUDEN EMK107BJ224MA	6V	11mA
L	MURATA LQH32CN220K		

FIG 3 (b) © RADCOM 523

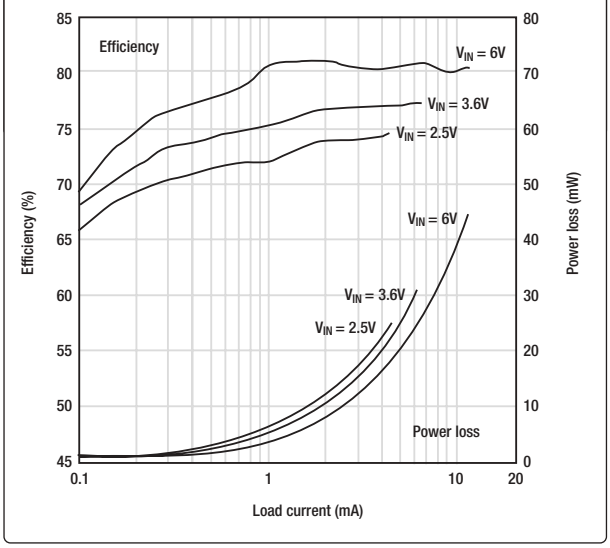
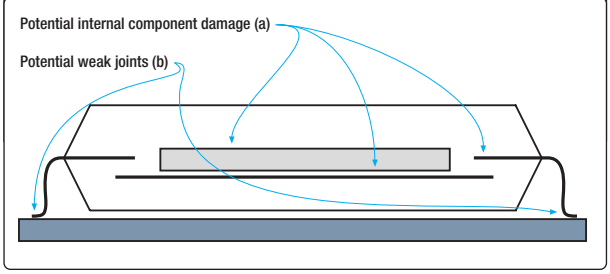


Fig 3
(a) Use of the Linear Technology LT3464 to obtain an efficient 16V bias supply using surface-mount components.

(b) Efficiency and power loss of the 16V output for input voltages of 2.5, 2.6 and 6V – maximum outputs 4.5. 6.5 and 11mA respectively. (Source: Linear Technology Design Notes advertisement)

Fig 4
Potential damage or weaknesses (a) of conventional lead component after reflow at higher lead-free soldering temperatures; (b) Lead-free component after reflow at lower conventional lead solder temperatures. (Source: Electronics World)

FIG 4 © RADCOM 524



used the water recovered when defrosting the fridge, which is more or less pure, if a little smelly."

Tony Webb, G4LYF, confirms some of the information provided by M0CGN, but also adds additional points. He writes: "Can I warn readers not to use baking powder to clean variable capacitors? Baking soda (sodium bicarbonate) is fine, when used correctly, but baking powder contains other ingredients such as rice flour, which are unlikely to enhance appearance or performance. To be on the safe side, use only a product bought under the names sodium bicarbonate or bicarbonate of soda.

"Tarnished silver or silver-plated articles can be cleaned very effectively by contact with aluminium (foil, or old aluminium pan) in a hot solution of sodium bicarbonate in water. Washing soda may also be used (bicarbonate turns into this in hot water) but definitely *not* caustic soda! In fact, you shouldn't use caustic soda for any purpose unless you are qualified to handle it. It will enthusiastically dissolve aluminium, etch ceramics and destroy many plastics.

"In the cleaning process with bicarbonate, electrical contact between the metal to be cleaned and the aluminium is necessary. This sets up a (short-circuited) cell (the open circuit voltage is about 1.5V) and the tarnish (silver sulphide) acts briefly as a depolariser, being converted to hydrogen sulphide and silver. There is sometimes a delay in the action, while the oxide surface is etched from the aluminium. Any oil or grease on the silver surface (including fingerprints will hinder the action and it is best to clean this off first. A trace of detergent (but *not* soap) in the bicarbonate is also helpful. Boiling water should not be used.

"Any component thus cleaned must be very thoroughly rinsed with distilled or demineralised water. If you can get hold of methanol or isopropanol, these are usually good for a final rinse, as they are non-aggressive solvents, although they are very flammable, and methanol is poisonous, so should be handled appropriately. Isopropanol is known as 'rubbing alcohol' in the USA. I'm doubtful about using methylated spirit, as this may leave a residue of 'pyridine bases' which could encourage copper and some other metals to corrode in air. Don't forget that re-lubrication of bearings may be needed.

"I have tried the same cleaning technique on copper, which usually has a mixture of sulphide and oxide tarnish, but without success."

COMPACT DC-DC CONVERTERS

There is often a requirement for a DC voltage in the region of 16V or 20V, when the equipment is powered from 2.5 to 6V supplies, eg for electronic tuning diodes, bias supplies etc. Design Note 358 'Compact Step-Up Converter Conserves Battery Power', by Mike Shriver appears as a Linear Technology advertisement in *EDN*, 17 March 2005. This provides an introduction to the surface-mounted LT3468 device, with circuits showing how it can be used as a 16V bias supply, ±20V bias supply, or 34V bias supply.

It is claimed that the LT3464 is an ideal choice for portable devices which require a tiny, efficient and rugged step-up converter. "The device, housed in a low profile (1mm) 8-lead thin SOT package, integrates a Schottky diode, npn main switch and pnp output disconnect switch. For light lead efficiency Burst Mode™ operation is used to deliver power to the load. This results in high efficiency and minimal battery current drawn over a broad range of load current. Quiescent current is only 25µA. While in shut down, the output disconnect switch separates the load from the input, further increasing battery run..."

Fig 3 shows a 16V bias supply that can provide 6.5mA at an efficiency of 77% from a 3.6V lithium-ion battery. The circuit uses a 22µH surface-mount chip inductor with a 1210 footprint and a 0.33µF output capacitor with 0805 footprint. Data sheet download at **www.linear.com**

HERE & THERE

In connection with recent 'TT' items on high IP3 valve mixers, André Jamet, F9HX, comments: "One suggestion: why not use vacuum diodes such as the 6AL5 or the old 6H6? Well, we need a 6.3V supply for the heater! But we could expect a very, very high IP3 [if used in switching-type ring mixers]. Not only inductors but also capacitors have to be *linear* – ie to have a constant value even when the applied voltage varies. Mica, polystyrene and NPO ceramic types are useful."

An article "Lead-free – or Not Lead-free?' Asks the US Military', *Electronics World,* May 2005, pp18 – 19, notes that the US military is looking very cautiously at lead-free components: "While the world of electronics manufacturing is turning its attention – if not its enthusiasm – to lead-free processing, the US military is taking a somewhat different view. The US military establishment may, at some point, begin accepting lead-free as a fact of life, but that time is not likely to arrive soon.

The fear is that mixtures of leaded and lead-free components etc may end up on the same board. While leaded components etc are required to pass a heat test of 260°C for 4s during lead-free reflow, the same component might reach 260°C for 30s due to the higher working temperatures of lead-free solder: **Fig 4** shows the potential damage of a lead-free component after reflow at higher and lower temperatures. ♦

The Buccaneer

An experimental high-performance binaural receiver for 1.8MHz, using the KK7P digital signal processing board. Software for the project is available for downloading from the RadCom Plus area of the RSGB Members-Only website www.rsgb.org.uk/membersonly

For the last 50 years, radio receivers have almost exclusively used the superheterodyne design as a means of receiving a desired signal that is processed, via a chain of amplifiers, mixers, filters and a detector, and sent to a loudspeaker or a pair of headphones, so it can be heard.

SOME BACKGROUND

The same signal route is equally valid for the WWII RCA AR88D receiver as for the receiver section of a 1990s Yaesu FT-1000MP.

However, a major difference between the processing chain of the AR88 and the Yaesu FT-1000MP is the fact that the latter uses a digital signal processor near its end – converting the signal from its analogue form into a digital (binary) one, with the aim of improving the available selectivity of the processing chain and reducing any noise that accompanies the wanted signal.

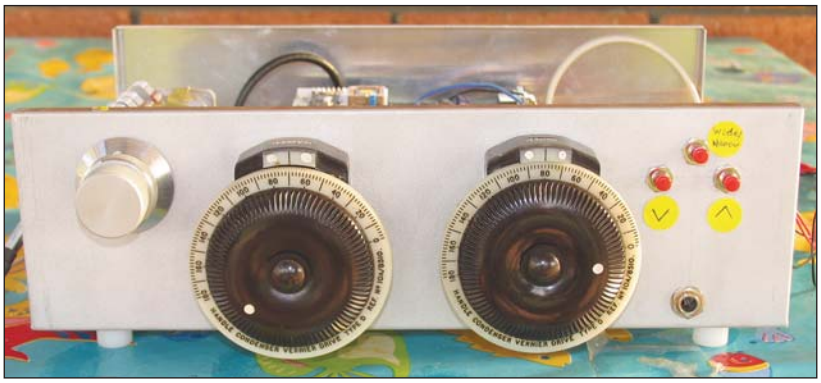
One of the inherent problems with the superheterodyne design is that its chain of oscillators, mixers and amplifiers adds noise to the received signal which, luckily, can then be cleaned up, at least to some extent, by digital signal processing (DSP). This chain is what gives the superheterodyne its selectivity – the ability to select a desired signal from a number of others. However, these days, a high level of selectivity can also be provided through DSP.

This situation has resulted in a renewed interest from radio designers in the direct-conversion (DC) receiver, where a signal is directly converted from its radio frequency to audio frequencies by using a detector that operates at the desired signal frequency. The detected signal can then be passed into a digital signal processor, which can provide selectivity at audio frequencies, along with noise rejection.

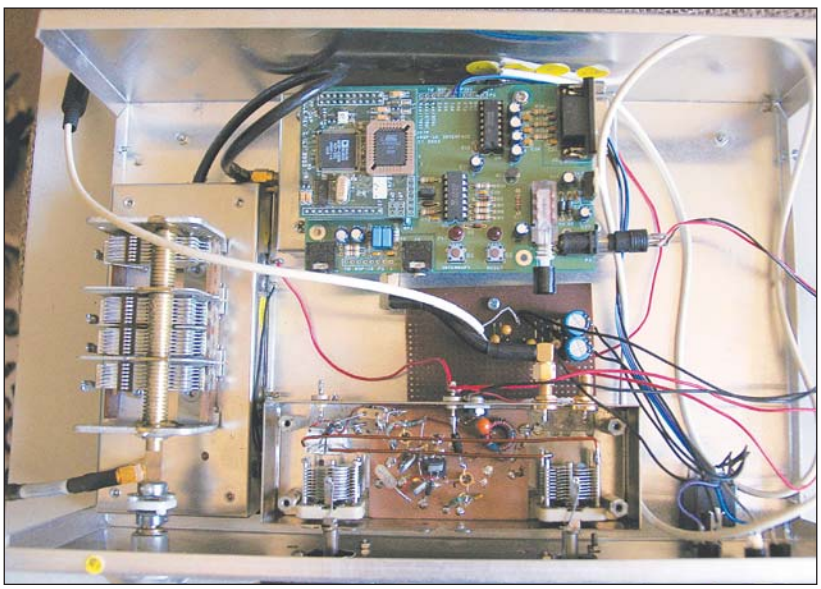
The direct-conversion technique has always offered the advantage of a degree of signal clarity that is often lacking in a superheterodyne receiver, owing to the latter's multiple stages of (analogue) signal processing.

BINAURAL RECEPTION

The direct-conversion method of reception, combined with DSP, lends itself to a technique that is still relatively unknown – that of binaural reception. Simply put, binaural reception is like listening in 3D – the signals received on a binaural receiver when it is tuned seem to occupy the space between the listener's ears, with the signal that is most precisely tuned in apparently lying in the middle of one's head and those signals on either side of it in the frequency domain appearing off to one side in



The Buccaneer – front view with cover removed.



Top view. The Cohn filter, with its tuning capacitor, is shown on the left-hand side. At the back is the DSPx, mounted on its KDSP10 motherboard, which sits on top of the screened box containing the quadrature mixer. The VXO box is inside the front panel, and to its rear is a small piece of matrix board, containing the 1W stereo audio amplifier.

Phil Harman, VK6APH **Steve Ireland, VK6VZ**

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the spatial domain, toward one's left and right ears.

Joe Street, VE3VXO, has described binaural reception [1] as sending slightly different audio signals to each ear, in the same sense that a stereo image viewer or a pair of binoculars sends a different view to each eye, resulting in a 3D view with depth perception.

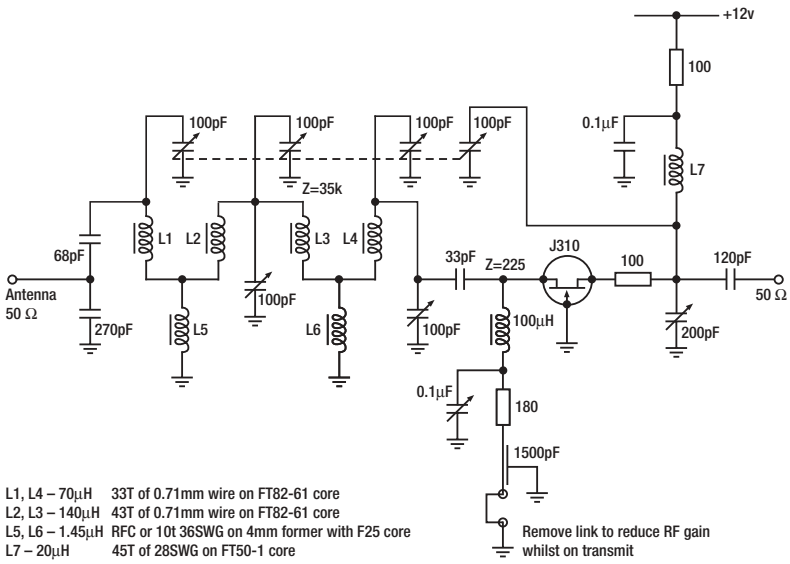
Perhaps the best description as to how this sounds in practice, on CW and SSB signals is given by the renowned Wes Hayward, W7ZOI [2]: "As you tune through a CW signal on a quiet band (best done with your eyes closed while sitting in a solid chair) a centred signal enters [your head], but moves to the left background, undergoes circular motions at the back of your head as you tune through zero beat, repeats the previous gyrations on the right side, fades to the right background and finally drops away in the centre.

"Multiple signals within the receiver passband are distributed throughout this perceived space. With training, concentration on one signal allows it to be copied among the many.

"An SSB signal seems to occupy parts of the space, left and right, with clarity when properly tuned, leaving others vacant. Static crashes and white noise appear distributed through the entire space without well-defined positions. Receiver noise, though present, has no perceived position."

Believe us, using a binaural receiver on CW or SSB signals is just as fascinating as W7ZOI makes it sound. With the sharp audio selectivity offered by the Buccaneer - the use of the KK7P digital signal processor allows switchable 2.4kHz and 500Hz bandwidths – the need to concentrate hard in order to distinguish between closely-spaced signals virtually disappears.

FIG 1 © RADCOM 525



L1, L4 – 70µH 33T of 0.71mm wire on FT82-61 core
L2, L3 – 140µH 43T of 0.71mm wire on FT82-61 core
L5, L6 – 1.45µH RFC or 10t 36SWG on 4mm former with F25 core
L7 – 20µH 45T of 28SWG on FT50-1 core

Fig 1
Four-stage Cohn filter for 1.8MHz.

There are a couple of ways to implement binaural reception. That used and described above by W7ZOI creates 'I' (in-phase) and 'Q' (quadrature) signals from the incoming signal and feeds each to a separate ear. The I and Q signals are easily generated by mixing the incoming signal with two local oscillator signals, one at 90° to the other.

The disadvantage of this method is that it doubles the receiver bandwidth, entailing a 3dB reduction in signal-to-noise ratio. An alternative approach is to delay the signal to one ear by a small amount. This is the method we use in the Buccaneer receiver.

While the Buccaneer still generates I and Q signals, these are combined in the DSP software to cancel one of the sidebands, effectively halving the receiver bandwidth. This combining of I and Q signals is the classic 'phasing method' of SSB and CW demodulation.

THE RECEIVER

The Buccaneer is effectively made up of five parts or modules, with the first three parts built into metal enclosures to ensure excellent RF screening. It was decided that the receiver should cover the 1.8MHz band, as this is the favourite of VK6VZ and it would be a good test of the ability of binaural reception to help an operator distinguish a weak signal amongst high noise levels.

The first part of the receiver is a highly-selective four-section Cohn tunable filter, covering about 1.5 to 2MHz – see the circuit in **Fig 1**. This gives a very sharp frequency response and needs to be retuned every 10kHz or so. With the filter tuned to 1.9MHz, it shows a rejection of about 35dB at 1.8MHz and

Fig 2
Quadrature twin-mixer using a pair of Mini-circuits SBL-3 modules.

Fig 3
Block diagram of a binaural receiver.

FIG 2 © RADCOM 526

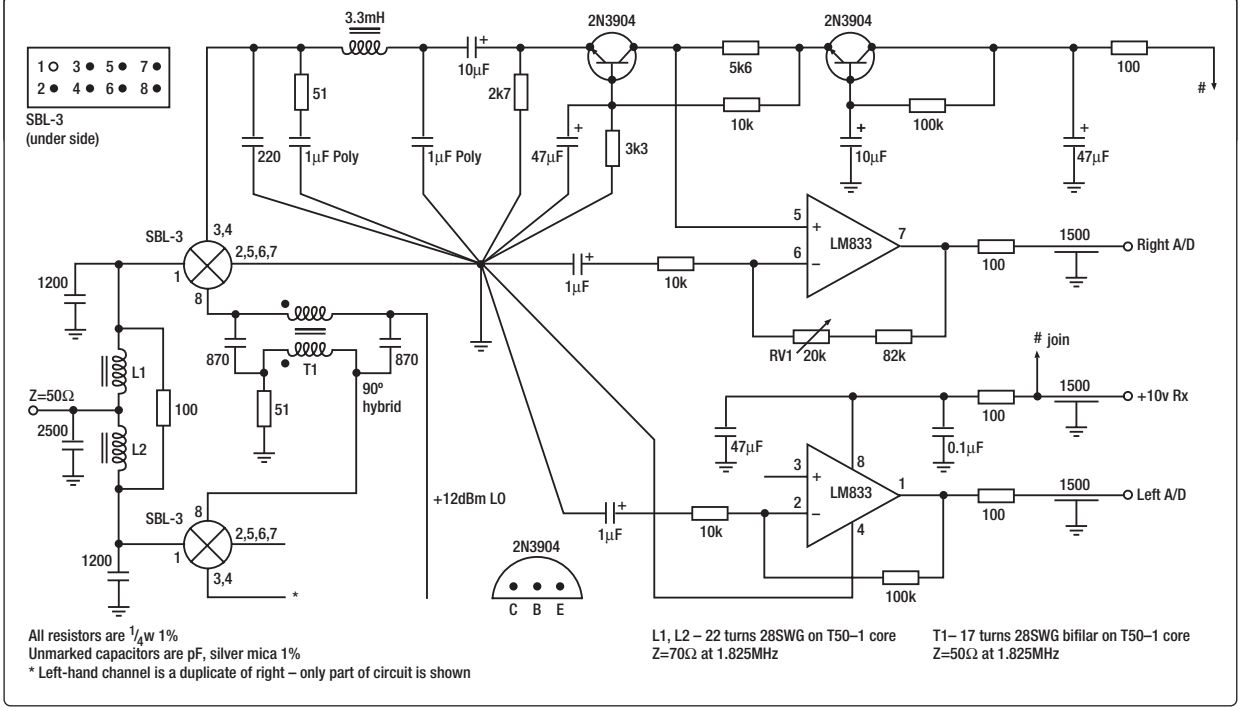
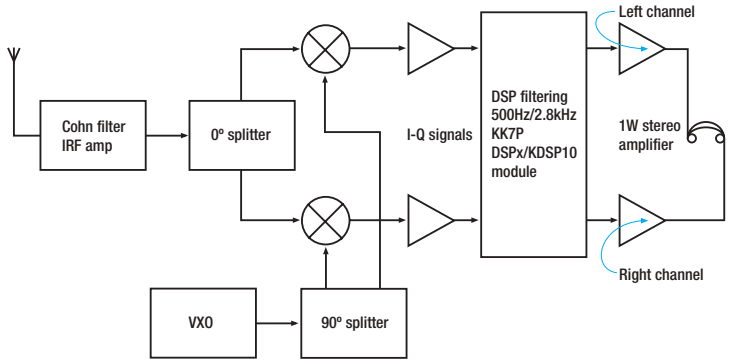


FIG 3 © RADCOM 527



2.0MHz.

When used with an efficient 160m antenna, many volts of signal from local medium-wave broadcast stations are often present. Such signals, if not removed, can play havoc with the performance of direct-conversion receivers. The high selectivity of the Cohn filter effectively eliminates such problems.

The filter has a small insertion loss of about 5dB, owing to its narrowness. It uses seven coils – five of which are wound on FT82-61 cores, tuned by a four-section 100pF variable capacitor, rotated via a Jackson slow-motion drive. A single J310 FET is used as a grounded-gate RF amplifier. While gain is not important here, given the high ambient noise levels on 160m, the amplifier provides a resistive termination for the Cohn filter and ring mixers, as well as reducing local oscillator radiation from the antenna.

There are three variable capacitors that need to be adjusted for maximum output from the filter on the 1.8MHz band (say, at 1.825MHz if the Buccsneer is covering 1.8 - 1.85MHz), with the four section tuning capacitor set mid-mesh. These are the 100pF capacitors between L2 and earth, between L4 and earth and the 200pF capacitor to the output of the filter.

The filter module feeds two Mini-circuits SBL-3 mixer modules, in a quadrature twin-mixer phasing configuration. This is followed by two carefully-balanced audio amplifiers – see the circuit in **Fig 2**.

The two signal outputs are the I (in-phase) signal and the Q (quadrature) signal. These are derived from the incoming signal, being split into two paths and mixed from a local oscillator, which has two outputs with a 90° phase shift between them, created by a hybrid quadrature transformer – see **Fig 3**.

The signal splitter coils (L1, L2) are wound on T50-1 toroid cores, while the 90° hybrid transformer (T1) is bifilar wound on a similar core.

The outputs from the two SBL-3 mixers are then fed into two low-noise amplifiers, each using a pair of 2N3904 transistors and an LM833 integrated circuit. This is a very popular circuit amongst direct-conversion constructors, since the common-base input stage provides low noise and a low input impedance that correctly terminates the SBL-3 mixer. The circuit was taken from [4] with a few component changes to reduce the gain to that required by the DSP input.

Note the use of a single-point earthing technique for the low-noise AF amplifiers. This minimises hum loops that can otherwise occur if conventional multi-earthing points are used.

The SBL-3 mixers are fed from an ultra-low phase-noise variable crystal oscillator (VXO) that provides an exceptionally pure and highly-stable signal from 1800kHz to 1850kHz. VXOs are well known for

their purity of output and high stability. However, for use on 160m, a conventional VXO - ie one where the frequency of an 1800kHz crystal is pulled directly - would only provide a swing of a few kHz.

To overcome this problem, two VXOs are used, each operating in the region of 27MHz. Using such a high frequency means that the crystals can easily be pulled many tens of kHz. In the circuit used in the Buccaneer, the *difference* between the frequencies of the two crystals is equal to the desired receive frequency.

To alter the received frequency, each VXO is connected to one half of a differential variable capacitor. As the capacitor is adjusted, one VXO increases in frequency while the other decreases. Since we are using the difference between these two frequencies, this means that the effective VXO swing is doubled. In practice, two 27MHz crystals were used for one oscillator and a 25.160MHz crystal was manufactured to order for the other. There is nothing special about these frequencies - the 27MHz crystals were on hand from VK6APH's junk box.

The VXO requirements are that the crystals can be pulled 25kHz easily, and that there are no high-order mixing products that fall within the 160m band. Using the frequencies specified results in a >50kHz tuning range, and no in-band spurious signals.

Fig 4 shows the circuit of the VXOs. The 27MHz oscillator is constructed from a bipolar transistor in a Colpitts configuration and feeds one input of an NE602 double-balanced mixer.

The 25.160MHz oscillator also uses the Colpitts configuration, but utilises a transistor contained within the NE602 mixer as its active device. This is very convenient, because we need to produce the difference between these two frequencies – which is then available on pin 5 of the NE602.

The ring diode mixers each require a drive level of +7dBm, which requires +10dBm from the VXO. The 2N918 transistor provides some +12dBm into 50Ω, which allows for some loss in the 90° hybrid coupler feeding the mixers. A low-pass filter on the output of the VXO removes the sum component (27 + 25.16MHz) from the output.

Since a companion transmitter is planned in the future, a 'second VFO' feature is provided (for independent receiver tuning and split-frequency use) by relay-switching between two differential capacitors. While the circuit shows two single-pole changeover relays being used, these happened to be small and conveniently located in VK6APH's junk box. There is no reason why a single dual-pole changeover relay could not be substituted. It is important to ensure that connections to these relays are made via mechanically-rigid means, since any movement in these connections will appear as 'microphony' in the completed receiver.

Two of the traditional problems associated with direct-conversion receivers are those of picking up hum and being microphonic – ie picking up any movement that occurs to the receiver and passing this into its audio output – and the high level of screening prevents this from occurring. As a result, the Cohn filter, mixer and VXO circuits are all mounted in surplus silver-plated brass boxes - these could be substituted by diecast aluminium boxes - and all inputs / outputs, including voltage supplies, are fed via 1000pF feedthrough capacitors.

The fourth part of the Buccaneer is the DSPx digital signal processing module and its companion KDSP10 adaptor board [3]. Designed by Lyle Johnson, KK7P, the DSPx module uses the Analog Devices ADSP-2185N DSP chip and is best known as the platform for carrying out the DSP experiments described in the ARRL's publication *Experimental Methods in RF Design* [4].

The DSPx is a powerful digital processor, with a speed of 80mips (million instructions per second) and a sampling rate of 96kHz. It comes equipped with 512KB/64KB of flash memory, which can be used to store software programs that govern its processing operation and that are entered into it using a personal computer.

In this case, Lyle, KK7P, and Phil, VK6APH, have created a software program, adapted from software originally written by Bob Larkin, W7PUA, for the ARRL's *Experimental Methods in RF Design*, that allows the DSPx to be configured as a combination of two high-performance digital filters (2.8kHz and 500Hz) and a binaural decoder/audio amplifier. Many thanks must also go to W7PUA and Bob Whelan, G3PJT, who ported W7PUA's code to the DSPx. This software is available for free downloading, as explained at the head of this article.

Once the I and Q inputs to the digital signal processor have been optimised in both phase and amplitude, both the 2.8kHz and 500Hz bandwidth filters should give at least 60dB of image rejection.

Optimisation can be undertaken in either hardware or software. For hardware amplitude balance, RV1 can be adjusted. For phase, a 200pF variable capacitor can be connected between pin 8 of one SBL-3 and earth. Since each constructor's layout, component toler-

FIG 4 © RADCOM 528

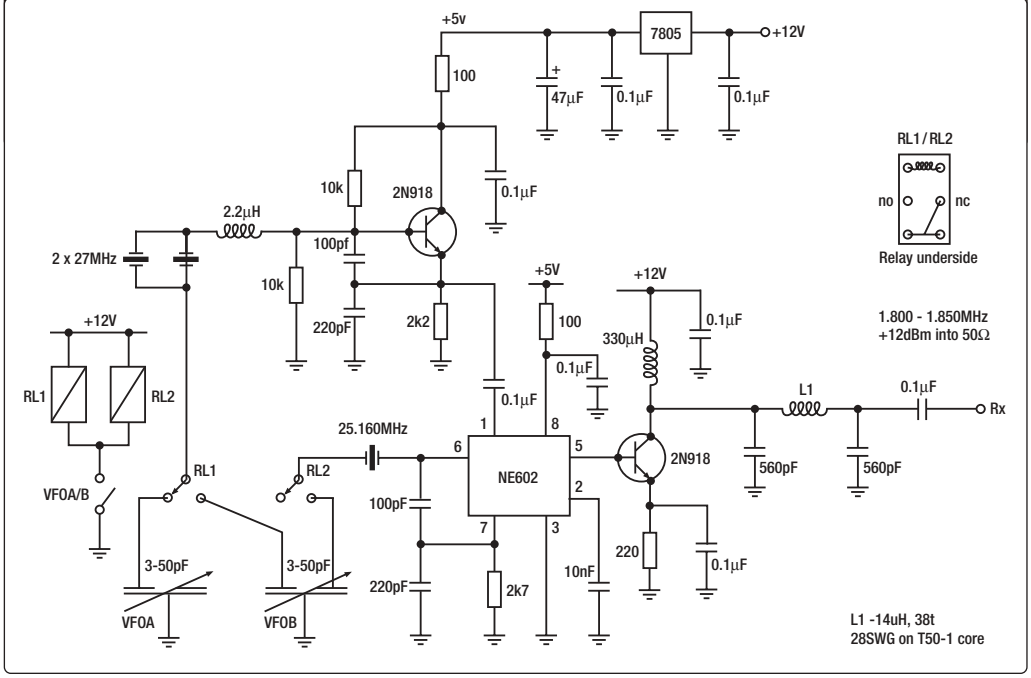
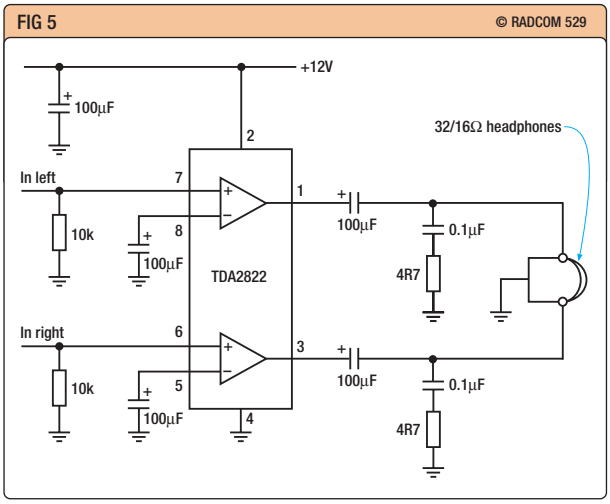


Fig 4
VK6APH VXO using twin crystals and a differential capacitor. The circuit shows two differential tuning capacitors (VFO A and VFO B), as two have been fitted so they can be used as a dual VFO when the Buccaneer is converted to a transceiver.

Fig 5
Stereo 1W audio amplifier.



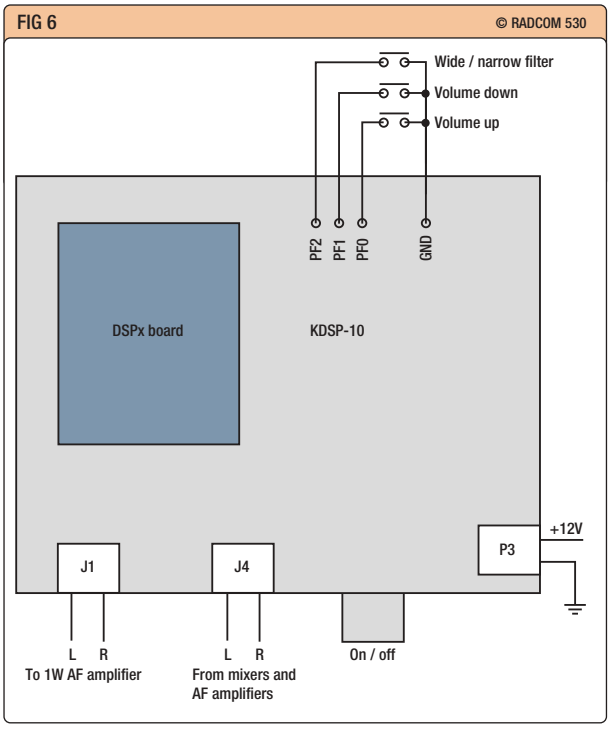


Fig 6
Connections between the DSPx/KDSP10 and the Buccaneer (showing connections from the quadrature mixer module and the 1W stereo audio amplifier.

ances and stray capacitances will be different, the correct mixer to which the capacitor should be connected will need to be determined by trial and error. Both adjustments are interactive and need to be repeatedly 'tweaked' for best unwanted-sideband rejection.

Alternatively, the optimisation can be done in software. The DSP code has been documented showing where these values can be adjusted. The default code assumes that both I and Q have exactly the same amplitude and have a precise 90° phase relationship. If software optimisation is chosen, RV1 and its associated 82k resistor can be replaced with a 100k 1% resistor.

Since software optimisation is very much an iterative process, it is suggested that this be undertaken once the overall performance of the receiver has reached a satisfactory level. An explanation of software optimisation is provided in *Experimental Methods in RF Design* [4].

While 60dB of image rejection is not as good as can be expected from a conventional crystal or mechanical filter, for a direct-conversion receiver with no AGC, it is entirely adequate. Lyle, KK7P, has concluded that the ratio of in-band response to stop-band response of these filters is of the order of 80 to 85dB.

To boost the output of the KK7P DSPx/KDSP10 board to a suitable level for headphones, the fifth and final module is a 1W stereo audio amplifier. The circuit used is shown in **Fig 5**, although virtually any small, low distortion, commercial amplifier module could be used.

The RF connections between the Cohn filter / RF amplifier module, quadrature mixer and variable crystal oscillators in the Buccaneer prototype were made using surplus miniature coaxial cable and SMA connectors. However, these interconnections could be easily made using short lengths of RG-178 cable, soldered directly to the PCB-mounted components.

CONSTRUCTION NOTES

The Cohn filter / RF amplifier, the mixer / phasing network and the variable crystal oscillator were built, 'dead bug' style (ie the components on their backs, with their legs in the air), on pieces of single-sided printed circuit board. The four-gang variable capacitor used in the Cohn filter is mounted on the box into which the filter is built – see the photograph. The variable capacitor is driven from a Jackson D-type two-speed drive unit (4832/2K-U) and the differential capacitor controlling the VXO from an old surplus Muirhead-type drive.

The rest of the components are readily available, with the exception of the four-gang variable, the differential capacitor used in the VXO and the KK7P DSPx/KDSP10 module. Details of where to obtain these are given in the box.

The most important part of the construction is keeping all leads as short as possible and, in particular, with regard to the VXO, making it as rigid as possible.

The radio is controlled by the DSPx/KDSP10 via three push-button controls – one is used to increase the audio volume from the Buccaneer, the second is depressed to decrease the volume and the third is used to switch between 2.0kHz and 500Hz receive bandwidths.

Initially, the software program controlling the DSPx/KDSP10 was loaded using an old Toshiba T2130CT laptop, using a serial cable to connect to the module. Rather inconveniently, this required that the DSP code be loaded into the DSPx/KDSP10 board each time the power was reapplied. However, Lyle, KK7P, has recently added a feature to his software that enables the DSP code to be placed in the DSPx's flash memory, which very effectively overcomes this problem. Details of how to place the DSP code in flash memory are provided on Lyle's website **www.kk7p.com**

CONCLUSIONS

The Buccaneer was placed next to the VK6VZ main transceiver, a Yaesu FT-1000MP with 500Hz crystal filters in its second and third IFs, and a coaxial switch used to change an 1.8MHz half-wave inverted-V dipole at 27m between the two radios. Stereo headphones are needed for the binaural reception – VK6VZ used those from an old lightweight Heil headset. The cheap throw-away 'Walkman' type headphones will not be adequate for this purpose, but low- to mid-end stereo headphones, such as you would use with a music centre, should be fine.

Any signal that could be heard on the FT-1000MP could be heard on the Buccaneer, but VK6VZ found

listening to the latter much more pleasant and less tiring. The binaural reception was truly an amazing aural experience, and VK6VZ found signals in noise or with adjacent QRM easier to copy than on the conventional receiver of the FT-1000MP. After listening to the Buccaneer, the audio from the FT-1000MP and other superheterodyne receivers in the VK6VZ station sound flat and uninteresting.

On-air tests of the Buccaneer's strong-signal handling were carried out with VK6ABL 15km away, who generates a consistent R5 S9+25dB signal at VK6VZ, and a weak navigation beacon 0.5 to 1kHz away from VK6ABL's frequency could be easily copied. The RF performance of the radio was so good that it is planned to turn the Buccaneer into a compact transceiver to use for 160m DXpeditions.

The KK7P digital signal processing board performed admirably, and its digital filters with their >60dB rejection compared very favourably with the FT-1000MP's DSP features.

The cost of the Buccaneer is a mere fraction of that of a commercial receiver and, although limited to one band, offers an aural treat – 'ear candy', as the Americans say – not available on 'appliance' equipment bought from the local amateur radio store.♦

SOFTWARE DOWNLOAD

Software download from *RadCom Plus* area of
www.rsgb.org/membersonly
c18rx.bnm – code to make software run from flash memory
c18rx.dsp – DSP source code
c18rx.exe – compiled code to be loaded into the DSPx
lp2_8new.dat - 2.8kHz LPF
bpfnew.dat – 500Hz CW BPF

REFERENCES

[1] 'A Binaural Processor for Any Rig', J Street, VE3VXO, *ARS Sojourner*, available at: **http://tinyurl.com/cof9k**
[2] 'A Binaural I-Q Receiver', R Campbell, KK7B, *QST*, March 1999, pp44 – 48.
[3] Designed by Lyle, KK7P, and available from the Tucson Amateur Packet Radio group – see 'Components' box.
[4] *Experimental Methods in RF Design*, W Hayward, W7ZOI, R Campbell, KK7B, and B Larkin, W7PUA (ARRL), available from the RSGB.

COMPONENTS & SUPPLIERS

Unless otherwise specified, resistors are $^1/_4$W, 5% tolerance carbon composition or film.

COHN FILTER/RF AMPLIFIER

100R (2), 180R resistors
68pF (2), 270pF mica (2) – see **www.surplussales.com**
0.1µF (2) disc ceramic
100µH radio frequency choke
J310 field effect transistor (FET)
L1, L4 - 33 turns of 0.71mm wire on FT82-61 ferrite core (70µH)
L2, L3 – 43 turns of 0.71mm wire on FT82-61 ferrite core (140µH)
L5, L6 – 1.45µH RFC or 10 turns 36SWG on 4mm former with F25 core.
L7 –45 turns of 28SWG wire (20µH on a FT50-1 core).
4-gang, 100pF per section variable capacitor. The capacitor used was a 4-gang, 10 – 200pF per section, type BC10200, obtainable from Ocean State Electronics, PO Box 1458, Westerly, RI 02891, USA (e-mail: **ose@oselectronics.com**). FT82-61 toroid cores can also be obtained from Ocean State Electronics.
1,000pF feedthrough capacitors (Ocean State Electronics).
Jackson slow motion drive D-type two-speed drive unit 4832/2K-U, available from Mainline Electronics, Unit A, Cutters Close, Coventry Road, Narborough, Leicester, LE19 2FZ, England (Tel: 0116 286 5303).

QUADRATURE MIXER

20k miniature potentiometer (RV1)
51R (2), 100R (5), 1k, 2k7, 3k3, 5k6, 10k, 100k (2) all 1%.
2500pF, 1200pF (2), 870pF (2), 220pF mica all 1% – see **www.surplussales.com**
0.1µF disc ceramic.
1µF, 1.5µF polystyrene.
10µF (2), 47µF (3), 50V electrolytic or tantalum.
Mini-circuits SBL-3 mixers (2) – see **www.alltronics.com**
The address is: PO Box 730, Morgan Hill, CA 95038-0730, USA, or
e-mail: ejohnson@alltronics.com
3.3mH choke – Digikey TK3207-ND (Toko 126ANS-T1100Z, adjustable, type 7PA) – see **www.digikey.com**
2N3904 transistor (2)
LM833 operational amplifier
L1, L2 - 22 turns of 28SWG wire on a T50-1 toroid core (Z = 70Ω at 1.825 MHz).
T1 – 17 turns, bifilar wound, of 28SWG wire on a T50-1 toroid core
(Z = 50Ω at 1.825MHz).
1000pF feedthrough capacitors (3) – **www.oselectronics.com**

VARIABLE CRYSTAL OSCILLATOR

100R (2), 1k5, 2k2, 2k7, 10k (4) resistors.
27MHz crystals (2) fundamental, parallel mode, 30pF shunt capacitance.
25.160MHz fundamental, parallel mode, 30pF shunt capacitance.
VFO A and VFO B - 3.2pF to 50pF Johnson differential capacitor (2).
Part number (CAV) 148-304-1 – see Surplus Sales, Nebraska – **www.surplussales.com**
2.2µH choke.
100pF (2), 220pF (2), 560pF (4) mica – **www.surplussales.com**
0.1µF (7), 0.01µF disc ceramic.
2N918 transistor (2).
7805 5V voltage regulator.
NE602 integrated circuit.
L1(14µH) – 38 turns of 28SWG wound on a T50-1 core.
Slow motion drive – Muirhead or similar.
Relays RL1 and RL2 are optional – see text for details.

STEREO ONE-WATT AUDIO AMPLIFIER

4R7 (2), 10k (2) resistors
100µF (5) 50V electrolytics
TDA2822 integrated circuit audio amplifier
32/16Ω impedance headphones – see text.

KK7P DSPX MODULE AND KDSP10 ADAPTOR KIT

These are available from Tucson Amateur Packet Radio at **www.tapr.org** At the time of writing, the DSPx cost US $99 plus shipping / handling, while the KDSP10 adapter kit cost $39 plus shipping / handling. This is on a par with the cost of a crystal filter and is excellent value for money. As TAPR says, they are excellent as a DSP learning platform and you can perform experiments with them using the ARRL's *Experimental Methods in RF Design* [4].

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Tigh Na Bata, Kilmelford, Oban, Argyll PA34 4XD.

E-mail: willy@kilmelford.freeserve.co.uk

A cheap and cheerful approach to keying

In the early 80s, I designed an electronic keyer, the aims of which were to be battery operation for portability, and no moving parts to avoid the necessity for complicated mechanical construction. This is what emerged, and how its has developed over the years.

FIRST, SOME HISTORY

Keying levers in the conventional keyer were replaced by touch-sensitive switches which, in turn, drove a multivibrator, or a multivibrator-plus-divider, to produce the dots and dashes. These were positive with respect to 0V and drove an open-collector npn transistor which keyed the transmitter. All the ICs were CMOS, so the battery consumption was negligible. Now, 20 years later, the keyer is only on its third battery (a 9V PP3)! The touch-sensitive switches were aluminium pads screwed on to the top surface of the keyer, and were 'keyed' by pressing the third finger on the central pad and tapping the Dot and Dash pads with the index and fourth fingers. Because of this keying action, I dubbed it the 'Piano Keyer'. A sidetone oscillator was included, which was useful for off-air practice – very necessary for a new style of keying! Although published at the time it didn't attract much attention and, as far as I know, it remains ignored.

Most of today's transceivers incorporate an integral electronic keyer. This internal keyer requires three connections – Dot, Dash and the Chassis Ground or 0V line. Grounding either the Dot or Dash contact triggers a stream of either dots or dashes. Grounding both Dot and Dash contacts simultaneously triggers a stream of alternate dots and dashes. This is known as 'Iambic Keying', where the keyer recognises that both the Dot and Dash contacts are grounded, as opposed to earlier keyers that recognised either the Dot or Dash contact, and where (possibly) the Dash contact would override the Dot contact.

The convenience of having an internal keyer in one's transceiver has made the conventional stand-alone keyer, 'bug' key or Vibroplex, and the Piano Keyer, obsolete. However, one still needs a device to make the contact between Ground and Dot and Dash contacts and this is usually achieved by a 'paddle' keyer which can be likened to a pair of manual Morse keys ('pumphandle' keys) mounted back-to-back and operated with sideways movements of the levers. In practice, the paddle keyer is mechanically quite complicated, as both levers have adjustable contact gaps and spring tensions, and the whole is mounted on a heavy base-block to prevent it walking across the table under the influence of the sideways movement of the keying levers. The better models are beautifully engineered but, in view of the very simple function that they perform, are horrendously expensive. The paddle keyer, being mechanically complicated, is possibly beyond the capabilities of the average small electronic workshop. With this in mind, it seemed a good idea to have another look at the Piano Keyer.

The new Piano Keyer, showing the dot pad on the top left and the dash pad on the top right of the box, with the earth pad on the left-hand side of the box. There is an identical pad on the opposite side.

THE NEW PIANO KEYER

For the new Piano Keyer, all we need from the original are the touch-sensitive switches, as the production of dots and dashes is now performed within the transceiver. The circuit is now reduced to one IC, a 4011 (a CMOS quad two-input NAND gate), and is shown in **Fig 1**. In its quiescent state, the output on both the dot and dash lines is high, eg +9V. When the 0V and Dot pad are bridged by finger contact, pin 9 goes towards 0V and the output of IC1c on pin 10 goes to +9V. Both inputs of IC1b, pins 5 and 6, are now +9V, and the output on pin 4 goes to 0V, thus enabling the transmitter's keyer. Operation of the Dash keyer is identical.

The new Piano Keyer is built into a small Maplin project box of 75 x 55 x 25mm, which is just large enough to accommodate the 9V battery and small circuit board which are held in place by double-sided sticky pads. The Dot and Dash keying pads are made of copper-clad circuit board and are Araldited on to the outside of the box. The Dot and Dash pads are on the top and there is a 0V pad on either side, (see the photograph). Electrical connection is made by drilling right through the pad and box and soldering on the outside. In operation, the keyer is held on either side between the thumb and fourth finger [just like a computer mouse – *Ed.*] and the Dot and Dash pads are 'keyed' by the index and third fingers. This may seem to be unusual at first, but I believe that it is not difficult to get used to. If you are reading this, you have probably graduated from a 'pumphandle' key to a 'bug' or Vibroplex and thence to an iambic keyer. The cultural leap to the Piano Keyer is minimal in comparison – easier done than said!

I am indebted to John, F5VJH (ex MM0BPO), who suggested the new form of construction because he felt it would be easier to operate than the original Piano Keyer which has the three pads in line on top of the box. Either way, one unforeseen advantage is that the keyer has no tendency to 'walk' across the operating table! With such a simple circuit, the operator can choose the physical layout which suits him/her best, and even the conventional vertical paddles can be closely replicated.

This circuit depends on reasonable skin conductivity for reliable operation. For the operator who has exceptionally dry skin, an occasional lick of the fingers may be necessary! Of course, microswitches could be configured to do the same job, but then we're back to mechanics... ♦

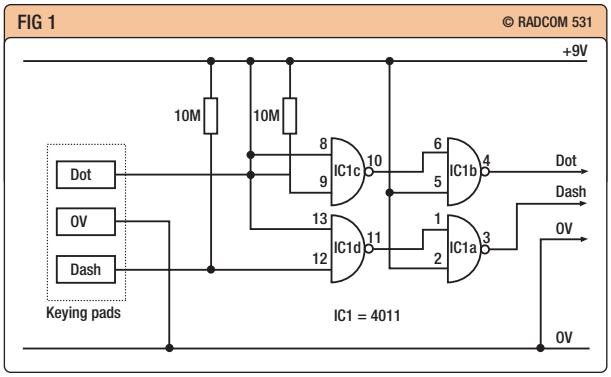
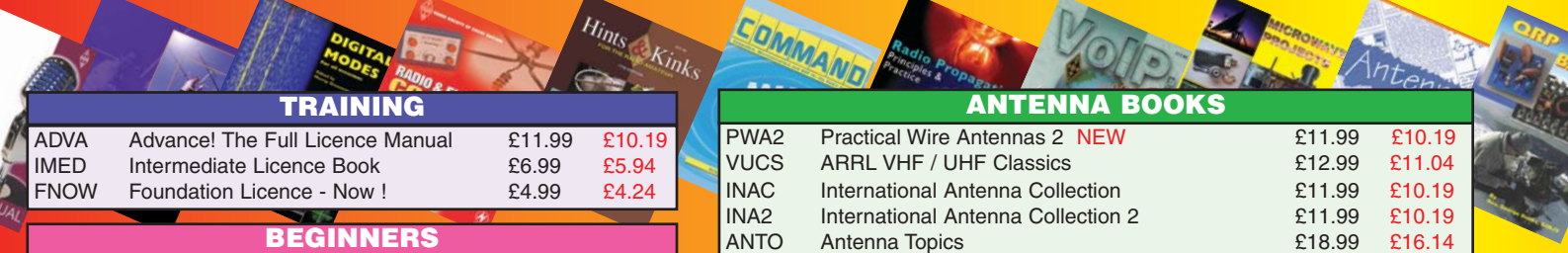


Fig 1
Circuit diagram of the 'Piano Keyer'.



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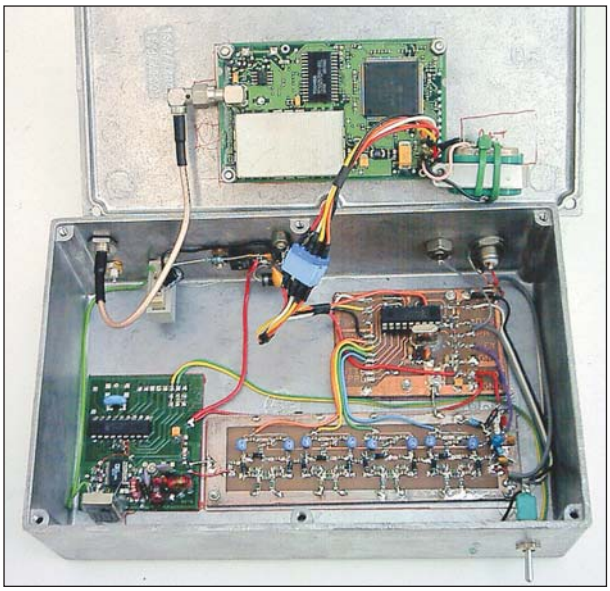
Design and construction of the 5MHz beacons GB3RAL, GB3WES and GB3ORK – part two

Andy concludes the description of the beacon project by considering the GPS module, the new power amplifier, and the final assemblies. He indicates the lessons that have been learned from the project, and shows how a complete multi-band propagation monitoring beacon becomes feasible, complementing those of the International Beacon Project, but on the higher bands.

All the PIC code for GB3RAL had been written for NMEA data supplied from a Garmin GPS25 module (which I had often used before, and was also what Mike Willis, G0MJW, had available), so the controller supplied to him worked straight away. For the later beacons, I intended using a surplus Motorola Oncore unit that was sitting on the shelf, then purchase another more modern version of this one for the third beacon. At first sight, the NMEA data appeared to be identical with that of the GPS25, so no software changes should be needed. On integrating the Oncore module with my existing PIC controller, however, there was no way the combination could be persuaded to work at all. It just dumbly sat there doing nothing! I could see the NMEA data by directly reading it on a PC, but the PIC software, which worked perfectly with the Garmin, just refused to take any notice whatsoever.

After much head-scratching and peering at long strings of letters and numbers, I noticed that, whereas the Garmin output its hours, minutes and seconds in the format ...,HHMMSS,... the Motorola module was supplying ...,HHMMSS.SSSS,... with decimals of seconds in the data string. Previously, the PIC software counted the commas as they arrived, then extracted the time by counting *backwards* from the second comma, having saved the last few items of previous data in memory. This was clearly now failing to give the correct time as the decimals of seconds and the dot were appearing where the hours and minutes ought to have been. The solution was to modify the software to detect the first comma, then store the *next* six characters to give the time.

The new, more modern, Oncore M12 module needed a 3V supply rather than the 5V of the original, so a separate power regulator had to be provided, together with a separate chip to interface the 3V logic levels to the 5V required on the PIC. Once this interface was constructed, both GPS modules now communicated successfully with the PIC controller. The controller PCB, attenuator / keyer assembly built on another PCB, and the GPS module, were built into a single screened diecast box to give a standalone unit that was a complete beacon source - supplying a few milliwatts with the correct timing and power step sequence, albeit at only a few milliwatts. The photograph shows the completed driver hardware comprising the three modules.



The GB3WES driver assembly.

NEW POWER AMPLIFIER

Unfortunately, when it was tested, the second donated Yaesu power amplifier was found to be faulty – two driver transistors had failed. There were no more spare PA units available, the driver transistors were obsolete and difficult to obtain, so my spare PA module was pressed into service and integrated to make up the first complete beacon assembly. The whole lot was placed into a surplus 19in rack mount and put on to extended soak test, running on-air continuously as an attended beacon, signing G4JNT. The transmission sequence started immediately GB3RAL had completed its transmission. (Initially the beacon went on air signing G8IMR, my alternative callsign, until it was gently pointed out that G8IMR did not hold an NoV for 5MHz!)

There now remained the problem of what to do for a second power amplifier. A bodged repair job on the faulty one, using a different type of driver transistor, was just not the done-thing for high-reliability electronics targeted at 24-hours per day operation, the Yaesu amplifier was deemed to be beyond repair, so another solution was needed. I had several surplus TMOS power FETs of the MRF134/5/6/7 family, and previously had built a broadband 8W amplifier covering 20 to 80MHz for a non-amateur related project using a MRF136. This had been straightforward to get going, so the design was lifted, the inductors modified for the lower frequency and a bit more feedback included to tame the increased gain at low frequencies. The circuit is shown in **Fig 5**. A single MRF137 device will supply approaching 20W when used in this circuit, operating from a 24V supply. At the 10W output level, it was comfortably linear, running at less than 0.2dB of gain compression, so would amplify the power step sequence correctly.

The only snag was that now a 24V power supply was needed. The logic circuitry had its own internal regulator down to 5V (and 3V). Supplying the driver from the full 24V would lead to excessive dissipation in the driver unit, so an additional power resistor was added external to the driver to drop the voltage supplied to a more acceptable level to feed the regulators.

FIG 5 © RADCOM 532

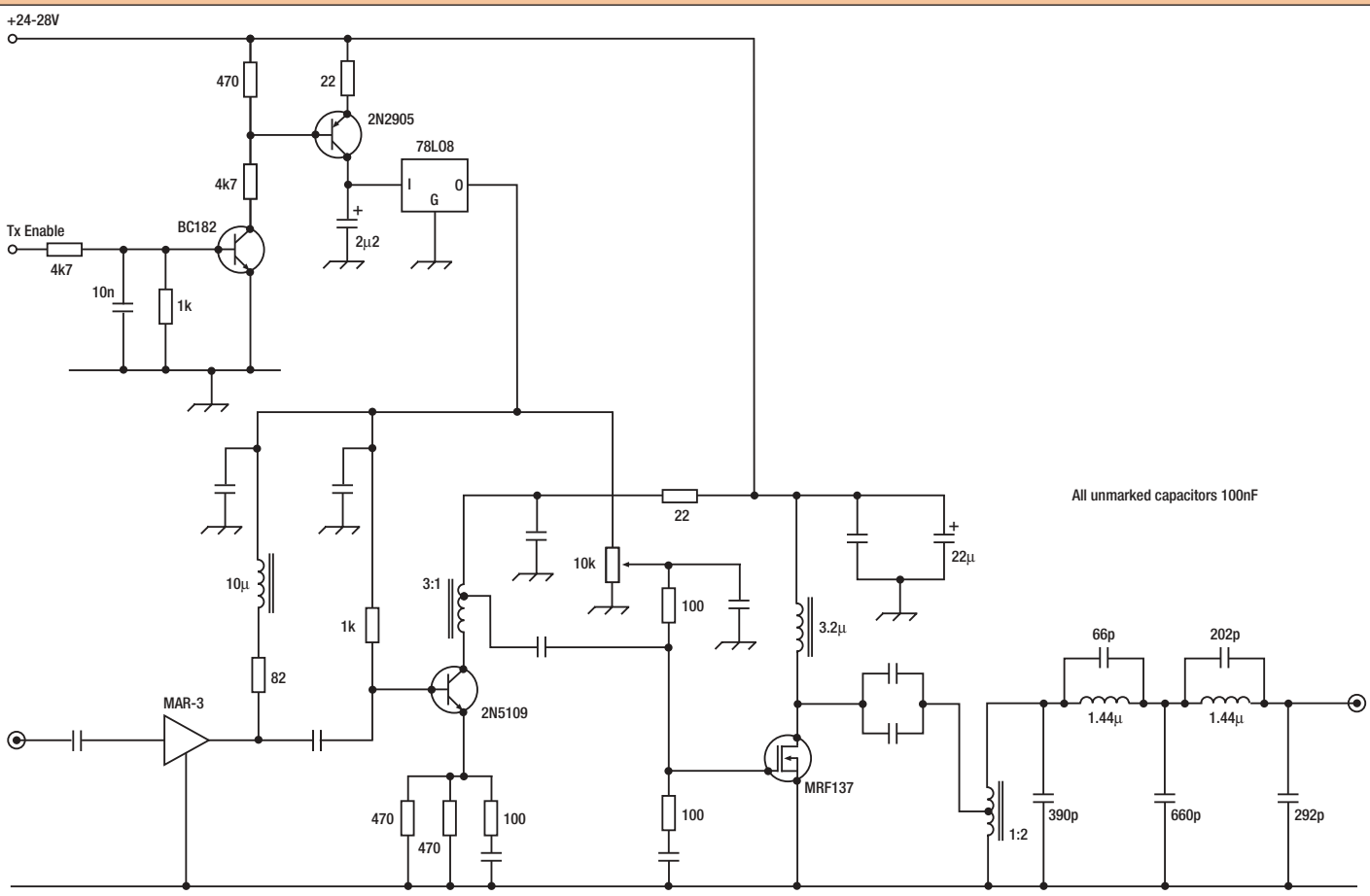


Fig 5
The GB3ORK PA circuit diagram.

THE FINAL ASSEMBLIES

The new PA was built into a second rack mount and integrated with its driver unit to form the final beacon hardware. It only required 24V at 2A which could be delivered from a surplus PSU found at a rally.

As there was going to be plenty of 12V power available at the site of GB3WES, the first beacon that had been built using the Yaesu PA became that one. This went on air in October 2004. GB3ORK was shipped up to the Orkneys along with the PSU, and came on air in December. Apart from a few teething and installation / shack decoration glitches and power cuts, both have operated continuously from then.

Some details of GB3WES can be found on the website of G3WGV [4].

A FEW LESSONS LEARNED

The switched attenuator and keyer turned out to be the most complicated part of this project but, fortunately, a large number of surplus PIN diodes that were ideally suited to this task just happened to be available. These devices, especially in the quantities needed here, would otherwise have been quite expensive – typically they cost £1 - £2 each. Discrete FET switches were tried, but failed to achieve the isolation needed for the higher stages of attenuation. An alternative would be to use packaged FET switches designed for RF routing – these are available from companies such as Minicircuits, and may have a slightly lower cost as many devices are included within one chip. However, isolation still couldn't be guaranteed and the final cost could begin to approach that of a ready-made attenuator module.

But, in retrospect, there was a much simpler solution – use a different DDS chip. The Analog Devices AD9852 device includes on-chip programmable control of the output amplitude to 12 bits of resolution, which allows the output power to be varied over a range of 70dB. Now, both power steps and keyer could be made by directly programming the DDS chip from the PIC controller, without any need for more RF hardware. The RF chain could now just simply be DDS chip and power amplifier / filter. This device will form the basis of any future beacon projects.

Much time was wasted getting the PIC software to read NMEA data from a different GPS module. Instead, the proprietary binary format should have been used and the old NMEA-compatible code jettisoned. It even appears that the Oncore binary format has become an 'unofficial' standard that other GPS receiver manufacturers have incorporated into their products. For example, the Jupiter-T GPS module defaults to this format at switch on. Furthermore, these are quite reasonably priced (I even had at least one spare!), and would have allowed simple frequency-locking circuitry with its 10kHz output.

THE FUTURE

As designed, the beacons can be used directly on 3.5 and 7MHz, just by changing the PIC code in the DDS controller. (In fact, new driver software in the DDS modules does now allow up to four pre-programmed frequencies to be selected in the range DC to 12MHz). The timing controller PIC could easily be programmed to change frequency bands as well as generate the power / keying sequence. By adopting the AD9852-based concept described above, a completely integrated, single board, multi-band beacon driver could be produced. With the addition of a broadband PA, a complete multi-band propagation monitoring beacon becomes feasible, complementing those of the International Beacon Project, but on the higher bands.

Furthermore, the AD9852 can directly generate frequencies up to 80MHz, making its use in VHF and UHF beacons feasible. The ability to change the frequency in steps of minute fractions of one hertz, together with the high resolution setting of amplitude and phase of the DDS output, means that a host of data modulation schemes could be incorporated into a new generation of modern beacon designs. At the other end of the spectrum, GB3SCX on 10GHz already uses an AD9851 DDS device to generate RTTY keying. ♦

REFERENCES

[4] Details of GB3WES
http://g3wgv.com/gb3wes.htm

Technical feedback

'Restoring old valve equipment' – *RadCom* April/May 2005, and 'The Last Word' – *RadCom* May 2005. We have had three sets of comments, mainly about replacing / reviving electrolytic capacitors, and using solid-state rectifier diodes. The following are condensed extracts.

PHOTO: M5ACN

High-voltage electrolytic capacitors, one of the main subjects of our feedback letters.

From Geoff Darby, G7RTC, and, independently, Malcolm Perry, G8AKX:

Firstly, service engineers of many years experience on valve equipment would not advocate changing components just because they *might* be faulty, or *might* give problems in the future, or just because they *look* a bit rough.

When deciding to replace capacitors, it is *essential* to understand the function of the device within the circuit, as this will affect the type chosen for the replacement. Get this wrong, and you could seriously degrade a radio's performance or stability. Also, it is essential to dress the replacement component's leads exactly as the original manufacturer did as, again, this can be very important to performance and stability.

Secondly, there seems to be a problem with the maths regarding the replacement of high-voltage electrolytics. In his article, Steve, VK6VZ, states that he recently replaced a 16µF 500V capacitor, with two 10µF 450V capacitors in series. While this does produce a 'capacitor' with an overall voltage rating of 900V, it only yields a capacitance of 5µF – less than $^1/_3$ of the original value. In order to produce the original value, when series-connecting two capacitors to increase the voltage rating, each individual capacitor must have twice the capacitance of the original (or three times the capacitance, for three capacitors in series). So, to produce a capacitance of 16µF at 900Vwkg, Steve should have connected two 32µF 450Vwkg capacitors in series. Also, a voltage-sharing resistor of the appropriate power dissipation *and voltage rating* should be connected across each capacitor.

Replacing a rectifier valve with a semiconductor diode (or diodes) should be done only as a last resort. The output from a semiconductor diode appears immediately the voltage is applied and, because of the diode's lower forward voltage drop, the peak rectified voltage is almost certainly higher than that of the valve rectifier it replaces. The potential problems resulting from this are several; here is just one.

All the valves in the set are cold, drawing no current at switch-on. This results in a power supply producing full output, because the supply's source impedance is not yet in play to reduce the HT voltage to its normal running level. It should also be remembered that some types of valve can suffer irreparable internal damage by having full HT applied before their heaters are at working temperature.

Also, don't think of a Variac as being an ordinary transformer, as this may give you the impression that it provides isolation from the mains. It doesn't. Although it *is* a transformer, it's a special type called an auto-transformer, which has only a single winding, the tap being a continuously-movable carbon brush.

From Denzil Roden, G3KXF:

Mike, G8DKW ('The Last Word', *RadCom*, May 2005), likes to live a little dangerously. For those of us who find enough excitement in life already, a Variac is extremely valuable for reforming electrolytics safely, and for other purposes.

'Reforming' is the important word. Electrolytics need a regular application of their operating voltage to maintain the chemically-formed dielectric film on a surface of one electrode. Absence of the voltage for long periods allows the dielectric to deteriorate. Sudden application of working voltage to a deformed capacitor can then cause excessive current, boiling of the contents and possible violent bursting of the case.

I find it easiest, in the long run, to remove components and rejuvenate each one separately. Modern electrolytics have soft-burst cases, but beware older ones which can explode violently. To that end, you need a metal box in which to enclose and contain any possible eruptions.

The other thing you need to know is the maximum permitted leakage current for an individual electrolytic. The following formulæ are currently hard to find and come from an old RS publication *Component Application Data*, 6th edition, 1971.

Maximum leakage current:

Capacitors <100Vwkg: current (µA) = 0.08CV + 100µA.

Capacitors ≥100Vwkg: current (µA) = 0.05CV + 250µA.

C is in µF and V is the component's marked working voltage.

Increase the voltage gradually, ensuring that the current never exceeds the maximum. The measured current should then gradually diminish, whereupon repeat the exercise by increasing the voltage. It may take many hours, but eventually the current should stabilise at a safe value at the specified working voltage.

No matter how long the set has been unused, always try to use the original components. ♦

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SILENT KEYS

We regret to record the passing of the following radio amateurs:

EI2FB	Mr L Lyons	05
G0HMQ	Mr G G B Schofield	02/04/05
G0VQC	Mr N L Edis	29/04/05
G1WRP	Mr L M Neesom	23/09/04
G2AUK	Mr S J Harris	15/05/05
G3CCC	Mr B J Moore	19/04/05
G3CCM	Mr W R Harris	28/01/05
G3DXJ	Mr T H Holbert	22/04/05
G3XPH	Mr R S Grant	05
G7JLL	Mr E R Jarvis	05/05
GI0EZD	Mr C C Marshall	
GI3ONZ	Mr W H Chambers	10/08/04
GU3EJL	Mr S Green	
GW0KSZ	Mr T Gill	14/02/05
GW6NMO	Mr R E Goff	03/05
LA8AK	Mr J M Noeding	27/05/05
M3HZZ	Mr A Clements	08/05/05
M3JEJ	Mr J E Jones	16/12/04
RS15851	Mr K J Edwards	03/05/05
VK2FFF	Mr S J Hutchison	

FT-707 100W HF tcvr. FP-707 PSU, integrated spkr. FV-707 remote VFO and memory. Yaesu YD-148 desk mic, job lot, £300. Icom-706 MkI, HF & 2m, 100W HF, 10W VHF, £300. Alinco EDX-2 autotuner, needs new rig connection, supplied, £125. L Mullin, G6DQU. E-mail: leslie@lmullin.wanadoo.co.uk

GW0HUT moving to G-land. Cushcraft R-6000 vertical 20 – 6m, £100. Altron CM-35 slimline telescopic tiltover galvanised mast with Fulton auto-brake winch, £200. 01600 713 549.

HY-GAIN T2X rotator with delayed braking action, two spare new motors and new spare brake solenoid, £275. Buyer to inspect and collect. E-mail: tonyg4ekl@btopenworld.com

HY-GAIN TH-7DX 7-ele 20 – 10m antenna, complete and serviceable, renovated 2003, £150. Buyer collects. G3OGQ, not QTHR, 01925 267 553 (Warrington). E-mail: g3ogq@aol.com

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ICOM IC-746, exc cond, h/book, orig box, £550. JRC NRD-525, h/book, orig box, £250. Non-smoking owner. Constructor's shack clearance. Phone or e-mail for list of good equipment, antennas, books. May deliver locally at cost or carriage extra. David, G8PPR, 01274 651 486 (Bradford). E-mail: david.bancroft8@btinternet.com

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MARCONI rcvr type 352, R1155, WS 19/3, KW 2000A new filter, Nagra E and 4.2. All unmod, working well, vgc. *Wireless World* 1951 – 72, *Radio Bygones* 1 – 79, bound. 01845 567 519 (N Yorks).

MV-75 fibreglass mast, 5 sec, 26ft, will take 12kg top load. K75 base plate kit for above, £115. Watson PSU 25A – 30A peak, £50. Icom AT-150 ATU, £85 with leads. Heil Proset HC4 insert, non-smoker, £50. 01202 429 698 (Bournemouth). E-mail: david.milne7@ntlworld.com

RACAL valve voltmeter 314A/S, £30. Marconi o/p meter TF-340, £15. STC solid-state audio osc 10Hz – 20kHz, £15. Audio level meter, £10. Megatherm 27MHz 400W o/p. Diathermy set, £15. 2 x Goodmans Axiom 301, Fane 2in aluminium cone, 8x5in elliptical loud speakers, £10. Arrange carriage. G3KAG, 01335 324 393 (Ashbourne). E-mail: g3kagroston@yahoo.co.uk

SGC auto-ATU 1.8 – 30MHz Smartuner 239 with h/book. GWO, never been outside, £135. Geoff, 01634 891 017 (Medway).

SILENT key sale. FT-736R VHF/UHF all-mode tcvr, 2m, 70cm, 6m modules with internal PSU, £450. MX-2000 triplexer for above, £20. Trio TS-700 2m all-mode tcvr, exc for year, £200. No time-wasters please. M0CJI, QTHR, 01270 761 224 (Sandbach). E-mail: m0cji@btinternet.com

SILENT key. Icom IC-756PROII, £800. Icom IC-746, £500. Icom IC-PS15 PSU, £50. MFJ-969 ATU, £120. G3UEY, QTHR, 01386 553 037 (Pershore).

SILENT key. Yaesu FL-2100Z linear amp, £350. (Burnley). E-mail: dick.g2ffo@dsl.pipex.com

VHF Icom 2100H 2-metre 50W tcvr. Not used mobile. Little used, near mint cond, £130. G4BNB, QTHR, 020 8504 3260 (London).

YAESU FT-990, internal auto-ATU, PSU, CW and SSB filters. Boxed in exc cond, £595. Icom ICR-7000 base all-mode scanner 25 – 2000MHz, £295. MC-60 desk mic, £70. MD-1 desk mic, £60. SM-5 desk mic, £30. Daiwa CN-101L 1.5kW HF/VHF meter, £40. Alinco EDX-1 ATU as new, £145. Palstar AT-300 ATU as new, £90. 01953 884 305 or 07970 214 039 (Norfolk).

YAESU G-450C rotator c/w lower mast clamps. Little use, £200. Yamato YS-130 rotator, medium/VHF, £45. Maspro 8-ele 144MHz, Maspro 12-ele 435MHz, Maspro 14-ele 435MHz, good cond, £15 each. 2E1CIK, 01904 413 348 (York).

YAESU VR-5000 400kHz to 2.6GHz scanner. Mint cond with DSP option, boxed, £425. Paul, 01920 871 639 or 07977 122 345.

CONGRATULATIONS

to the following, whom our records show as having reached 60 or 50 years' continuous RSGB membership:

60 years

G2FQS	Mr R L Barrett
G3IJS	Mr J F Stratfull

50 years

G3LAS	Mr J B Butcher
G4DOE	Mr J C Alford
RS20751	Mr M Cooper

EXCHANGE

ICOM-821H mint cond, hardly used, £650. Alinco DX-70TH, HF – 6m, £350. 4-ele 6m Yagi, £50. Exchange for Icom 910. Trev, G2KF, 07974 892 179 (Cornwall).

WANTED

AA motorcycle-man's radio, complete with handlebar-mounted spkr and mic. Believed made by Pye. Condition not important. G4GPY, QTHR, 01482 860 440 evenings (Beverley).

CODAR pre-selector. Model PR-30X in good cond. 01352 771 520 (Mold). E-mail: gw3tmp@tiscali.co.uk

DISABLED fan of old days seeks pre-1980 QSLs, magazines, logs etc. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk IP18 6PQ.

HAMMARLUND rcvrs, SP-600, HQ-170, also HX-50 tx. Bendix RA-1B, rcvr and matching tx. G0LJS, QTHR, 01380 859 088. E-mail: g0ljs@arrl.net

MORSE keys wanted by private collector, straight and bug keys, sounders, relays, Morse inking machines, heliographs, all telegraph-related items. Also KW-160 ATU. For a friendly chat ring Gerald,

01189 834 307 (Reading).
E-mail: gerald.beaver@btinternet.com

PYE Reporter type PTC-116. Must be in reasonable cond. Marc, GI3YDH, QTHR, 028 9050 3203 (Belfast).
E-mail: q.quad@ntlworld.com

SCRAP valve equipment always wanted for parts by home constructor. Tcvrs, rcvrs and txs, home-built or commercial. KW and G2DAF equipment particularly welcome. G3WCE, QTHR, 01692 538 794 (North Walsham).
E-mail: g3wce@supanet.com

SILENT key clearout or just not needed. I collect QSL cards for their historic interest, preferably from periods before 1970. Please don't throw them away. I can collect or arrange collection. Tony, G4UZN, 01132 693892 (Leeds).
E-mail: g4uzn@qsl.net

WODEN UM4 or similar 250W multi-ratio modulation transformer. Also 10H chokes 300 to 500mA. For restoration project, will collect. 01989 769 654 (Ross-on-Wye).
E-mail: g7rvi@vmars.org.uk

WORKSHOP manual for FDK-2700 multi. Trev, G2KF, 07974 892 179 (Cornwall).

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.

3 JULY 2005

NORFOLK ARC Barford Radio Rally – Barford, 9 miles SW of Norwich, near A11 and A47. OT 10am, CP, TI, CBS, B&B, C, TS. David, G7URP, 01953 457 322 or 01953 458 844, radio@dcpmicro.com [www.norfolkamateurradio.org]

YORK RC Rally – York racecourse. Arthur, G8IMZ, 01904 413 342, 07841 120 738. [www.yorkradioclub.net]

10 JULY 2005

CORNISH RAC 42nd Cornish Rally – Penair School, Truro. OT 10.30am. C, B&B, MA, demonstrations, etc. For the first time in 16 years, the rally has returned to a Sunday! John, G4LJY, g4ljy@dsl.pipex.com, Ken, G0FIC, ken@jtarry.freeserve.co.uk

16 / 17 JULY 2005

PORTLAND ARC Rally – Southwell Business Park, Southwell, Portland, Dorset. Well signposted from the north of the island. OT 10am both days, admission free to rally, but charge for steam show. CP, TS, SIG, C, LB, DF, FAM (steam show), WIN, CS, TI. [www.portland-amateur-radio-club.org.uk]

17 JULY 2005

McMichael Amateur Rally & Car Boot Sale – Reading Rugby Club, Sonning Lane, Sonning, Reading, Berks. OT 9.30am. RAFARS. Min, G0JMS, 01189 723 504, g0jms@radarc.org [http://go.to/mcmichael rally]

24 JULY 2005

Horncastle Radio Rally – Horncastle Youth Centre. OT 10.30, £1. C – famous Horncastle bacon butties. Tony, G3ZPU, 01507 527 835, g3zpu@hotmail.com

29 – 31 JULY 2005

AMSAT-UK Space Colloquium – University of Surrey, Guildford. GB4FUN, beginners' sessions. Jim, G3WGM, 01258 453 959, g3wgm@amsat.org [www.uk.amsat.org].

30 JULY 2005

Martin Lynch & Sons' Summer Barbecue & Boot Fair – Guildford Street, Chertsey. sales@hamradio.co.uk [www.hamradio.co.uk]

31 JULY 2005

COLCHESTER RAC Rally – St Helena School, Sheepen Road (off Avenue of Remembrance), Colchester. OT 10am, TI, C, CP, DF, TS, B&B, FM, RSGB, IOTA station. Gary, M0JJH, 01621 818 620, m0jjh@despammed.com, or James, M0ZZO, 01255 242 746, james@mcginty.net

GB CALLS

These callsigns are valid for use from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 – 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Please send operational details of your special event station to the RadCom office at least five weeks before publication. The only QSL Bureau sub-manager for special event station callsigns is as follows: Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntlworld.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

1 Jul	GB4ON: Operation Neptune. TLHV27 (GW4XKE)
2 Jul	GB0FLB: Front Line Branch. Havenstreet, Isle of Wight. LH2 (G0NTH)
	GB2GDO: Guide Dogs Open day. Moreton Morrel, Warks. LHV27 (M0DMD)
	GB2RUT: Richmond Upon Thames. Richmond -upon-Thames. L27 (G4SNT)
	GB2WVG: Whitwell Village Gala. Whitwell Village. HV27 (M0HHF)
	GB4FT: Fordown Tower. Portslade, East Sussex. LH (G4XKF)
	GB4HS: Hollowell Steam. TLHV27 (G0OFB)
3 Jul	GB6SFD: Seaford Fun Day. Seaford, East Sussex. LH (G6XTW)
5 Jul	GB6VCB: Victory Celebration Bangor. Bangor, Northern Ireland. TLH27 (GI4AAM)
6 Jul	GB0RAF: Royal AirForce. L (G0NRK)
8 Jul	GB2IGS: Island Games Shetland. Shetland Islands. LHV (GM7AFE)
	GB2IGS: Island Games Shetland. Shetland Islands. LHV (GM7AFE)
	GB2RVS: Rettendon Village Show. Rettendon nr Chelmsford, Essex. TLHV27 (G4ZPE)
	GB4JLC: John Lowther Centre. LH (G4MRA)
	GB4QES: Queen Elizabeth Show. TLH27 (M1SKA)
	GB60VCD: Victory Celebration Day. Kingston-upon-Hull. LH27 (G0SWO)
	GB6KCD: Kingston Celebration Day. Hull, East Yorkshire. LH27 (M0SCT)
9 Jul	GB0AWW: Air Ambulance Wales. Swansea, Sth Wales. LH27 (MW0CNA)
	GB0BSW: Bedfordshire Secret War. Biggleswade, Beds. TLHV27P (M1TLK)
	GB0DAA: Devon Air Ambulance. Devon. TLHV27 (G1FON)
	GB0FFL: Flight For Life. Oldbury, West Midlands. L2 (G4JSR)
	GB2AAS: Air Ambulance Service. Roliston, Derbyshire. LH27 (M1CBO)
	GB2BLE: Bristol Lundy Expedition. Lundy Island, N. Devon. TLHV2 (G0DRX)
10 Jul	GB2VEJ: Victory in Europe & Japan. Stafford. LHV2 (G0RLA)
	GB60DD: CANCELLED. TLHV27 (G6LDZ)
	GB60VE: (60th)Victory in Europe. Standish, Lancs. TLHV27 (G6LDZ)
16 Jul	GB0PLF: Pontefract Liquorice Festival. Pontefract, Yorkshire. L2 (G0BPK)
	GB1STT: First Teddington (Scouts). Richmond -upon-Thames. L27 (G4SNT)
	GB2SF: Sherwood Forest. Sherwood Forest. LH27 (M0HHF)
	GB2SMW: St Marys Willingdon. Eastbourne. L2 (G4YJW)
	GB2WAS: Walney Air Show. Walney Island. LH27 (G0TAK)
17 Jul	GB6MMR: McMichael Rally. Reading, Berks. 2 (G4KWT)
22 Jul	GB2FAS: First Astley Scouts. Ormskirk, Lancs. TLH27 (M1HLL)
23 Jul	GB8TR: Truimph Register. Malvern, Worcs. LH (G0MRH)
24 Jul	GB2WBM: West Blatchington Mill. Hove, East Sussex. L2 (G4JZC)
	GB5TD: (RAF) Tynwald Downs. Heathhall, Dumfries. LH2 (GM4NAB)
25 Jul	GB4CW: Cowes Week. Ryde, Isle of Wight. LH2 (G0MWU)
26 Jul	GB2CV: Citroen 2CV. LH27 (G0BRY)
29 Jul	GB5BI: Brownsea Island 05. Brownsea Island. LH2 (M0AEU)
	GB5EJ: EuroJam. Chelmsford, Essex. LH27 (G8AKU)
	GB5EJ: EuroJam. Chelmsford, Essex. LH27 (G3WNS)
	GB5EJ: EuroJam. Chelmsford, Essex. LH27P (G0RJX)
	GB5EJ: EuroJam. Chelmsford Essex. LH27P (G0REL)
	GB5PIC: Peak International Camp. Chatsworth, Derbyshire. TLHV27P (G6SVH)
30 Jul	GB5MOB: Mutiny On the Bounty. Douglas, Isle of Man. LH2 (MD0I0M)
	GB6SA: Sandown Airport. Sandown, Isle of Wight. L2 (G0NTH)

2 AUGUST 2005

CHELMSFORD ARS Table-Top Sale - Marconi Social Club, Beehive Lane, Great Baddow. OT 7.30pm, admission free. CP free, LB. Colin, G0TRM, 01245 223 835, colinpage@ukgateway.net [www.g0mwt.org.uk]

6 AUGUST 2005

RUGBY ATS Annual Rugby Radio Rally – Stanford Hall, Lutterworth, Leics. OT 10am, £2. T M Humphries, G0OLS, 01455 552 519, tonyg0ols@aol.com

7 AUGUST 2005

FLIGHT REFUELLING ARS Hamfest – RAFARS. Mike, M0MJS, 01202 883 479, hamfest@frars.org.uk [www.frars.org.uk]

LORN ARS Radio Rally – Crianlarich Village Hall, 12 miles N of Loch Lomond at jn of A82/A85. OT 10.30 / 11am, £1. Shirley, GM0ERV, gm0erv@dsl.pipex.com or John, GM8MLH, 01838 200 304. [www.gm0lra.freeuk.com]

12 AUGUST 2005

COCKENZIE & PORT SETON ARC Annual Junk Night – Cockenzie & Port Seton Community Centre, South Seton Park, Port Seton. OT 6.30, £1, proceeds to British Heart Foundation. DF, WIN, C. Bob, GM4UYZ, 01875 811 723, bob.gm4uyz@btinternet.com

14 AUGUST 2005

KING'S LYNN ARC 16th Great Eastern Radio Rally – ***New venue and date*** – King's Lynn Caravan & Camping Park, North Runcton, 2 miles east of King's Lynn on A47. OT 10am, £1. CBS, C, TI via G3XYZ on 145.550MHz. Andy, G1KLP, 07818 001 311, g1klp@btinternet.com [www.klarc.org.uk]

28 AUGUST 2005

MILTON KEYNES ARS 19th Annual Rally – St Paul's School, Chaffron Way, Leadenhall, Milton Keynes, 3 miles from jn 14, M1. OT 9am. TI on 145.550MHz. Dave, M0BZK, 01908 647 662, rally@bletchley.net [www.mkars.org.uk]

TORBAY ARS Communications Fair – Churston Ferrers Grammar School, Greenway Road, Churston, Devon. OT 10am, £2. CP free, TS, C, WIN, no B&B, but a free sales notice board. Colin, G4FCN, 01803 812 117, or Peter, G3VTO, 01803 864 528. [www.rally@tars.org.uk]

29 AUGUST 2005

HUNTINGDON ARS Bank Holiday Monday Rally – Ernulf Community College, St Neots (near superstore on A428). OT 10am, £1.50. C, CBS on hard standing, TI on 145.550MHz. Peter, M5ABN, 01480 457 347 (between 6pm and 10pm), peteherbert@aol.com

3 SEPTEMBER 2005

Northern Ireland Morse Proficiency Tests – Greystoke Community Centre, Antrim. Advanced booking (>10days prior to test) necessary. John, GI3YRL, 028 9336 7208, jbranagh@supanet.com or Jim, GI0DVU, 028 9266 2270, jim.henry@ntlworld.com

4 SEPTEMBER 2005

SUFFOLK DATA GROUP Five Ss Rally – Raceway Centre Green, Foxhall Stadium, Foxhall Road, nr Ipswich. OT 9.30, £1, accompanied under-14s free. TS, CBS, RSGB, C, CP free, TI on 145.550MHz. Peter, G8HUE, 01473 631 313, peter@sdgrally.org [www.sdgrally.com]

Telford Rally – * Temporary change of venue ***** – West Midlands Agricultural Showground, Shrewsbury. OT 9.30. RAFARS. Dave, G8VZT, 01952 222 101, or Martyn, G3UKV, 01952 244,516, or Bob, M0RJS, 01782 516 504, telford-rally@somervilleroberts.co.uk

10 SEPTEMBER 2005

W&S @ Lowe Open Day – Matlock Shop, 01629 832 375.

10 / 11 SEPTEMBER 2005

50th Weinheim VHF Convention – Karl Kübel Schule, Bensheim. LEC, FM, TS, CP, CBS. df1gw@amsat.org

11 SEPTEMBER 2005

LINCOLN SWC Hamfest – Newark Showground, at jn of A46, A1 and A17 at Newark. OT 10am. All rally favourites, RAFARS, plus craft, classic cars, possible fly-in by WWII Auster-V reconnaissance plane, FAM. Roger, 01522 693 848, hamfest2005@mail.com

18 SEPTEMBER 2005

SOUTH YORKSHIRE REPEATER GROUP Great Northern Hamfest – Metrodome Leisure Complex, Queen's Road, Barnsley. Less than two miles from jn 37 M1, five minutes' walk from train and bus stations – follow the brown 'Metrodome' signs from all directions. OT 10.30 / 11am. TS, components, SIG, B&B. Ernie, G4LUE, 01226 716 339, 07984 191 873 6pm – 8pm.

30 SEPTEMBER / 1 OCTOBER 2005

Leicester Amateur Radio Show – Donington International Centre, Castle Donington, Leics, close to jns 23A and 24 of the M1. Geoff, G4AFJ, 01455 823 344, geoffg4afj@aol.com [www.lars.org.uk]

7 – 9 OCTOBER 2005

RSGB HFC2005 – Gatwick Worth Hotel, Sussex. 0870 904 7373. hfc@rsgb.org.uk [www.rsgb-hfc.org.uk]

9 OCTOBER 2005

BLACKWOOD & DARS Rally – George, 2W1JLK, 01495 724 942, or Dave, GW4HBK, 01495 228 516.

GREAT LUMLEY AMATEUR RADIO & ELECTRONICS SOCIETY Rally – Nancy, G7UUR, 0191 477 0036, 07990 760 920, nancybone2001@yahoo.co.uk

15 OCTOBER 2005

W&S @ Jaycee Open Day – Glenrothes Shop, 01592 756 962.

15 / 16 OCTOBER 2005

JAMBOREE ON THE AIR (JOTA)

16 OCTOBER 2005

HORNSEA ARC Annual Rally – G4YTV, 01964 562 498.

Northern Ireland Morse Proficiency Tests – John, GI3YRL, 028 9336 7208, jbranagh@supanet.com or Jim, GI0DVU, 028 9266 2270, jim.henry@ntlworld.com

22 / 23 OCTOBER 2005

HAMEXPO 27ème Salon International Radioamateur – Auxerre. [www.ref-union.org]

23 OCTOBER 2005

GALASHIELS & DARS Annual Open Day & Rally – Jim, GM7LUN, 01896 850 245, mail@gm7lun.co.uk

30 OCTOBER 2005

RUSTY RADIOS CONTEST GROUP Rally – Sean, 01462 459 724 (eve). [www.rustyradios.com]

5 / 6 NOVEMBER 2005

NORTH WALES RS 19th North Wales Radio, Electronics & Computer Show – Jenny, MW0BET, 01492 549 413. [www.nwrs.org.uk]

13 NOVEMBER 2005

West London Radio & Electronics Show – Paul, M0CJX, 01737 279 108, m0cjx@radiofairs.co.uk [www.radiofairs.co.uk]

26 NOVEMBER 2005

Reddish Rally – John, G4ILA, 0161 477 6702, john@mckae.freeserve.co.uk

3 DECEMBER 2005

Martin Lynch & Sons' Christmas Hog Roast & Boot Fair – sales@hamradio.co.uk [www.hamradio.co.uk]

Northern Ireland Morse Proficiency Tests – John, GI3YRL, 028 9336 7208, jbranagh@supanet.com or Jim, GI0DVU, 028 9266 2270, jim.henry@ntlworld.com

RSGB Annual General Meeting – venue TBC. 0870 904 7373.

4 DECEMBER 2005

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

5 FEBRUARY 2006

SOUTH ESSEX ARS Mobile Radio Rally – Ken G0BBN, 01842 861 089, hendryken@aol.com [www.southessex.ars.btinternet.co.uk]

1 APRIL 2006

GMDX Convention 2006 – Robert, GM3YTS, gm3yts@btinternet.com

RSGB MEMBERS' ADVERTISEMENTS

RSGB members wishing to place an advertisement in this section should use the official form printed in *RadCom* each month and send it to 'Memads', *RadCom*, RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN6 3JE. No acknowledgement will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due.

An advertisement longer than 60 words will be charged *pro rata*. **The RSGB believes that it is inappropriate for members trading in whatever way in radio equipment to place members' advertisements. We therefore regret that we are unable to take such advertisements, although we do welcome these in the 'Classified' advertising section of *RadCom*.** The editor reserves the right to refuse any advertisement for any reason. In such matters, the editor's decision is final.

The RSGB accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain.

Please note that because this is a subsidised service to members, no correspondence can be entered into. Members may submit *one* photograph of equipment being sold / wanted at an additional cost of £5.00. This *must* be a .jpg or .gif file and the file name *must* be included on the Order Form. The photograph may be e-mailed to radcom@rsgb.org.uk or sent on a floppy disk or CD.

Licensed members are asked to use their callsigns and QTHR, provided their addresses in the current edition of the *RSGB Yearbook* are correct. RS members will have to provide their names and addresses or telephone numbers. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition. Please do not send Members' Advertisements to Danby Advertising (advertising agents). The closing date for copy is the first day of the month prior to publication, e.g. the deadline for the May issue is 1 April.

Warning: *Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid. Members' Ads also appear on the members-only website: www.rsgb.org/membersonly/membersads*

The Members' Ads order form is published below. If members do not wish to cut the form out of the magazine, photocopies will be accepted, as will recent copies of the form from previous months. As a last resort, members may also send in their advertisements on separate sheets of paper, but if you choose to do this, you must supply an accurate word count and, of course the correct fee in the normal way.

RSGB MEMBERS' ADS ORDER FORM

Application form for one For Sale, Exchange or Wanted advertisement. Do not mix classifications on this form; separate applications must be made.

Please ensure you read and understand the conditions of acceptance of these subsidised Members' Advertisements, printed at the top of the Members' Ads page of *Radcom*

☐ I enclose a cheque/PO for £ ☐☐.☐☐ p

☐ Please charge to my credit card

Number ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐

Expiry date ☐☐☐☐ Issue number (Switch only) ☐☐

Signed _____ Date _____

Section: ☐ FOR SALE ☐ EXCHANGE ☐ WANTED

RATES: UP TO 20 WORDS £5.50; 21-40, £6.50; 41-60, £7.50. PHOTO (jpg or gif only) ADD £5.00

Free entries

Photo file name (if applicable) _____.jpg/gif

Town _____

E-mail _____

Phone _____

The last word

Letters published in 'The Last Word' do not necessarily reflect RSGB policy. 'Last Word' letters may be e-mailed to radcom@rsgb.org.uk Please note that letters submitted for 'The Last Word' may not be acknowledged. The RSGB reserves the right to not publish any letter, with no reason being given. It is a condition of publication that all letters may be edited for grammar, length and / or clarity. Due to the limited space available, please keep letters as short as possible. Additional letters may be published on the RSGB members-only website at www.rsgb.org/membersonly/lastword

Future of amateur licensing

From: Michael D J Everett, G3LFR

On 26 May, Ofcom announced proposals to replace the current paper-based system of amateur radio licensing with a new, 'low-cost' electronic licence for life. As part of the new process, "Ofcom would... continue to offer a postal service for applicants who do not have access to, or prefer not to use, the internet. This service would incur a fee to cover administrative costs, although Ofcom will ensure that disabled licence holders are not disadvantaged as a result" - as required by law. Fulfilment of this requirement appears to represent the full extent of the 'low-cost' element of the proposals, which otherwise suggest the intention that an amateur licence be issued free of charge to any and all applicants who are able to demonstrate that they hold the requisite qualifications.

I am deeply concerned by the principle of being able to obtain an amateur radio licence free of charge. I believe that a licence which is obtained for nothing would seriously devalue its worth in the mind of the holder, and accordingly reduce the perceived status with which he or she is currently privileged to use the amateur bands responsibly and within the law. I further believe that the majority of UK amateurs would not only be prepared, but would *prefer*, to pay a reasonable fee for a lifetime licence, because this reinforces the sense of status, privilege and responsibility which maintains a degree of 'self-policing' of the amateur spectrum.

Another aspect of the 'Free Licence' is the question of its status in law. It would seem reasonable that 'that which is freely given may be as freely taken away'. My understanding is that if a sum of money changes hands in respect of goods or services provided, then a legal contract is implied between the parties involved. In this case the parties involved would be the radio amateur and the licensing authority; and the privileges, conditions and restrictions inherent in the licence could not be withdrawn without legal recourse to the provisions of the W/T Act. This would appear to be a valuable safeguard against the possibility of future deregulation, which is of some concern to us all.

From: Lawrence D Woolf, GJ3RAX

…Some of the recent letters published in *RadCom* must have been written before Ofcom clarified their intentions. When the word "Deregulation" was used they must have assumed it meant no regulation. The actual proposals sound good to me. The first one is to make the licence valid for life. I see no problem with that. Back in 1998 I spent some time on Vancouver Island. My licence was due to expire just when I was travelling, so the Radio Licensing Centre was kind enough to send me my new licence by first class post. This arrived just before I left home and the regular copy came after I had left. In other circumstances I might not have been so lucky and would not have been able to operate while abroad. A licence without a time limit would have solved that problem nicely.

The second proposal is to allow us to download the licence document online. That would also have solved my problem while travelling as I was always somewhere that allowed me an Internet connection. Those who are not on the Internet probably have a friend nearby who is, or could use a library or an Internet cafe. In extreme cases I assume that Ofcom, or agents such as the RSGB, could mail the document.

I understand that licences in Sweden are now issued by their national society. Perhaps the RSGB might be able to do this at some future time if it does not cause too high a workload? Other countries, such as the USA and Canada, no longer require log books to be kept. I assume that these were other possible types of deregulation that have worried some people.

In recent years we have gained a lot of benefits for the hobby such as access to new bands and modes and the expansion of 40 metres. The new grades of licence have encouraged many newcomers to join us who would previously have felt that the Full exam was more than they could cope with. I also believe that dropping the Morse test has been of great benefit and it has actually encouraged many more to start using Morse code. We are doing well and I am happy with most of the progress and changes.

Mobile operating safety

From: Graham Eckersall JP, G4HFG

I am reluctant to step into the arena of debate concerning amateur radio mobile. However, also with 20 years experience in the motoring courts and in an effort to redress the balance, I pass the following observations. In the hypothetical scenario narrated by my colleague, I note that the police officer "formed the view" that the defendant was driving carelessly. I also note that the officer's opinion was formed completely on the fact that the motorist was holding a microphone and talking whilst driving. My colleague suggests that the "hapless amateur would be up against it". Not necessarily so. The burden of proof lies with the prosecution and the evidence must be beyond all reasonable doubt.

In this case, prima facie, the defendant may not have committed an offence. I suspect that his plea may be equivocal and I would advise him to seek legal advice. It may be for instance, that the motorist in question, has held a driving licence for 40 years, an amateur licence for a similar period, driven thousands miles per year as a professional driver, most of which were /M and is still the proud owner of a clean driving licence. Such experience may cast a doubt upon the opinion of the police officer wouldn't you agree? Judge each case on its merits.

There is little doubt in my mind, that even if there was specific legislation enforcing the ban on mobile two-way radio, the eating of apples etc, there would still be a large proportion of the population who drive inherently unsafely or ignorantly. Safe driving is no accident of course. I support the efforts of the RSGB on our behalf, for at least now we have the freedom of choice. But choose safely.

From: Martin Slater, M0SSO

…As a traffic officer and radio amateur it was refreshing to read a realistic and accurate summary and explanation of the law surrounding the use of a fist mic whilst driving, by David Taylor. From a traffic officer's point of view the offence you are most likely to be prosecuted for is "not being in proper control of your vehicle". This would normally be dealt with by way of a non-endorsable fixed penalty notice, being a £30 fine with 28 days in which to pay it. The legislation specifically for "using a mobile phone does not apply to two-way radios, and should not be confused with the "not in proper control" offence (as it seemed to be in the editorial note at the article's conclusion).

As a matter of course in the investigation of road traffic collisions we examine vehicles for mobile phones, two-way radios and other forms of mobile communications equipment which may have been contributory to the collision. It's amazing how many witnesses provide evidence about drivers using mobile phones and the like. The courts do seem take a very dim view of offenders who cause accidents due to the use of mobile communication devices whilst driving. And rightly so, when you see the usually unnecessary carnage and injury that's caused in road traffic collisions.

As David Taylor states, using a mobile phone is an absolute offence, as soon as you hold the phone in your

hand you commit the offence. With the fist mic, it would have to be shown that using it did in some way affect your driving in that you simply weren't in proper control, were driving without due care and attention or that your driving was dangerous. Be warned though, this sort of offence is currently high profile and police officers are specifically directed to prosecute offenders rather than give a bit of kindly verbal advice and an "on your way now Sir / Madam". I also don't wish to scaremonger or be negative about /M operating but forewarned is forearmed and safety must come first. If you really can't live without /M operating, then keep your 'overs' short or better still, invest in a hands-free kit. Enjoy /M operating, but remember, keep if safe or you could be prosecuted.

[The article by David Taylor, G4EBT, in the June *RadCom* produced a large postbag, about half agreeing and half disagreeing with G4EBT's comments. The challenge of writing an article expressing a different opinion has been taken up and the article will be published next month - Ed.]

Donate your tax relief

From: Ron Smith, G3SVW

Members, be aware that your RSGB subscription can be eligible for tax relief as a professional subscription if employed in work that relates to the Society's interests - communications, computing, electronics and education/training in those subjects. Relief at basic rate on each year's subscription must be worth around a tenner, and you can back claim for seven years, making a nice sum of about £70.

Don't be put off - my first application was refused by the Tax Office saying RSGB subscriptions were not eligible. I referred them to the Inland Revenue master list which shows subs to the Society are indeed allowable. No further questions, and the tax repayment cheque was issued.

I donated mine to the GB4FUN fund, but perhaps, in view of the Spectrum Review issue, future repayments should go to a 'legal fighting fund' in defence of our hobby?

Freeware software

From: Geoff Bagley, G3FHL

With reference to the 'Skysweeper' free software review (*RadCom* April 2005) and the response from G4ILO ('The last word', May), may I point out that the author / developer of the software, being the copyright holder, is entitled to distribute it in whatever manner he may wish? It is his to release, if he chooses, without payment of money.

There is now a prospering and ever-growing body of free and open source software which, being part of a mutually self-supporting 'gift culture', seeks to be rewarded not by money, but by the contributions of other like-minded people. Those who do not wish to join in have no need to. Those who prefer the excellent stable software published under the General Public Licence will go on enjoying life whatever goes on in the world of proprietary software.

Not a howler

From: Tim Walford, G3PCJ

Regarding the letter from David Sumner, G3PVH ('The last word', June) about audio amp chips type LM386 etc, I suspect he has failed to include the Zoebel network (1R series 100nF etc) across the chip output which is essential for stability and is indicated in the manufacturer's application notes for the LM380 series of devices. Without that they do make good 2MHz power oscillators!

The possessive 'S'

From: Jeff Jeffrey, VK6AJ / G3JJX

Peter Martinez, G3PLX ('The last word', June) is quite right; the little diddle at the end of CW QSOs is not a product of amateur radio. Being older than most, I can remember its being used at the end of comic pieces of music as, "pom tiddly-om-pom pom-pom". There were various nonsense words to it, the most common being "shave-and-a-haircut, two-bob". When learning Morse in the army in 1942, we were taught "best bent wire" to demonstrate the rhythm of the code. For practising dots we were made to send "the word possesses possesses more esses than the word possess possesses". The key in use was the Army 8-amp key; arguably the slowest key ever made, but solid and dependable - and still around today.

[Thanks also to John Headland, G3BFP, Colin Brock, G3ISB, and G Wynne Evans, GW3WWN, for similar letters remembering that 'fist-twister'! - Ed.]

Welsh-language QSOs

From: Dewi E Roberts, GW0ABL

I refer to the letter from Eddi Ramm, DK3UZ ('The last word', June) and his interest in comparing the Welsh language with Gaelic. Briefly, the Brythonic and Gaelic languages split many centuries ago. Although they share many myths and legends, they cannot now be understood one by the other.

Welsh (a Brythonic language) known as Cymraeg, is related to Kernyweg (Cornish) which is being revived and LLydaweg (Breton) which is spoken in Brittany. They share a similar grammatical structure and many words and phrases.

Welsh is also spoken in Patagonia, having survived 150 years since the first Welsh settlers arrived there. They are now bi-lingual Welsh / Spanish and a few LU amateurs are still able to make a contact in the old language.

A strong Welsh net is held on 80 metres (40 metres depending on conditions) on Monday, Wednesday and Friday mornings. Other individual Welsh language QSOs can also he heard on all bands especially VHF.

Lwc DDa.

Computer 'QSOs'

From: Anthony B Plant, G3NXC

Edgar Powell, GW1TDW ('The last word', May), comments that *Echolink* is another form of communication and says that's what amateur working is all about. That amateur radio is about communication is quite true, although this claim represents a very superficial view of the hobby. Communication is not confined to amateur radio but can be achieved in many ways including smoke signals, the Internet, letters, telephones, CB, PMR-446, semaphore, flag signals, chats in the pub or over the garden fence - the list is almost endless. What separates amateur radio from all other forms of communication is that it allows an involvement in the process of radio communication. Take away this involvement and the activity ceases to be amateur radio.

Look at BR68, the first item in the listed Purposes of the licence specifies "The Licensee shall use the Station for the Purpose of self-training in communication by radio telecommunications which use (without limiting the generality of the foregoing) includes technical investigations." Take note of the "shall": this makes the Purpose a required activity, not merely something that is allowed if the licence holder feels like it! It is difficult to see how connecting to *Echolink* via the Internet offers any such self-training. It's not that much better, in this respect, if the connection is via a simple 2m link to a near-by repeater.

I'm not against *Echolink* and its brethren. The existence of this mode forms, like the packet network, a useful additional facility for radio amateurs. It should not, though, be regarded as a substitute for the more normal amateur radio activities. Think of it this way: would golf enthusiasts consider that being able to chat about the activity via the Internet means that they no longer need actually to go out and play the game?

Amateur radio has so much to offer. I'm very aware that in my near 50 years as a licensed amateur, I have hardly been able to scratch the surface of what is available to me. To consider giving up amateur radio simply because a 2m repeater is no longer accessible seems to indicate a lack of involvement in what the hobby is all about. My advice to GW1TDW is to look at the enormous range of possibilities available within the terms of the licence, there is bound to be something in the list to attract anyone with even just a slight interest in "…self-training in communication by radio telecommunications…"

Good customer relations

From: Chris Thorpe, G0SAY

Recently I had a problem with an MFJ tuner and having read and exhausted all the recommendations in the manual, I contacted Richard Stubbs at MFJ Enterprises at the e-mail address in the manual. This resulted in an exchange of e-mails to diagnose the exact problem and five days later a replacement part. The cost of this, including postage, was absolutely nothing. I would like to thank Richard and MFJ Enterprises for their quick response and excellent customer relations.

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MFJ Coax Switches

MFJ-1702C

*2-way *Connectors SO-239 * < 0.2dB loss *SWR < 1.2:1 *Isolation 60dB at 300MHz 50dB at 450MHz

£28.95 A

MFJ-1704 £69.95 B
4-way, Connectors SO-239 or 'N'

MFJ-1700C £89.95 B
6-position antenna swirtch, SO-239

MFJ-1701 £52.95 B
6-way, range 1.8-30MHz, SO-239

Watson Coax Switches

WATSON CX-201

*2-way *Connectors SO-239 *Power 2.5kW *Range DC - 600MHz *Impedance 50 Ohms *Loss 0.1dB

£18.95 A

CS-600 £12.95 A
2-way, Connectors SO-239, Power 2.5kW

MFJ-260C 300W Dummy Load

Every station needs one!

A convenient way of testing your rig and measuring power etc. Just plug into output sock of radio. SO-239 socket. 600MHz **MFJ-260CN** "N" socket **£44.95B**

£37.95 B

Duplexers

DIAMOND MX-72

*1.6MHz - 150MHz 400W PEP *400MHz - 460MHz 250W PEP *Max loss 0.3dB *SO-239 to 2 x PL-259 *Cable length 200mm to plug *45 x 42 x 25mm approx.

£32.95 B

DIAMOND MX-62M £49.95 B
Port1: HF + 6m Port 2: 2m + 70cm

DIAMOND MX-610 £54.95 B
Port 1: HF Port 2: 6m + 2m + 70cm

WATSON WD-25 £24.95 A
Port1:HF+6m+2m Port2:70cm, SO-239 sockets

WATSON WD-24 £22.95 A
As WD-25, SO-239 and dual PL-259

WATSON WD-24N £24.95 A
As WD-25, SO-239, PL-259, N-type

Diamond Triplexers

DIAMOND MX-2000

*1.6 - 60MHz 800W PEP Loss 0.15dB *110 - 170MHz 800W PEP Low 0.2dB *300 - 950MHz 500W PEP Low 0.25dB *SO-239 socket & 3 x PL-259 plugs *Cable length 300mm to plug. *65 x 85 x 23mm approx.

£59.95 B

MX-3000 £56.95 B
Port1:HF+6m+2m Port2:70cm Port3:23cm

Superb DCI Band Pass Filters

Razor Sharp Professional Filtering

DCI-145-2H £119.95 B
144 - 146MHz 68dB @ 136MHz / 55dB @ 155MHz. Less than 1dB loss. 200W. 30 x 8 x 13cm SO-239

DCI-145-2HN £129.95 B
144 - 146MHz 68dB @ 136MHz / 55dB @ 155MHz. Less than 1dB loss. 200W. 30 x 8 x 13cm N socket

DCI-435-10C £139.95 B
430 - 440MHz 47dB @ 415MHz / 50dB @ 455MHz. Less than 1dB loss. 200W. 30 x 8 x 19cm N socket

DCI-145/435-DB £199.95 B
This has similar performance to above 2m and 70cm individual filters. 200W Duplexer inside. N socket. Designed for single coax dual band operation.

Antenna Rotators

CREATE RC5-1

Vert load:	400kg
Horiz. load	800kg
Torque	80kg/m
Stub size	48-63mm
Weight	5kg

£369.95 C

Lower mast clamps needed for mast mounting. MC-2 **£59.95**

Create

RC5-3	Medium needs 7-core cable	£449.95C
RC5A-3	Heavy needs 7-core cable	£649.95C

Yaesu

G-450C	Light/medium c/w 25m cable	£299.00C
G-650C	Light/medium c/w 25m cable	£379.00C
G-1000C	Med/heavy c/w 25m cable	£449.00C
G-1000DXC	Heavy duty c/w 25m cable	£459.00C
G-2800DXC	Heavy duty c/w 25m cable	£999.00C

Hy-Gain

CD-45II	Light/med needs 8-core cable	£399.95C
AR-40X	Light duty needs 5-core cable	£299.95C
HAM-IVX	Med duty needs 8-core cable	£549.95C
HAM-VX	Med duty needs 8-core cable	£929.95C
T-2XX	Med/heavy with digital display	£639.95C
HDR-300AX	Heavy duty with digital display	£1499.95C

NOTE: Many of the rotators are for tower mounting and require a lower mast clamp for mounting on a pole.

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

THE WAITING IS OVER ...

FT DX 9000 MP

FT DX 9000 CONTEST

FT DX 9000 D

FT DX 9000 RANGE

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In the fifteen years since it was born, the FT-1000 series has been recognised as the pinnacle of performance among elite-class HF base stations.

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- 3-BAND PARAMETRIC MICROPHONE AUDIO EQUALISER WITH XLR AND 8-PIN MICROPHONE CONNECTORS
- 200-WATT AND 400-WATT VERSIONS
- SMART MEMORY CARD
- NEW MU (μ) NARROW-BANDWIDTH HIGH-Q RF TUNING UNITS

...The radio

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