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The Radio Society of Great Britain Members' Magazine

RadCom

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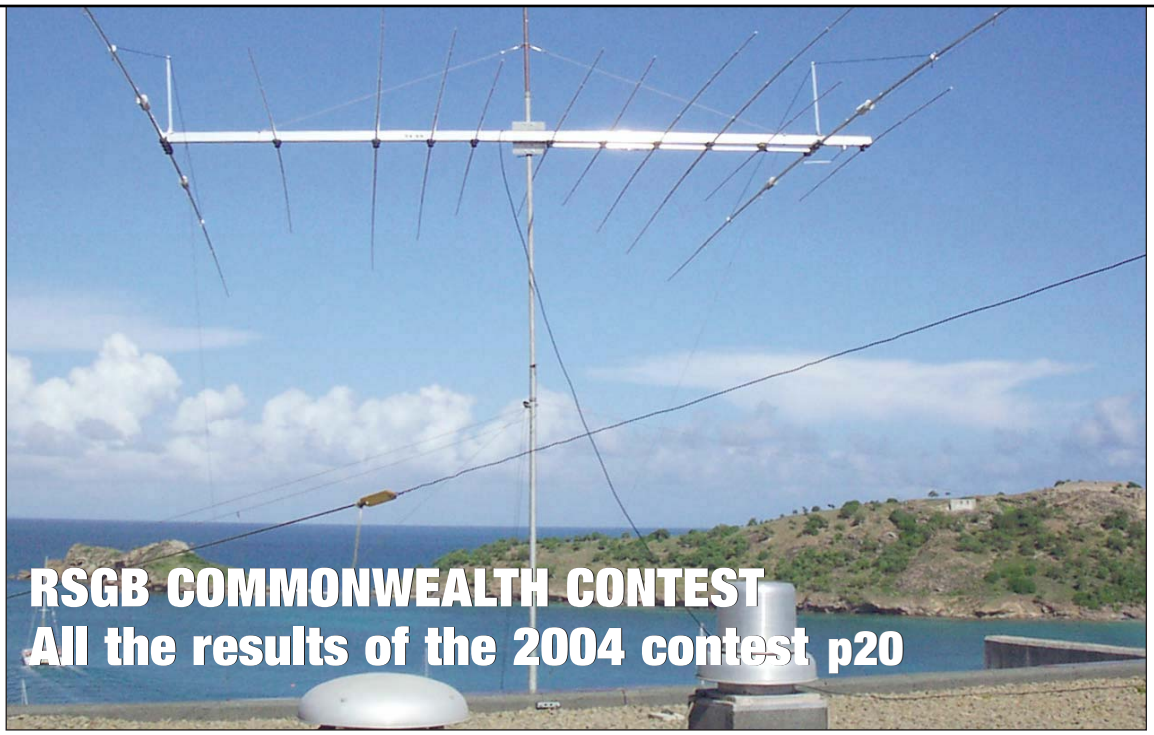
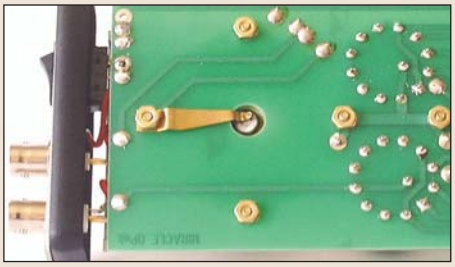
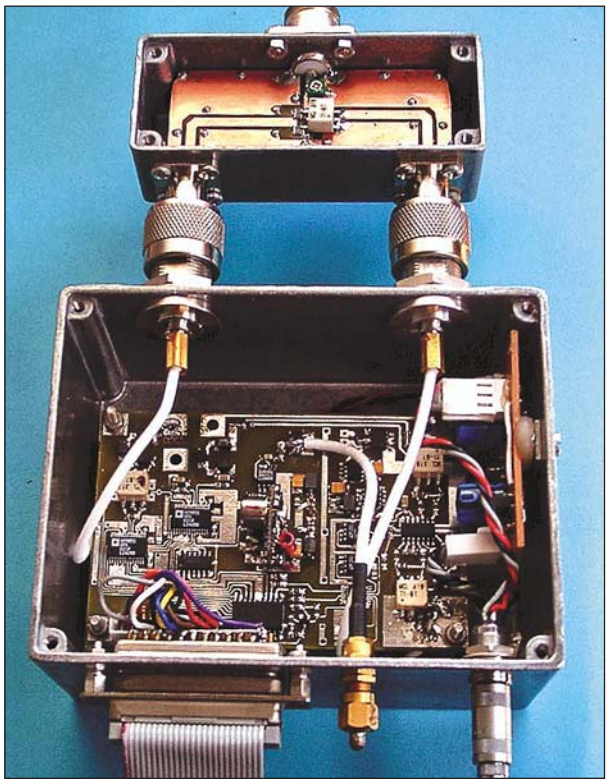


RSGB COMMONWEALTH CONTEST
All the results of the 2004 contest p20

REVIEW
QPak Precision Tuner. p32



IN PRACTICE
The N2PK Vector Network Analyser, as built by Ian White, G3SEK. p61

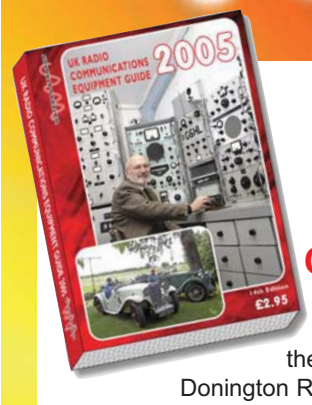


INSIDE

WATERS & STANTON

ZERO DEPOS

NO DEPOSIT NOTHING TO PAY



The *New* Waters & Stanton 2005 Catalogue

Will be available for the first time at the Donington Rally on the 1st & 2nd October 2004. Now **384 full colour** pages bursting with over 5000 products, information and money off vouchers, still only **£2.95** +P&P

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

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NEW IC-7800 In Stock!

BUY NOW PAY LATER AT ALL THREE STORES

You won't find a better deal!

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

If you can find a better advertised deal we will match it!

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

OR AFTER TWELVE MONTHS

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

ALL FINANCE SUBJECT TO STATUS WRITTEN QUOTATION ON REQUEST.

ICOM IC-756 PRO II £1899 C

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

ICOM IC-7400 SPECIAL OFFER £1299 C

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

ICOM IC-703 SPECIAL OFFER £589 C

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

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

ICOM IC-706 IIG DSP £769 C

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

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

ICOM IC-718 £449 C

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

KENWOOD TS-2000 £1599 C

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

ARCP Control Software. **£44.95 B**

KENWOOD TS-870S DSP £1399 C

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

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

KENWOOD TS-570DGE £849 C

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

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

ICOM IC-910X with 23cm £1249 C

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

UT-106 DSP unit **£84.99 B**

Basic Model IC-910H £1129 C

YAESU FT-1000 MKV £2349 C

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

YAESU FT-1000 FIELD £1749 C

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

KENWOOD TS-480SAT & TS-480HX

NEW

The **TS-480SAT** is the 100W version of this new HF+6m transceiver from Kenwood. Smaller than the TS-2000/ TS-B2000 it has many similar features.
TS-480SAT £999 C
The **TS-480HX** is the 200W version of this new HF+6m transceiver. **TS-480HX £1099 C**

YAESU FT-897D £899 C

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

YAESU FT-847 £1199 C

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

YAESU FT-857D NEW £729 C

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

YAESU FT-817ND £499 C

bhi NE-DSP1061 Module available!

160m - 70cms. Up to 5W output all modes. ***Ours includes*** **battery and charger.** **Add £90 for DSP ready fitted.**

NEW DSP Module

There is NO new FT-817 DSP! The fact is that the UK manufacturers, **bhi**, (of whom we are their largest distributor), have produced a lovely 4-stage DSP module that can be fitted inside the FT-817. The NE-DSP1061 module costs £89 plus a fitting charge of £25 for retro-fitting to existing models. This includes installing a mini switch and LED on top cover.

TOKYO HY-POWER HL-50B £269.95 C

FT-817 VERSION !

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

SIT ZERO INTEREST

FOR 12 MONTHS ON SELECTED ITEMS MARKED BY £

THE ONLY THING WE CUSTOMER SERVICE WON'T DISCOUNT

ICOM IC-E208 NEW £279 C

VHF/UHF FM Dual Band Mobile Transceiver *Freq range 144-146MHz, 430-440MHz Tx *55/50W (3 pwr steps each band) *Wideband Rx 118-173, 230-549 & 810-999MHz *512 memories *FM narrow capability *104x2 DTCS, 50 CTCSS tone squelch *16 DTMF channels *HM-133 remote control mic *Packet ready for 9600/1200bps-mini DIN or 1200bps-mic socket *Supply 13.8V

ICOM IC-2725E £269 C

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

ICOM IC-2100H £229 C

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

YAESU FT-8900R NEW £339 C

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

YAESU FT-2800M NEW £159 C

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

YAESU FT-8800E £289 C

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

YAESU FT-7800E NEW £239 C

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

We Price Match!
Call 08000 73 73 88

KENWOOD TMD-700E £449 C

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

KENWOOD TM-V7E £359 C

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

KENWOOD TM-G707E £289 C

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

YAESU VX-7R £299 B

6m/2m/70cm

Available in Silver or Black

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

YAESU VX-150 £125 B

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

YAESU VX-2E NEW £169 B

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

ICOM IC-E90 £269 B

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

ICOM IC-T3H £129 B

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

KENWOOD TH-D7E £319 B

DATA COMMUNICATOR

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

KENWOOD TH-F7E £249 B

WITH EXTRA WIDE RX COVERAGE

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

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

KENWOOD TH-G71E 199 B

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

YAESU VX-110 £119 B

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

MFJ-267

1.5kW Dummy Load & VSWR Meter

Combined dummy load and in-line watt meter. Just switch between one or the other. *1.8 - 54MHz *300/3000W/3kW *50 Ohms *SWR/Wattmeter *3in Cross-needle meter VSWR/PWR *Reads PEP or AVG *Load: 1.5kW 10secs - 100W 1min *SO-239 x2 Sockets *9V int or 12V DC ext *Size 110 x 80 x 265mm *Weight 1kg

£139.95 B

MFJ-1704

4-Way Coax Switch

*4-Way *Connections S)-239 / N *Power 2.5kW *Range DC - >500MHz *Isolation 60dB at 30MHz / 50dB at 500MHz *Centre Earth Position *Static Discharge Protector

£69.95 B

MFJ-971

QRP portable tuner, 300/30/6W. Wire, coax or balanced.

£99.95 B

MFJ-969

The latest design from MFJ, this unit features an active power meter for really accurate PEP measurements. Powered by an internal PP3 battery (not supplied) or an external 12V source. This is one of the most popular 300W models, having a very wide frequency range an excellent power and VSWR accuracy.

£199.95 B

MFJ-461 Morse Reader

The MFJ-461 is a stand-alone pocket sized Morse code reader. Similar in size to the MFJ Morse tutors, all you do is hold it close to your receiver and it instantly displays CW on the 32 character high contrast LCD. It has automatic speed tracking, a serial port - if you wish to connect to a computer to display the text on a bigger screen. It can also be connected to your receivers audio if required.

£84.95 B

WEB ORDERING
www.wsplc.com

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WATERS & STANTON

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VERTICAL ANTENNAS

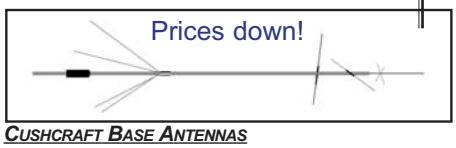
Hustler Mobiles

Get top performance when on the move. Purchase the **MO-3 base** (137cm) for **£24.95** or the **MO-4 base** (68cm) for **£22.95**. Then add the resonator of your choice. **RM-10, RM-12, RM-15**, all **£19.95** ea. **RM-17, RM-20 £24.95** ea. **RM-40 £26.95, RM-80 £29.95**
Carriage £6

Resonator

MA5V Base vertical
No radials needed

Base section
MO-3 or MO-4



CUSHCRAFT BASE ANTENNAS

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

DIAMOND CP6 £239.95 C

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

Covers five popular HF bands and the 6m band. Low angle radiation makes it ideal for DX work. Outperforms dipoles for long distance contacts and compares favourably with beams located 10m+ above ground. It doesn't need long wire radials. Adjustable rigid radials, DC return helps the antenna get rid of static noise. Antenna is adjustable for each band.

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

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

HORIZONTAL BEAMS & DIPOLES

CUSHCRAFT Prices down!

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

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

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

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

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

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

RADIO WORKS - CAROLINA WINDOMS

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

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

MFJ *In Tune with MFJ...*

MFJ-993

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

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

£249.95 C

MFJ-991

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

Auto ATU

£209.95 B

MFJ-941E

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

Manual ATU

£129.95 B

MFJ-974H

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

£179.95 C

MFJ-904H

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

Mobile and portable use

Manual ATU

£129.95 B

MFJ-962D

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

Manual ATU

£279.95 C

MFJ-989C

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

£359.95 C

MFJ-986

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

£329.95 C

MFJ-949E

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

£159.95 B

MFJ-948E

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

£139.95 B

Zero Space - - DX Antennas

From Hustler USA

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

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

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

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

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

BATTERIES & CHARGER

Ni-Cad and Ni-MH Charger with four Nickel Metal Hydride (Ni-MH) batteries. The charger can charge up to four Ni-Cad/Ni-MH AA, AAA cells or one or two PP3 rechargeable batteries.

The Ni-MH AA cells provided are 1.2V @ 1550mAh. These do not have memory effect and are a direct replacement for use in most equipment.

Order As V-2888 DEAL

£9.95 + £2P&P

PORTABLE ANTENNAS

MIZUHO (FOR FT-817)

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

New Low price on Walkabout whips, three to choose from with three different connectors.

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

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

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

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

RSGB matters

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GM.Dept@rsgb.org.uk (managerial)

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

RSGB TO TAKE OVER ISSUING INTERNET GATEWAY NoVs

Ofcom announced on 6 August (www.ofcom.org.uk/licensing_numbering/radiocomms/am_radio/a_r_news/20040806) the decisions it has taken about changes to the procedure and terms of issuing Notices of Variation (NoV) for Internet Linking Gateways. Ofcom proposes to pass the Internet-linking NoV process to the RSGB to issue NoVs on behalf of Ofcom. The RSGB will be announcing procedures for NoV renewal shortly and queries on the renewal process should be directed to the Society. Ofcom's decisions were made following the notification of four proposals which gave those holding an NoV the opportunity to make representations.

7MHz BAND EXTENSION

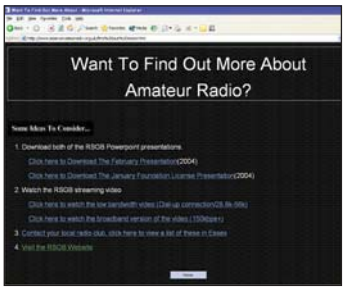
We reported in the August *RadCom* ('RSGB Matters', page 5) that it was anticipated that the 100kHz extension to the 40m band agreed at WRC03 (taking it to 7000 - 7200kHz) would come on stream at the end of October. We hope to bring more news on this development in 'RSGB Matters' next month.

CORNWALL RAYNET ON STANDBY FOLLOWING FLOODS

Cornwall Raynet Groups were put on standby by their Emergency Planning Unit on the evening of Sunday 16 August, following communications difficulties resulting from the massive flooding at Boscastle. Eleven volunteers were available to proceed to the emergency, but were stood down later as the communications difficulties had been resolved.

RSGB VIDEO ON ESSEX WEBSITE

To help to promote amateur radio, the recently-created 'Essex Amateur Radio' website has started streaming the new RSGB video 'What is Amateur Radio?'. It is being streamed at



speeds of 26kbs and 57kbs so it can be viewed by those using dial-up as well as broadband. It is the first time this video has been made available via a website. To view the video go to www.EssexAmateurRadio.org.uk and click on the 'Find Out More About Amateur Radio' button at the bottom of the page.

NRPB LIMITS AFFECT ADVANCED EXAM

Eagled-eyed amateurs may have spotted that the *Reference Levels for UK Amateur Radio Bands*, published by the National Radiological Protection Board (NRPB), were reduced at the end of July this year. These set the level, above which more detailed calculations and checks should be performed, to ensure safe human exposure limits are not exceeded. The lowest levels applying to HF and VHF bands have reduced from 50V/m to 28V/m. This topic is covered in the syllabus of the Radio Communications Examination Advanced examination. Due to the change, questions will not be asked on the numerical values until all tutors have been informed and have had an opportunity to inform their students. The next advanced exam is on Tuesday 26 October.

AROS TALKS

The RSGB Amateur Radio Observation Service national coordinator, Barry Scarisbrick, G4ACK, is giving a talk on the work of AROS at the North Bristol Amateur Radio Club on 15 October. For further details please contact Dick, G0XAY, tel: 01454 218362, or Jon, tel: 0117 9414602.

VIP VISITOR

RSGB HQ was pleased to welcome Raymond Borg, 9H1EI, from Mosta, Malta GC, on 12 July. Raymond is the president of the Malta Amateur Radio League as well as being a member of the RSGB in his own right.

QSL BUREAU NEWS

Two new RSGB QSL Bureau Sub-Managers have been appointed. Dr D A Dhuglas, GM4ELV, has had to give up as

The busy QSL bureau at RSGB HQ.

CONGRATULATIONS!

Congratulations go to the following RSGB members who successfully upgraded from **Foundation to Intermediate** licence by taking the Intermediate exam in August:

Martin Butcher, M3EDR; Nigel Nash, M3NDR; Charles Wilmott, M3ZYZ; Rachel Haynes, MM3ALK; Amanda Haynes, MM3ALJ; Oliver Staines, M3LIT; Steve Packman, M3TZD; Robin Gilbert; Martin Harrigan, MI3GZX; Simon Meakin, M3MEA.

Sub-Manager of the GM0MAA - ZZZ and MM0MAA - ZZZ series due to ill health and Alex Jackson, MM0MUL, Union Farm, Craigrothie, Cupar, Fife KY15 5PG has taken over both these series.

Simon Harris, G0SJH, who was the Sub-Manager for the M0DAA - M0ZZZ series of callsigns, is now only Sub-Manager for M0PAA - M0ZZZ cards. M0DAA - M0OZZ cards are now being handled by Roy Walsh, G4ZNK, 16 Pinewood Grove, Midsomer Norton, Bath BA3 2RH.

Marc Litchman, G0TOC, the RSGB's new QSL Bureau Sub-Manager for the G7AAA - ZZZ series, has recently completed a comprehensive audit of all the QSL cards and SASEs which are currently in his possession and he would like to take this opportunity to invite enquiries by e-mail (G7QSLMan@lefars.org.uk) to all current and ex-G7 callsign holders to check on how many, if any, QSL cards and / or SASEs he is holding on their behalf.

Paul Scarratt, G0WRE (www.qsl.net/g0wre), the RSGB QSL Bureau Sub-Manager for the G0W series of callsigns, has many QSL cards that have not been claimed and for which he has no envelopes. Please contact him at g0wre@blueyonder.co.uk or tel: 0151 287 4558 for details.

The RSGB QSL Bureau Sub-Manager for the G6AAA to G6ZZZ series of callsigns, Eddie Murphy, G0VVT, still has a few thousand unclaimed QSL cards. He asks that amateurs with G6 three-letter calls either e-mail him at eddie@g0vvt.freeserve.co.uk or call 07881 647434 for further details.

VHF AWARD NEWS

This has been a quiet period for claims. On 50MHz Tony Jarvis, G6TTL (PE), has gained a 50MHz Countries (DX) certificate with stickers for 25 and 50 countries. He has also gained a 60 countries sticker for his 50MHz Counties (2-way) certificate. Also on 50MHz, Heath W Rees, GW3HWR (SA), has been awarded a 300 squares sticker for his 50MHz squares certificate.

On 144MHz James Kelly, GM1VKI (KY), has been awarded a squares and countries certificate for working 40 squares in 10 countries. All of his contacts were made using an FT-290 and a homebrew 10 watt amplifier. His antenna is a 5-element ZL special made of half-inch copper piping and located in his loft.

Details of all VHF / UHF and Microwave awards can be found in the current *Yearbook* or by following the links from the RSGB website. Claim forms may be obtained by download from the website or by sending an SASE to the new RSGB VHF Awards Manager, Bill Salt, M0CBQ, 89 Woodhall Drive, Waltham, Grimsby, North East Lincolnshire DN37 0UX. All claims should also be sent to this address.

WHO IS WHO IN AMATEUR RADIO: LAST CHANCE

A reminder that there is still *just* time for you to send in your amateur radio CV for possible inclusion in a new book to be called 'Who is Who in Amateur Radio' that the RSGB is considering publishing. The book is intended to be a list of notable figures in amateur radio in the UK and worldwide. You could be included in the book as the RSGB is seeking to be as inclusive as possible by asking for amateurs around the country to submit information for possible inclusion. If you would like to be considered for inclusion you can submit your own information on-line www.rsgb.org/whoswho It is also possible to include your picture by submitting a small passport-sized photograph as an e-mail attachment to whos.who@rsgb.org.uk The closing date for completed nominations is 20 September 2004 and not every submission is guaranteed to be included.

COMMUNITY AUDIO DISTRIBUTION SYSTEMS TO SHARE CB SPECTRUM

Ofcom proposes to allow local religious and community organisations to operate within the UK Citizens' Band allocation. To begin with, a small number of such organisations will be licensed to transmit services in a limited number of pilot areas. These would be called Community Audio Distribution Systems (CADS). At present, some housebound religious congregation members, who wish to hear local religious community services, are unable to do so. Ofcom is proposing to allow CADS users to share spectrum with the Citizens' Band radio service in a way that will provide the flexibility required to transmit religious and community service material, whilst protecting other spectrum users from harmful interference.

Community Audio Distribution Systems would, in practice, constitute simple, short-range and inexpensive wireless public address systems. The evidence of demand for such arrangements has arisen primarily from within religious communities and this is therefore where Ofcom expects the majority of use to arise. However, other community groups could also use the arrangements for other similar purposes. To test these plans, Ofcom is proposing a closely monitored year-long pilot scheme in the areas where interest has been most widespread and sustained: Northern Ireland and West Yorkshire. Further information is available on the Ofcom website at www.ofcom.org.uk/consultations/current/cads/?a=87101

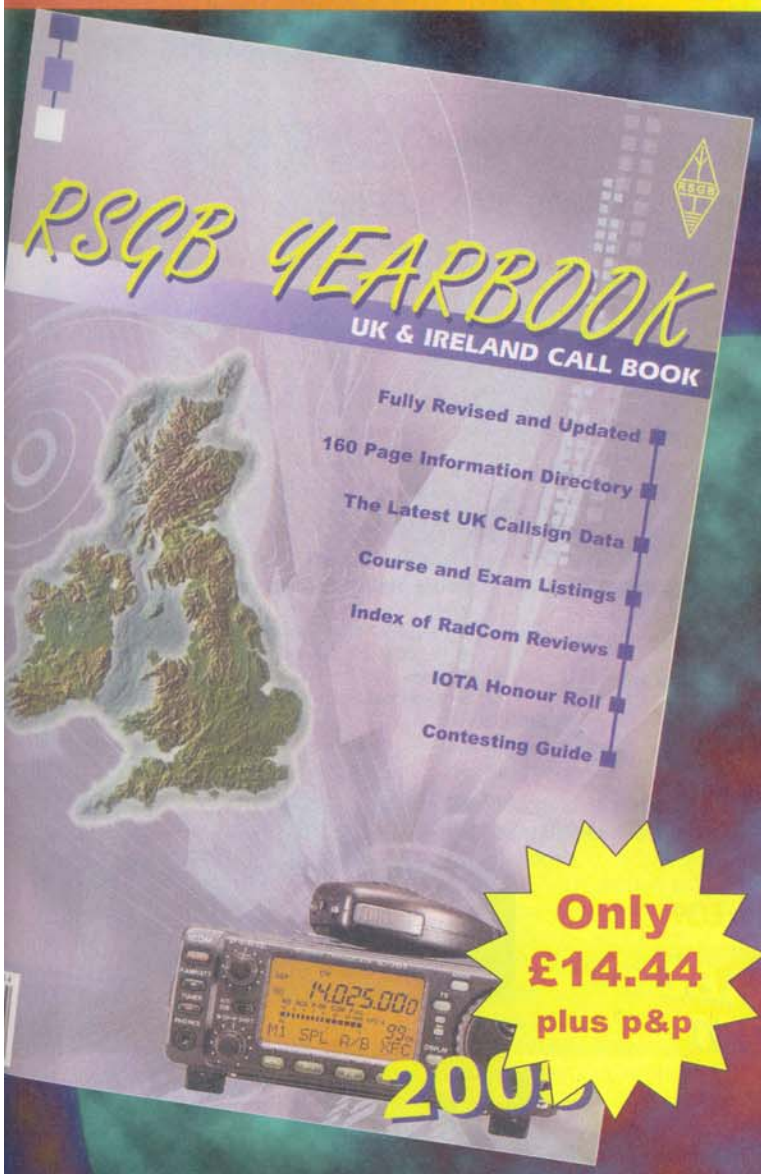
RADIO SPECTRUM CONSULTATION

The Department of Trade and Industry has launched a consultation to seek views on a proposal to consolidate into a single Act various pieces of legislation that provide the legal basis for the management of the radio spectrum. The consolidation Bill is restricted to reproducing the effect of the existing legislation, so there will be no policy changes to the way in which radio spectrum is managed. Currently there are six separate Acts directly relating to various aspects of regulating the use of the spectrum. A consolidated act would combine these under a single piece of primary legislation greatly improving clarification, reference and use. The consultation seeks views from all interested parties and the final date for responses is 28 October. The document can be downloaded from www.dti.gov.uk/consultations

OFCOM: GREATER FLEXIBILITY IN USE OF RADIO SPECTRUM

Ofcom has published an overview of the steps it intends to take in 2004-05 to introduce greater flexibility and freedom of use to radio spectrum management. Ofcom says that: "Historically, spectrum has been managed through a top-down, centrally-run approach, in which Governments (or Government agencies) controlled every aspect of the allocation of the rights to use wireless communications services. Ofcom believes that this approach reduces scope for the most efficient possible use of available spectrum; users tend to be better placed than governments to decide how best to meet market demand." Spectrum trading and liberalisation - removing unnecessary restrictions on licences so that licensees can change the use of spectrum - will be phased in from the end of this year. There is no indication that the Amateur Radio Services are affected in any way by any of these proposals. ♦

Yearbook & Callseeker



RSGB Yearbook 2005
UK & Ireland Call Book

Edited by Steve White, G3ZVW

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

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

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

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

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

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ML&S Price: £1315

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*TS-480HX 200W

ML&S Price: £1399

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Contents

OCTOBER 2004

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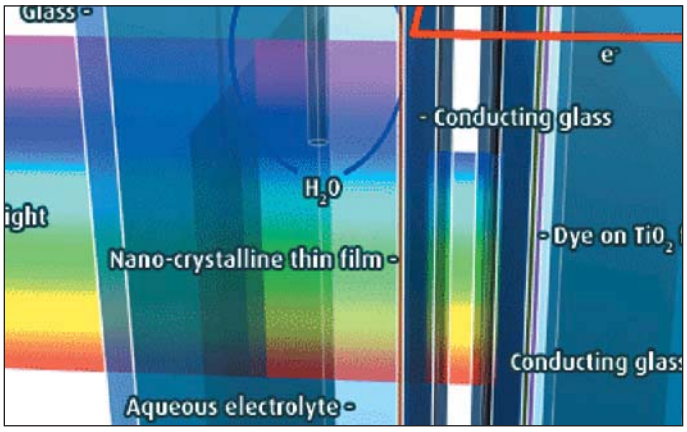


p59 – Hydrogen from sunlight

p56 – Switch-mode battery charger

NEWS AND REPORTS

REVIEWS

DOWN TO EARTH - AMATEUR RADIO FROM THE GROUND UP

TECHNICAL FEATURES

REGULARS

Hundreds of Scouts & Guides visit GB2EIJ, build receiver kits

ScARF team provides amateur radio experience at Essex International Jamboree

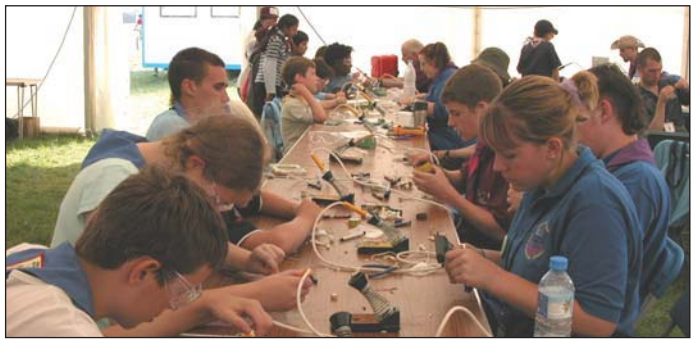
Over the week 31 July - 7 August some 25 licensed Scouts and Scout leaders of the Chelmsford Scouts Amateur Radio Fellowship (ScARF) team operated demonstration station GB2EIJ from the Essex International Jamboree Scout and Guide Camp at Kirby-le-Soken near Clacton-on-Sea. It included two antennas constructed with 'Scout Pioneering skills'. Contacts were made on the HF bands, 6m, 2m and 70cm. These included several contacts made via satellite and many Greetings Messages were passed by the young people.

Around 800 of the 7000 Scouts and Guides attending successfully constructed battery powered medium wave radio receivers from basic components under the guidance of ScARF members.

Chelmsford ScARF is a group of Scouts, Explorer Scouts and adult members of the Scout Network and Scout Fellowship which aims to improve the communications skills of young people and adults through the medium of amateur radio. It has trained over 40 members of the Scout and Guide movements at Foundation, Intermediate and Advanced licence levels.

♦ Jamboree on the Air (JOTA) takes place over the weekend of 16 / 17 October. This is the event where Scouts and Guides use amateur radio to contact other Scouts and Guides throughout the world.

Information packs will be available from RSGB HQ for all participants. Groups using GO or similar prefixes instead of a GB call are asked to inform Rod Wilkinson at RSGB HQ by Tuesday 5 October if they want details of their activity to appear in the information pack.



Just a few of the 800 Scouts and Guides who constructed radios at the Essex International Jamboree Scout and Guide Camp.

ML&S has moved

The well known Ealing amateur radio emporium is no more: Martin Lynch (www.MLandS.co.uk) has moved to larger premises in Chertsey, Surrey. The new store opened on 23 August and Martin is promising a big Open Day with the major manufacturers in attendance on 4 December - more details soon. Meanwhile, you can visit the new store at 73 Guildford Street, Chertsey, Surrey KT16 9AS, or contact ML&S on tel: 0845 2300 599.

Martin Lynch, G4HKS, with his car Y4ESU (gettit?) outside the new store.

Train spotting

GB0FGR is scheduled to be active over the weekend of 23 / 24 October. It is to mark the final withdrawal of the remaining classes of slam-door diesel and electric multiple unit trains in service on various lines in Kent, East and West Sussex, Surrey and Hampshire. These units are collectively known as First Generation Rolling Stock and are all due to be withdrawn by the end of this year.

Class 205, number 001, departing Crowborough station. These units were built at the Eastleigh depot in Hampshire between 1957-1959 and have been in service for nearly 50 years.

RAOTA & RAIBC at Leicester Show

The Radio Amateur Old Timers' Association (RAOTA - www.raota.supanet.co.uk) will be holding its AGM during the Leicester Show [see pages 34 - 35 - Ed]. The AGM will be held at 1.00pm on 1 October at the Tudor Inn in Castle Donington. Transport from the Leicester Show will be provided for anyone who needs it. Further details from Edward Rule, G3FEW, 15 Norwich Road, Lenwade, Norwich NR9 5SH, by e-mail: edit@raota.fsnet.co.uk or from the RAOTA stand at the Leicester Show.

The Radio Amateur Invalid and Blind Club (RAIBC) celebrates its 50th anniversary this year. It will operate GB50IBC at the Leicester Show and hold a raffle with some excellent prizes: a Yaesu FT-817 donated by Yaesu (UK), a Kenwood TH-K2E donated by Kenwood (UK) as well as RSGB publications, headphones etc.

Open invitation from FOC

The First Class CW Operators' Club (FOC) has announced an operating event open to all amateurs world-wide. The Bill Windle QSO Party, named in honour of one of the club's long-standing members, now a silent key, will run from 0000 to 2359UTC on 16 October on all six HF bands (10, 18 and 24MHz excluded) and VHF. The primary purpose of the event is to encourage more CW activity. Call "CQ BW" and contact each station once per band. The exchange is RST and name; FOC members also send their membership number. No logs are required as the 'honour' system will be used but totals should be sent by e-mail to KZ5D@aol.com by 23 October. A final listing will be posted on the FOC website at www.first-classcw.org.uk and on www.contesting.com

NEWS BRIEFS

- We've had IOTA and SOTA, now it's CASHOTA - Castles And Stately Homes On The Air. The Special Events Amateur Radio Educational Group (SEAREG) wants to set up a CASHOTA scheme and has already started a website at www.cashota.org They are not suggesting a single activity weekend, but rather a scheme to put these venues on the air regularly throughout the year. If you are interested please contact Arthur, MM0DHQ, for Scotland; Melfyn, GW1AKT, for Wales; or John, G8LGC, for England (all QTHR).
- A novel but useful design of watch is now available from USA. The TechNote Time Watch Company has geared its new product line towards radio amateurs and electronic engineers. You'll never forget those formulas again as their analog wrist watches incorporate Ohm's law, power formulas and a resistor colour chart into the design (see www.technotetime.com). Watches cost from $25 (approx £15) and may be ordered using your credit card over the website.
- David, G3GAH, uses one of several websites set up for buying and selling amateur radio equipment. In response to one of his ads he recently received responses believed to be from West Africa which bear all the hallmarks of a money-making scam. While the vast majority of buyers and sellers of amateur radio equipment are law-abiding individuals, whenever you buy or sell any equipment through whatever means you are advised to be on your guard.
- Stolen: Yaesu FT-100D (S/N 3E500071), standard hand microphone, DTMF microphone and mag-mounted 6m 'homebrew' quarter-wave antenna. Stolen from the car of P N Harris, G4SPZ, parked outside his house in Bewdley, Worcestershire, between 7.00pm on 21 August and 9.45am on 22 August. Contact West Mercia Police tel: 08457 444888 quoting Crime Number 22 DD 74648 N 04.

Sergei's back in town

The Ukraininan international striker Sergei Rebrov, M0SDX, was signed to West Ham at the end of July. The former Tottenham Hotspur striker was released by Spurs and joined West Ham on a free transfer. Sergei signed for Spurs for £11m from Dynamo Kiev in June 2000 but was loaned to the Turkish side Fenerbahçe 18 months ago. Sergei is a keen DXer and can be heard operating in most international HF contests on CW, SSB and datamodes.

Sergei Rebrov, M0SDX, operating the RSGB HQ station GB3RS.

Bon voyage M0KLA/MM

On page 13 of the September RadCom we reported that Sean Collins had gone from no knowledge of amateur radio to passing the Advanced Radio Communications Examination in 14 weeks. He was in a hurry because he wished to operate maritime mobile from his yacht Vortex on a trans-Atlantic trip to the Caribbean this autumn and winter. We have now learned that Sean's callsign is M0KLA so whilst at sea he will be signing M0KLA/MM. Bon voyage, Sean.

TAPR lifetime achievement award

Tucson Amateur Packet Radio (TAPR) has announced a Lifetime Achievement Award to Roger Barker, G4IDE, for his services to digital communications. Roger has worked tirelessly for many years to provide quality software for radio amateurs, allowing them to operate advanced digital modes without the difficulties once associated with those modes. Roger's UI-View is the benchmark to which all other APRS software is compared. Once the software was written, he ensured that it was extensively supported: one mailing list had 35,000 messages, with Roger reading each one and replying to a significant number of them. This is the first award of its kind made by TAPR in its 22-year history.

On the fiddle (in the best possible way!)

15-year old radio amateur and self-taught fiddle player Blair Ross, GM0WSG, has been fundraising for charities, including the Guide Dogs for the Blind Association, the National Kidney Research Fund, Cash for Kids and Yorkhill Children's Hospital since the age of 11. His efforts were recently recognised by the Nationwide Building Society with the Single Category under-18s Award for Voluntary Endeavour, Scottish Region. After the awards ceremony in Edinburgh, where he played a selection of traditional music, he was asked by the organisers if he would play his fiddle at Lords Cricket Ground in October.

Blair has helped to run the Guide Dogs for the Blind awareness fundraising stall at the Scottish Radio Convention and helped with special events stations GB4GD and GB4GDS. He has also promoted the national 'Shades for a Day' campaign to try to make youngsters aware of the damage ultraviolet light can cause to one's eyes. Blair is a member of the Sparks Radio Club which meets at the Strathclyde Fire Brigade HQ in Hamilton.

Blair Ross, GM0WSG, with his father Keith, GM4DAE, and guide dog Craig at the Nationwide awards ceremony.

Attention IC-7800 owners

Icom (UK) says that as a thank you to all customers who have bought an IC-7800 they would like to send them all a limited edition Icom leather bag. All customers have to do is to visit the www.icomuk.co.uk website, go to downloads, go to miscellaneous and download the leather bag claim form, or contact John Turner at johnt@icomuk.co.uk Proof of purchase is required.

IC-7800 upgrade packages have become available for download from the Icom Inc website at www.icom.co.jp/world/download/index.html The upgrades includes the addition of functional capability to upgrade the firmware from the CF memory card, a screensaver mode and other features.

A final listing will be posted on the FOC website at www.firstclasscw.org.uk and on www.contesting.com

Richmond School students on the air

Five students at Richmond School have recently obtained their Foundation licences. Nathan McGarry, Stephen McVay, John Coultish, Sam Watkinson and George Parkes all passed the exam held recently at the school. Richmond School is one of only a few school radio societies in the UK and regularly transmits each lunchtime. Richmond also has the GB3IR repeater station which provides a gateway to all parts of the world via the Internet. Due to interest from members of the public it is proposed to hold another Foundation course at Richmond Community Education Centre at Richmond School, open to all ages.

Phil Beever, Headteacher of Richmond School, receives a donation of RSGB books for the school library. They were presented by the five new Foundation licensees.

Club and regional news

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

1 Scotland South & Western Isles

COCKENZIE & PORT SETON ARC
3, RSGB 21/28MHz contest. 15, Video night. Bob, GM4UYZ, 01875 811723.
KILMARNOCK & LOUDOUN ARC
12, Propagation, Barry, GM3YEH. 26, Next generation of control logic for CSFMG repeaters, Jack, GM4COX. Len, GM0ONX, 01563 534383.
LOTHIANS RS
11, Junk / surplus equipment sale, raffle.
25, EMC: our hobby in danger, Angus Annan, MM1CCR. Toby, MM0TSS, 07739 742367, tobysigouin@onetel.net.uk
PAISLEY (YMCA) ARC
13, Slow Scan Television.
27, Why are you not paying? MM5AON. Jim, GM3UWX.

2 Scotland North & Northern Isles

ABERDEEN ARS
7, Junk sale.
14, APRS on the air.
21, RSGB video.
28, Morse class, on air. Ellis, GM4JLZ, 01224 580594.

3 North West

CHESTER & DARS
5, 'The Other Man's Shack'.
19, Visit by RSGB General Manager Peter Kirby. 26, Talk TBA, John, G3ETH. Chris, MW3TWI, 01244 683629 or Bruce, 01244 343825.
SOUTH MANCHESTER R & CC
1, HF on air.
8, 'My Apprenticeship', Greg, G8RSI.
15, 'Metal Detecting', Dave, G0BJK.
22, Electronic curios.
29, Favourite websites. Ed, 0161 969 1964.
STOCKPORT RS
5, 'Rough Guide to 2m', Nigel, G0RXA, and the Barpackers.
19, 3B9C DXpedition video, and others. David, M1ANT, 0161 456 7832.
THORNTON CLEVELEYS ARS
4, On air.
11, Demonstration of aerial programme, G4FWM.
18, AGM.
25, Chairman's address. Jack, G4BFH, jack.duddington@btinternet.com
WEST MANCHESTER RC
14, 'Advanced first aid,' Keith, 2E0AWO. Trevor, G0TEE, 07973 827257, www.wmrc.org.uk

4 North East

GOOLE R & ES
27, Junk sale at The Courtyard. Richard, G0GLZ, 01405 769894.
GREAT LUMLEY AR & ES
10, Rally. Nancy, 0191 447 0036, 07990 760920, nancybone2001 @yahoo.co.uk
GRIMSBY ARS
7, AGM. 21, Junk sale. George, G4EBK, 01472 887720.
HORNSEA ARC
13, Rally preparation.
17, Hornsea Rally.
20, QRP kit, G4BYG.
27, AGM. Richard, G4YTV, 01964 562498, G4YTV@AOL.com
KEIGHLEY ARS
7, Social evening.
14, On air.
21, Social evening.
28, Used equipment sale. Kath, G0OSA, 01535 656155.
SHEFFIELD ARC
4, Telescopes and binoculars, Geoff, M1GWA.
11, VHF radio.
18, Team quiz.
25, AGM. Nick, G4FAL, 0114 255 2893.
SPEN VALLEY ARS
14, 'Radio, my hobby', Roy, G4YDI. Russell, G0FOI, 01274 875038.
YORK ARS
8, Annual dinner at Beechwood Close Hotel. Keith, G3WVO.

5 West Midlands

COVENTRY ARS
1, AGM.
8, On air, Intermediate, Morse practice.
15, Visit to fire station (TBC).
22, Air Ambulance.
29, On air, Intermediate, Morse practice. John, G8SEQ, 024 7627 3190, johng8seq@ntlworld.com
GLOUCESTER AR & ES
4, DF hunt, 160 & 2m. 11, 18, 25, On air, HF, workshop. Tony, 01452 618930 office hours.
KIDDERMINSTER & DARS
5, Surplus equipment sale. Tony, G1OZB, 01299 400172.
MID-WARWICKSHIRE ARS
12, Programme planning.
26, Battery and power supply basics. Bernard, M1AUK, 01926 420913.
SALOP ARS
14, Tetra radio systems, Pat McAllister. Fred, G3NSY, 01743 790457.
ST LEONARD'S ARS
7, Surplus equipment sale, G8HJS.
14, Planning special event stations in 2005.
21, Equipment protection, part 1.
28, Shack night. Derek, G0EYX, 01785 604904, www.freewebs.com/g3sbl g0eyx.derek@ntlworld.com
STRATFORD UPON AVON DRS
11, Contest expedition stations, Lee Volante, G0MTN.
25, Quiz night, Pat, G3IKR. Terry, G3MXH, 01789 294387.
TELFORD & DARS
6, Open evening, HF on air. Mike, G3JKX, 01952 299677, mjstreetg3jkx@aol.com

6 North Wales

CONWY VALLEY ARC
6, Digital VFO for Heathkit HW9, Stewart, GW0ETF. Wynne, GW6PMC, 01745 855068.
MERION ARS
7, The 'Bronze Bell' wreck, Tony Iles. Martyn, GW4XZJ.

7 South Wales

No club details received.

8 Northern Ireland

No club details received.

9 London & Thames Valley

AYLESBURY VALE RS
13, On air, discussion evening. Roger, G3MEH, 01442 826651, roger@g3meh.com
BROMLEY & DARS
19, Construction project for G2MI Trophy. Alan, G0TLK, 020 8777 0420 www.bdars.org or voicemail / fax 01689 818582.
COULSDON ATS
11, Construction evening. Steve, G7SYO, 01737 354271.
CRAY VALLEY RS
7, Meet the members 2004 style, G3SXE.
24, Presentation of HF NFD Trophy at HF Convention. 30, 31, CQ World Wide SSB. Bob, BRS32525, 020 8265 7735 after 8pm & weekends.
CRYSTAL PALACE R & EC
1, How to use an oscilloscope, and practical workshop. Bob, G3OOU, 01737 552170 or Victor, G1PKS, 020 8653 2946.
HODDESDON RC
12, Farnborough 2004, Don, G3JNJ.
26, MS Excel, G4VMR. Don Platt, G0TSN.
MILTON KEYNES ARS
18, TBA. www.mkars.org.uk Malcolm, M0MBO, 01525 874075.
NEWBURY & DARS
27, Crystal oscillators, Peter, G3LWT. Kevin, G6FOP, 01635 826397, g5xv@ntlworld.com
READING & DARC
14, Talk for club's 70th anniversary, 'Early Wireless', Vin, G4JTR, Peter, G4JNU.
28, Annual construction contest. Pete, G8FRC, 01189 695 697, www.radarc.org
SHEFFORD & DARS
1, Cambridge quiz night.
7, CQWW planning.
14, Autumn junk sale.
21, Vertical HF aerials.
28, CQWW equipment check.
30, 31, CQWW contest. David, G8UOD, 01234 742757.
SILVERTHORN RC
1, Microlights, Tom, M5AJK.
22, On air. 29, AGM. Les, G0CIB, 07980 275081.
SOUTHGATE ARC
14, Junk sale. Mike, M0ASA, 020 8366 0698.
WIMBLEDON & DARS
8, Club projects construction.
29, AGM. Jim, M0CON, 020 8874 7456.

10 South & South East

BASINGSTOKE ARC
4, AGM.
18, Transceiver test gear, TBC.
31, ARDF 'foxhunt'. Frank, M0AEU, barc@2lo.info
BRIGHTON RC
12, Get your own television station going.
26, Cheap stepping drive control systems. Reg, G3GZT, 01273 699104.
FAREHAM & DARS
6, On air.
13, 'How does it work?' The solar panel, Andrew, G0AMS.
20, 'A night with the microwave king', Bob, G8VOI. 27, The new Full licence, discussion. Steve, G7HEP, 01329 663673.
FARNBOROUGH & DRS
13, Construction contest.
27, Video. evening. Norman, G0VYR, 01483 835320.
HARWELL ARS
12, GPS & Galileo navigational systems, Walter, G3JKV. Angus, G0UGO, 01235 522858, www.hamradio.harwell.com
HASTINGS E & RC
9, 10, Hastings Hobbies and Crafts Fair special event station.
20, Winter auction at William Parker School. Gordon Sweet, 01424 431909, gordon@gsweet.fsnet.co.uk, www.g4cus.freeserve.co.uk
HORNDEAN & DARC
5, Social evening.
26, AGM. Stuart, G0FYX, 023 9247 2846.
ITCHEN VALLEY RC
8, 'How I Became a Radio Amateur'.
22, Digital Radio Mondiale. Sheila, G0VNI, 023 8081 3827, sheila.williams @ivarc.org.uk
SOUTHDOWN ARS
4, Digital modes demo, Phil, G4UDU. John, G3DQY, 01424 424319, vaughdqy@aol.com
SWINDON & DARC
4, Digital radio networks, Ian, G8JHC.
7, Getting the best from Powerpoint,

Den, M0ACM.
18, Amateur radio emergency comms, Brian, G1HFY, North Wiltshire Raynet Controller.
21, The sun, Charles, G0TLI. Mike, 5CBS, 01793 826465.

TROWBRIDGE & DARC

20, 'Unusual Arcs & Sparks, an eye-open ing display', M1EZW. Ian, G0GRI, 01225 864698 evenings / weekends.

WORTHING & DARC

6, 'How bad is your radio?' - test your rig, G4UDU.
13, AGM.
20, The Burma story, G4MRH.
27, First Aid, M3EKV. Roy, G4GPX, 01903 753893

11 South West & Channel Islands

APPLEDORE & DARC

18, ATUs, Mike, G4NCU. Brian, M0BRB, brian.jewell@ic24.net

CITY OF BRISTOL RSGB GROUP

25, Motorola rig: testing set, Jan, G0BBL. Martyn, G3RFX, 0117 973 6419.

CORNISH RAC

7, The water board, Mike, G7ERQ.
11, Computer section: using the music program Personal Composer, Peter King. John, G4LJY, 01872 863 849

EXMOUTH ARC

13, 'What is it?'
27, Testing PSUs, Wilf, G0GHO. Mike, G1GZG, 01395 274172.

NORTH BRISTOL ARC

8, Operating evening.
15, AROS, Barry Scarisbrick, G4ACK, National Co-ordinator.
22, Sale of members' treasured equip ment. Dick, G0XAY, 01454 218362, Jon, 0117 9414602

SOUTH BRISTOL ARC

6, Computer software clinic, David, G7PKJ.
13, Autumn 'Bring & Buy', Muriel, G4YZR.
20, Club events and contest planning for 2205, Fred, G7LPP.
27, On air. Len, G4RZY, 01275 834282.

SOUTH DORSET RS

12, Dorset Beam Stations, P M Hawkins, G4KHU. Carol, 2E1RBH, 01305 820400, carolonfraggle@tiscali.co.uk

TORBAY ARS

22, Visit to Brixham Battery Gardens, G3KDV. Dave, G6FSP, dave.helliwell@tesco.net

WEST SOMERSET ARC

5, IT & its uses. Jean, G0SZO, 01984 633060.

WESTON-SUPER-MARE ARS

4, The Y Service. D Welch, G0ATD

12 East & East Anglia

BRAINTREE & DARS

4, JOTA planning.
11, Club net.
16, 17, JOTA.
18, Personal role radio.
25, Club net. John, M5AJB, 01787 460947.

CAMBRIDGE & DARC

1, Quiz.
15, Project evening.
29, SHF developments, Jenny and Bernie. Ian, G4AKD, 01954 782974.

FELIXSTOWE & DARS

4, Construction evening, part 2, Orwell Park School.
18, Fish & Chip supper, The Victoria, Felixstowe Ferry.
30, 31, Foundation Licence Course, Orwell Park School. Paul, G4YQC, paul.whiting@bt.com

HARWICH AR INTEREST GROUP

13, 'Contesting in West Africa', Andy Cook, G4PIQ. Tony, G4EYE, 01255 886065.

LOUGHTON & EPPING FOREST ARS

1, Visit by Trevor Hawkins, M5AKA, RSGB's Deputy Regional Manager for Essex.
15, History & evolution of *L&EFARS Newsletter*, John, G8DZH.
29, Review of GB2EFF & GB2LRS special events. Marc, G0TOC, 020 8502 1645, info@lefars.org.uk

NORFOLK ARC

6, Construction contest.
13, Construction / Morse tuition.
20, 'What is APRS?', Mark, G0LGJ.
27, Construction / Morse tuition. Reg, G0VDO, 01603 429269.

13 East Midlands

EAGLE RADIO GROUP

12, 'Frequency, Noise and Information', David Brinnen, G7BUK. Terry, G0SWS, 07979 733640.

HUCKNALL ROLLS-ROYCE ARC

1, First Aid in the shack, Dennis Purbrick.
8, VHF on air.
15, Construction night; attenuator for DF hunting.
22, Video traces on audio spectrum analyser.
29, HF on air. Keith, G6NHY, 0792 9916642, hrrarc@ntlworld.com

LEICESTER RS & CC

4, Quarterly open meeting.
11, Quiz.
18, Test equipment in the shack, Stan, G3HYH. 25, Video, construction, on air. Tom, G1IUT, 0116 286 3949, tomchristmas@ukonline.co.uk

LINCOLN SW CLUB

6, On air.
10, 'Foxhunt'.
20, Talk, TBA.
27, Junk sale. John, G1TSL, 01523 323153.

LOUGHBOROUGH & DARC

5, Bring & buy.
12, AGM.
19, Visit to gas museum Leicester.
26, On air. Chris, G1ETZ, 01509 504319.

RAF WADDINGTON ARC

14, Aerial rigging in Antarctica, Alan Howland. Martin, M3MDF, martin@farmer4.freeserve.co.uk

S NORMANTON, ALFRETON & DARC

4, Talk TBA.
11, 'The SNADPOLE portable antenna proj ect, part 2, Mike, M0RMJ.
18, Junk sale.
21, ARCON 'foxhunt', SNADARC members invited, Mike, M0RMJ.
25, Test equipment. Mike, M0RMJ. Mike, M0RMJ, 01949 876523, mike.jeffs@ntlworld.com, www.qsl.net/snadarc

RYAN EARNS AWARD FROM SOUTH YORKSHIRE CLUB

Ryan Churm, M3FXS (centre), receiving the Roy Oxley G0FYM Trophy for Outstanding Operating, from Roy's brother, Ian (left), and South Yorkshire ARS President Leo English, M0BDV (right).

Roy Oxley, G0FYM (sadly now a silent key), was a 'local legend' in South Yorkshire amateur radio circles for his innovation, helpfulness and, yes, even eccentricity. The South Yorkshire Amateur Radio Society (SYARS - syars@blueyonder.co.uk) thought it would be fitting to remember him and his contribution to VHF NFD operation by launching an annual Roy Oxley G0FYM Trophy for Outstanding Operating. Ryan Churm, M3FXS, was an excellent choice following his sterling efforts to keep the station running, and morale high during VHF NFD this year. He manned the generator through the weekend under difficult conditions, as well as contesting, antenna erecting, and taking part in everything that was asked of him. His energy and enthusiasm was both infectious and enjoyable. For most people, earning their Foundation licence is an achievement. For Ryan, who has learning difficulties, and who had to put in lots of extra work to get his ticket, this award is doubly meaningful. Becoming an M3 has given him more confidence in his abilities, and helped his communications skills generally. Winning the award is recognition of his selfless contribution to his local club and amateur radio in general.

BRAINTREE RADIO CLUB SUMMER BBQ

Monday 5 July saw the Braintree club's (www.badars.org.uk) annual summer BBQ. This popular event took place with uncertain weather promised, but in the event there was a dry evening. Master of the fires was Dean, G4WQI, who made an expert job of the cooking a selection of sausages, burgers, ribs and chicken legs. Being a social event it was nice to see members families turning out and enjoying the evening.

"Anyone for a sausage?" asks Dean, G4WQI.

TALENTED YOUNG ARTISTS WANTED

Last year Icom (UK) was involved in producing *The Adventures of Zack and Max*, an amateur radio comic, for the UK market. It was intended to encourage younger people and newcomers into the hobby and was a resounding success as clubs throughout the UK snapped up copies. Feedback has suggested that it has indeed helped to get new people into the hobby. A new comic is now being produced which it is hoped will be a joint effort between students in America and the UK. Called *Maddy Goes To England*, it is hoped that 10 - 12 year old radio amateurs will write and draw selected panels of the comic. If any radio club with youngsters among their membership is interested in being involved please contact the Marketing Manager at Icom (UK) Ltd via e-mail at marketing@icomuk.co.uk

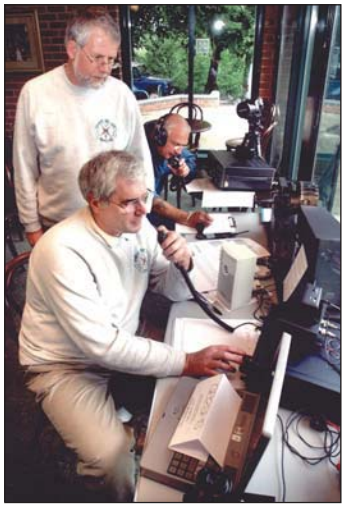
AA GETS EXAM CANDIDATE HOME

When Mark Isaacs was a few miles from the Bredhurst Receiving and Transmitting Society (BRATS) for his Intermediate exam, his powerful motorbike developed a puncture in the front wheel. A passing motorist helped him out with a spray tyre sealant and Mark made the exam centre just in time. Whilst the papers were being checked Mark called the AA and a very nice man fixed his puncture.

STOCKPORT MUSEUM ON AIR

As part of the Museums on the Air weekend in June, the Stockport Radio Society activated GB2SHS (www.gb2shs.com) from Stockport Museum. CW, SSB and digital modes were used to contact as many other museums as possible. 'Best DX' during the weekend was Singapore. The Stockport Radio Society is one of the oldest amateur radio clubs in the UK, having being formed in 1920. At present there are over 100 members. The event was covered in the *Stockport Times* weekly newspaper, providing much good publicity for amateur radio.

PHOTO COURTESY OF *STOCKPORT TIMES*



Stockport Radio Society treasurer, Bernard Naylor, G3SHF (standing), and club secretary, David Simcock, M1ANT, operating GB2SHS.

RICHARD TREVITHICK BICENTENARY

The Hoover Amateur Radio Society of Merthyr Tydfil took an active part in the town's Richard Trevithick bicentenary celebrations. From 26 June to 23 July the club operated special event station GB2RTB, making 1120 contacts with stations around the world, including Japan, Vietnam and Australia. Howell Thomas, MW0ATG, said that many people had never heard of Trevithick or his locomotive, but they took great pride in informing them of the facts. "Many found it hard to believe that a steam locomotive had operated as long ago as 1804," he said.news.htm

ANNIVERSARY SUCCESS

Let's face it, we've all done it; wondered what to get the wife for an anniversary present. Gordon Coggan, G4FYE, pondered and then decided to enrol his good lady, Mary, on the Finningley Amateur Radio Society Foundation course (just what every women wants!) How could she compare a romantic meal for two against Harold Scrivens, G0UGE, and Peter Myers, G3UWT, explaining Ohm's law? Thankfully (for Gordon) Mary passed and he is now back in the good books. However, Mary is now considering adding that feminine touch to their shack.

The Finningley club would also like to congratulate Harold, G0UGE, on his appointment as RSGB Deputy Regional Manager.

EDGWARE 'ACTIVITY PERIODS' 2004

Every year the Edgware & DRS organises 'Edgware Activity Periods' (EAP). EAP is a series of friendly competitions that test your all-band capability. Activity is on CW between 1900 and 1930UTC and SSB from 1945 to 2015UTC on 5 October on 40m; 6 October on 10m; 8 October on 80m; 13 October on 160m; and 15 October on 20m. The full rules are on the club's website at www.g3asr.thersgb.net/news.htm

Colin Higgins of Blackpool Fylde College deploying a life raft during a recent presentation on 'Survival at Sea in an Emergency Situation' at the Eagle Radio Group, Mablethorpe.

NEWS IN BRIEF

♦ The Harlow and District Amateur Radio Society (www.qsl.net/g6ut) is fortunate to have a permanent base at Mark Hall Barn, a Grade II listed building. Over recent years the club has provided training for the Foundation, Intermediate and Advanced licences and the club is now a registered exam centre. For more information contact Len, G7UFF, tel: 01279 864973; mob: 07931 207184; or e-mail: g6ut@qsl.net

♦ The latest Charlie Delta ARC (www.cqdx.co.uk) Foundation course was a success with all four candidates passing. Mark, one of the two youngest to have taken the course at the club so far, said after he had finished it, "I enjoyed it all, except for the CW!" Those who took the course wish to thank Dave, M0DCM; Geoff, G7NZM, and Dave, G0MJY. Another weekend Foundation course is being planned, please contact Dave, M0DCM, tel: 01902 635244.

♦ The Dundee Amateur Radio Club (www.dundee-amateur-radio.co.uk) announces the success of its latest Foundation exam held on 3 August: all three candidates passed. The exam was held on board the North Carr Lightship, which the Maritime Volunteer Service allows the club to use during the summer. Thanks to Tom Harrison, GM3NHQ, for tuition and to other members who assisted.

♦ Northampton Radio Club has started a very active training programme with two of its trainers attending the RSGB 'Train the Trainers' course. In May, 10 people successfully passed the Foundation course including one 14-year old. The club went straight into an Intermediate course and another 10 people passed, some from the previous Foundation course. You can contact the club by e-mail: northamptonradioclub@hotmail.com or tel: 07870 434931.

♦ Six candidates recently celebrated their success in the Intermediate examination at the Hinckley Amateur Radio Electronics Society. The club meets every Wednesday at 2000 at All Services Club, Station Rd, Hinckley and anyone is welcome to visit or to enrol in the Foundation or Intermediate exams.

♦ The Swansea ARS is running a 49-seat coach to the Leicester Amateur Radio Show at Castle Donington on Saturday 2 October. For further details contact Roger, GW4HSH, tel: 01792 404422.

Grand Christmas raffle to raise funds for the Radio Communications Foundation

News of your chance to win some great amateur radio prizes and to help with the important work of the Radio Communications Foundation.

This year, the RSGB is holding a grand Christmas raffle on behalf of the Radio Communications Foundation with major amateur radio prizes kindly donated by the leading manufacturers (full details next month).

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

You may buy any number of tickets you desire and additional tickets are available from the RSGB stand at the Leicester Amateur Radio Show on 1/2 October (see below), on request from RSGB HQ, and on-line at www.rsgb.org/shop You do *not* have to be an RSGB member to enter, and members can help the important work of the Radio Communications Foundation by selling raffle tickets to non-members of the Society. The draw will take place

Come along and see the GB4FUN vehicle at the Leicester Show.

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'
The estate of the late R F Lyddon, G4ETJ

R Clay, 2E0ODY
G Pesch, DJ2XB
P Martin, EI2CA
Fr N T Foley, EI4CF
P Lalibert, F3ET
W D Johnson, G0AXZ
K L Mills, G0GIN
C G Wackett, G0GVN
C Fiedler, G0GYP
R P Jeffery, G0GZI
D B Ross, G0HIW
P E Boorman, G0JBA
T Hanratty, G0JRT
H Gorman, G0MVG
J Hall, G0ODQ
A S Frank, G0TDY
G Merrills, G0UQF
T Cannon, G0VQR
M de Silva, G0WMD
B R Talbot, G1BIN
W T Boucher, G1GBC
I C Millar, G1KMS
L T Clarke, G1LQB
P J Brolan, G1MPU
P D Beardshaw, G1UGL
T A Embleton, G1VMH
D Buckley, G1XRY
J C Stephenson, G1ZFG
G L Sanderson, G2DBT
J H Knowles, G2FXS
H J Smith, G3ARU
P W Gifford, G3AWP
B J Clark, G3BEC
J L Salter, G3DQC
P J Powell, G3EFI
R A E Fursey, G3FSO
J Harper-Bill, G3IZM
T W Mitchell, G3LMX
R Roberts, G3MAK
G Dale, G3MFH
G F Hearn, G3REU
W M Furness, G3SMM
J R Hey, G3TDZ
L P Best, G3THM
A J Matthews, G3UNM
J B Letts, G3URQ
G W Gardiner, G3WEB
W E Kent, G3YCN
R A Ingram, G3YIY
J Murdoch, G3YSD
A Heyes, G3ZHE
P Malon, G4BLF
R D Johnson, G4BWF
S W Taylor, G4CKX
Dunstable Downs RC, G4DDC
K Middleton, G4EJH
Scunthorpe Steel ARC, G4FUH
K P Austen, G4GJA
E Rigby, G4HCS
Dr J M Buckley, G4HGL
P W Turner, G4IJE
J J Proudfoot, G4ISS
A Rhodes, G4KIJ
G Barber, G4KYO
F R Harrison, G4MJT
R N Byford, G4MKR
The late G Mullender, G4NAO
K C Chaplin, G4NWO
E J Day, G4OBV
J Muzyka, G4RCG
C E Jay, G4TDR
J A Norton, G4TLS
P Barnett, G4TMC
D H Duffill, G4UBY
G R Dymond, G4VQL
C N Wilson, G4VVZ
J N R Wiles, G4WQZ
R West, G4YKS
J Scriven, G4YNU
C S Moore, G4ZOX
J Cheetham, G6ALM
G Horwood, G6IFR
D R Banks, G6KIE
R G W Leong, G6ODU
W Carter, G6WSX
J Hunt, G6XRL
C A Jones, G6ZEZ
P Edwards, G7MLQ
M J Howse, G7PTV
B Carter, G7SOG
B R Forhead, G7TUQ
P Caloe, G7TVB
B Mellor, G7UOT
J E Agar, G8AZA
T N Tisdall, G8BJL
R E G Kendall, G8BNE
J Witherspoon, G8DSM
G L Robotham, G8KLH
A H Darby, G8KLR
D J T Burrell, G8LUB
C Rose, G8MKE
A P Ball, G8PSF
F Poulton, G8RXJ
J E H Spencer, G8UMA
A D Cleave, G8XQN
C G Baillie-Searle, GD4EIP
W J Watson, GI4NRB
A D Crozier, GI7VXC
T H Currie, GM0FRH
J J Horsburgh, GM1RDG
R Brown, GM4IKU
N S Lowson, GM4XRF
D F Easton, GM7AWK
S Ross, GM7ORJ
J E Martin, GU3YIZ
D W Jones, GW0UDJ
C P Griffiths, GW1HCW
A E Gwynne, GW3LNR
K Robbins, GW3PFV
M J Smith, GW4DWX
P W Granby, GW4OKF
L D Connery, GW4ZBN
D L Miller, GW6JMC
A M Sharman, GW7GPU
R P Hope, GW8TVX
M Koyama, JK1ANL
M Potter, KG4JZH
G Sandsbraaten, LA4EC
J R Moritz, M0BMU
M Fitchett, M0BMX
D G Morris, M0DAV
A J Howard, M0FRG
G R H Chance, M0GRC
D B Bilson, M0IKE
Dr S Fukushima, M0RAA
R Smith, M1DEG
D B Sampson, M1DOZ
A C Payne, M1EFO
K J Wright, M1EVH
G Ma, M1GGG
D R Coombes, M1VPN
C W Woolley, M3CWY
P Dobson, M3EJJ
M3GVT
H R Alderson, M3HRA
N J Lightfoot, M3NOD
C P Murtha, M3OCE
P Alce, M3PBA
R R Humphries, M3RRH
R Guscott, M5GUS
J S Woods, M5JSW
F L Cooper, MI0BWK
S J Hutton, MI0LJM
R P Taylor, MJ0JER
S Hurst, ON9BKS
J R Blythe, RS171047
A F Organ, RS177650
T Jackson, RS179971
W James, RS180566
J Dittrich, RS182594
R J Goose, RS186376
M C Luxton, RS188327
L Foster, RS20323
A W Tideswell, RS48462
Hickley District Scouts
Somervale School

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.

GB4FUN AT LEICESTER

The idea of GB4FUN is that it introduces amateur radio to people who might otherwise never even had heard about our hobby. It therefore attends schools, colleges, open days, fêtes and other events open to the general public - but rarely amateur radio events: after all, there is little point in preaching to the already converted. However, once a year there *is* an opportunity for radio amateurs to inspect GB4FUN, and this is at the Leicester Amateur Radio Show (see pages 34 - 35). This year the Leicester Show takes place on Friday 1 October and Saturday 2 October at the usual venue, the Donington Park International Exhibition Centre, Donington Park, north-west Leicestershire, less than five minutes drive from Junctions 23A and 24 of the M1 motorway.

GB4FUN WORLD-WIDE

WIA, the Australian national amateur radio society, has obtained the callsign VK4FUN. WIA Director Glenn Dunstan, VK4DU, said "VK4FUN will be used for special event operations promoting amateur radio to the general public, with a particular focus on school kids. We decided to obtain the callsign following the success of the RSGB with their GB4FUN station." VK4FUN will be available for use by clubs and groups on application to the WIA. In August 2003 we reported in *RadCom* that the idea of GB4FUN had also been taken up in Finland. The Finnish national amateur radio society, SRAL, reported in its *Radioamatööri* magazine that the society had launched an 'OH4FUN' project based on the success of the RSGB's GB4FUN. ♦

Mounting Hardware (All galvanised)

6" Stand Off Bracket *(complete with U Bolts)*.....**£6.00**
9" Stand off bracket *(complete with U Bolts)*.....**£9.00**
12" Stand off bracket *(complete with U Bolts)*..**£12.00**
12" T & K Bracket *(complete with U Bolts)*.....**£11.95**
18" T & K Bracket *(complete with U Bolts)*.....**£17.95**
24" T & K Bracket *(complete with U Bolts)*.....**£19.95**
36" T & K Bracket *(complete with U Bolts)*.....**£29.95**
Chimney lashing kit.....**£12.95**
Double chimney lashing kit.....**£24.95**
3-Way Pole Spider for Guy Rope/ wire.....**£3.95**
4-Way Pole Spider for Guy Rope/wire 1" Mast Sleeve/Joiner.....**£6.95**
1.25" Mast Sleeve/Joiner.....**£7.95**
1.5" Mast Sleeve/Joiner.....**£8.95**
2" Mast Sleeve/Joiner.....**£9.95**
Earth rod including clamp (copper plated).....**£9.95**
Earth rod including clamp (solid copper).....**£14.95**
Pole to pole clamp 2"-2".....**£4.95**
Di-pole centre (for wire).....**£4.95**
Di-pole centre (for aluminium rod).....**£4.95**
Dog bone insulator.....**£1.00**
Dog bone insulator heavy duty.....**£2.00**

5ft Poles Heavy Duty (swaged)

Heavy Duty Aluminium (1.2mm wall)
1¼" single 5' ali pole.....**£7.00**
1¼" set of four (20' total approx).....**£24.95**
1½" single 5' ali pole.....**£10.00**
1½" set of four (20' total approx).....**£34.95**
1¾" single 5' ali pole.....**£12.00**
1¾" set of four (20' total approx).....**£39.95**
2" single 5' ali pole.....**£15.00**
2" set of four (20' total approx).....**£49.95**
(All swaged poles have a push fit to give a very strong mast set)

Cable & Coax Cable

RG58 best quality standard per mt.....**35p**
RG58 best quality military spec per mt.....**60p**
RGMini 8 best quality military spec per mt.....**70p**
RG213 best quality military spec per mt.....**85p**
H100 best quality military coax cable per mt.....**£1.10**
3-core rotator cable per mt.....**45p**
7-core rotator cable per mt.....**£1.00**
10 amp red/black cable 10 amp per mt.....**40p**
20 amp red/black cable 20 amp per mt.....**75p**
30 amp red/black cable 30 amp per mt.....**£1.25**
Please phone for special 100 metre discounted price

Connectors & Adaptors

PL259/9 plug (Large entry).....**£0.75**
PL259 Reducer (For PL259/6 to conv to P1259/6).....**£0.25**
PL259/6 plug (Small entry).....**£0.75**
PL259/7 plug (For mini 8 cable).....**£1.00**
BNC Screw type plug (Small entry).....**£1.00**
BNC Solder type plug (Small entry).....**£1.00**
BNC Solder type plug (Large entry).....**£2.50**
N-Type plug (Small entry).....**£2.50**
N-Type plug (Large entry).....**£2.50**
SO239 Chassis socket (Round).....**£1.00**
SO239 Chassis socket (Square).....**£1.00**
N-Type Chassis scoket (Round).....**£2.50**
N-Type Chassis scoket (Square).....**£2.50**
SO239 Double female adapter.....**£1.00**
PL259 Double male adapter.....**£1.00**
N-Type Double female.....**£2.50**
SO239 to BNC adapter.....**£1.50**
SO239 to N-Type adapter.....**£3.00**
SO239 to PL259 adapter (Right angle).....**£2.50**
SO239 T-Piece adapter (2xPL 1XSO).....**£3.00**
N-Type to PL259 adapter (Female to male).....**£2.50**
BNC to PL259 adapter (Female to male).....**£2.00**
BNC to N-Type adapter (Female to male).....**£2.50**
BNC to N-Type adapter (Male to female).....**£2.50**
SMA to BNC adapter (Male to female).....**£3.95**
SMA to SO239 adapter (Male to SO239).....**£3.95**
SO239 to 3/8 adapter (For antennas).....**£3.95**
3/8 Whip stud (For 2.5mm whips).....**£2.95**
Please add just £2.00 P&P for connector only orders

Baluns

MB-1 1:1 Balun 400 watts power.....**£24.95**
MB-4 4:1 Balun 400 watts power.....**£24.95**
MB-6 6:1 Balun 400 watts power.....**£24.95**
MB-1X 1:1 Balun 1000 watts power.....**£29.95**
MB-4X 4:1 Balun 1000 watts power.....**£29.95**
MB-6X 6:1 Balun 1000 watts power.....**£29.95**
MB-Y2 Yagi Balun 1.5 to 50MHz 1kW.....**£24.95**

Tri/Duplex & Antennas Switches

MD-24 HF or VHF/UHF internal duplexer (1.3-225MHz) (350-540MHz) SO239/PL259 fittings.....**£22.95**
MD-24N same spec as MD-24 but "N-type" fittings.**£24.95**
MX2000 HF/VHF/UHF internal Tri-plexer (1.6-60MHz) (110-170MHz) (300-950MHz).....**£59.95**
CS201 Two-way di-cast antenna switch. Freq: 0-1000MHz max 2,500 watts SO239 fittings.....**£18.95**
CS201-N Same spec as CS201 but with N-type fittings.....**£28.95**
CS401 Same spec as CS201 but4-way.....**£49.95**

Antennas Rotators

AR-31050 Very light duty TV/UHF.....**£24.95**
AR-300XL Light duty UHF\VHF.....**£49.95**
YS-130 Medium duty VHF.....**£79.95**
RC5-1 Heavy duty HF.....**£349.95**
RG5-3 Heavy Duty HF inc pre set control box.....**£449.95**
AR26 Alignment Bearing for the AR300XL.....**£18.95**
RC26 Alignment Bearing for RC5-1/3.....**£49.95**

Mobile Mounts

Turbo mag mount 7" 4mtrs coax/PL259 3/8 or SO239.....**£14.95**
Tri-mag mount 3 x 5" 4mtrs coax/PL259 3/8 or SO239.....**£39.95**
Hatch Back Mount (stainless steel) 4 mts coax/PL259 3/8 or SO239 fully adjustable with turn knob.....**£29.95**
Gutter Mount (same as above).....**£29.95**
Rail Mount (aluminium) 4mtrs coax/PL259 sutiable for up to 1inch roof bars or poles 3/8 fitting.....**£12.95**
SO259 fitting.....**£14.95**
Gutter Mount (cast aluminium) 4mtrs coax/PL259 3/8 fitting...**£9.95**
SO259 fitting.....**£12.95**
Hatch Back Mount 3/8 4mtrs coax/PL259.....**£12.95**
Roof stud Mount 4mts coax/PL259 3/8 or SO239 fitting.....**£12.95**

Antenna Wire & Ribbon

Enamelled copper wire 16 gauge (50mtrs).....**£11.95**
Hard Drawn copper wire 16 gauge (50mtrs)..**£12.95**
Equipment wire Multi Stranded (50mtrs).....**£9.95**
Flexweave high quality (50mtrs).....**£27.95**
PVC Coated Flexweave high quality (50mtrs).....**£37.95**
300Ω Ladder Ribbon heavy duty USA imported (20mtrs).....**£15.00**
450Ω Ladder Ribbon heavy duty USA imported (20mtrs).....**£15.00**
(Other lengths available, please phone for details)

HF Balcony Antenna

BAHF-4 FREQ:10-15-20-40 Mtrs LENGTH: 1.70m HEIGHT: 1.20m POWER: 300 Watts.....**£159.95**

Miscellaneous Items

CDX Lightening arrestor 500 watts.....**£19.95**
MDX Lightening arrestor 1000 watts.....**£24.95**
AKD TV1 filter.....**£9.95**
Amalgamating tape (10mtrs).....**£7.50**
Desoldering pump.....**£2.99**
Alignment 5pc kit.....**£1.99**

Telescopic Masts (aluminium & Fibreglass opt)

TMA-1 Aluminium mast ★ 4 sections 170cm each ★ 45mm to 30mm ★ Approx 20ft erect 6ft collapsed.....**£99.95**
TMA-2 Aluminium mast ★ 8 sections 170cm each ★ 65mm to 30mm ★ Approx 40ft erect 6ft collapsed.....**£189.95**
TMF-1 Fibreglass mast ★ 4 sections 160cm each ★ 50mm to 30mm ★ Approx 20ft erect 6ft collapsed.....**£99.95**
TMF-2 Fibreglass mast ★ 5 sections 240cm each ★ 60mm to 30mm ★Approx 40ft erect 9ft collapsed.....**£189.95**

HF Yagi

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**

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

EVX5000 5 BAND VERTICAL FREQ:10-15-20-40-80 Mtrs GAIN: 3.5dBi HEIGHT: 7.30m POWER: 2000 Watts (without radials) POWER: 500 Watts (with optional radials).....**£169.95**
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**
80 MTR RADIAL KIT FOR ABOVE.....**£89.00**
(All verticals require grounding if optional radials are not purchased to obtain a good VSWR)

Trapped Wire Di-Pole Antennas (Hi grade heavy duty Commercial Antennas)

UTD160 FREQ:160 Mtrs LENGTH:28m POWER:1000 Watts.....**£49.95**
MTD-1 (3 BAND) FREQ:10-15-20 Mtrs LENGTH:7.40 Mtrs POWER:1000 Watts..**£44.95**
MTD-2 (2 BAND) FREQ:40-80 Mtrs LENGTH: 20Mtrs POWER:1000 Watts.....**£49.95**
MTD-3 (3 BAND) FREQ:40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts.....**£89.95**
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.....**£79.95**
(MTD-5 is a crossed di-pole with 4 legs)

Patch Leads

STANDARD LEADS
1mtr RG58 PL259 to PL259 lead.....**£3.95**
10mtr RG58 PL259 to PL259 lead.....**£7.95**
30mtr RG58 PL259 to PL259 lead.....**£14.95**

MILITARY SPECIFICATION LEADS
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)

ALL PICTURES ARE FOR REFERENCE ONLY

HFC2004

RSGB International HF & IOTA 40th Anniversary Convention

22nd - 24th OCTOBER 2004

The World's Premier HF & IOTA Event

NEW VENUE

This year, the RSGB HF Convention returns 'down south' after our sojourn to Manchester in 2003 and to a brand-new venue: the Gatwick Worth Hotel, near Gatwick Airport in West Sussex. The Gatwick Worth is located at Crabbet Park, Turners Hill Road, Crawley RH10 4ST (note that the Convention is not taking place at the Europa Hotel, as previously advertised). The Gatwick Worth is part of the well-known Best Western Hotel chain. It is an AA three star hotel which has all the facilities and standards we expect for the Convention. It is extremely well suited to our needs for putting on three simultaneous lecture streams.

LECTURES

THE LECTURES

We are following the tried and tested formula of timing all the talks the same way so that one can move between lecture streams, thus enabling you to attend particular sessions of interest. The three lecture streams are roughly, but not exclusively, aimed at three areas of interest: 1. DX operating. 2. Contesting and Technical matters, Including experimentation, propagation, etc. 3. Introductory presentations for beginners, improvers and even for the so called 'experts' in perhaps a new area of the hobby. In amongst this broad framework there are some sessions that break this mould, in order to help the event to appeal to an extremely wide audience. You can find the expected programme opposite, but please note that in order to bring you the best possible programme over the weekend, the timing and order of events may change after we go to press. See www.rsgb.org./hfc for the latest news.

IOTA, Contest, LF & QRP Lectures

HIGHLIGHTS

HIGHLIGHTS

In addition to the lectures and the other regular features of the Convention such as the DXCC card checking facility, facilities for the checking of your personal registration documents for the Logbook of The World, and an outgoing QSL card bureau, new for this year we have the space to offer the full range of licence assessments / exams from Foundation through Intermediate to Advanced. So if you are prepared for a full weekend and have the appropriate competences, you could move through all three stages, which includes taking the operating part of the assessment on the Convention's HF station.

If you wish to take the examinations at the HF Convention, please contact the Amateur Radio Department at RSGB HQ, tel: 0870 904 7373, or e-mail: ar.dept@rsgb.org.uk in good time before-hand.

Whilst CW is no longer a prerequisite for the amateur licence the skill is as popular as ever and you also have the chance to monitor your level of skill through the

Morse Proficiency Programme. The HF Convention culminates in a major raffle, the proceeds of which go to the RSGB DXpedition Fund. There will be numerous prizes and major sponsors Yaesu (UK) are kindly donating an FT-897 1.8MHz - 430MHz multimode transceiver as the star prize and Martin Lynch & Sons an FT-8900 29 / 50 / 144 / 430MHz FM transceiver as the second prize.

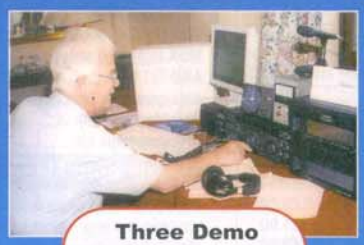
RAFFLE PRIZES

SOCIALISING

SOCIALISING

The quality and breadth of the lecture programme is only part of the fun of the Convention weekend. The other almost equally important aspect of the weekend is for visitors to relax and chat with friends, both old and new. Feedback from recent Conventions speak of the need to get the bar, the small exhibition area and HF demonstration stations in the same area.

The organising committee and our sponsors are excited with the layout at the Gatwick Worth Hotel and the fact that we will be taking over the whole hotel! This means that we can use the large bar area as a place to have some refreshments, relax and chat with friends, browse and perhaps buy from the small selection of stands from our sponsors, and finally have a go at operating state of the art equipment loaned for the HF demonstration station by Yaesu (UK). The latter will feature three complete stations so you can try your hand at the Yaesu FT-1000MP Mark V with its accompanying Quadra linear, or have a go with one of the other two lower specification systems, aimed at suiting all levels of expertise and size of wallet.



Three Demo Stations

One change that we are making this year, given that it is the IOTA's 40th Anniversary, is to hold a fairly informal Welcome Dinner' on the Friday evening, so that on Saturday we can combine IOTA's celebrations with the interests of others: DXing, contesting and construction at a 'Gala Dinner', with Bob Beebe, GU4YOX, as Master of Ceremonies. Both events will be extremely popular so make sure that you book early and note that everyone is welcome to attend, whether or not you are staying at the hotel.

The event is thus an opportunity to come and listen to and exchange ideas with experts and other fellow enthusiasts, including many amateurs from overseas, in a wide range of subjects ranging from DXpeditioning, contesting, DXCC and IOTA award programmes to equipment design and a range of introductory talks on technical and operating issues. It is one of the few occasions when such a wide range of expertise is available in one place.

ADMISSION

ADMSSION

Don't miss your opportunity to visit the Convention, either by booking an accommodation package or simply by turning up on the day. The admission is just £6.50 for the whole day on either Saturday or Sunday, or £10 for a weekend pass. If you're travelling as a group you can buy four tickets and get one free: a group day visitors' pass for five people costs just £26. Alternatively, take advantage of the accommodation packages and stay overnight at the Gatwick Worth Hotel. There are four different packages available, costing from £115 for one or two people staying on a dinner, bed and breakfast basis for one or two nights. Full details are at www.rsgb.org/hfc and you can book on-line there. Alternatively, contact RSGB Events at 1 The Beeches, Banstead, Surrey SM7 2AZ; tel / fax 0870 904 7379 or e-mail rsgbevents@rsgb.org.uk if you have any questions concerning the booking of accommodation packages, advance purchase of day tickets, etc.

How to find us?

Gatwick Worth Hotel
Off Turners Hill Rd, Gatwick

HFC Programme

Friday 22nd October 2004

TIME	SUSSEX SUITE
18:30	Welcoming of Guests
20:00	Welcoming Dinner

Visitors to the Convention can either pre-book a package that includes accommodation at the Gatwick Worth Hotel, Welcome Buffet, Gala Dinner and access to all lectures streams. Alternatively, if you do not need overnight accommodation at the Convention you can turn up on the day and pay an entry fee, for attending the Convention, of £6.50 at the door (pre-booked weekend tickets: £10.00 for the two days & under-18s free). Tickets to the two dinners are also available: Gala Dinner £30.00, Welcome Dinner £23.00

N.B. Places for the Gala Dinner are limited, priority will be given to delegates booking packages.

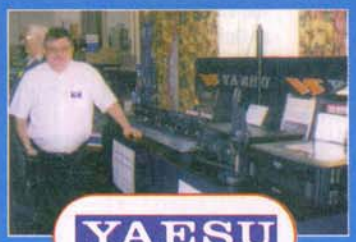
Saturday 23rd October 2004

TIME	SUSSEX SUITE	STABLE SUITE	WENTWORTH SUITE
09:15	**Welcome from RSGB President,** Jeff Smith MI0AEX		
09:30 - 10:15	**IOTA Session:** Welcome **OX/DL2VFR & OX/DL2SWW,** An operation from Maniitsoq Island in Greenland	**HF Contest Forum,** Justin Snow G4TSH	**HF for the Newcomer,** Steve Hartley G0FUW
10:15	**COFFEE**	**COFFEE**	**COFFEE**
10:45 - 11:30	**"Onwards to 50 years",** A talk by the IOTA Commitee on possible major new programme developments	**HF Contest Trophy Presentations,** Justin Snow G4TSH	**ZB2FX and Pile-up Management,** Martyn Phillips G3RFX
11:45 - 12.30	**"DXpeditioning the Australian way",** A video of the VI5WCP and VI5BR IOTA programme developments Operations	**VHF Contest Trophy Presentations,** Andy Cook, G4PIQ	**Getting Started on LF** Mike Dennison G3XDV
12:30	**LUNCH**	**LUNCH**	**LUNCH**
13:45 - 14:30	**3B9C Rodrigues Island Expedition,** Neville Cheadle G3NUG & Don Beattie G3BJ	**An update on the MB7LF remote receiver for 136kHz,** Stewart Bryant G3YSX & Derek Atter G3GRO	
14:45 - 15:30		**136kHz Propagation,** Alan Melia G3NYK	**Project Goodwill Albania,** Roger Brown G3LQP
15:30	**TEA**	**TEA**	**TEA**
16:00 - 16:45	**Development and design philosophy of the FT DX9000 Elite-Class HF/50MHz Transceiver** Chip Margelli, K7JA	**EZNEC Workshop,** Roy Lewallen W7EL (presentation via internet)	**SOTA,** John Linford G3WGV
17:00 - 17:45	**7Q7MM Malawi DXpedition,** by the team G4AXX,GU4CHY, G4EDG, G4JVG, M5RIC	**Elecraft K2,** Eric Schwartz WA6HHQ (presentation via internet)	**Underground Comms - LF to UHF,** John Rabson G3PAI

19:30 for 20:00 Gala Dinner in the Sussex Suite Master of Ceremonies, Bob Beebe GU4YOX

Sunday 24th October 2004

TIME	SUSSEX SUITE	STABLE SUITE	WENTWORTH SUITE
09:00 - 09:45	**IOTA Forum,** Martin Atherton G3ZAY & Roger Balister G3KMA	**Antennas,** Peter Dodd, G3LDO	
10:00 - 10:45	**Log Book of the World,** Wayne Mills N7NG	**SO2R Contest Operation,** Stavros Tsiakkouris M0BBB	**Wire Antennas** Dominic Smith M0BLF
10:45	**COFFEE**	**COFFEE**	**COFFEE**
11:15 - 12:00	**T33C Banaba Island DXpedition,** Ronald Stuy PA3EWP	**Spectrum Forum** Colin Thomas G3PSM	**Basic QSOs in Foreign Languages,** Martyn Phillips G3RFX
12:15 - 13:00	**3B9C LF Propagation** Mike Devereux G3SED & Don Field G3XTT	**5MHz Forum,** John Gould G3WKL	**World Wide Young Contesters** Royce Hunt M0RHI
13:00	**LUNCH**	**LUNCH**	**LUNCH**
14:00 - 14:45	**StarLog,** John Linford G3WGV	**PLC and the Future of the HF Spectrum** Panel discussion	
15:00 - 15:45	**TJ3G CW DXpedition to Cameroon 2004,** Roger G3SXW, Nigel G3TXF		
16:00 - 16:30	**Raffle Draw & Farewell** from RSGB President Jeff Smith MI0AEX		Note: Timetable is subject to change



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Andy Chadwick, G3AB* and **Bob Whelan,** G3PJT**

*5 Thorpe Chase, Ripon, North Yorkshire HG4 1UA

**36 Green End, Comberton, Cambridge CB3 7DY.

RSGB Commonwealth Contest 2004

The Commonwealth Contest is one of the Society's oldest HF operating events. This year there were over 900 participants throughout the Commonwealth and new winners in both the Open and Restricted Sections, as Andy Chadwick and Bob Whelan explain...

The V26DX antenna, an Optibeam OB12-6 at 33 metres with the view over the Caribbean Sea.

The downward trend in HF band conditions as a result of the decline in solar activity is reflected in this year's scores. Scores on 28MHz are well down on 2003. At the same time conditions on 3.5MHz were the best for some time, with very low levels of static. This year sees new first-time winners in both the Open and the Restricted sections. Despite the conditions there was an increase in the number of individual Commonwealth stations active in the contest (936). However, log entries received were down slightly on last year, which was disappointing. Please send in your log if you have taken part in the contest, no matter how big or small, as it all helps with the adjudication process.

OPEN SECTION

Congratulations to Vladimir, 9H1ZA. After finishing as runner-up last year and being consistently highly placed over the years, Vladimir took first place in the Open category with 8670 points, winning the Senior Rose Bowl. Vlad used an Icom IC-756Pro, PA 400W with homebrew antennas: a 6-element log periodic array for 10, 15, 20m and a top-loaded vertical for 40 and 80m. John, VE3EJ, came in second with 8160 points. Despite having 233 bonuses (30 more than 9H1ZA), John could not overcome Vladimir's high QSO total of 918 (more than 200 ahead of VE3EJ). In third place spot was Dave, VO1AU. Fourth and fifth place went to the Caribbean DXpedition stations of Dave, J88DR (G3TBK), and Bob, V26DX (G3PJT), respectively. Top UK station and regaining the Col Thomas Rose Bowl was Dave, G4BUO, with last year's winner Andy, G4PIQ/P, coming close behind. The leading station from Oceania, in 12th place was ZL6QH operated by Brian, ZL1AZE. Leading station from Africa was Brian, 9J2BO, who managed a staggering 128 QSOs on 28MHz - so the north-south path was working at least.

RESTRICTED SECTION

Congratulations to Bob, 5B4AGN, who takes the Junior Rose Bowl for the first time. In second place was Bruce, ZF2NT, just edging out last year's winner, George, 5B4AGC, into third spot. Top UK station was Steve, G0CKP, who wins the Ross Carey Rose Bowl. The leading station from Oceania in fifth place was Barry, VK2BJ, just ahead of Steve, VK6VZ, in sixth place. As in previous years there were many comments suggesting that the Restricted section should reflect lower power or less well-equipped station entries, rather than a restriction in operating time. However, there were also many who enjoy the 12-hour section as it stands, allowing them to spend time with family during the weekend. Indeed some claim that the additional challenge to optimise operating times to match conditions adds to the interest.

HQ STATIONS

Three HQ stations were active this year. From the UK, Fraser, G4BJM, operated as GB5CC. Keith, VK4TT, signed as VK4WIA and Arasu activated VU2UR as the Indian HQ station. HQ stations generate lots of extra interest and bonus points. We would like to encourage more HQ stations to be active next year. It is an ideal opportunity for a club or multi-op team to get involved in the contest. The committee will be giving as much encouragement as it can to Canada especially to mount a few VExRAC stations in 2005 as they have done in previous years to great effect. What about it you VEs?

COMMONWEALTH MEDAL

This year the committee has awarded the Commonwealth Medal to Arasu, VU2UR, for his support and activity over many years. Many thanks Arasu!

ACTIVITY STATISTICS

A total of 936 different valid Commonwealth stations were recorded in the logs. This is actually up on previous years. 597 individual stations were active from UK, 164 Canadian stations, 58 from Australia, 29 from New Zealand and 20 from South Africa.

60 different Call Areas were active, but some of them were worked by only a select few:

3B8, 3DA0, 4S7, 5B, 5X, 5Z, 6Y, 7Q, 8P, 9H, 9J, 9M2, 9V, G, G (HQ), J3, J8, S2, T30, V2, V3, V5, V8, VE1, VE2, VE3, VE4, VE5, VE6, VE7, VE9, VK2, VK3, VK4, VK4 (HQ), VK5, VK6, VK7, VK8, VK9N, VO1, VP9, VQ9, VU, VU (HQ), VY2,

CC	Year	Open		Restricted		HQ		Total
		Nr.	Score	Nr.	Score	Nr.	Score	Nr.
62nd	1999	76	10451	45	4694	3	7503	124
63rd	2000	71	9410	51	5469	8	7410	130
64th	2001	81	9562	64	6644	3	8861	148
65th	2002	88	9882	69	7465	2	9203	159
66th	2003	79	10660	71	7195	6	8930	156
67th	2004	60	8670	69	7195	3	7835	132

Number of entries and scores of each of the sections from 1999 to the present.

Z2, ZB2, ZC4, ZF, ZK3, ZL1, ZL2, ZL3, ZL4, ZL6, ZS1, ZS2, ZS4, ZS6.

Special thanks to those entrants who ventured overseas for the contest for the extra bonus point activity: J88DR, V26DX and VP9/G3TXF. Most of the Commonwealth countries are very desirable holiday destinations and many have stations which can be rented – worth a look for 2005. We would also like to thank the African stations, 9J2BO, ZS1AN, ZS1EL, ZS1AJS and ZS6ME. See you all in 2005.

RESULTS

CALL	80	40	20	15	10	QSOS	BONUS	SCORE
OPEN SECTION								
9H1ZA	125/24	253/59	292/61	228/41	20/18	918	203	8670
VE3EJ	116/41	171/65	251/61	140/46	22/20	700	233	8160
VO1AU	145/31	235/50	278/43	171/34	14/13	843	171	7635
J88DR	94/31	161/49	230/46	198/48	48/18	731	192	7495
V26DX	110/27	212/45	231/45	205/37	26/14	784	168	7280
G4BUO	49/31	85/58	129/73	79/62	24/24	366	248	6790
G4PIQ/P	35/24	88/58	105/65	75/57	31/29	334	233	6330
VE3AT	52/33	127/53	242/48	95/39	9/8	525	181	6245
G3BJ	54/32	78/58	103/68	57/49	23/22	315	229	6155
G3AB	40/26	69/56	107/67	61/53	21/20	298	222	5930
VP9/G3TXF	139/31	217/49	107/39	94/26	5/5	562	150	5810
ZL6QH	51/31	153/51	134/53	67/27	17/14	422	176	5630
VE3QAA	58/32	163/50	180/37	28/19	2/2	431	140	4955
VE7CC	40/30	72/53	161/44	26/26	12/11	311	164	4835
9J2BO	2/2	47/27	99/33	140/26	128/14	416	102	4120
G3GLL	13/13	40/39	75/59	32/32	13/13	173	159	4045
G3WPH	31/20	49/44	56/44	40/33	13/12	189	153	4005
VE2AYU	43/24	101/34	198/38	20/13	-	362	109	3990
VE3NE	48/24	75/38	85/29	49/25	7/7	264	124	3800
VE3VHB	35/23	51/37	93/35	40/28	5/5	224	131	3740
ZL1DD	10/10	84/37	96/40	41/24	9/9	240	121	3620
G3IAF	23/17	44/42	52/49	23/23	7/7	149	143	3605
ZL4HH	20/17	70/41	73/46	19/17	10/10	192	131	3580
ZL2AZ	40/29	69/39	44/29	23/20	13/13	189	130	3545
VE6JY	24/17	79/49	92/27	22/20	-	217	113	3345
ZL1MH	18/18	57/41	42/37	26/16	11/10	154	123	3230
ZS1AN	-	51/27	79/34	74/34	14/8	218	103	3150
ZL1AIH	7/7	53/36	61/30	41/28	5/5	167	106	2955
G4CZB	13/13	32/30	42/33	30/27	8/8	125	111	2845
G3LIK	12/12	19/19	43/41	28/27	6/6	108	106	2660
VE3XN	26/23	33/33	36/26	17/17	3/3	115	102	2615
VE7UZ	11/9	53/40	43/27	12/12	6/6	125	97	2565
VE7JKZ	10/5	34/29	59/38	18/16	8/7	129	95	2545
ZL2JKY	15/14	60/36	50/40	-	-	125	90	2425
G3JJG	8/8	25/25	32/30	24/24	6/6	95	96	2395
G3KKP	5/5	19/19	38/32	26/25	6/6	94	87	2210
ZB2EO	-	75/13	37/6	146/24	-	258	43	2150
VK6HQ	5/5	32/30	46/27	15/15	3/3	101	82	2145
GM4KGK	5/5	16/16	45/35	18/18	2/2	86	79	2010
VE3JCV	24/18	31/23	69/20	6/6	-	130	67	1990
M0AJT	8/8	14/14	29/25	19/19	8/8	78	74	1870
G3RFH	6/6	13/13	35/32	17/17	5/5	76	73	1840
G3VDL	10/10	13/13	21/19	20/20	4/4	68	70	1740
VE1LS	15/13	24/18	37/15	13/11	5/5	94	62	1710
ZL1CT	2/2	18/15	50/38	6/6	3/3	77	64	1665
G4KHM	-	19/19	30/28	10/10	3/3	62	62	1550
VE7VF	1/1	7/7	46/25	14/13	6/6	74	52	1410
M1DXC	-	13/13	21/21	18/18	-	52	53	1320
VE1KB	9/9	21/12	38/22	-	-	68	47	1280
G4EBK	4/4	5/5	32/26	8/8	5/5	53	49	1245
VK6AJ	-	16/11	24/21	6/6	13/9	59	47	1235
VK2YN	-	16/16	37/20	6/6	-	59	43	1155
VE4YU	10/8	9/8	26/17	9/9	-	54	42	1110
G3UFY	13/13	22/21	-	-	5/5	40	39	980
VE3BBM	1/1	3/3	36/17	6/6	-	46	29	810
VE9VAR	-	9/5	57/9	5/5	-	71	19	735
G4ARI	3/3	3/3	19/17	4/4	-	28	28	700
VK5HO	4/4	20/20	1/1	-	-	25	25	625
G4SLE	-	-	8/8	6/6	1/1	15	22	515
G3NKS	-	3/3	7/7	7/7	-	17	17	425

ADJUDICATION / LOGS

The total number of logs received was 141. This comprised 59 Open, 70 Restricted, 3 HQ and 9 check logs. The vast majority of logs were computer generated and sent by e-mail. Thank you to those who supplied a log in Cabrillo format, this is the preferred format for future entries. However, we can still handle other computer formats and please send paper logs if you don't use computer logging. The important thing is to send in your log please!

The committee would like to emphasise that the Commonwealth Contest is a *single operator* only contest (HQ stations apart) and this means no use of DX *PacketCluster* spots or any other spotting assistance. From next year, the committee will be checking entries for patterns of DX Cluster use and will question any entrant who is suspected to have used spotting assistance.

Certificates for working 67 Band-Call Areas will be issued to those who qualified and requested the certificate in their entry.

The results and this write up will be sent to all non-UK entrants for the last three years. In addition a reminder will be sent out to a non-UK mailing list in February 2005. This information will be sent to the VE, VK and ZL contest managers for local publicity.

SOAPBOX

Some good stuff on LF this year . . . made VK6VZ on 10m (G4TSH). Conditions down on all bands this year except 80m, DX and the Gs hard going (ZL2AZ). My strategy of starting late went against me this year (5B4AGC). 80m was a disappointment, no opening to G this year (VK2BJ). 10 and 15m opened to EU after 0830 but not everyone realised (VK6VZ). Disappointed not to hear any proper two letter calls this year for the first time (G3LET). More ZLs active (at least 17!) than in recent years (ZL1MH). Conditions best ever long path ZL on 80m (G4BUO). We might benefit our reputations if activity areas were defined as 10 - 30kHz up from lower band edges (5B4AGN). Must try harder next year (G4PIQ/P). VKs were very few and far between for me (VO1AU). Very difficult to achieve the required band call areas (67) (VU2NXM).

Vladimir, 9H1ZA, this year's winner of the Open Section in his shack.

CALL	80	40	20	15	10	QSOS	BONUS	SCORE
RESTRICTED SECTION								
5B4AGN	37/14	197/52	280/60	147/34	86/13	747	173	7195
ZF2NT	94/33	174/43	166/34	199/46	35/20	668	176	6860
5B4AGC	63/19	177/35	249/56	179/36	77/9	745	155	6825
G0CKP	32/23	52/44	61/49	32/32	16/17	193	165	4265
VK2BJ	25/23	84/41	171/39	86/15	3/3	369	121	4265
VK6VZ	21/18	90/35	163/39	52/16	37/13	363	121	4235
G3LET	21/17	57/47	57/47	40/32	10/11	185	154	4005
G3LZQ	26/21	37/32	66/52	26/25	14/13	169	143	3705
G3KZR	17/17	37/33	51/44	29/28	11/11	145	133	3385
GW3NJW	14/14	46/34	51/43	27/25	8/7	146	123	3190
G3TXZ/P	17/15	29/27	53/43	27/27	13/12	139	124	3175
VE3DZ	23/17	50/27	123/27	44/18	6/6	246	95	3130
G4CWH	6/6	37/34	40/35	36/29	4/4	123	108	2775
9V1YC	-	41/16	146/30	36/17	7/7	230	70	2550
VK4BUI	10/10	37/27	53/41	19/17	2/2	121	97	2545
G3LHJ	13/13	29/25	51/42	16/16	1/1	110	97	2490
VA3NR	35/25	29/26	41/18	18/15	6/6	129	90	2445
GM0GAV	-	-	54/49	48/37	6/6	108	92	2380
G3VYI	10/10	27/26	31/29	20/20	5/5	93	90	2265
VE3XB	13/13	45/32	28/23	12/12	3/3	101	83	2165
VK2AYD	7/7	32/21	54/34	14/14	4/4	111	80	2155
G3HEJ	11/11	19/19	31/29	22/21	4/4	87	84	2115
VE2AWR	17/11	39/23	34/21	25/19	1/1	116	75	2080
G2AFV	10/10	23/23	35/35	12/12	1/1	81	83	2065
G3RSD	10/10	22/22	32/29	18/18	3/3	85	82	2065
G3TJE	3/3	21/21	35/32	21/19	1/1	81	76	1925
VE3ZI	25/23	21/20	58/19	3/3	-	107	65	1835
G3TEV	5/5	15/15	33/32	14/14	7/7	74	73	1830
G4IRN	15/15	13/13	23/23	13/13	9/9	73	73	1825
VE1AYY	7/7	47/12	101/13	18/10	2/2	175	44	1755
ZL1ALZ	6/6	18/18	25/23	21/14	8/7	78	68	1750
G3YEC	7/7	22/22	25/24	12/12	3/3	69	68	1705
VU2NXM	-	27/16	15/15	35/19	16/9	93	59	1645
MU0FAL	-	20/17	23/20	22/22	2/2	67	61	1555
VE3KP	15/14	20/17	39/12	17/10	-	91	53	1515
ZS1EL	-	12/9	44/12	27/15	22/13	105	49	1505
G3BFP	6/6	12/12	23/23	15/15	4/4	60	60	1500
GW3KJN	1/1	15/14	30/26	15/15	1/1	62	57	1450
GW4XXF	2/2	17/17	23/21	14/14	3/3	59	57	1435
ZS6ME	-	-	6/6	113/27	10/5	129	38	1405
VE3IAY	11/11	16/15	32/18	11/8	-	70	52	1390
GM3CFS	-	14/14	41/34	6/6	-	61	54	1385
G3NAN	5/5	20/20	14/14	9/9	4/4	52	56	1380
G3HAL	4/4	14/14	16/16	17/17	3/3	54	54	1350
G4DBW	5/5	18/18	15/15	12/12	4/4	54	54	1350
ZL1BHQ	3/2	41/33	14/14	-	-	58	53	1350
G3GMM	3/3	14/14	19/16	16/16	-	52	49	1240
VK2FRC/7	12/12	68/29	-	-	-	80	41	1220
VE5SF	2/2	11/10	58/19	7/7	-	78	38	1150
GW4HBK	4/4	14/14	21/20	5/5	1/1	45	44	1105
VE3KZ	-	11/11	16/13	18/13	2/2	47	39	1015
VE2OWL	14/9	6/6	24/18	5/5	-	49	38	1005
VK2EL	5/5	19/19	10/10	-	-	34	40	970
G3YMC	1/1	6/6	20/18	10/10	3/3	40	38	960
VE3PYG	6/6	6/6	20/15	8/7	-	40	34	880
VA3XRZ	2/2	6/6	20/16	5/5	-	33	29	745
G3ZDD	-	-	20/20	5/5	2/2	27	28	695
GW3SB	-	7/7	13/13	3/3	-	23	28	675
VA3IX	2/2	5/5	14/14	4/4	1/1	26	27	670
G3GMS	2/2	1/1	15/15	8/8	-	26	26	650
G3ZRJ	3/3	11/11	12/12	-	-	26	26	650
VY2SS	-	-	29/11	11/9	2/2	42	22	650
VK7GN	6/6	18/17	2/2	-	-	26	25	630
VA7ST	-	-	16/16	7/7	-	23	23	575
G3JJZ	1/1	12/12	5/5	1/1	-	19	19	475
G3VQO	-	1/1	11/11	4/4	-	16	16	400
VE3IGJ	-	-	16/14	1/1	-	17	15	385
G0MRH	-	1/1	6/6	-	-	7	7	175
ZS1AJS	-	-	-	5/5	1/1	6	6	150
HQ								
GB5CC	126/27	162/49	220/66	162/49	61/18	731	209	7835
VK4WIA	13/13	26/26	86/36	45/20	7/7	177	102	2925
VU2UR	-	15/15	49/32	32/25	32/22	128	94	2520

CHECKLOGS
4S7NI, G0WAT, G3XTT, G4TSH, GW0ETF, GW4BLE, VK4XA, ZL2TX, ZC4CW.

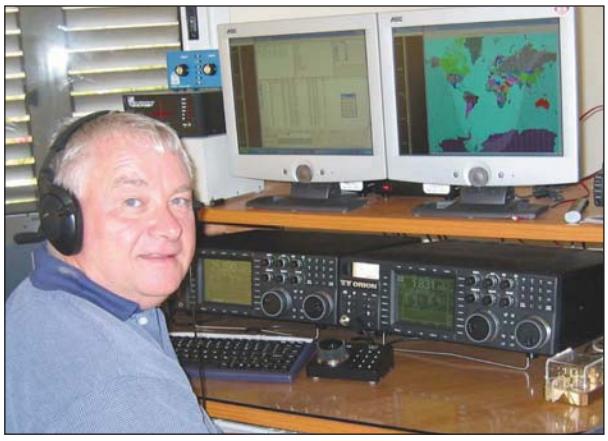
VIEW FROM THE CARIBBEAN (BOB, V26DX)
I used the V26DX contest site at the Royal Antiguan Hotel this year. The antennas are at 33m, for HF the Optibeam OB12-6 and slopers for 80 (and 160m). I used the K2/100. Great set up – very low static this year on 80 but as the HF antenna was fixed on Western Europe it rather limited the potential score. You can arrange to use this station by booking via Doug, W3CF.

Dave, G3TBK, was active from St Vincent as J88DR. Dave says, "I just used an R7000 vertical and dipoles for 80 and 40m with the IC-706 – would be totally uncompetitive at home! Hard going on 10m this year as expected, but got my highest-ever scores on 80, 40 and 15m. Fell asleep and missed the last couple of hours."

And from Nigel, VP9/G3TXF, "QRV for 22 hours. Working the UK on HF was a challenge as the beam was stuck on the west, but plenty of UK stations were worked on 40 and 80m. Gave up two hours before end because it got so slow!"

NEXT YEAR
The 68th Commonwealth Contest will take place on 12 / 13 March 2005. Start time is 1000UTC. You will need 68 band-call areas or more to qualify for a certificate, which *must* be requested in the comments field or summary sheet of your log entry.For 2005, low power stations, ie stations running less than 100 watts to single element antennas, will have their entry highlighted in the results. Low power stations should enter the Open section and should mark their entry "Low Power".

The Commonwealth Contest website is operational again now that Bob, G3PJT, is back in the 'real' world. This and the RSGB HF Contests Committee site are the places to look for the latest information. ♦



Bob Henderson, 5B4AGN, winner of the Restricted Section.

WEB SEARCH

RSGB HF Contests Committee: www.rsgbhfcc.org
Commonwealth Contest: http://uk.geocities.com/beru2004@btinternet.com
V26DX/W3CF: www.w3cf.com

By Steve Hartley, G0FUW

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

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

Steve Hartley helps to clarify some issues that have been confusing a number of newcomers.

Newcomers' news

The RSGB HF Convention is almost upon us. As you may be aware, I will be giving a talk aimed at 'HF for the Newcomer'. I hope to see some readers there [22 - 24 October at Gatwick - *Ed*], come and say hello.

For those who are coming to sit any, or all, of the Radio Communications Examinations, I wish you luck. Hopefully you will soon be reading about the first student to pass all three exams in one weekend! If you are ready to sit any of the exams it may not be too late to register. The Foundation and Intermediate assessments will be on the Saturday and the Advanced exam will be on the Sunday morning. Contact the Amateur Radio Department at RSGB Headquarters to book a place.

WHAT IS 'THE STATION'?

Requests for the Intermediate exam practice papers continue to come in on a weekly basis. I have lost count of the number I have sent out. From the feedback I have received it seems that students are finding them useful for last minute revision and several have confirmed success in the real thing. Well done all!

Richard Powell was one of the tutors to use the papers and he raised a point that is worth covering here. The term 'Station' in the Licence document does *not* refer to the equipment but *the callsign*. So when the Foundation and Intermediate licences say "The Station shall be operated only by the Licensee personally" that does not mean that another amateur cannot use your transceiver, only that they must use their own callsign, suffixed '/P' (assuming that they not at their Main Station Address).

This is the reason why neither Foundation nor Intermediate callsigns can be used for group entries in contests, for example. Clearly, an individual can enter as a 'Single Operator'. However, if a group wanted to enter they would have to take a Full (Advanced) licence holder with them and use the Full 'Station' (callsign) under supervision.

HOW ACCURATE?

Charles Darley, G4VSZ, also used the practice papers at the end of his latest course. He sought clarification on the issue of giving your location during portable (as opposed to mobile) operation. In some circumstances you need to be accurate to within 1km, in others 5km. Students - and tutors - are often confused by this.

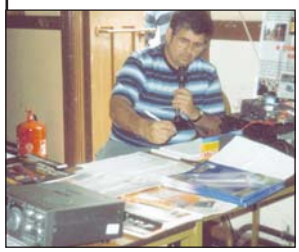
Yours truly and junior op, Jacob, M3MOB, at the Marconi Monument at Poldhu, a good 'geographical feature' (see 'How Accurate?').

When operating from a Temporary Location all three Licences state that you must "give the location of the Station every 30 minutes to an accuracy of at least 5km by a generally used identifier". In the Notes at the back of all three versions of *BR68* is a list of the options for identifying your location. One of these is "the address or other geographical description correct to 1km". So is it 1km or 5km?

The answer is, "it depends". The IARU Locator (eg IO81TJ) is acceptable because each small Locator square (ie the 'TJ' part in my example) is about 6km across. Wherever you are in that small square you will therefore be within 5km of the centre.

However, if you are referring to a 'geographical feature', such as a town, mountain summit or a monument, then you must be accurate to within 1km. "Located in Bristol" would not be accurate enough, as Bristol is more than 1km across. "Located near the Clifton suspension bridge" would be acceptable, as long as you were within 1km of the bridge.

I hope that clarifies things for your '/P' operating and any Intermediate exam questions that might crop up.



Kevin Valentine, MW0VKD, operating from the Llandybie Village Hall Grand Re-opening on behalf of the St Tybie ARS (see 'Recent Success').

MULTIPLE THANKS

When Chris Orme decided he wanted to become a radio amateur I don't think he envisaged travelling all round the UK for his training and assessments! He had studied for and had intended to sit the final RAE in December but events conspired to prevent him from doing so. Setting out on the 'progressive' Licence route gave Chris a few problems. He lives in an area where there are not many courses. Undeterred by this Chris 'got on his bike' and sat the three levels of assessments and examinations in just four weeks in two different locations. He has asked that those who helped him along the way be thanked for their support and dedication to newcomers through this column.

Chris attended a weekend Foundation course at the Stevenage and District ARS. He said they all made him very welcome but asked that Ken Blanshard, M0KPB, the Lead Instructor, be given a special mention as he also helped to arrange weekend accommodation for Chris. Take a bow, Stevenage! [See also the article on pages 42 - 43 of the September RadCom - Ed.]

Spurred on by his Foundation success he decided to have a shot at both the Intermediate and the Advanced in quick succession. Chris managed to make the arrangements with Tracy and Alan Ralph, M5ATR and G8XLH, in Peterborough, who Chris says were "brilliant". Another round of applause, please.

Chris made it three out of three and, to the best of my knowledge, now holds the record for the fastest progression through the new system. What an achievement!

Chris really wanted a Full licence so he could operate maritime mobile and by the time this column is published he should have completed his first /MM expedition, sailing a yacht to the Isle of Man from the Azores. Well done Chris, and I hope the FT-817 held up on the high seas.

RECENT SUCCESS

Kevin Valentine, MW0VKD, gained his Full Licence after studying long and hard for the June Advanced Exam. Kevin held an Novice (now Intermediate) Licence for a number of years and is rightly proud of his achievement, especially as he has suffered some difficult times in recent years. Well done Kevin! ♦

By Ian Poole, G3YWX

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E-mail: ian_poole@lineone.net

Phase noise and recip

The widespread use of frequency synthesisers in radio communications equipment has led to phase noise becoming an important design criterion. Ian Poole looks at phase noise and the associated problem of reciprocal mixing.

Frequency synthesisers are an essential part of today's radio communications scene. Without them, many of the facilities that we have come to expect from modern equipment would not be possible. Frequency stability, digital readout, memories, scanning, dual VFOs and much more are now all commonplace facilities on equipment. However, synthesisers do have some limitations and drawbacks. One of the main ones talked about is that of *phase noise*, and the associated problem of reciprocal mixing, although a well designed and constructed synthesiser can be very clean.

While all signal sources have some degree of phase noise, it was not until the introduction of synthesisers, when some designs produced very high levels of noise, that these issues came to the fore.

WHAT IS PHASE NOISE?

Phase noise arises on all signals from the fact that there is a small amount of random phase 'jitter' on them. This jitter manifests itself as noise sidebands that stretch out either side of the signal. In many cases the level of noise reduces the further away from the carrier as shown in **Fig 1**. However, in all cases its level varies with the offset from the carrier. In the example shown it reduces steadily.

When measuring the level of noise it is necessary to state the bandwidth used to make the measurement. This is needed because the level of noise increases if the measurement is made over a wider bandwidth. This can be experienced when using a receiver with a variable width filter. The level of noise is considerably more when the receiver is set to receive AM (where typically a 6kHz bandwidth may be used) or SSB (where a bandwidth or around 2.7kHz is used) when compared with Morse, where a bandwidth of 500Hz is typical.

In view of this, a bandwidth of 1Hz is often used in a specification and the level is related to the carrier. Thus a typical phase noise specification may be quoted as -80dBc/Hz at a 1kHz offset from the carrier. This means that the level of noise is 80dB lower than the carrier (ie dBc) in a 1Hz bandwidth when the measurement is made 1kHz away from the carrier.

SIGNAL SOURCES

In many instances the levels of the noise are very low, the level of noise being in part governed by the Q of the tuned circuit. As a result, crystal oscillators, having a very high Q tuned circuit are very good, and exhibit very low levels of noise. A crystal may easily have a Q of 10,000 or more. Variable frequency LC tuned oscillators are also quite good, as their tuned circuits may have a Q of a few hundred. Unfortunately a voltage controlled oscillator by its very nature has a much lower Q tuned circuit, and the action of the loop also has a very significant effect.

EFFECT OF A PHASE LOCKED LOOP ON PHASE NOISE

Noise can arise from a variety of points within a phase locked loop synthesiser. Phase locked loops were discussed in 'Down to Earth' last month [see September *RadCom* pages 22 / 23 - *Ed*]. Dependent upon where it is generated the loop acts upon it in a different manner and as a result the noise contour appears rather more complicated than that of a crystal or LC oscillator. The loop filter in the synthesiser plays a major part in determining where noise from different elements around the loop contribute to the overall noise contour.

A synthesiser consists of a number of elements, as shown in **Fig 2**. In its basic form it consists of a reference which may include a divider to reduce the frequency of the reference signal to a sufficiently small value to give small frequency steps, a phase detector, a loop filter and a voltage controlled oscillator. The loop operates by comparing the phase of the two signals entering the phase detector and producing an error voltage. This error voltage is passed through a filter to the VCO where it acts to reduce the phase error between the two signals. When in lock there is a steady state phase error between the two signals, but as this error is constant it means that the frequencies are exactly the same. The frequency divider then has the effect of multiplying the frequency at which the phase comparison takes place so that the VCO runs at a multiple of this frequency. By changing the division ratio, the VCO frequency changes.

In general the major contributors to the noise are the reference, the phase detector, and the voltage controlled oscillator. To look at the overall noise generated by the loop, each of these constituents will be looked at in turn.

Looking first at the voltage controlled oscillator, it can be seen that the signal - including the noise - enters the divider and appears at the input to the phase detector. Noise appears as small perturbations in the phase of the signal and appears as noise on the voltage output from the phase detector. When this signal passes through the loop filter, only those elements that are below the cut-off frequency will pass through the filter and appear at the input to the voltage controlled oscillator. This error voltage will aim to correct any phase errors on the voltage controlled oscillator and this means that noise from the VCO will be corrected, or reduced at frequency offsets lower than the loop filter cut-off. Outside this bandwidth the noise of the VCO will remain unchanged

A similar thought process can be applied to other elements within the loop. Take the reference. The signal enters the phase detector and any phase noise on the signal appears as noise on the tune voltage as before. Again it is filtered by the loop filter so that only elements that are inside the filter bandwidth appear at the control terminal of the VCO. In this instance they again affect the VCO signal but in this instance they add noise to the signal. This noise only appears at frequency offsets lower than the filter bandwidth.

The phase detector noise acts in exactly the same way as noise from the reference, adding noise to the signal for frequency offsets lower than the filter bandwidth. Similar arguments can be applied to other circuit blocks including the frequency divider, but these elements are often low and can usually be ignored.

Fortunately the levels of noise from the reference and phase detector are generally low when considered on their own. However, their contribution is often critical in the overall performance because

Fig 1
Phase noise spectrum of a typical signal source.

Fig 2
A basic frequency synthesiser.

Fig 3
Noise contour of a typical single loop synthesiser.

Fig 4
The way in which phase noise on a signal results in reciprocal mixing.

rocal mixing

FIG 1 © RADCOM 264

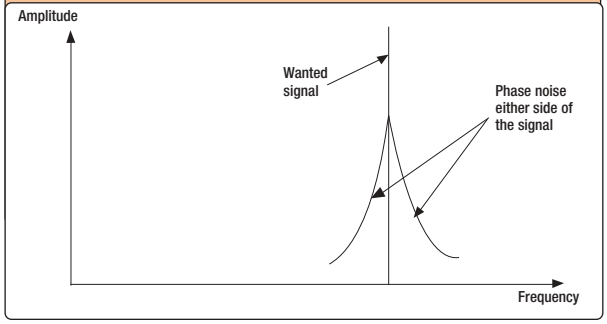


FIG 2 © RADCOM 265

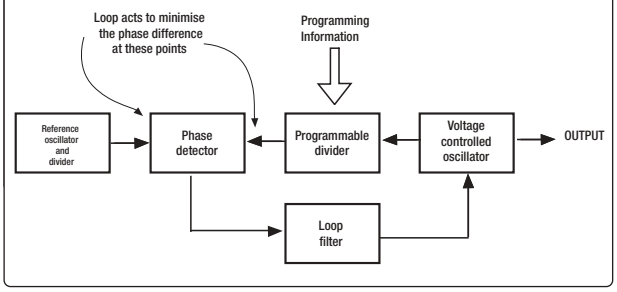


FIG 3 © RADCOM 262

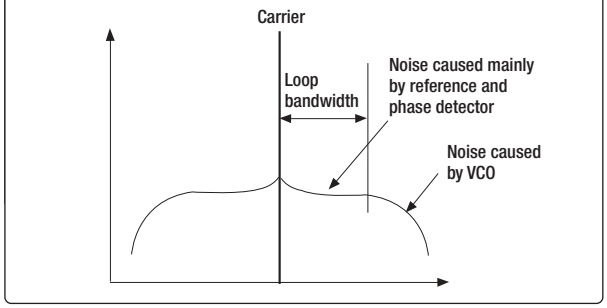
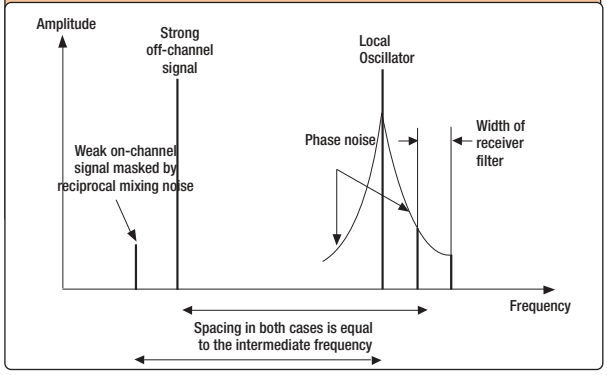


FIG 4 © RADCOM 263



WEB SEARCH

Ian Poole's radio and electronics website: www.radio-electronics.com
Ian Poole's business website: www.adrio-communicatons.com

the loop multiplies the frequency of the reference signal and the level of phase noise is also multiplied. In fact the amount by which is multiplied is simply 20 $\log_{10}$ N, where N is the division ratio of the divider. So a loop which has a divider set to 2 (and has a multiplication factor of 2) will multiply the noise of the reference and phase detector by 6dB. As multiplication factors increase so does the noise. This is one of the reasons why loops with high multiplication ratios, such as those used in VHF and UHF FM transceivers may have high levels of close-in phase noise. A typical noise contour, showing the different contributions of noise is shown in **Fig 3**.

IMPLICATIONS OF PHASE NOISE

Phase noise affects both transmitters and receivers. In the case of a transmitter the effects are fairly obvious. The phase noise spreads out either side of the signal and can cause interference to other users. In the case of SSB transmitters the level of noise will vary in line with the instantaneous level emanating from the transmitter. It will therefore appear as a very annoying amplitude modulated form of 'splatter' that extends away from the main signal.

For receivers the situation is slightly different, where an effect known as *reciprocal mixing* takes place. To look at how this occurs take the case of a superhet receiver tuned to a strong signal. The signal will pass through the radio frequency stages, and then in the mixer it will be mixed with the local oscillator to produce a new signal at the right frequency to pass through the IF filters. When the local oscillator is tuned off this channel by 10kilohertz, for example, the signal will no longer be able to pass through the IF filters. However, it is still possible for the phase noise on the local oscillator to mix with the strong incoming signal to produce a 'noise' signal that falls inside the receiver pass-band, as shown in **Fig 4**. This could be sufficiently strong to mask a weak station.

SPECIFICATIONS

There are several different methods that can be used to define the reciprocal mixing performance of a receiver. In generally they involve measuring the response of a receiver to a large off channel signal. A measurement can be made by noting the level of audio with the BFO switched 'on' when a small signal is injected into the receiver. The signal is then tuned off channel by a given amount, often 20kHz, and then increased until the audio level rises to the same level. This audio level arises because of the phase noise and reciprocal mixing action within the receiver. As the noise level is dependent upon the bandwidth of the receiver this has to be specified as well. The bandwidth used is that for the mode in question, ie 2.7kHz for SSB.

A good HF communications receiver might have a figure of, say, 95dB at a 20kHz offset using a 2.7kHz bandwidth. This figure will improve as the frequency offset from the main channel is increased. At 100kHz one might expect to see a figure in excess of 105dB or possibly more.

Another way of measuring the phase noise response is to inject a large signal into the receiver and monitor the level needed to give a 3dB increase in background noise level. As a number of different systems are in use it is often best to study reviews performed by the same person when comparing different rigs.

Reciprocal mixing measurements are not easy to undertake. It is obvious that the performance of the signal generator must be better than that of the receiver to be measured - if not, the measurement made will only show the performance of the signal generator. Unfortunately very good signal generators are often expensive, although some of the older valve oscillators exhibit very good phase noise performance and they are often used.

OVERALL

The phase noise performance of oscillators used in all forms of equipment is very important. For amateur applications the most important effects are transmitter splatter and reciprocal mixing. However, as data transmissions using phase modulation become more popular, the importance of phase noise performance will become even more critical because high levels of phase noise in a signal can introduce data errors. So whatever the application, the phase noise performance of a synthesiser is of great importance. ♦

Book review

LF TODAY
by Mike Dennison, G3XDV

Ever since the UK has had an LF allocation, the RSGB has published information for those wanting to try out the 73kHz, and later 136kHz, amateur bands. Initially this took the form of comb-bound photocopies of data from around the world. In 2000, this evolved into a 'proper' book, *The Low Frequency Experimenter's Handbook*, edited by Peter Dodd, G3LDO.

This evolution is moved a stage further on by LF Today. A large amount of knowledge has been built up in the first few years of experimentation on 136kHz and it is no longer necessary for the newcomer to go through the rite of passage of blowing up MOSFETs, setting fire to antenna insulators and failing to make contacts. *LF Today*, written by Mike Dennison, G3XDV, a very experienced LF experimenter, distils the experimental data into an easy-to-read handbook on how to succeed on the 136kHz band.

The opening chapter 'Getting started' outlines the pitfalls of this extreme frequency and how they can be overcome. It explains how many amateurs may already have the basis of an LF station if they operate the lower HF bands, and includes a simple 100W transmitter. The 'Receivers' chapter lists some of the commercial radios suitable for the band, and shows how to improve reception. Later in the book several receive-only antennas are described. 'Antennas and matching' covers the practical side of Marconi antennas and loops, how an existing antenna can be made to work at LF, and how to persuade a wire that is less than one-fiftieth of a wavelength long to radiate at all. It is illustrated by many pictures of large loading coils wound on a variety of household items.

The transmitting section is divided into 'Generating a 136kHz signal' and 'Transmitters'. There are several ways of producing an LF signal, including those suitable for the very narrow-band modes used for DX working. Four tried and tested transmitter circuits are included: a simple 120W breadboarded design, a 500W 'portable' rig, a 1kW mains version and the well-protected 300W transmitter originally published in *RadCom* last year.

Commercial operators have used LF for many years for its stable propagation characteristics. Radio amateurs, on the other hand, have discovered ways of using the few anomalies in propagation to make contacts over thousands of kilometres. For the first time in a book, these anomalies are explained together with methods of predicting when they might happen, and how to make the best use of them.

Other chapters include: 'Measurement and calculation', 'Operating practice' and 'Advanced techniques'. Appendices cover 'Information sources' and 'Components and software'. A comprehensive index allows key information to be located quickly.

LF Today contains some theory and a little maths, but it is first and foremost a practical handbook. For those seeking a better understanding of the theory, each chapter includes many references, mostly to well-established websites.

This new book is aimed at those who want to try out this fascinating amateur allocation, but it is also of great value to anyone already active on the band. It contains everything needed to succeed on 136kHz without unnecessary effort.

LF Today
by Mike Dennison, G3XDV
RSGB Publications, 2004
Soft covers, 128 pages, 240 x 174mm
ISBN 1-872309-99-2
Member's price £10.19 (non-members £11.99)

THE ARRL HANDBOOK 2005

This is the 82nd edition of this perennial favourite. Although each edition is updated, the 2005 *Handbook* has received the biggest update in a decade. In addition, for the first time the *Handbook* now comes bundled with *The ARRL Handbook on CD-ROM* (version 9.0), the complete book on CD-ROM including many images in colour and in fully searchable form.

In receiving by far the most extensive revision of this work in 10 years, entire sections of the book have been updated to reflect the most current state-of-the-art techniques in amateur radio. These areas cover analogue and digital signals and components; working with surface-mount components; High-Speed Multimedia (HSMM); new and previously unpublished antennas, and advice on baluns; satellites and EME, now with new Phase 3E details; oscillators, DSP and software radio design; a new chapter with Internet tips for hams, Wireless Fidelity or Wi-Fi, and other wireless and PC technology.

With thorough coverage of theory, references and practical projects, *The ARRL Handbook* is an unmatched source for building receivers, transceivers, power supplies, RF amplifiers, station accessories and antenna construction projects. The 2005 edition features more antenna projects and a new 10W, 60-metre (5MHz) SSB transceiver. There's something inside for experimenters of all skill levels.

This is one of those books that, along with the *RSGB Yearbook* and *RSGB Operating Manual* (a new edition of which is due to be published very soon), should be on all shack bookshelves.

The ARRL Handbook 2005
American Radio Relay League (ARRL), 2004
Soft covers, 275 x 209mm
ISBN 0-87259-928-0
Member's price £23.79 (non-members £27.99)

RSGB DELUXE LOG BOOK 2005

The concept of the *annual* log book - whereby contacts for a calendar year are kept in distinctly labelled volumes - is now well established. One advantage is that in the future, when you wish to look back on your amateur radio contacts over the years, you will appreciate the convenience of being able to go straight to the year required. The other big advantage of the *Deluxe Log Book* is that it contains a wealth of useful operating information which will always be right where you want it: on your operating desk.

The 2005 edition has been thoroughly updated and includes a prefix list; a Locator map of Europe - and how to work out your own Locator; information on the RSGB QSL Bureau and a list of QSL Bureau Sub-Managers; the current UK Band Plans, information on GB2RS news and the GB2RS broadcast schedule; repeater lists; and a diary with lists of events such as rallies taking place during 2005 as well as RSGB HF and VHF / UHF contests and the major international contests. New for 2005 is a guide to Ofcom with useful contact numbers and information on Morse practice sessions and the Morse Proficiency Programme.

RSGB Deluxe Log Book 2005
RSGB Publications, 2004
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Kenwood TS-940 HF Base £450.00
Kenwood TS-950SD HF150W DSP Base Station £1,200.00
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Palstar PS-30N PSU £79.00
Palstar PS-50 50A PSU £139.00
Realistic PRO2004 Base Scaner £89.00
Realistic PRO2005 25-13000 Scanner £119.00
SGC SG-231 Smart Tuner £275.00
Sommerkamp FT-290R 2m Multimode Transceiver £150.00
Sony ICF-SW7600GR World band Receiver £99.00
Standard C-156E 2m Handheld Transceiver £125.00
Starmaster Memory Keyer Electronic memory keyer £59.00
Target HF3 HF3 RX £99.00
Tentec Paragon HF BaseInc. Speaker £700.00
TenTec RX-350 HF Receiver £999.00
Timewave DSP9+ External DSP Unit £99.00
Timewave PK-12 Packet £99.00
Trio PS-430 Kenwood PSU 22A £100.00
Trio R-1000 HF Reciever £170.00
Trio TR-9130 2m multimode £220.00
Trio TS-530SP TS530SP £299.00
Trio TS-711E 2m Base £350.00
Uniden UBC-780XLT Scanner/Trunk Tracker £249.00
Yaesu DSV2 Voice recorder £139.00
Yaesu FC-20 ATU for FT847 £175.00
Yaesu FC-700 ATU £99.00
Yaesu FL-2025 Amplifier £90.00
Yaesu FP-700 Power Supply £100.00
Yaesu FP-707 PSU £110.00
Yaesu FP-757GX 757 PSU £99.00
Yaesu FR-101 HF, 2m, 6m Base Transceiver £399.00
Yaesu FRG-100 HF Receiver £299.00
Yaesu FRG-8800 RX £199.00 or inc Converter £299.00
Yaesu FRG-9600 RX VHF/UHF £199.00
Yaesu FRT-7700 FRT-7700 £70.00
Yaesu FRV-7700 Converter for FRG-7700 £60.00
Yaesu FT-100 HF/6m/2m/70cms Mobile Transceiver £499.00
Yaesu FT-1000MP AC HF Base £1,199.00
Yaesu FT-1000MP Field HF DSP Base £1,599.00
Yaesu FT-1000MP MkV DSP HF Base £1,799.00
Yaesu FT-200 FT200 £175.00
Yaesu FT-2600M Mobile VHF / FM Transceiver £120.00
Yaesu FT-290R Mk II 2m multimode £250.00
Yaesu FT-290RmkII 2m Multimode Mobile Transceiver £225.00
Yaesu FT-41R Handheld Transceiver £120.00
Yaesu FT-470R Dual Band Handheld £129.00
Yaesu FT-690R 6m Multimode Mobile Transceiver £199.00
Yaesu FT-7100M 2m / 70cms Mobile Transceiver £220.00
Yaesu FT-736R 2/70 Base £550.00 or 6/2/70 £750.00
Yaesu FT-767GX HF/6/2/70 Base £799.00
Yaesu FT-76R 70 cms Handheld Transceiver £99.00
Yaesu FT-77 HF inc FM £275.00
Yaesu FT-7800 2/70 mobile £199.00
Yaesu FT-8100R 2m / 70cms Mobile Transceiver £220.00
Yaesu FT-817 Mobile HF, VHF, UHF Transceiver £450.00
Yaesu FT-840 HF 100w Mobile £399.00
Yaesu FT-847 HF/6/2/70 BASE £899.00
Yaesu FT-897 Portable £699.00
Yaesu FT-920AF HF / 6M Base Transceiver £899.00
Yaesu FT-980 FT980 £399.00
Yaesu FTV-1000 200 W Transverter £475.00
Yaesu MW-1 Remote Control Microphone & Infra-Red £60.00
Yaesu NC70 Battery Charger £60.00
Yaesu Quadra 1KW Amp + PSU £2,750.00
Yaesu SP-980 SP980 £60.00
Yaesu VR-500 Yaesu Handheld Scanner £149.00
Yaesu VR-5000 Top Class Base Scanner £450.00
Yaesu VX-110 VX110 £99.00
Yaesu VX-1R VX1R £99.00
Yaesu FT-747 HF Trx £299.00
Yaesu FV-101Z FV101Z £125.00
Yupiteru MVT-7100 Handheld Scanner £140.00
Yupiteru MVT-9000 II MVT9000II £269.00

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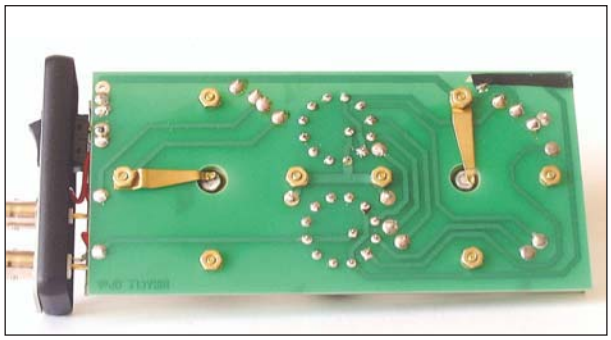
Reviewed by Chris Lorek, G4HCL,

PO Box 400, Eastleigh SO53 4ZF.

E-mail: g4hcl@rsgb.org.uk

The QPak Precision Tuner

If you wish to operate from portable locations where it is impossible to put up a resonant antenna, or perhaps from places such as hotel bedrooms, the QPak Precision Tuner could be just what you are looking for.



Antenna Tuning Units (ATUs) are typically used to match virtually any odd bit of wire to provide a 50K load to your transceiver, and can often give a high efficiency antenna system to get your signal where it's needed. ATUs have been in use virtually since transmitters were invented, with a 'Pi Tank' arrangement used in the output circuit of valve transmitters to provide a match in this way. Then came solid-state transmitters with their requirement for a given impedance of antenna, and add-on ATUs were often the norm. Built-in automatic ATUs were, and often still are, a feature on many HF base transceivers, but these could normally only be used to tune out a small mismatch, typically up to a VSWR of 3:1. Any more than this and you'll need an external ATU with adjustable matching components, typically variable input and output capacitors and a switched or continuously variable series inductor.

CIRCUITRY

The QPak Precision Tuner uses a unique link-coupled circuit configuration with band-switchable input taps, together with a further switchable transformer output link. This means it's capable of matching a very wide range of impedances, as well as being capable of driving balanced lines and random-length wires without the need for an external balun. The tuner is a very compact size, measuring 165 x 25 x 80mm and weighing 382g, and is housed in a sturdy extruded aluminium case which should stand the odd knock or two. Its small size is down to 'Flatpack' variable capacitors being used, which QPak says provide low-loss, high-component-Q values that are comparable with air-variable capacitors but with a tenth of the required space. These are just 6mm thick, and can provide up to 440pF capacitance with a working voltage of 1200V. BNC connectors are used for antenna and transceiver coupling, and a short coax patch cable is supplied with the tuner. Also supplied are four small stick-on rubber feet, useful if you're intending to use the tuner mainly in your home station. It's rated for a power of 20W with operation between 3.5 and 30MHz, plus limited operation also on 50MHz.

ON THE AIR

The two BNCs are labelled 'in' and 'out', but I had to refer to the manual to clarify that this was antenna in rather than transceiver RF in, and output to the transceiver rather than out to the antenna! Maybe these would have better been labelled 'TX/RX' and 'Ant'? Anyway, that's just a minor point, and the antenna connection is easily identified by its use of an insulated BNC connector on the tuner. A 'Ground' on / off switch is used to isolate the ground when needed, for example if you're using a balanced line feeder to your antenna.

To use the tuner, you first move the small 'band' switch to the nearest band to which you're operating on. So, if you're on, say, 18MHz you'd switch it to the 14MHz position. The output matching switch would initially be set to the '1' position, and a low-power RF carrier applied while you're watching the VSWR meter either on your rig or by using an external in-line meter. The two large variable capacitor 'Tune' and 'Load' knobs are then adjusted in turn for minimum VSWR. These will usually inter-react, so a small amount of backwards and forwards adjustment, with a knob in each hand, will typically get you a match in a few seconds or so. The first time I tried this, the 'Tune' knob came off in my hand! Closer inspection showed that the small securing grub screw was only just mating with the very top of the metal capacitor spindle, so re-fitting this and re-tightening the grub screw was called for. I eventually obtained the right Imperial size Allen key to do the job, tightening the 'Load' knob at the same time 'just in case'!

Most of my antennas at home are already resonant on the bands they were designed to operate on, but I found it handy to be able to load up my 80 / 40m trap dipole on 10, 18 and 24MHz. Out in the field with a portable wire antenna system and ground spike, I found the tuner would match virtually anything I connected to it. As a test I connected a 4m length of wire on 160m (1.8MHz) and 80m (3.5MHz) and yes, the tuner even managed to match that, with a resultant VSWR of less than 1.5:1 on both bands. In each case the entire band could be used, with a VSWR of 3:1 or less, without any further re-tuning of the controls. That's some going for a tuner that's not even specified to operate on 160m!

CONCLUSION

I found the QPak Precision Tuner was capable of matching any reasonable antenna or wire length I connected to it. Sometimes the switch positions needed changing, eg the '14MHz' band setting was required on 7MHz for high-Q antennas, but it always came up with a result. Overall it's a tough and durable tuner that's easily transportable, and an ideal add-on for low-power transceivers.

The QPak Precision Tuner is currently priced at £149.99, and our thanks go to Martin Lynch & Sons for the loan of the review equipment. ♦

call us six days a week, mon - sat 9.30 - 5.30 or log on to www.hamradio.co.uk

Four Important Events for Radio Amateurs from ML&S

Leicester Amateur Radio Show, Donington 1st & 2nd of October

Now in its 33rd year, The Leicester Amateur Radio Show is still the biggest event in the U.K. for Ham Radio. If you haven't attended before, come along on Friday or Saturday and see all the traders under one roof. ML&S will be there offering the very best prices on Yaesu, Kenwood & Icom.

RSGB H.F. IOTA Convention, Gatwick October 22nd to 24th

ML&S are proud to be the only U.K. ham radio retailer to be a major sponsor of the RSGB HF & IOTA Convention with Yaesu U.K. Once again the convention moves to a new venue and hopefully this may just be the new home for this prestigious event. For those of you that are either already committed to the H.F. scene (or indeed wish to get an insight into the fun, but serious side of H.F. DX), book yourself in early or just come along for the day. It really is a very informative and enjoyable event.

West London & Radio Electronics Fair, Kempton Park October 14th

Probably the most successful of all the November shows, Radio Fairs put a superb event on for the Radio Amateur. ML&S will have their huge stand promoting new and used equipment and offering the usual 'competitor cringing' prices that customers just love. Another series of 'byte-sized' lectures sponsored by the RSGB including: Internet Linking, Learn Morse in minutes, Backyard aerials & Propagation simplified.

Finally, The ML&S Open Day - 4th December.

To celebrate the forth London store that Martin has opened, make a date in your diary for this very special one-day Saturday Bonanza. The main distributors will of course be there and we are trying to arrange a boot sale in our HUGE car park to the rear of the building. We know it's a bit chilly in December but if you have a ton of bits and pieces, load up your car and bring it down to the new ML&S site. No charge for display and FREE Hot coffee for everyone! Spaces first come, first served.

For more details nearer the time, check it out under 'News' on our web-site.

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Leicester Amateur Radio Show

The 33rd Leicester Amateur Radio Show at Donington Park International Exhibition Centre, Donington Park, north-west Leicestershire, will take place on Friday 1 October and Saturday 2 October 2004. The venue is less than five minutes from Junctions 23A and 24 of the M1 motorway.

Most people go to the Leicester Show to find out about the latest trends in amateur radio products - and to drool over the latest equipment! This year no-one should go away disappointed, as several of the importers, manufacturers and dealers will be showing new products for the first time in the UK at the show.

All the major dealers will be there, but if you can't find what you want among all the new equipment there is an amateur radio flea market and a bring and buy stall to pick up those second-hand bargains and hard-to-find items. As well as amateur radio, the show features computers and general electronic equipment and components. Many local and national radio clubs and societies will also be represented - see the table.

Also at Donington is an amateur radio convention with some top lecturers. Details were not available as we went to press, although we do know that Bob Heil, K9EID, will be returning to the Leicester Show Convention to give another of his famous presentations on audio - see 'Waters & Stanton plc' below for more details.

The Leicester Show also features Morse proficiency tests, camping and caravanning on site, a 'drop and swap' table for data books and catalogues and demonstration stations GB0LS and GB50IBC. Talk-in by GB0LS will be on 145.550 and 433.550MHz. Don't forget to bring along your QSL card for the board so your friends can look out for you.

The show is open from 9.30am to 5.30pm on Friday 1 October, and 9.30am to 4.30pm on Saturday 2 October. Admission, which allows discounted entrance to The Donington Racing Car Collection, is £3.50 (OAPs and under-16s £3). A two-day ticket costs £6 (£5 for OAPs and under-16s). For further details and the most up-to-date information see www.lars.org.uk or contact Geoff Dover, G4AFJ, tel: 01455 823344, fax: 01455 828273, or e-mail: geoffg4afj@aol.com

EXHIBITORS

At the time of going to press, the following were expected to be attending the Leicester Show this year:

Alsco trading
Andy Reid
AOR (UK) Ltd
Barenco
Bowood Electronics
Brian Havenhand
Cablectrix
CCTV
Colin Turner
Computer Basement
Computer Junk Shop
Diode Communications
Downtown Computers Ltd
Dragon Office Products Selection
Freedom Poles
G C Computers
G H Engineering and G1MFG.com
Greenweld Ltd
H Morgan Smith
Holux UK Ltd
Horizon Magnifiers
ICC (Scotland)
Icom (UK) Ltd
Indigoquest
InkTec Midlands
J & M Computers
JAB Electronic Components
John Dilkes
Kenwood Electronics (UK) Ltd
Linear Amp UK
Martin Lynch & Sons
Mary Molyneux
Mastersmart
Microgenesis
Mikay Distributors
Mr Lee
Nevada Communications
Northampton Communications
Poole Logic
PW Publishing Ltd
Radioswap.co.uk
Radioworld
RCQ Communications
Remote Imaging Group
Rich Electronics
Ronal Computers Ltd
RSGB
Ruth Royle
Sabaki Ltd
Sandpiper Aerial Technology Ltd
SGS Electronics
Sinequanon Group
SOTA Beams
SRP Trading (Radio Centre)
Strikalite
TAMS 2000 Ltd
Terry Milman
thesatshop
Timestep Electronics
TLX Electrical Ltd
Vann Draper Electronics Ltd
Waters & Stanton plc
Westlake Electronics
Yaesu (UK) Ltd

Clubs and associations expected to be exhibiting at the show include:

5 Towns ARC
AMSAT-UK
ARCON
BATC
British Railways Amateur Radio Club
Bromsgrove ARS
Chiltern DX Club
Derby & District ARS
eQSO
Huntingdonshire Amateur Radio Society
International Listeners Association
Leeds and District ARS
Leicester Raynet
Leicestershire Repeater Group
Malvern Hills Repeater Group
March & District Radio Amateur Society
Nottingham QRP Club
NSC-ARC
RAFARS
RAIBC
RAOTA
RATS
Raynet Supplies
RNARS
ROA - Merchant Navy
RSARS
Stourbridge ARS
Worked All Britain

RADIOWORLD

The main items that Radioworld will be featuring at this year's Leicester show are LDG tuners, W4RT Electronics Accessories, W2IHY EQ & Noise Gate and of course all the major brands such as Yaesu, Icom, Kenwood, MFJ, RIGblaster etc.

ICOM (UK)

Icom (UK) will be displaying their latest product line-up, including the new IC-7800 HF/6m super transceiver that was reviewed in the August 2004 *RadCom*.

WATERS & STANTON PLC

Waters & Stanton have booked their biggest ever stand at the Show, partly in order to accommodate a display for Heil Sound Ltd. Bob Heil, K9EID, and his wife Sarah are joining the W&S staff to promote new products from their company. After his highly successful visit two years ago Bob has been invited back to lecture again on

1 - 2 October 2004

both days. This time his talk will be called 'It all starts at the microphone'.

New products from MFJ, bhi, Cushcraft, Diamond, Heil, SGC and Watson amongst others will be on display on the W&S stand.

Holders of the highly successful new Waters & Stanton Clubcard should take their card to the Show. If they present it at the W&S stand they will be paid back their entrance fee.

Further details at the W&S stand or tel: 01702 206835; fax: 01702 205843 or see www.wsplc.com

YAESU (UK)

Yaesu will be showing three new products on their stand at Leicester: the new top-of-the-range HF/6m transceiver, the FTDX-9000, which is scheduled for release later in the year; the FT-60 dualband handheld and the FC-40 tuner. The FTDX-9000 has already been featured in *RadCom* (see 'Whatever next', page 65 *RadCom* July 2004) and with its outstanding receiver performance and high-power transmitter (400W and 200W versions will be available), it is sure to become one of the most sought-after transceivers going.

The FT-60 is a new 144/430MHz dualband FM handheld, with wideband reception of 108-520and 700-999.990MHz included. Despite its tiny size, the rechargeable Nickel-Metal Hydride battery pack provides up to 5W transmit power on both the 144 and 430MHz bands. With over 1000 memory channels and numerous other features, the FT-60 looks like being another Yaesu hit!

The FC-40 is an automatic 100-memory antenna tuner designed to provide all amateur band transmitting capability with the FT-897 / 857 series of transceivers when used with an end-fed random wire or long whip antenna. The FC-40 makes use of control circuitry in the transceiver which allows the operator to control the FC-40 mounted near the antenna feedpoint.

If you can't get to the show, there's plenty more information at www.yaesu.co.uk/amateur Yaesu (UK) is also promising that they will be giving away prizes on both days: details at the show!

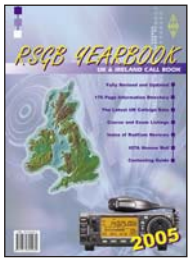
NEVADA

Nevada will be having a large stand at the Show and are promising several new products to be displayed for the first time at Leicester. One of these is the new Palstar AT1K-BAL, a 'true' balanced antenna tuner that has been designed to overcome the losses sometimes found with conventional tuners using a 4:1 balun at the antenna side of twin feeders. The AT1K-BAL has huge low-loss components which will handle up to 1500W PEP and it will match a wide impedance range of 2500 +/-j2500. The AT1K-BAL sells for £499 inc VAT.

The Alinco DJ-C7, a true 'shirt pocket' handheld dualband transceiver, will also be shown at Leicester for the first time. In addition to 2m and 70cm, it also receives the VHF / FM broadcast band, with optional airband receive and VHF / UHF scanning. The DJ-C7E is housed in a rugged package around the size of a credit card and just 0.5in thick which fits really comfortably in your shirt pocket. It costs just £149.

Phillystran guying cable is now available in the UK. Phillystran is an electrically-transparent guy cable constructed from Kevlar fibres covered with a copolymer jacket to provide excellent resistance to sun, weather and abrasion. It is very light yet enormously strong and provides a maintenance-free installation ideal for amateur radio towers or masts. Phillystran has been installed on more than 1000 commercial broadcast towers in the USA. It offers complete guy-line isolation, eliminating the need for insulators.

Visit the Nevada stand for more information on these and numerous other products, or visit the Nevada website at www.nevada.co.uk or call the Nevada sales line, tel: 02392 313090.



RSGB

Come to the RSGB stand to pick up your new *RSGB Yearbook 2005* and *Callseeker Plus 2005* [see September *RadCom* p32 - *Ed*]. As a special offer for visitors to the Leicester Show *only*, you can buy the two together for just £20, a saving of 24% off the normal members-only price! Also new at the show will be the *Deluxe Log Book and Diary 2005* and *LF Today*, a guide to success on 136kHz.

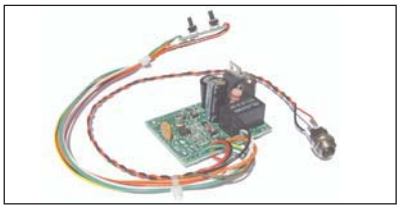
If you have not yet seen GB4FUN, the RSGB's mobile amateur radio demonstration vehicle, you will have an opportunity to do so at the Leicester Show. GB4FUN continues to play a major role in introducing amateur radio to people of all ages at schools and events open to the general public throughout the country (see also page 15).

bhi LTD

British manufacturer bhi will be launching the NEDSP1062 Amplified DSP Module at the Leicester Show. This module is designed to be retrofitted into almost any extension loudspeaker. It comes as a kit which includes the DSP module with a small keyboard and wiring / connectors, a fused DC power lead, professional label to stick on the outside of the speaker, and full installation and operating instructions. There will be separate instructions for the Kenwood SP-31, Yaesu SP-8, and the Icom SP-20/21 as well as generic instructions for fitting the module into almost any loudspeaker.

bhi will also be demonstrating its full range of DSP noise cancellation products and accessories (see, for example, *RadCom* March 2004 page 37), as well as the new Wonder Wand portable rig-mounted antenna and TCS tuneable counterpoise system (reviewed in *RadCom* June 2004), along with a new range of accessories for the Yaesu FT-817 including an adjustable stand priced at £14.95.

More information is available from bhi Ltd, tel: 0870 240 7258, or see www.bhi-ltd.co.uk or www.wonder-wands.co.uk



KENWOOD (UK)

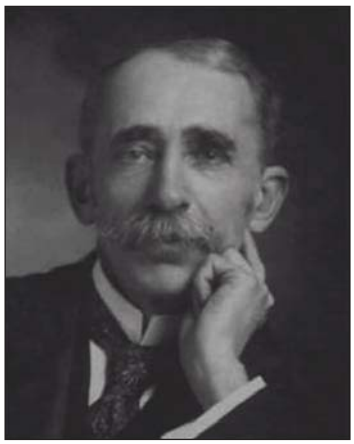
Kenwood (UK) will be featuring the TM-271E VHF FM mobile, the TS-480 HF/6m transceiver, and the TH-K2E and TH-K4E VHF and UHF handhelds. The TM-271E is a 60-watt output 2m mobile rig, with 200 memories, or 100 memories using alpha-tagging. It has built-in CTCSS / DCS encoder and decoder and 1750Hz tone burst. A very useful feature is the ability to switch from narrow to wide deviation on each channel.

The TS-480 was featured in the Peter Hart Review in the March 2004 *RadCom*: it is available in two versions: the HX, with 200 watts output (100W on 6m), and the SAT, with 100W out but including a built-in antenna tuner.

The TH-K2E and TH-K4E are 2m and 70cm handhelds, respectively, with similar features. Both have high-power (5W) output from the standard PB-43N Ni-MH battery pack or when operating from an external 13.8V DC source. Like the TM-271E, they feature CTCSS / DCS encoder and decoder, 1750Hz tone burst and wide / narrow deviation. They are PC-programmable using Windows software which is downloadable from www.kenwood.net ♦

By F J Gregory BEM, G3AQM

23 Woolbrook Meadows, Sidmouth, Devon EX10 9UJ.



Photograph courtesy of University College London

Sir Ambrose Fleming (1849 – 1945) may be regarded as 'the father of electronics and radio engineering in Britain.' Exactly 100 years ago he invented the radio valve and helped to make Marconi's trans-Atlantic experiments in wireless telegraphy and the broadcasting of speech and music possible.

Sir Ambrose Fleming – 100th anniversary of the invention of the radio valve

This year sees the centenary of Fleming's invention of the valve diode which he called his 'oscillation valve', and for the months of October and November the Radio Group of the Norman Lockyer Observatory Society (tel: 01395 5799987) in Sidmouth, Devon, is holding a special celebration to mark this event using the callsign GB2AFC [see **Table 1**]. There will also be an exhibition at Sidmouth Museum, Hope Cottage, Church Street, Sidmouth EX10 8LY, including a number of the first diodes and a copy of Sir Oliver Lodge's detector, the coherer. This exhibition is open from April to December this year. In addition to this there will be a public lecture on Sir Ambrose Fleming given by Dr Brian Bowes, the former head of Electrical Engineering at the Science Museum.

COHERER

In 1877 Ambrose Fleming started his study of electricity and magnetism at Cambridge under James Clerk Maxwell, whose discovery of radio waves in 1864 was vital. It was Edouard Branly who completed the first detector in 1892. This was developed by Sir Oliver Lodge who demonstrated the detection of radio waves to the public at Oxford in 1894. Lodge's coherer consisted of a tube of metal filings between two contacts. Its resistance was lowered when subjected to radio waves and this then switched on a bell. The only drawback to this system was that the filings had to be tapped after each burst of radio waves was detected. It has been said that it took five seconds for a dot and 15 seconds for a dash to be received! So the Branly tube, in spite of its clumsiness, was the first detector of radio waves. Sir Oliver Lodge modified his bell so that its clapper tapped the coherer after each burst. Later on the Italians made a 'self recovery' mercury coherer.

LIGHT BULBS

In 1882 Ambrose Fleming became the Electrical Adviser to the Edison Electrical Light Company of London. At this time he worked in Edison's laboratory in America on early incandescent light bulbs. It was then that the 'Edison effect' was noticed. After a period of use the inside of the bulbs became coated with carbon given off from the filament. Edison inserted a small metal plate inside the lamp near to the filament to prevent this. He was surprised to find that when a galvanometer was put in the line between the positive side of the filament and this plate, that current flowed between the plate and the filament. Fleming took his electric light bulbs back to University College and continued his experiments with them.

THE VALVE DIODE

It was during the preparations for the trans-Atlantic test of 1901 between Cornwall and Newfoundland that Marconi appointed Professor Fleming to give advice on the detection of radio signals. Now Fleming had become the acknowledged expert on alternating current machines and transformers and he it was who designed the transmitter to be used at Poldhu. After the success of the 1901 test, as Fleming was becoming hard of hearing, he searched around for another way of detecting weak wireless waves that would give him a more stable reading on his galvanometer. Coming across his collection of lamps in a cupboard, he thought of his early work on them, and in particular the Edison effect, the strange current that flowed from the filament to the plate. This occurred when the plate was joined externally to the positive end of the hot filament, but not when the plate was joined to the negative. Professor Fleming remembered these experiments some years later, and in 1903 he used it as a new form of detector which he called a 'valve' because of its property in passing current just one way, like water going through a valve. It could be made to pick up the alternating impulses of a wireless signal and convert them into a direct current. He had invented the thermionic diode which could activate a telephone earpiece. This led to the transmission not only of Morse, but speech and music. He patented this valve diode in 1904.

Sir Ambrose Fleming died at Sidmouth in 1945 at the age of 95, and is buried at nearby Salcombe Regis church. During his lifetime he achieved an enormous amount, but the invention of the valve diode was indeed a major contribution to the start of electronics.

Photograph courtesy of Sidmouth Museum

Experimental diodes with spiral wire anodes.

Photograph courtesy of Sidmouth Museum

GB2AFC AMBROSE FLEMING CENTENARY

It is proposed to activate the above callsign on the following dates:
Tuesday 12 October
Thursday 21 October
Tuesday 26 October
Wednesday 27 October*
Saturday 6 November
Tuesday 9 November
Saturday 20 November
Tuesday 23 November.
(* GB2AFC will usually be on the air from 7.30pm onwards, but on 27 October it is expected to be from 2.30pm.)

Table 1: GB2AFC Ambrose Fleming Centenary operating schedule.

WEB SEARCH

Norman Lockyer Observatory:	www.ex.ac.uk/nlo
GB2AFC special event station:	www.gb2afc.org

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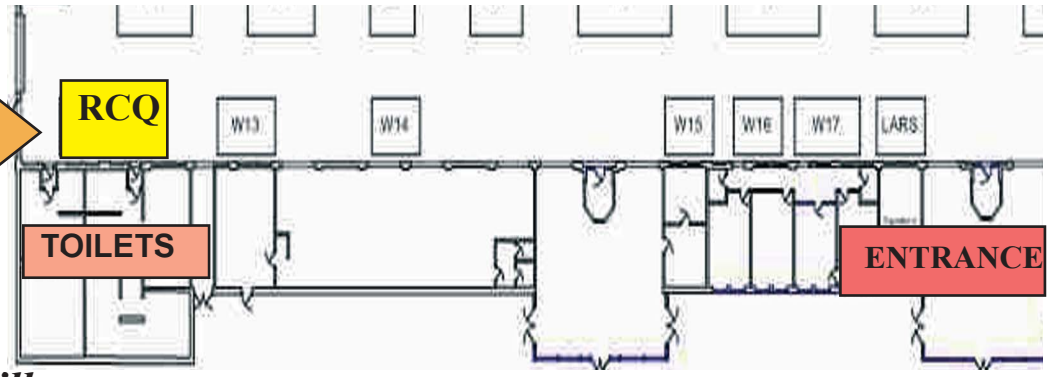

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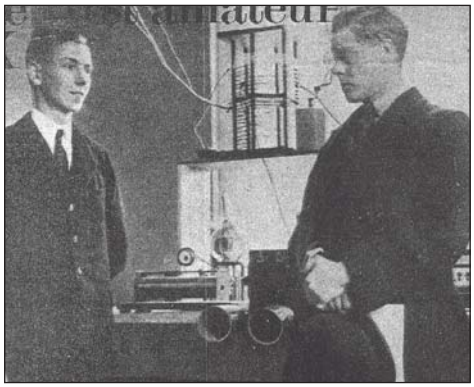
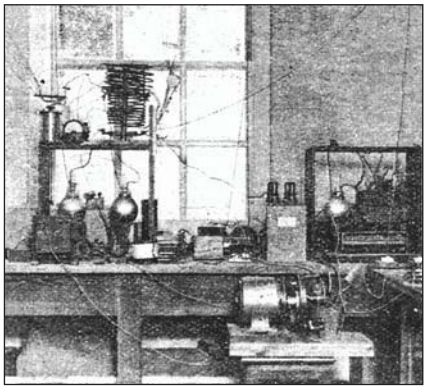
By John D Heys, G3BDQ

Whitefriars, Friars Hill, Guestling, Hastings TN35 4EP.

The ultimate DX

19 October marks the 80th anniversary of the first two-way contact between the UK and New Zealand. John Heys describes how a teenage student in London achieved the terrestrial two-way long-distance DX record that was unbeatable.





Through 1923 and 1924 the DX distance record was being greatly and rapidly lengthened. Amateurs had been ejected from the medium and long-wave bands by the burgeoning number of broadcast stations, and had been relegated to what were then officially thought of as the 'useless' wavelengths below 200 metres. The amateurs' new short-wave spectrum allowed an unexpected dividend in the shape of exciting long-distance QSOs. By using wavelengths below 100 metres, trans-Atlantic and other long-distance contacts were being made.

On 13 October 1924 the station 1SF in Short Beach, Connecticut, USA, worked Frank Bell, Z4AA, in Palmerston South, New Zealand, for a new world distance record of 9000 miles. However, this record was only to stand for six days, for on Sunday 19 October at 0615UTC the distance record shot up to 12,450 miles. This was established by Z4AA in New Zealand and Cecil Goyder, who was operating 2SZ, the Mill Hill School Wireless Society station located in North London. Goyder had left the school and become a student at the City & Guilds of London College. He then lived at 44 Hale Lane, which was about one mile west of his old school. He had gone, early that morning, perhaps to catch some of the trans-Atlantic DX. Also on the lookout for DX was Ernest Simmonds, 2OD, in Gerrard's Cross, Bucks. Goyder heard Simmonds calling an American amateur station. All this took place on wavelengths close to 100 metres.

From left: Mill Hill School, showing the 2SZ antenna (from *The Wireless Magazine*, April 1925).

HRH Edward the Prince of Wales visits the Mill Hill School Wireless Society station and speaks to Cecil Goyder.

A photograph of the shack at 2SZ some time after the historic New Zealand contact. In the right foreground is the synchronous rectifier and below the antenna coil at the window a second Mullard 0/250 valve has been added (from *The Wireless Magazine*, April 1925).

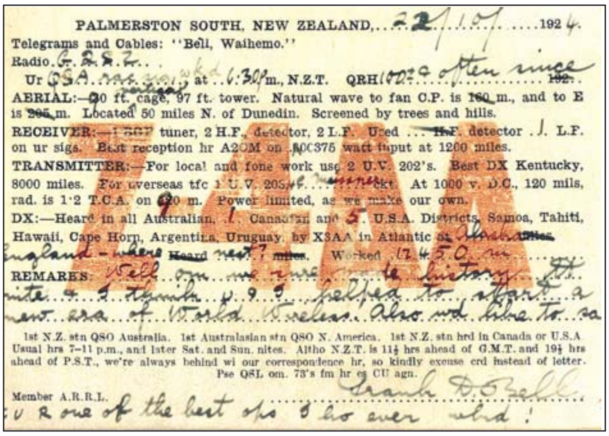
Goyder tuned his receiver away from the strong 'local' signals from 2OD and put out a 'Test' call ('CQ' was not allowed in the UK at that time). Then he heard a station with a fine 'DC' note sending '2SZ' for 10 minutes and eventually signing Z4AA. Goyder thought this was a joke but responded to the call. A QSO was achieved which lasted for 90 minutes and at its close Goyder still had some suspicions as to the other station's real status. He was only convinced that he had indeed just worked a station in New Zealand when three hours later that morning a cable arrived at the school which read: "Congratulations on first transworld message - Bell".

The two stations had just made the first radio contact between Australasia and Europe and the antipodal distance could not be beaten. Inspired by all this Goyder on the key at the Mill Hill station operated for a further 10 nights and worked the New Zealand stations Z4AA, Z4AG and Z4AK. It is ironic that the well-equipped and experienced DXer Simmonds, 2OD, had actually been heard by Bell on 16 October and on the 17th had received a cable to confirm this. It seems like sheer bad luck that he had been 'pipped at the post' by the young Goyder.

I am fortunate to possess the actual QSL card that was sent by Frank Bell to Cecil Goyder to confirm this historic achievement which had taken place 80 years ago. The card was written out three days after the QSO and it gives 90 metres as the wavelength used as well as the station details. At that time it was not considered necessary to give a signal report for then our RST reporting system had not been introduced. On his card Bell wrote: "Where next? Well OM we sure made history that nite and I think U and I helped to start a new era of World Wireless. Also would like to Sa that U R one of the best ops I hv ever wkd."

The Mill Hill School Wireless Society at that time had another operator, Mr W Brown. I also have a QSL card from 2GW to the Mill Hill station dated 20 October 1924 which is addressed to Mr Brown. Another card to Brown was from SWL H A Maxwell Whyte (later to be the well-known H A M Whyte, G6WY) dated November 1927. It suggests that Mr Brown was a member of the school staff, and in the 1925 Amateur Wireless *Handbook of Call Signs* W H Brown is listed as the 2SZ licence-holder.

Young Goyder's achievement was soon picked up by the press and he was interviewed at the school by none other than the Patron of the RSGB at that time, Edward, Prince of Wales, who later became the short-reigned King Edward VIII. This meeting at Mill Hill also included a look at the shack and equipment employed to make the historic con-


PALMERSTON SOUTH, NEW ZEALAND, 22/1/07 1924.
Telegrams and Cables: "Bell, Waihemo."
Radio. G.2SZ.
Ur QSA .... at 6:30 p.m., N.Z.T. QRH 100 often since 192 .
AERIAL:—90 ft. cage, 97 ft. tower. Natural wave to fan C.P. is 160 m., and to E is 205 m. Located 50 miles N. of Dunedin. Screened by trees and hills.
RECEIVER:— tuner, 2 H.F., detector, 2 L.F. Used ... detector . 1. L.F. on ur sigs. Best reception hr A2CM on 500C375 watt input at 1200 miles.
TRANSMITTER:—For local and fone work use 2 U.V. 202's. Best DX Kentucky, 8000 miles. For overseas tfc 1 U.V. 205 ckt. At 1000 v. D.C., 120 mils, rad. is 1·2 T.C.A. on 90 m. Power limited, as we make our own.
DX:—Heard in all Australian, 1. Canadian and 5. U.S.A. Districts, Samoa, Tahiti, Hawaii, Cape Horn, Argentina, Uruguay, by X3AA in Atlantic
England - where Heard next? Worked 12450 m
REMARKS: Well om we have made history
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Pse QSL om. 73's fm hr es CU agn.
Frank D. Bell
Member A.R.R.L.
u r one of the best ops I ho ever whd!

Left
The QSL card sent to Goyder by Frank Bell, Z4AA.

tact. Mill Hill School Wireless Society held a high-power transmitting licence which had been granted by the GPO in April 1923 and it enabled Goyder through the winter of 1923 - 24 to contact 40 American stations and to receive reception reports from more than 130 amateurs and listeners. The maximum power used at 2SZ was limited to 250 watts input. As the efficiency of a valve oscillator lies between 25 and 30% the actual radiated power at 2SZ would certainly have been no more than 80 watts. This compares unfavourably with the ubiquitous 100 watts of output from most modern transceivers. The 2SZ transmitter circuit is shown in **Fig 1** and it is a simple Hartley design which used a Mullard 01250 valve. Goyder's 2500 volt HT supply employed a synchronous mechanical rectifier with an additional diode valve rectifier. Keying took place in the primary circuit of transformer Tl. His 1μF smoothing capacitor seems very inadequate today and no doubt accounted for the 'RAC' ('raw AC') tone written on Bell's QSL card. The picture of Mill Hill School shows the station's antenna. It had a five-wire flat top 50ft long which used 12ft spreaders and there was a cage lead-in 45ft long which went down to the operating position. The maximum antenna length allowed by the GPO at that time was 100ft. The receiver employed a single triode detector valve which was followed by an audio amplifier. The circuit is shown in **Fig 2**. An unusual feature is that the grid coil was in two sections at right angles to each other; an arrangement which Goyder maintained reduced the detuning when the antenna coil was adjusted. Regeneration was obtained by the setting position of the 10-turn reaction coil. Goyder considered 90 metres to be a very short wave indeed, yet Simmonds, 2OD, just seven months after Goyder's New Zealand QSO made a two-way daylight contact with A2CM in New South Wales, Australia, on a wavelength of 23m. Superhet receivers were just being introduced in 1924 but Goyder considered that a TRF design was superior for CW work.

Cecil Goyder went on to become a leading expert on quartz crystal frequency control. Amateurs soon discovered that when a high-power oscillator was set up with crystal control the excessive RF currents through the crystal caused overheating and fracture. Sometimes when using the open crystal holders then available an overexcited 'rock' would fly across the room! Goyder devised a circuit which became known as the 'Goyder Lock' and involved the use of a low-power crystal oscillator which was very loosely coupled to the grid circuit of a big high-power self-excited oscillator. The small oscillator always took over and determined the frequency of the power valve. This is a rare example of 'good driving out the bad' but the technique was abandoned after the introduction of multi-stage transmitters using MOPA and COPA circuits.

The 1927 *RSGB Log Book* included technical contributions, one of which was by G2SZ (Goyder) and was titled *The Quartz Oscillator and its use in a Transmitter*. The third Convention organised by the RSGB in 1928 heard Ernest Simmonds, G2OD, also explaining crystal control and Cecil Goyder argued the case for master oscillators followed by power amplifiers for transmitting.

Goyder left the UK and went to work in the USA and his death there was briefly reported a few years ago in *RadCom*. His 'lucky' achievement in working the 'ultimate' in terrestrial DX will live on in the history of our hobby. ♦

Fig 1: The 2SZ transmitter circuit. The Hartley oscillator coil was tuned by tapping a fixed capacitor across part of it towards the 'earthy' end, removing the need for a high-voltage variable component (from *The Wireless Magazine*, April 1925).

FIG 1

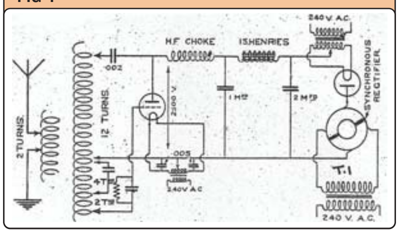
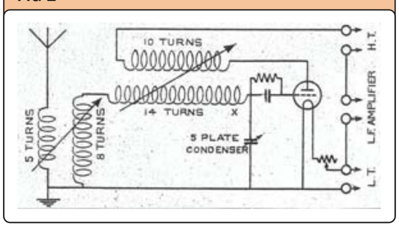


Fig 2: The receiver was a simple loosely-coupled detector followed by a standard audio amplifier (from *The Wireless Magazine*, April 1925).

FIG 2



By Anthony Vinters, G0WFG

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E-mail: tony@g0wfg.demon.co.uk

"Go back to your schools and pre

The STELAR - Science and Technology through Educational Links with Amateur Radio - organisation has run a series of amateur radio courses for teachers during the school Easter holidays for several years now. Anthony Vinters describes this year's course, and how 14 teachers went from little or no knowledge of amateur radio to Intermediate licence status in just five days.

Left: Assembling the crystal receiver kit from Ingo, DL1BLV.

Right: Brian, G8OSN, leads the course.

Tuesday 13 April 2004, sitting in the sunshine waiting for it to happen. Yes, it's that time of the year again: time for the STELAR Easter course for teachers. Like most events of this kind the planning for it started months ago.

As we sit there in the sun we see cars streaming past carrying hordes on their way to and from holiday. There is a temptation to think, why do we bother? Let's just examine why we *do* bother for a few moments. I have felt for a long time that radio amateurs have been sitting on a treasure house. They have at their fingertips not just the knowledge, but also a potential educational experience of enormous value to young people.

WHAT IS STELAR TRYING TO DO?

STELAR works within the educational establishment. We try to convince teachers and their mentors in university departments of education that radio communications have an enormous educational potential in our schools. Not only does this potential lie in areas that are obvious, such as physics, but also in the social development of the young person. Seeing a youngster deal with some piece of stubborn circuitry that refuses to work, or who is made to realise that it actually takes a lot of patience and effort before success is achieved, is a very valuable lesson. My own radio club at school has a record of turning some of our disaffected and difficult learners into quite reasonable human beings. In radio they have often had their first taste of real success. They can make something that works, they can talk to other people across the other side of the world, and they do begin to understand how the science works. To a teacher this is manna from heaven!

WHAT OF THE EASTER TEACHERS?

As we sit in the sun awaiting their arrival we wonder what sort of a bunch they will turn out to be. The first car appears swinging into the school courtyard, eventually decanting its driver who asks for the directions to the 'Radio Thing'. They are ushered to our Kingsford Room, a panelled meeting room where they sit in quiet and perhaps nervous contemplation of what they have let themselves in for. Gradually more arrive, and soon the room is full of teachers talking lustily of this and that. Soon all 14 are gathered.

Fortunately we have a venue for our course that is almost ideal. Rishworth School in the heart of the Pennines is almost everything we could wish for. With on-site accommodation, excellent catering and fine teaching laboratories in the beautiful Ryburn Valley we could not ask for better. On the STELAR course we pride ourselves in the quality of the catering. If the person coming on one of our courses has not put on several pounds by the time they leave us then we have failed!

Our courses have been held at Rishworth for a number of years, and we have enjoyed the fullest cooperation and support from the headmaster, the bursar and the catering department as well as those that work in boarding in the school.

THE COURSE COMMENCES

Very soon all the jollity has been put aside and we are busy in the physics laboratory introducing basic ideas in electricity. Our lecturers, all volunteers, are chosen not only for their expertise in radio, but also for their communication skills. Being asked to perform in front of experienced teachers is not for the faint-hearted. They are quick to spot any failure in delivery! This year we were extremely fortunate to have the services of Alan Betts, G0HIQ; Richard Constantine, G3UGF; Murray Niman, G6JYB, and Brian Reay, G8OSN. Each one of these gentlemen has a deep knowledge of the subject, and is above all enthusiastic about how he teaches it. Their teaching skills are as good as their technical knowledge.

pare to transmit!”

As a result of previous experience STELAR has worked with determination to provide teaching materials of a high standard. The RSGB initiative to ‘Train the Trainers’ has certainly been of help in this area. Also assisting to help things run smoothly were Roy Smith, G3NBI; Esde Tyler, G0AEC, and the secretary of STELAR, Mike Wade, G8OGO. Their constant help during practical sessions was most important in helping the participants get the most out of the course. I feel it important to mention especially the part played by Roy Smith, G3NBI, and Esde Tyler, G0AEC. Their time spent during the ‘on air’ parts of the course was invaluable. They both have a knack of being able to make newcomers to radio relax when they are transmitting and enjoy the experience.

Unfortunately this year Dr Ingo Goltz, DL1BLV, was unable to be with us. Ingo is a regular lecturer on the STELAR course. He has developed a series of relatively simple radio circuits that can be built by young people using simple components and easily available DIY products. These projects look very good when complete, and give young people a chance to make something that works very well indeed. Ingo has proved an immensely popular lecturer with all the teachers who have been on our courses in recent years. I have a promise from him that he will certainly be with us at Easter 2005.

PRACTICAL PROJECTS

It is true that in the world of education physicists are rare animals. The current shortage of physics graduates means that they usually end up doing GCSE, A/S and A2 level work, while non-specialists often teach physics further down the school. STELAR has made a brisk start on addressing the problem. The thinking is simple: the Foundation and Intermediate licences contain material on basic electricity and electronics. We take great care to teach these well, the idea being to bring a sense of confidence to the non-specialist: to show them that electricity is not the mystery that many find it. I am extremely pleased to report that on the course we had several biologists from our local university who are about to enter careers in the teaching profession. Every single one passed the Foundation and Intermediate examinations with flying colours.

There you have it: amateur radio playing a direct and vital role in addressing a current need in education. I return to my thesis: a study of radio communications is a treasure house of educational experiences, even for teachers!

Since Ingo could not be with us, I made enquiries several months ago if he would be prepared to make up kits of parts for our teachers to put together on the course. This he gladly did. About a week before the course started a large cardboard box arrived at Rishworth School from Germany. Inside were 20 of the most beautifully prepared kits, each one exquisitely presented in its own re-sealable plastic bag containing everything needed. Nothing is left to chance, nothing untested. Everything fits perfectly and works first time. These little practical projects have become a hallmark of STELAR courses.

BURNING THE MIDNIGHT OIL

Although the STELAR course is great fun, it is also very hard work. We push the course participants hard from Tuesday afternoon to the following Saturday lunchtime. A colleague of mine who lives on-site at the school asked me what on earth we were doing? The lights in the physics lab were still burning at 11.30pm most evenings.

Eventually Thursday morning arrived and the Foundation licence test. Everyone was up early doing last minute bits of revision. Standing at the front of the class there was a definite tension in the air as the packets of papers were opened. Not to do well or worse still

Alan Betts, G0HIQ, on the air.

to fail completely would be felt especially keenly by a teacher. After all, they are supposed to be the expert at exams!

As the last candidate left the exam room the task of marking began straight away. Each paper was double marked by independent examiners to ensure accuracy and fair play. To our great relief all had passed the first hurdle by a handsome margin. The teachers had all gathered in the school dining room for a well-earned cup of tea after the exam. We examiners filed in looking suitably solemn. It was announced that all had passed; they had at least now the certainty of leaving the course with a callsign. The relief felt by all of us was intense. We could now brace ourselves for the second hurdle, the Intermediate licence.

Work on this started immediately. Time was spent not only on theory but also getting to grips with issues like soldering, PL259 plugs, calibrating a VFO etc. I find these practical matters particularly interesting and worthwhile to teach. After a little training on how to solder, each of our teachers built a simple crystal receiver with its own amplifier from the kits so well prepared by DL1BLV. Very soon each person was rewarded with the sound of a broadcast station coming through the earpiece. It was interesting to hear from several of them that this was the first time they had soldered anything and it had worked! Clearly Ingo's careful preparation had reaped a harvest of success. On the STELAR courses we are conscious that it is vital to give all our participants a real sense of achievement and a taste of success.

That evening we all gathered at a local restaurant and had an excellent meal plus something to wash it down with. One or two of our number found the Timothy Taylor's local brew very much to their liking.

To their credit all were up early on Friday ready for the final day's play. Soldering continued, putting mains plugs on cable under the eagle eye of Alan Betts, G0HIQ, making transistor circuits and a myriad of other activities. That evening after dinner we all went to the physics lab for a final revision session. Out came the data projector. The questions were displayed on the screen for all to discuss and generally tear apart. To a group of teachers how the question is phrased and slanted is as great an interest as the actual answer. One of our number, in his exam for Intermediate level, actually wrote on the paper "Nice try", which caused a lot of amusement among the markers: the candidate had spotted a diode placed in the circuit the wrong way around and hadn't fallen into the carefully constructed trap!

"PREPARE FOR TRANSMISION!"

The end of the course was now upon us. Saturday morning was the time set aside for the Intermediate licence examination. Once again tense faces and a distinct lack of banter. This was serious stuff!

Tim and Robert from Year 10 at the school studying their kit before assembly.

Again we marked the final papers in a tense atmosphere, a lot was at stake. Professional pride, not failing in front of colleagues, not wanting to feel it had been a waste of time. All these crowded in on the teachers and made their task more difficult. When our work was complete, the last paper safely marked and all marks verified we went across to the now familiar dining room to announce the results. Richard, G3UGF, made a few helpful suggestions as to how we should tackle the announcement. He drew a political parallel that I thought most appropriate. The teachers were all assembled quietly talking. At our appearance silence descended, the air was electric. I began the announcement: "Go back to your schools and prepare for transmission"!

Every person had passed the course, a 100% pass rate at both Foundation and Intermediate levels. Again the rush of relief, the congratulations, the backslapping, hand shaking, laughing and an odd wet eye summed up eloquently what this course was about.

On Monday morning the room was filled with young faces. They had little idea of what had happened there previously, except two of them. Robert and Tim, two young men in Year 10 at the school who had worked alongside the teachers to get their tickets. The fact that they were at least as good as the teachers brought a smile of satisfaction to their faces. Their classmates had simply no idea!

IS THAT IT?

No, not by a long way. Brian, G8OSN, made sure that people kept in touch. He swiftly set up a *Yahoo* group for the participants. This has been an enormous success and information has been flowing back and forth ever since the course. There has been a demand for the Advanced licence course to take place in the autumn. This we plan to do!

Like all worthwhile projects this one has its army of unseen people who make it happen. Through the columns of *RadCom* I would like to express my thanks to all the people in the RSGB that have worked so hard on a multiplicity of tasks to make sure everything went well. In particular Sylvia Manco, 2E1CYL, and her team at HQ who provided exam papers and looked after the administration so well. The RSGB has long been a great supporter of STELAR and I would like to thank them for the many ways in which they assist our efforts. Their mission to become involved in the educational world has not been without difficulties, but they share with us a vision that amateur radio has much to offer the young person growing up in the 21st century.

Ofcom has played a major role in our courses. Through their generosity in providing funds we have been able to provide free courses for teachers. This has been in line with our thinking in STELAR. Financial considerations should not stand in the way of the professional development of the teacher. It is a fact that without their interest STELAR would not be able to function. In particular Alan Betts, G0HIQ, has always been a keen supporter of our work, not just in his role in Ofcom but his presence on our courses shows a commitment that is outstanding.

Our lecturers Richard, G3UGF; Alan, G0HIQ; Murray, G6JYB, and Brian, G8OSN, have not only shown themselves to be excellent ambassadors for amateur radio, their teaching abilities and experience have made them all first rate lecturers. All our teachers commented on how well the course was delivered, and praised the excellence of the teaching. Personally I found this most gratifying.

My thoughts now turn to our next course, the planning has started and a list of those who are 'up for it' is in readiness. I hope the reason why we spend our holidays doing this is apparent but, if not, here is a short quotation: "Is there a course in the autumn? There is! Oh good, count me in". ♦

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Another silent key – the revered John D Kraus, W8JK ♦ A small four-arm antenna ♦ Another simple SSB generator ♦ PA0SE's 'sliding doors' transceiver

TT

ANTENNA ICON – JOHN KRAUS, W8JK, SK

Hardly had the September 'TT' item gone to press with the item 'A Sad Harvest' (noting the spate of deaths of a succession of amateurs and others who had contributed to home construction and audio engineering), than the Grim Reaper wielded his sickle once more. This time removing Dr John D Kraus, W8JK, antenna designer, radio astronomer and author of several classic engineering handbooks, aged 94. A legend in his lifetime and an icon to both amateurs and professionals.

At the age of 10, in 1920, he erected his first antenna, soon afterwards joining ARRL and, in 1926, becoming a licensed amateur (8AFJ, later W8JK). In 1933, he gained a PhD degree in Physics at the University of Michigan for a 5m (58MHz) research project (with Henry Muyskens who was also a licensed amateur). This was published in P*roc IRE,* September 1933 as 'Some Characteristics of Ultra-High-Frequency Transmission'. Using a 15W, 58.1MHz transmitter and National HFR receiver (predecessor to the One-Ten) mounted in a Studebaker touring car, they compiled a field strength contour map of Ann Arbor, Michigan. In an era when little commercial use was being made of the VHF spectrum they concluded *inter alia*: "A resonant [vertical] receiving antenna was shown to be of considerable value. Using an antenna of this type, good reception may be obtained for field strengths of about 50μV/m with even the comparatively-simple super-regenerative type of receiver. An area of about 150 square kilometres was covered with minimum field strength of about 50μV/m. *Such low power coverage would be admirably suited for certain types of local services as broadcast, television, police or local point-to-point communications. Likewise, due to the relatively small range under ordinary conditions, similar services in other centres could use the same frequencies without interference to each other*" (italics added).

His great skill was seeing, in the theoretical work of himself anf others, the potential for antennas of great practicality, not only to ama-

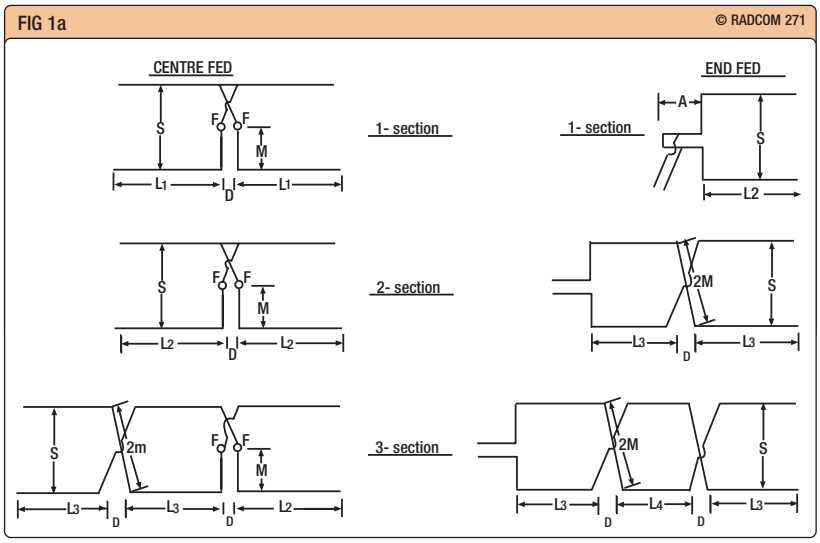
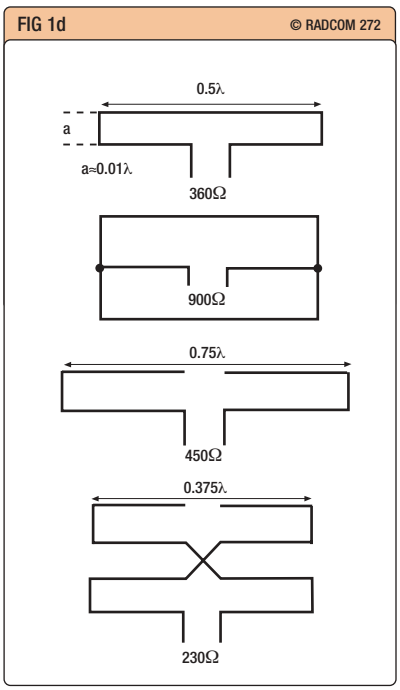


Fig 1
Major contributions to antenna engineering by John D Kraus, W8JK. (a) The first close-spaced flat-top arrays in early 1937. (b) The VHF/UHF corner reflector. (c) The axial-mode helix. (d) Codification of centre-fed multi-wire doublets including the 300ohm half-wave folded dipole (1939/40).



teurs, but also to professionals. In 1937 he became the first to see in the classic paper of Dr George Brown (RCA) the tremendous importance of the close-spacing of antenna elements, a story recounted recently in 'TT' (March, 2004). He soon developed a series of effective fixed or rotary 'flat-top' bi-directional (W8JK) beams. His interest in amateur radio continued throughout his long professional life. In June 1982, he contributed an article 'The W8JK Antenna: Recap and Update' to *QST* (noted in 'TT', November 1982) showing how the antenna forms an effective multi-band antenna, with a single-section 14MHz array effective on all the higher HF bands (including the then new WARC bands) and less effectively on 10MHz (**Fig 1(a)**).

John Kraus 'invented' the corner reflector antenna (**Fig 1(b)**), much used in the USA for TV reception, the high-gain axial-mode helix antenna (**Fig 1(c)**), widely used in space communications and radio-astronomy, and was the first to describe in detail the 300ω folded-dipole, the related family of multi-wire doublets (**Fig 1(d)**), and the three-eighth-wave vertical (**Fig 2**), first in the US amateur magazine *Radio* in May/June1939 (copy kindly provided by G3UUR), and then in *Electronics* (April 1940). A spin-off was the 'T-Match' antenna, described in *QST* (September, 1940) from which was later developed the gamma match.

In *IEEE Antennas & Propagation Magazine* (April 1995), Dr Kraus, at the age of 84 years, was still developing new forms of his axial-mode helical beam antenna. As I noted in 'TT' (August 1995), he showed that the large ground-plane reflector could be replaced by one or more loops with little effect on performance. **Fig 3** shows his experimental 10-turn 1680MHz helix antenna which has a gain of about 15dBi and half-power beamwidth of 34°

He was author of classic handbooks *Antennas* and *Electromagnetics*, both of which ran to more than one edition, as well as an autobiographical book *Big Ear*, named after the large radio astronomy antenna he built as Director of the Ohio State University Radio Observatory. He also wrote a popular book, *Cosmic Universe* (1980).

Fig 2
The two-wire 3λ/8 vertical antenna with a resistive feed-point of about 250Ω, as described by W8JK in his articles on multi-wire dipoles (Radio, June 1939 and Electronics, May 1940). Dimensions shown in (a) are for 14MHz with the total current distribution shown in (b). This antenna has been featured several times in 'TT' but appears to be seldom used.

FIG 2a © RADCOM 276

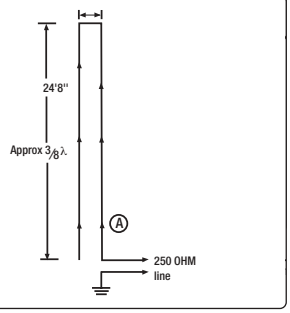
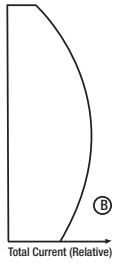


FIG 2b © RADCOM 279



Brian Austin, G0GSF, points out that one book contains a list of the 146 papers Kraus published between 1933 and 1995, including three survey papers on antennas in 1982, 1985 and 1989. G0GSF adds that of his four books with seven editions, he has six, two being signed copies from the author himself! "He was a great man and a giant in the world of applied electromagnetics". To G3UUR also, he was one of his technical heroes. Amateur radio owes him a great debt!

Fig 3
In his eighties, W8JK continued to develop new antennas until the mid-90s. This new form of his helical-beam antenna appeared in 'TT' December 1995, in which the ground-plane reflector is replaced by one or more loops. It has less wind-resistance, is well suited to pole mounting, and of less obtrusive appearance, but this 10-turn 1.7GHz version provided a gain of some 15dBi.

SMALL FOUR-ARM CSL ANTENNA

These days, the professional antenna designers have largely shifted their attention away from HF or even VHF antennas, and mostly have as their objective ever smaller UHF antennas for handheld mobile telephones and related equipment. With a quarter-wavelength at 900MHz only 22mm, there might seem little need to strive to produce electrically-small UHF antennas. Nevertheless, as mobile terminals are shrinking in size, there are increasing demands for antennas whose maximum dimension is only a fraction of a wavelength, despite fundamental limitations in efficiency and bandwidth.

Paul Hallbjörner of Ericsson AB (and postgraduate student at Chalmers University of Technology, Göteborg, Sweden) in 'Electrically Small Unbalanced Four-Arm Wire Antenna' (*IEEE Trans on Antennas & Propagation*, June 2004, pp1424 – 28), presents a novel CSL (capacitance-inductance (Swedish) -loaded) antenna, tunable with a selected capacitance-value over a wide frequency range and with an instantaneous bandwidth of about 3%. A good match to 50Ω coaxial feed without a matching network is ensured by the 50Ω load resistor. The non-inductive resistor has to absorb the residual transmitter power, and this will vary with the radiation efficiency of the antenna, requiring approximately absorption of the full transmitter output at the lower frequency end of its range.

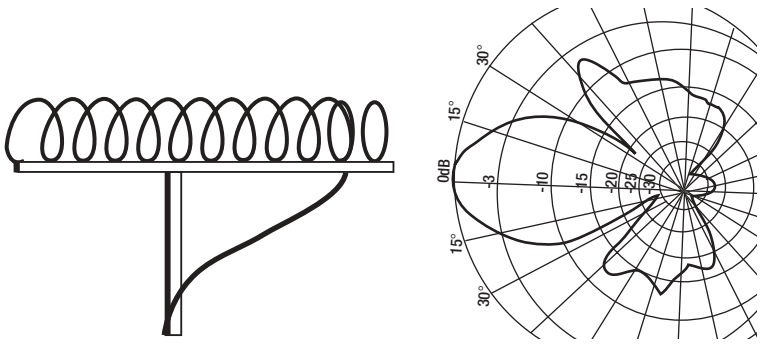
As shown in **Fig 4**, it is an unbalanced antenna, consisting of four wire arms arching over a ground-plane in shapes that may vary from semicircular to rectangular, etc. One of the wire ends is the feed, and the other three are connected to the ground-plane, one via a variable capacitance, one as a direct connection, and the other via a load resistor (the order in which these connections are made is important). The ends of the four wires are connected to the ground-plane roughly as a square, although making it slightly rectangular fine-tunes the input impedance. The crossover point of the arms is electrically connected. The resonance of the antenna is set by the value of the capacitance (fixed or variable). With a variable capacitance, the antenna can be resonated over a range of several octaves, with a 3dB bandwidth of roughly 3% at any given frequency.

The Swedish paper describes a miniature CSL for UHF/VHF applications with a copper ground-plane measuring only 30mm by 30mm with semicircular 0.8mm copper wires reaching 19mm above the ground-plane. All four wires connections to the ground-plane are located about 2 – 3mm from the respective edges, thus forming a square of 25 x 25mm (roughly an inch square). This tunes from 1585MHz with zero capacitance to 310MHz with 6.8pF capacitance (intended for maximum efficiency at 900MHz).

I came across this paper at the IEE Library and was struck by the possible application of scaled-up models at HF as an alternative to the tunable transmitting loop for mobile operation etc. I wrote to Dr Brian Austin, G0GSF, who in the past investigated and developed a vehicle NVIS loop (see 'TT', August 1995 etc).

He writes: "This CSL antenna is certainly a novel idea and lends

FIG 3 © RADCOM 273



itself well to modelling with *NEC*. To simplify the process, I used a rectangular configuration rather than his semi-circular one with a height of 19mm to compare my results with those given in the paper. As one would expect, the 50Ω resistor determines the input impedance at discrete frequencies and obviously consumes power, so the radiation efficiency is further impaired as a consequence. However, the idea is clever and the antenna certainly deserves a place alongside those other resistively-loaded configurations where gain is traded for bandwidth.

"The best match occurs at the parallel resonance formed by the lumped capacitor, transferred to the feed-point, and the distributed inductances of the wires, especially the short-circuited one – a stub. Allowing for the slight difference in geometry between my model and his, the agreement between them was good.

"I then scaled my antenna down to HF by keeping the reactance of the capacitor the same as his and merely changing the side lengths in proportion (from mm to m): see **Fig 5.** As scaled with 25mm copper tubing, the antenna would be too large to be mounted on a conventional motor car but would not look too out of place on a ship! I was particularly interested in its NVIS properties. With a 1000pF variable capacitor, it will tune between about 1.5MHz and 9MHz – certainly useful for NVIS. The VSWR (50Ω) is very good (as the resistor ensures), being better than 1.5:1 everywhere except at the very top of the band when the capacitance is made up only of strays. Now to the important bit – the gain towards the zenith varies between -3dBi at 9MHz and -23dBi at 1.8MHz. Naturally, the radiation efficiency is very low (<1%) at the lowest frequency, but approaches 60-70% at the top end of the tuning range and, of course, no additional impedance matching network is required. These figures assume an ideal, perfectly conducting ground plane beneath the loop. In practice, this won't be realised, and so there will be a consequential decrease in gain due to increased ground losses. On board a ship at sea, things should be much better.

"The scaled-up dimensions I used produce an antenna that is not really electrically small above about 5MHz, since the loop perimeter (including that part within the ground plane) is of the order of λ/3 at 5MHz. Above that frequency, the current distribution is no longer uniform and the so-called dipole-mode begins to dominate the small loop mode (terms that have received airing in 'TT' over many months!). The onset of this is immediately evident as a flattering of the lobe in the zenithal direction with maximum radiation now beginning to appear broadside to the loop instead of in the plane of the loop. However, the effect is not too severe and this antenna would still be a useful radiator for NVIS service at the top of the band. I have not tried changing the dimensions to produce a 'car top' version but, no doubt, this could be done."

FIG 4a © RADCOM 267

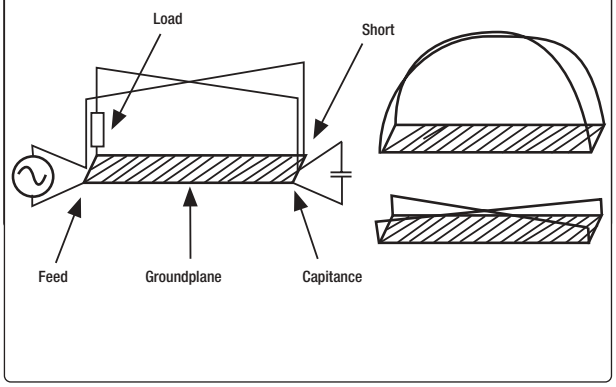


FIG 4b © RADCOM 268

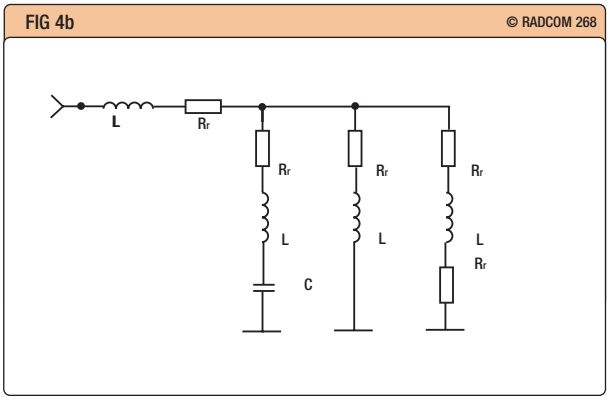


Fig 4
(a) The new Swedish CSL electrically-small unbalanced four-wire antenna developed for mobile telephones. On the left, its four-wire connections: feed, capacitance, short and load (in that order). On the right, alternative shapes. The wires are electrically connected where they cross in the middle. (b) Equivalent circuit for the CSL antenna.

PA0SE's now-completed and operational home-built HF transceiver featuring 'sliding doors' variable selectivity with constant shape factor, Cohn RF filters and a National PW (HRO-type) tuning dial.

ANOTHER SIMPLE SSB GENERATOR

Paul Fellingham, G7FJC, writes: "The simple SSB generator by P M Prabhu ('TT', August, 2004, p44, Fig 2 from *Electronics World*) struck a chord, as I have recently developed a very similar design as one section of a transceiver (incomplete as yet) for the lower HF bands: **Fig 6.** There is nothing new or specialised about it; it is just a cheap, simple SSB generator that is easy to build and set up.

"The generator is built around a filter using readily-available 4.433MHz colour TV crystals. Three of these filters have been built and tested using different makes of crystal. All three had similar responses, provided that all the crystals were closely matched in frequency. This ladder filter has an excellent response on the high-frequency side, but the roll-off and ultimate attenuation (~42dB) are rather poor on the low-frequency side. The poor low-frequency response, corresponding to the high-frequency end of the audio input signal, can be improved by the use of audio filtering prior to the modulator. These ladder filters are unsuitable for generating upper-sideband signals.

"The LSB generator includes a microphone amplifier based around a TL071 op-amp with HF roll-off provided by the 680pF capacitor. This is followed by a low-pass filter, using two transistors, that removes the high frequencies insufficiently attenuated by the crystal filter. A single-transistor high-pass filter removes low audio frequencies.

"As in the Prabhu design, an NE602 is used as oscillator and balanced modulator, with the double-sideband signal fed directly to the home-brew crystal filter that removes the upper sideband. A 4dB attenuator helps to terminate the filter and also reduces the signal level to that needed by an NE602 transmit mixer (not shown) To terminate the crystal filter properly, the following circuit requires a 1.5kΩ input impedance. This remains true if the attenuator is
omitted."

PA0SE's 'SLIDING DOORS' TRANSCEIVER

'TT' June 2002, pp 61-2 reported that Dick Rollema, PA0SE, was in course of constructing a new HF transceiver incorporating a 'sliding doors' variable-selectivity IF filter. This filter is a modified form of the multi-mixer system originally developed by Rohde & Schwarz for their EK-07-80 receiver and described in 'TT' December, 1969. R/S used two high-slope 10kHz low-pass filters and was shown in Fig 2 of the June 2002 'TT' and also in several editions of *Amateur Radio Techniques*. The PA0SE filter, unlike the R/S original (Fig 2, June 2002), can be adjusted to provide an LSB, USB or symmetrical response, each of continuously-variable bandwidth, without degrading the shape factor even at the narrow CW settings. He was also incorporating a National PW (HRO) dial recovered from a German wartime receiver and Cohn filters as described in 'TT' April, 1997 (*TTS 1995-1999*, pp147/48).

In June this year, he writes: "My new home-made transceiver has been in use for several months now, and I am entirely satisfied with it. The 'sliding doors' are very convenient and at least as useful as the combination of selectable bandwidth plus pass-band tuning incorporated in my former valve receiver. I have not measured its large-signal behaviour but it must be very good, as judged from an operational point of

view. During evening hours on 7MHz there is no trace of intermod, not even with the 12dB RF pre-amplifier switched on as a test only, since the amplifier is intended only for possible use on 24 and 28MHz. The attractive appearance of this unique transceiver is shown in the photograph.

HERE & THERE

In respect of low-voltage valves ('TT' January & August, 2004) Richard Hawkins, G7RVI, draws attention to the Collins high-performance communications vehicle receiver, type R-392 widely used by the US Army in the 1950s and 1960s.This ran directly from 28V DC vehicle batteries with no form of DC conversion to provide HT. He points out that it was a simplified, compact, ruggedised version of the famous R-390 designed by Collins about 1950. It provided 31 1MHz-wide bands, with dual-conversion above 8MHz and triple-conversion below that, with a 1st IF of 9 – 18MHz, tunable 2nd IF of 3 – 2MHz and 3rd IF of 455kHz, and used the classic Collins permeability tuning, giving a linear tuning dial. Despite the low 'HT' rail of 28V, it used typical US types such as the 26A6, 6AJ5 and 12AU7. Full details can be found at www.roveroresearch.com/r392/r392.html

In respect of the True antenna matcher (July 2004), John Pegler, G3ENI, notes that there was an article in *CQ* (January 1962) by David T Geiser, WA2ANU, about a phase detector using the same principles. He acknowledged Hay's article.

Michael O'Beirne, G8MOB, draws attention to an item in the 'Home Forum' feature of *The Times*, July 7, 2004, which provides an answer to the question: "How can I remove white deposits caused by batteries leaking in my camera flash after being left in too long? The answer given would be widely applicable: 'To remove battery deposits, sprinkle baking soda on the affected areas. Using a cotton bud dipped in vinegar, carefully swab out the baking soda and the deposits underneath. Take care not to damage the battery terminals." ♦

FIG 5 © RADCOM 269

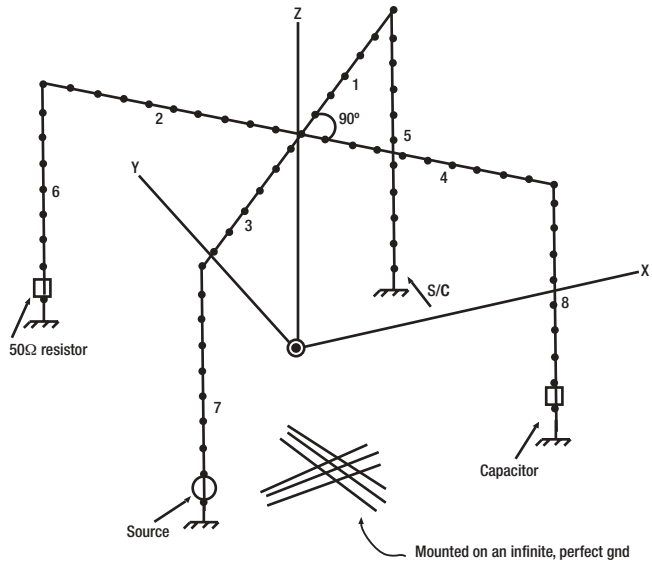
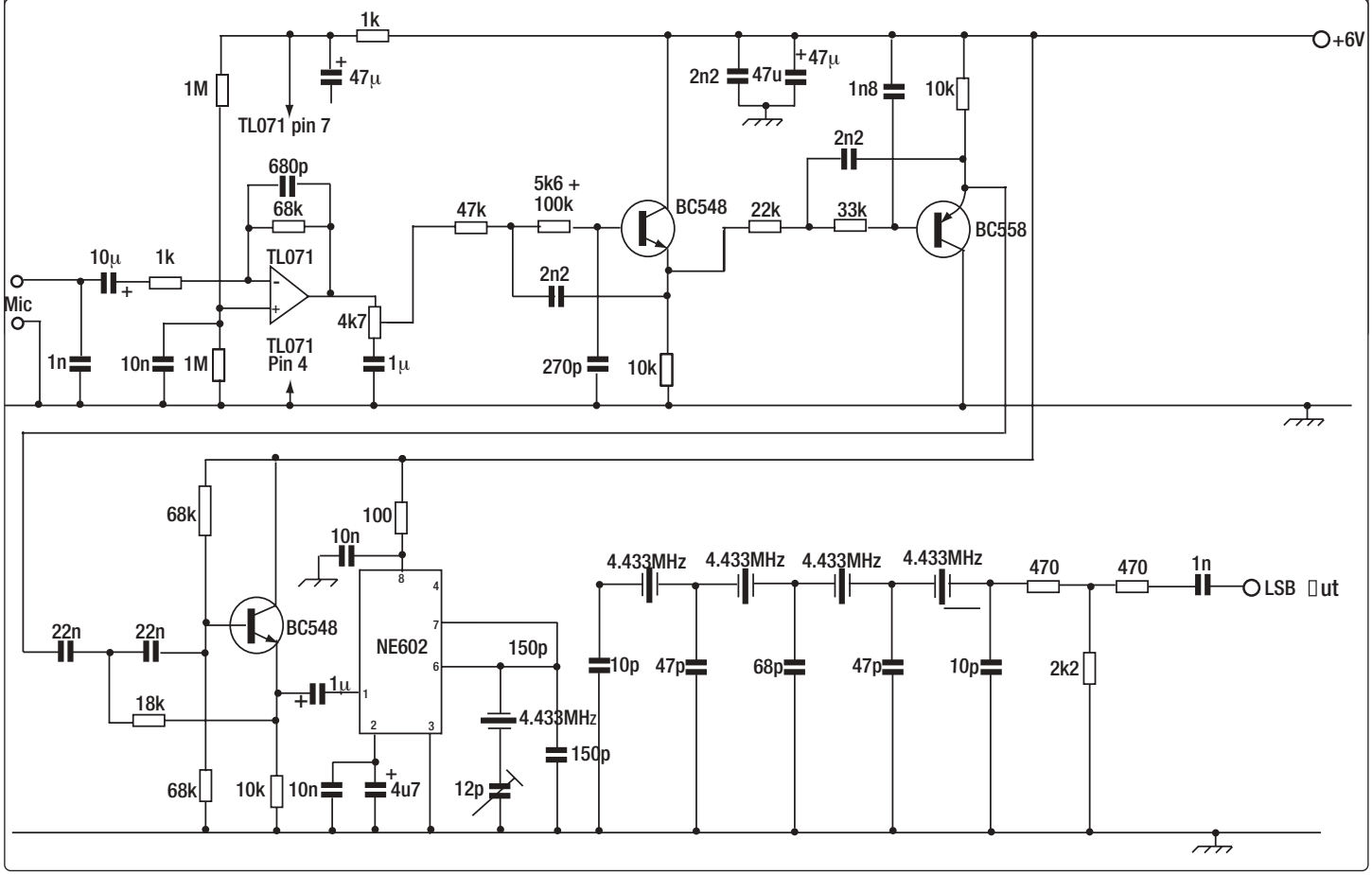


Fig 5
G0GSF scaled-up the CSL antenna EZNEC simulation for HF coverage by using metres rather than millimetres and 25mm copper tubing in place of the wires. Dimensions: 1, 2, 3, 4 each 3.15m. 5, 6, 7, 8 2.8m. The capacitor is variable, thereby allowing continuous tuning across the band. The Xc values in the original paper translate to 39pF required at 6.5MHz rising to 909pF at 1.75MHz. In practice, the size could be reduced if 1.8MHz coverage was not required and the antenna was mounted on a car etc.

Fig 6
Simple 4.43MHz SSB generator including audio- as well as crystal-ladder filtering developed by G7FJC.

FIG 6 © RADCOM 270



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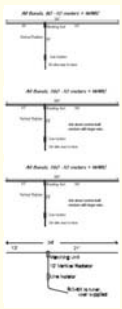

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- Feed with any length 50 Ohm coax
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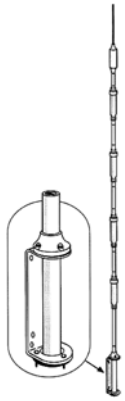

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Hot off the press! And is this GOOD!!!! The latest compact Auto ATU from MFJ will BURY the competition. Take a look at our web site for a detailed specification..... **£248.99**

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Having many years of experience offering specific finance packages for our customers, we can now offer various options on payment.

We have added "**Take-Away Now & Pay Later**" to all our products over £199. It works like this:

0% APR An example of our Take-Away Now: Discounted price of £300. Pay no interest provided you pay by the date the amount is due, in full. 29.8% APR

After the 12 months period has expired pay £15.76 for 36 months. TAP £567.43

Please note that interest is calculated from the date of the original agreement.

Words of advice when choosing your personal finance option.

Be very careful when you next run out of your local ham store having signed on the dotted line to get your new rig. ML&S have been providing customers with finance packages for many years and here are examples of finance based on £899 borrowed over 36 months.

1. **Option One**.....Classic Low-Rate Finance
2. **Option Two**.....No-Interest Finance Option
3. **Option Three**.....Take-away now, pay later
4. **Option Four**.....Tailor made to customers requirements

Option One

The most popular option, Classic Finance— is very simple and operates without an interest-free period. If you budget for your radio equipment over a fixed amount for 36 months (in fact 12-48 months if you prefer) then this maybe the best choice for you. Look at the total amount payable to see how much you really can save over options Two and Three.

Cost of Rig £899 Pay 36 x £32.68 Total amount payable £1164.96 at 19.9%APR

Option Two

A variation on Option Three and one that doesn't leave it all to the last minute to find the amount due in one huge lump. You simply pay a small amount each month which is directly taken off the final amount due within the twelve month period. At the end of the term you simply pay the balance with no interest accrued. Unlike Option Three, the final payment is far less but you do still have the option to pay over a further 36 months at an APR rate of 29.9% APR.

Cost of Rig £899 Pay only £30.52 for 11 months Pay £532.76 on due date with no interest Or pay 37 x £30.52. Total amount payable £1464.96 at 29.8% APR

Option Three

Also referred to as 'Buy now pay later'. A popular choice at the moment, this method enables you to take away your new rig and pay nothing for twelve months. Once the free-interest period is almost complete you are given the opportunity of settling the amount avoiding any interest charges or paying over a further 36 months accuring interest at 29.8%. APR.

Whilst this method initially sounds very appealing, the shock may come when the 12 month free-interest period has expired and you cannot afford to pay the amount in full. You are then locked into paying back over 36 months at an APR rate of 29.8%.

If you think that you will continue paying after the twelve months has expired and enter the 29.8% APR Rate, (which incidentally is calculated from day one of the original transaction), either consider option 1 or 2. Option 2 lessens the burden as you are at least paying from day one and won't accrue any interest charges unless you roll over to the next 36 months. On the due date for payment you pay the remainder (which will be far less because you have already contributed 12 small payments) and avoided any interest charges. Option 1 will work out the cheapest by far at an interest rate of only 19.9% APR.

Cost of Rig £899 Pay Nothing for 12 months Pay £899 on due date with no interest. Or pay 36 x £47.24. Total amount payable £1700.64 at 29.8% APR

Option Four

Because of ML&S' experience in finance we are often able to tailor a payment plan to meet your own requirements. For example, you may wish to pay over 12, 24, 36 or 48 months. Instead of paying nothing for 12 months, 6 or 9 months maybe better. The variations are literally endless. Please give our finance help line a call (or email) and we will do our very best to offer a package that is the best for you.

Call 0845 2300 599 or email financeplan@hamradio.co.uk

By Peter Dodd, G3LDO

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E-mail: g3ldo@ukonline.co.uk

Antennas

In the July 'Antennas', I said that full constructional details of the G3ZOM noise bridge were available in [1], however this only applies to the second edition. The first edition describes the basic noise bridge from the then current ARRL *Antenna Handbook*. I also said that antenna impedance could be measured via an electrical half-wavelength of feeder, which may be the only method available if the feed-point of the antenna is inaccessible. I can see now that 'the only method' phrase is misleading. I received an e-mail to say that there was a spreadsheet available by G4JNH that allowed impedance to be measured over any length of feeder. The subject is interesting and is the basis for this month's 'Antennas'.

ANOTHER LOOK AT IMPEDANCE

The feed impedance of a resonant dipole antenna (for example) is purely resistive at resonance; at any other frequency there is always inductive or capacitive reactance present. The combination of resistance and reactance occurring in a series circuit is impedance (Z). The impedance of a circuit can be defined as the ratio of the driving voltage to the current it produces.

Because impedance is derived from resistance and reactance it is always expressed in two parts, Z = R + jX. An impedance having a resistance of 75Ω and a inductive reactance 50Ω is conventionally written as: Z = 75 +j50. For our consideration the 'j' part of impedance can simply be regarded as a convention for reactance, a '+j' indicating inductive reactance and a '-j' indicating capacitive reactance. When the antenna is at its resonant frequency, the +j and -j parts are equal and opposite so only the resistive part remains.

Impedance can be represented using a chart with Cartesian co-ordinates as shown in **Fig 1**. This method of plotting and recording the impedance characteristics of antennas is rather like a map Mercator projection, with the latitude and longitude of R and jX respectively plotted to define an impedance 'location'. Resonance, where the inductive and capacitive reactances in a tuned circuit or antenna element are equal and opposite, exists only on the zero reactance vertical line. The impedance measured at the end of a transmission line, with the other end connected to an antenna or a load, will rarely be the same as that antenna or load because of impedance transformation the transmission line. There are two ways to find out what the real antenna impedance or load actually is.

- Measure the electrical length of the feeder and use a transmission line calculator, such as the Smith Chart or a computer program to find the antenna impedance.
- Measure the impedance of the antenna using an electrical half-wave, or a multiple of a half-wavelength, of coaxial cable.

FIG 1 © RADCOM 276

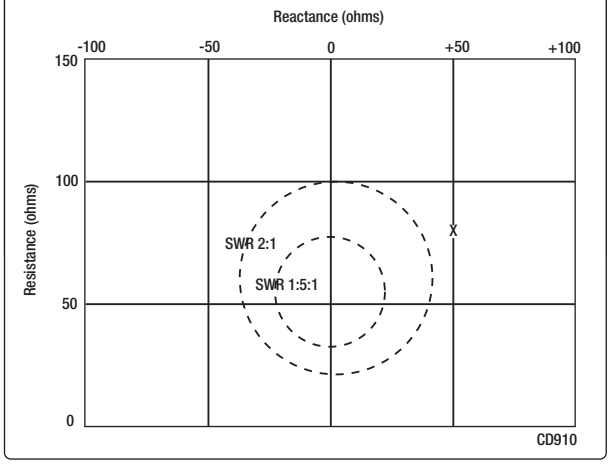


Fig 1: Impedance Chart, with X showing an impedance of 75 + j50. The circles represent SWRs of 1.5:1 and 2:1 for 50w coaxial cable. Note that, on this projection, the SWR circles are not concentric as they are on the Smith Chart projection.

THE SMITH CHART

The traditional method of for calculating impedance transforms over a length of coaxial feeder is the by using a Smith Chart. This is a sort of slide rule and was invented by Phillip H. Smith and described as a Transmission-Line Calculator [2]. The Smith chart shown in **Fig 2** is an impedance map with a projection different from that shown in Fig 1, just as maps have different projections, such as the Mercator or Great Circle projections. The most obvious difference with the Smith chart is that all the co-ordinate lines are sections of a circle instead of being straight. The Smith chart, by convention, has the resistance scale decreasing towards the top. With this projection, the SWR circles are con-

Fig 2: A simplified, restricted-range Smith Chart. An additional scale is added around the circumference, calibrated in electrical wavelength. Two lengths of coaxial cable are shown superimposed on the transmission line electrical length scale.

FIG 2 © RADCOM 279

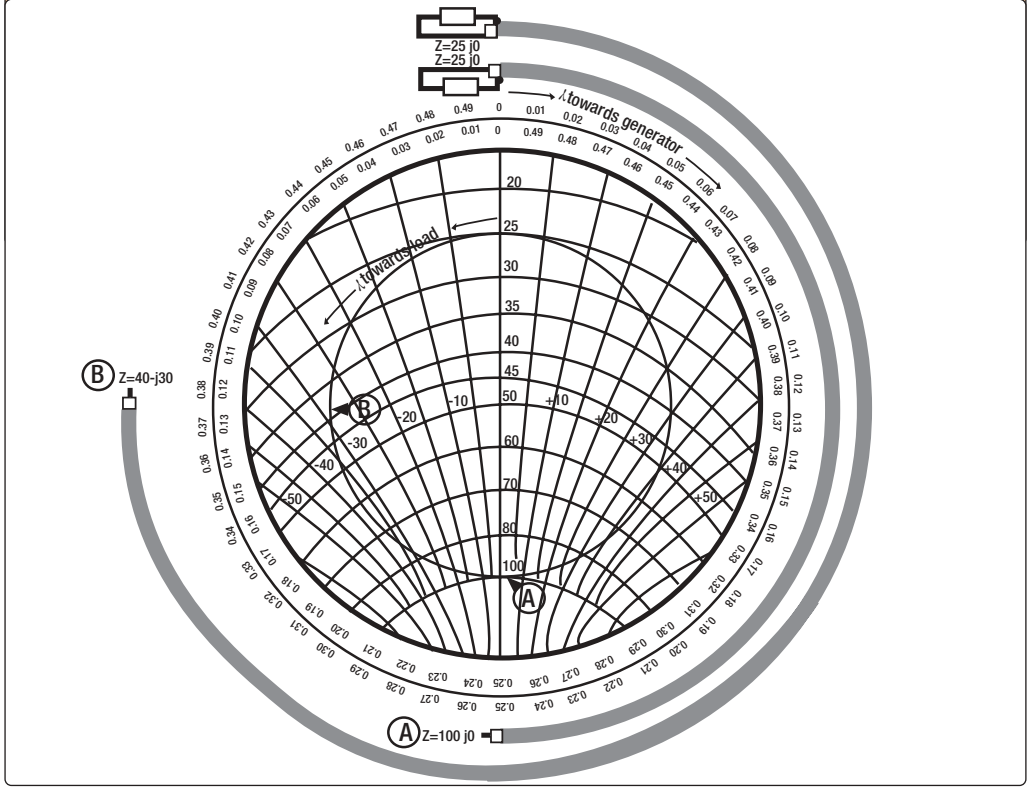


FIG 3

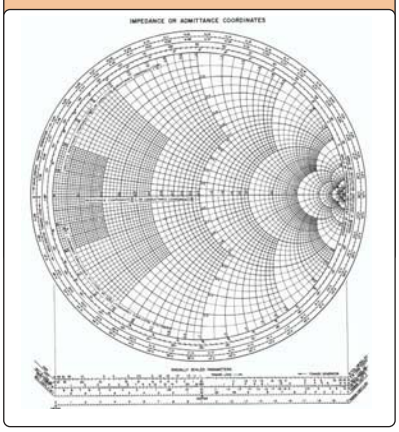


Fig 3
A professional Smith Chart. Note the more modern convention – the chart is rotated 270° relative to that in Fig 2. This chart would have to be enlarged to 0.5m in diameter to be of any practical use.

centric, centred on the 50Ω point, which is known as the prime centre.

Because the reflected impedance varies along the feeder, it follows that you need to know the electrical length of your coaxial feeder to the antenna. You can then calculate the transformation of impedance measured at the shack end of the coaxial feeder using a noise bridge or similar impedance-measuring bridge. You can also measure the electrical length of the feeder (length taking in to account the velocity factor) by terminating one end with a known load, such as a 100Ω resistor.

An additional scale is added around the circumference, calibrated in electrical wavelength. Halfway round the chart equals 0.25 or a quarter wavelength, while a full rotation equals 0.5 or a half wavelength. Two lengths of 50Ω coaxial feeder are shown superimposed around the circumference of a Smith chart in Fig 2, one length λ/4 long and the other 3λ/8 wavelength). Both lengths are connected to a load having an impedance of 25 + j0. The λ/4 length of line (0.25λ) gives a measured impedance of 100 + j0 at the other end, while the 3λ/8 section (0.375λ) gives an impedance of 40 + j30. It can also be seen from Fig 2 that a λ/2 length of coaxial would transform the impedance back to 25 + j0.

You can make a practical Smith chart calculator from the description and the charts in [1]. Also described are methods of measuring coaxial cable electrical length, calculating antenna impedance from measured impedance and the calculation of SWR.

The variation of the chart that I have just described is very simplified. By limiting its range of impedances and the number of lines in the chart it is very much easier to use than the professional Smith chart shown in **Fig 3**. This is achieved at the expense of some accuracy. However, the chart shown in Fig 3 requires some skill and experience in its use. To complicate the issue further, most Smith charts are normalised so that they can be used at any impedance and not restricted to 50Ω, as is the one shown in Fig 2. This is achieved by assigning 1 to the prime centre and calling it 50; other values, for example, are 0.5 for 25Ω and 2 for 100Ω in a 50Ω system.

The chart is used with the cursor shown, using a range of calibrated 'radially-scaled parameters', the most common being SWR in amateur radio use. **Fig 4**. The cursor is attached to the chart so that the centre pivots on the centre of the chart. SWR for example is read from the centre to the marked measured impedance point. Other more common radially-scaled parameters are return loss and reflection coefficient, which are beyond the scope of this discussion.

COMPUTER PROGRAMS

As in other fields of technical mathematics, the slide rule has been supplanted by the computer. One of the earliest programs was a computer simulation called *MicroSmith*, designed by Wes Howard, W7ZOI. This *DOS* program was originally written for the author's personal use in professional applications and was later modified for use by the engineering student and radio amateur.

There are many others. One of these, brought to my notice recently, is in a spreadsheet format designed by G4JNH [3].

FIG 4

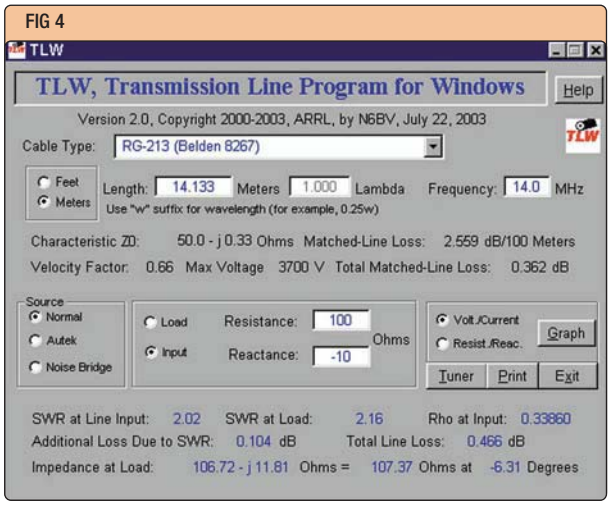


Fig 4
TLW main screen. RG-213 has been selected from the transmission line list and all the characteristics of RG-213 are displayed four lines down.

My favourite is *TLW* (*Transmission Line for Windows*) which comes bundled with a lot of other antenna software in [4] and is very simple to use. When the program is opened the main screen gives most of the information you need to know. All you have to do is specify the type of cable, the length of cable, the measurement frequency and the measured impedance. There is a library of 34 different types of transmission line plus a user defined transmission line to choose from and in **Fig 4** RG-213 has been selected.

From the measured impedance at the input *TLW* calculates the impedance at the load or antenna. I selected a value of 1.00λ for the length of the coax. The program calculates the length in metres or feet taking into account the velocity factor of RG-213. It also calculates the SWR. Note that the SWR is given for the input and the load; these are different due to the coax loss. *TLW* can also show impedance variation or voltage and current, along the coax length by selecting 'Graph' on the main screen as shown in **Fig 5**.

Theoretically, the impedance value is the same as the terminated value every half wavelength but, due to transmission line losses, there are small differences as can be seen in Figs 4 and 5. If you select a user-defined transmission line and insert a purely resistive transmission line characteristic impedance, a 1.0 velocity factor and zero line loss, you will see the terminated value occurring every half wavelength. ♦

REFERENCES

[1] *The Antenna Experimenter's Guide*, **Second** Edition, Peter Dodd, G3LDO.

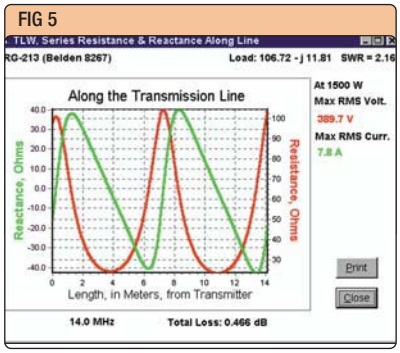
[2] 'Smith Radio Transmission-Line Calculator', Phillip H Smith, *Electronics*, January 1939.

[3] 'A Spreadsheet for Remote Antenna Impedance Measurement', Ron Barker, G4JNH, *QEX*, September/October 2001 and *QEX* July/August 2004.[4] *The ARRL Antenna Book*, 20th Edition

[4] The ARRL Antenna Book, 20th Edition.

Fig 5 Series resistance and reactance (impedance) along one wavelength of transmission line. Note that the impedance value is the same (nearly) as the terminated value every half wavelength.

FIG 5



By Andy Talbot, G4JNT

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Putting chat rooms to use

G4JNT outlines the advantages of the Internet, mobile phones and, preferably, packet radio for VHF and microwave operators who can use a chat room to discuss beam headings, etc. He then outlines the use of a Wireless LAN for Field Day operation, something the more adventurous clubs might like to adopt.

Many VHF and microwave operators are turning to the Internet to help establish contacts, in particular to find who is active and where to point their dishes or beams. ON4KST has started a VHF-to-microwave chat room, and anyone logged on can announce his/her presence and use it in very nearly real-time to set up the stations for a QSO. This is straightforward enough for home use and a real boon to operation although, since you need to be logged on to the Web for the duration, a broadband connection is desirable. For operation when portable, however, it become more difficult. A GPRS-equipped laptop (using the mobile phone network) will permit Internet access to the chat facility, but this is a luxury few casual operators will want to pursue. I was introduced to this by M0EYT during the May 432MHz and Up contest, and became an instant convert to the sheer simplicity and beauty of the chat room idea with its ease of setting up QSOs and near-instant communication with all others logged on, but definitely not to the idea of having to use GPRS / mobile phone technology!

PACKET ACCESS TO CHAT ROOMS

There has to be another way, especially as typical messages consist of only a line or two of text at a time. What about the old packet network still used for the DX cluster amongst many HF operators? The introduction on the ON4KST page suggests it can be accessed via the packet network. Being completely out of touch with modern packet operation I contacted the keeper of the local packet cluster and asked about connection to ON4KST. The reply from Darren Collins, G0TSM, SysOp for the GB7EDX DX Cluster (Eastleigh, 144.900MHz) was "For packet access to ON4KST's chats, you need to connect to the nodes on either GB7CGL or GB7PFD, then connect to GB7BUX-8, then enter 'telnet www.on4kst.ino 23000'".

At the time of writing, I haven't had a chance to try this route, but will dust off the old TNC and have a go ready for the next microwave outing. It would be great if we could achieve access to the chat facility via 'proper' amateur radio means!

WIRELESS LANs IN CONTESTS

During VHF Field Day with the combined Flight Refuelling and Bracknell clubs from a hilltop site in Dorset, we had a local wireless LAN set up between the four operating tents. It was built up by Paul, M0EYT, Carl, G6NLC, and Neil, M1NCD, and apart from local communications between our stations including an inter-station chat-room type facility, we also managed a link back to the Internet via a broadband ADSL connection. The entire setup was quite complex and involved several repeaters and hops.

The five laptops forming the users were linked via WLAN cards into an on-site hub situated in the middle of the field, consisting of another laptop running from a car battery connected to a WLAN Access Point. This AP connected over a 17km straight line-of-sight path to our microwave beacon site on Bell Hill in Dorset. Here, another AP was used to act as a repeater to relay the traffic to a location north of Poole, another 22.5km, and not in sight of the contest site. In turn, this was linked into a broadband Internet connection. The net result, once Paul had spent most of Saturday setting up access codes and permissions on every laptop, was broadband continuous Internet access from anywhere on the contest site, a local chat facility and access to ON4KST without having to pay GPRS charges. Plus the challenge of doing it!

All WLAN links were made using pure 802.1b standards, and keeping within legal EIRPs for the licence free operation, in spite of the frequencies falling within the 2.4GHz amateur band. High reliability and long-distance coverage was ensured by using split transmit and receive antennas with additional low noise GaAsFET preamplifiers in the wireless card receive chains. Data rates as high as 5.5MB/s were seen over the LAN during this session.

And the cost issues? Apart from some privately-owned laptops, most of those forming the link and APs were old scrap / low spec units otherwise thrown away, as illustrated in the photograph. Some were even stripped of power-consuming components to allow operation from car batteries for the duration. WLAN cards and AP points can be obtained for a few pounds online.

FEEDBACK

A few snippets from readers: From John, G7HIA: "If you want to boot your XP home PC in DOS try this. Put a blank disc in the A: drive. Hold down the *Windows* and 'E' keys. Place the cursor on A: drive and right click. Choose 'Format'. Look at the bottom for 'Format Options' and choose 'Create *MS-DOS* Startup disc'. Re-boot the PC with this disc in the A: drive. The PC then boots like a *DOS* machine. Not tried all of my software yet, but so far so good."

From Alan Strong: "I agree with the comments regarding *MultiPSK*, but if you can make do with monitoring just 20 PSK31 channels simultaneously then try the SuperBrowser in *Ham Radio Deluxe* by Simon Brown, HB9DRV. It does not offer as many different modes, but it will control your Kenwood, Icom or Yaesu transceiver and the colours are not garish."

PICs AND FUTURE COLUMNS

For future 'Data' columns, I would like to include some PIC Microcontroller programming notes, although this departs somewhat from the normal area we cover. In spite of the simplicity, versatility and ease of use of these devices, they are still not appearing in many simple home constructional projects. Do any readers want me to follow this up? ♦

Some of the laptops and accessories used for the VHF NFD Wireless LAN links.

WEB SEARCH

ON4KST VHF to Microwave Chat	www.on4kst.com
SuperBrowser in *Ham Radio Deluxe*	http://hb9drv.ham-radio.ch/

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EMC

The International Amateur Radio Union (IARU) EUROCOM Working Group has had some notable successes with lobbying the European Parliament to introduce amendments to the draft of a new EMC Directive. This Directive will determine how EMC is regulated throughout the European Union for many years to come. The work of the EUROCOM Group shows the importance of the IARU as an international organisation representing member societies in many countries.

Reports of RFI from switch-mode power supplies (SMPS) continue to arrive. In some SMPSs, RF interference suppression components have been omitted and these are unlikely to meet European EMC regulations. I am preparing an item on enforcement of EMC regulations and would be interested to hear from anyone who has reported suspected non-compliant electronic equipment to their local council's Trading Standards officer or to the RA or to Ofcom.

CURRENT EUROPEAN EMC DIRECTIVE

In August 'EMC', it was stated that EMC emission and immunity standards became compulsory from 1996. This was something of a simplification, because complying with a standard is not the only route to EMC compliance. Products sold in the EU are required to carry a CE mark to indicate compliance with all applicable European directives, for example the Electromagnetic Compatibility (EMC) Directive, (89/336/EEC, with amendments 92/31/EEC and 93/68/EEC), the Toys Directive or the Telecommunications Terminal Equipment (TTE) Directive. A 112-page document Guide to the Implementation of Directives based on the New Approach and the Global Approach is available from the European Commission (see 'Web Search').

A European Commission Directive by itself does not have any force of law in member states. It is an instruction to member states to introduce legislation to achieve specified objectives. In the UK, the relevant legislation is the EMC Regulations, Statutory Instrument SI 1992 No 2372. Electronic products are required to meet the protection requirements of the EMC regulations. These protection requirements are a general definition of EMC, and one way to achieve compliance for electronic products is to test to a harmonised European EMC standard that is fully applicable (different rules apply to radio transmitters, however). A manufacturer or importer then enjoys 'presumption of conformity' and can self-certify and affix the CE mark. If existing harmonised European standards are not applicable or are only partially applicable, a manufacturer or importer needs to prepare a Technical Construction File (TCF) and to obtain a technical report or certificate from a 'competent body', such as an approved EMC test laboratory. The CE mark can then be affixed.

NEW EUROPEAN EMC DIRECTIVE - IARU LOBBYING

Further to the item in August 'EMC' about a new European EMC Directive, the IARU Region 1 European Community Working Group (EUROCOM) has done some important political lobbying to have amendments included in the proposed Directive. The following details are extracted from the EUROCOM Newsletter #06-2004 (see 'Web Search').

Berenguer Fuster, Chairman of the European Parliamentary Committee on Industry, External Trade, Research and Energy (ITRE) decided that the new EMC Directive should be dealt with under a shortened procedure, without public debate. The only way to try to make amendments was to suggest them to members of the EU Parliament for submission to ITRE. Gaston Bertels, ON4WF, drafted an amendment, and MEP Fernando Fernandez-Martin, EA8AK, submitted it immediately to ITRE. In September 2003, a local DARC club convened a meeting of nearly 200 DARC members in Werl, near Dortmund, Germany with Members of the EU Parliament. EUROCOM chairman, ON4WF, presented some amendments that he had drafted to the new EMC Directive and the MEPs were supportive. In November 2003, a DARC delegation comprising Ulfried Überschar, DJ6AN, and Peter Roselieb, DL9KBM, accompanied by ON4WF, visited MEP Norbert Glante in the EU Parliament, Brussels and presented the PLC issue. Subsequently, nine amendments have been suggested by EUROCOM and submitted by several MEPs to ITRE. Three of these amendments have been accepted by ITRE and a recommendation to the Member States has been included in the recital of the Directive, stating that the amateur radio service shall be protected against electromagnetic disturbance.

A switch-mode battery charger for electric scooters.

The scope of the original EMC Directive, 89/336/EEC contains an exclusion for home-built amateur radio equipment. This is important to radio amateurs because, without it, anyone constructing 'home-brew' equipment would need to demonstrate compliance with the EMC Directive before taking it into service and this would not be feasible for a 'one-off' piece of equipment. When the EU Commission published the initial draft of the new EMC Directive, there was no exclusion for home-built amateur radio equipment from the scope of the Directive. EUROCOM chairman, ON4WF, asked the Commission to maintain the exclusion and to extend it to kits to be assembled by licensed radio amateurs. This proposal has been accepted.

The new EMC Directive also makes it possible for manufacturers to self-certify compliance with the EMC Directive using the Technical Construction File route (see above) without involving a 'competent body'. EUROCOM proposed an amendment to maintain the control by a competent body, but this has been rejected. In March 2004, the EU Parliament adopted the amended text of the EMC Directive and it is now being translated into 20 languages for publication in the Official Journal of the European Communities.

ELECTRIC SCOOTERS & TRICYCLES

Paul, G0UBV, reports that electric scooters for children are 'all the rage' in his neighbourhood and that a neighbour about 75m away got one last Christmas. These typically use a 24V lead-acid battery with a switch-mode power supply in the charger. Paul describes his neighbour's electric scooter charger as the worst source of RFI that he has come across. He reports that, at his home, the charger generates S9++ buzzing from 1.6 – 30MHz and renders the spectrum unusable. It is in the neighbour's garage with a mains power feed from the house which may increase emissions by acting as an antenna. Last Christmas, when the neighbours had an extensive display of outdoor lighting powered from the same garage supply

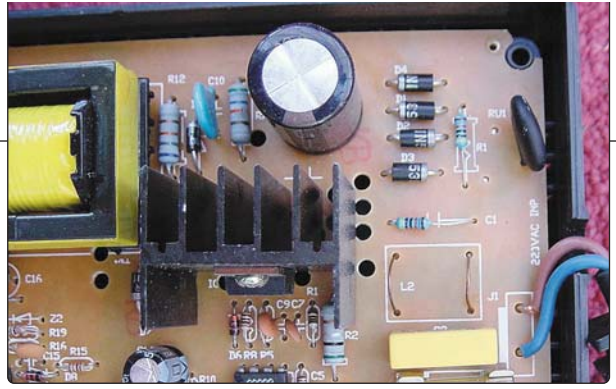
as the charger, the RFI increased.

The charger is a 'dog-on-a-lead' style unit and the original one had no markings except 'Made in China'. Paul thinks that it may be a 'grey import' into the UK and wonders whether it conforms to European EMC regulations. The neighbour was co-operative and allowed Paul to take a close look at the charger. Paul noted that it had a lack of mains RFI filtering so he provided the neighbour with a mains filter. This gave some improvement, but Paul reports that the RFI was still "pretty bad". If the scooter novelty doesn't wear off, Paul expects that he will eventually buy the neighbour a replacement charger, but they are not cheap.

The first scooter and charger were stolen from the neighbour's garage late in January. The replacement scooter was a different model, called an 'E-Scooter' but it had a similar type of charger. Paul reports that the RFI from charger two was bad, but not quite as bad as from charger one. Then, charger number two failed and Paul reports that the replacement charger, number three, a model JY-100 is far worse than the other two. Paul states that he has detected the noise up to 800m away with a Sony ICF2001D and a Kiwa pocket loop. Paul has not been able to find out where the scooters were purchased, but they may have come from Germany via 'contacts' at the neighbour's work.

Paul has kindly provided digital photos of charger three (see photos). It can be seen that inside, links are fitted in place of L2, which is a space for a bifilar wound mains RF interference filter choke. There is also a 470k resistor in place of C1 which is a space for a mains RFI filter capacitor. In the author's experience, it seems likely that a switch-mode power supply with no input filter choke and only one capacitor across the mains would exceed the relevant EMC limits for conducted emissions into the mains.

Pat, G3IKR, reports that his XYL has recently purchased an electric bicycle, an 'Ecolux Tornado' that came with a special 36V battery charger, a 'Talent TL-100' Intelligent EV charger for lead-acid batteries. Pat reports that the charger produces a wideband 'hash' type noise from about 6 – 30MHz, with the peak being at about 16MHz, when it is charging. On his equipment, which is 6m away with the beam aerial at 9m, the noise is S9 on his old Heathkit equipment where the S-meter is "particularly mean" and not many amateur signals reach S9. The RFI therefore blots out practically all signals on the 7, 14, 18, 21, 24 and 28MHz bands. Pat can just about null it out with the beam in one critical direction but, using the 3.5MHz half-wave aerial which runs away from the charging position in the garage, no reduction is possible. The RF is definitely being radiated and is not coming in via the mains. When charging is complete, the noise is much reduced, but some still remains. Pat has reported it to the dealer who has informed the importer, but no response has been received.



Inside a switch-mode battery charger for electric scooters, showing that RF interference filtering components L2 and C1 are not fitted.

AUTOMOTIVE EMC

John, M0ELS, works for a research and development company in the UK that manufactures various types of AM/FM diversity radio systems, GSM dual-band and 'kombi' antennas, DAB antennas, etc. John describes some cars as "pure murder" for generating RF interference. He reports that the onboard computer systems are mostly un-tameable and one often has to place the aerial as far from the computer system as possible to get anywhere near acceptable interference levels. In some cases, the problem is detected in the early stages of vehicle production and is reduced to an acceptable level, but not in all cases.

David, G3PTU, reports that, about five years ago, he bought a Peugeot car and was surprised to find that, when driving in France, Radio 4 long-wave on 198kHz was inaudible just past Calais. He reports that other cars have generally permitted reception a lot further south than this. The cause of interference was the electric petrol pump under the back seat. A 100nF capacitor across the terminals of the pump solved the problem. David then raised this with Peugeot and eventually got a technical reply, which indicated that they were unhappy about him adding a 100nF capacitor. Their view seemed to be that the problem was not with the car but that the radio signal was not strong enough! David wrote back pointing out the flaw in their logic, but received a further communication stating that the logic as they saw it was clear and advising him to remove the capacitor at once.

I can confirm that Radio 4 198kHz can be received much further away than Calais. In an electrically-quiet car without tyre static, I have received it all the way down the Rhine valley in Germany except when near high-voltage overhead power lines which caused QRM. This appeared to be due to communications carriers on the power lines. Although this was a form of power line communications, it was only used by the electricity supply industry for signalling at low data rates. Perhaps I should have complained about it to the German authorities about it when I first heard it in 1978.

CURRENT EUROPEAN EMC DIRECTIVE

In August 'EMC', it was stated that EMC emission and immunity standards became compulsory from 1996. This was something of a simplification, because complying with a standard is not the only route to EMC compliance. Products sold in the EU are required to carry a CE mark to indicate compliance with all applicable European directives, for example the Electromagnetic Compatibility (EMC) Directive, (89/336/EEC, with amendments 92/31/EEC and 93/68/EEC), the Toys Directive or the elecommunications Terminal Equipment (TTE) Directive. A 112-page document *Guide to the Implementation of Directives based on the New Approach and the Global Approach* is available from the European Commission (see 'Web Search').

A European Commission Directive by itself does not have any force of law in member states. It is an instruction to member states to introduce legislation to achieve specified objectives. In the UK, the relevant legislation is the EMC Regulations, Statutory Instrument SI 1992 No 2372. Electronic products are required to meet the protection requirements of the EMC regulations. These protection requirements are a general definition of EMC, and one way to achieve compliance for electronic products is to test to a harmonised European EMC standard that is fully applicable (different rules apply to radio transmitters, however). A manufacturer or importer then enjoys 'presumption of conformity' and can self-certify and affix the CE mark. If existing harmonised European standards are not applicable or are only partially applicable, a manufacturer or importer needs to prepare a Technical Construction File (TCF) and to obtain a technical report or certificate from a 'competent body', such as an approved EMC test laboratory. The CE mark can then be affixed.

MEGAHERTZ OR METRES?

Some members may have wondered why this column normally uses megahertz rather than metres when referring to amateur bands. When radio amateurs refer to the 3.5MHz band as '80 metres', we know what we mean, but EMC cases often involve contact with companies who do not know what we mean. If you tell a company that you have a problem with one of their products emitting interference or suffering breakthrough on the '80 metre' band, this is often misunderstood as 80MHz. Rather than explaining how to calculate the frequency from the wavelength in metres, it is much clearer to give the frequency in megahertz in the first place when dealing with people who do not know about amateur radio. ♦

WEB SEARCH

European Commission, *Guide to the Implementation of Directives based on the New Approach and the Global Approach*, Luxembourg: Office for Official Publications of the European Communities, 2000, ISBN 92-828-7500-8. Available online
http://europa.eu.int/comm/enterprise/newapproach/newapproach.htm
IARU **Region 1 EUROCOM Working Group, Newsletter #06-2004**
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By Steve White, G3ZVW

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

E-mail: g3zvw@dsl.pipex.com

Is hydrogen the replacement for our dwindling oil supplies? G3ZVW explains one promising venture. We also have an introduction to three new types of memory which are cheap, fast, non-volatile and very small.

Whatever next

Everyone knows that the world is heading for an energy crisis if nothing is done to reduce our dependence on oil. In particular, the Chinese economy is expanding rapidly, and they are now importing a lot more to support industry and increased consumption by an increasingly well-off population. The ever-rising price of 'black gold' is encouraging companies to invest more money in research associated with alternative sources of power, and British company Hydrogen Solar have come up with a new method of producing hydrogen for use in fuel cells. Hydrogen is a clean fuel, because when it is burned it produces water vapour *only* (ie no dirty particulates, acidic gases or greenhouse-effect carbon compounds).

The problem with producing hydrogen for fuel cells is that, until now, it has been a pretty inefficient operation, because it has needed an input of electrical power to electrolyse the water. Hydrogen Solar's new 'Tandem Cell™' technology has increased the production efficiency to 8% and it does so by converting sunlight *directly* into hydrogen. This is getting pretty close to 10%, the target performance level recognised in 2003 by the industry as the common benchmark for commercially-viable production on the open energy market. Published research implies that light conversion efficiencies of 15% may be obtainable.

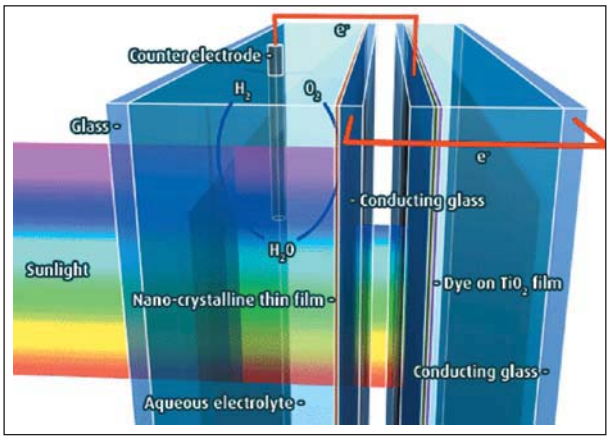

Fig 1: The Hydrogen Solar Tandem Cell™. UV and short-wavelength visible light are absorbed in the first cell, while longer wavelength light is absorbed in the second cell. The cells are connected together to increase the efficiency that water can be separated into its constituents – hydrogen and oxygen – the hydrogen being collected and stored for use as a clean fuel.

WEB SEARCH

Hydrogen from sunlight: www.hydrogensolar.com

The Tandem Cell (Fig 1) consists of two photo-catalytic cells connected together. Not surprisingly, it also uses something that was not available until fairly recently – nano-technology. The front cell absorbs ultraviolet plus the violet and blue light in sunlight, using nano-crystalline metal oxide films to generate electron-hole pairs. The longer wavelength light in the green to red region passes through the front cell and is absorbed in a Graetzel Cell behind it. The latter produces electrical potential under nearly all light conditions The two cells are connected together to provide the potential required to split the water molecules in the electrolyte contained in the front cell. The Cell is fabricated from widely available and cheap materials, the key to its performance being how the metal oxides react to the photons of incident light. Ferric oxide is currently showing lower efficiencies than tungsten oxide, but many experts believe that ferric oxide has higher long-term potential if it can be prepared and deposited in nano-structured crystalline layers in a repeatable way. "We now have a scalable pathway, and can confidently foresee higher performance levels in the near future," said CEO Dr David Auty, who believes further increases in efficiency can be expected. "Over the last couple of years we have doubled efficiency… We are not yet in the hydrogen economy, but it has the potential to take over when the oil economy becomes untenable".

Mounted on a double garage roof in a sunny climate, a 7m x 7m Tandem Cell could produce sufficient hydrogen to fuel a small car to travel 11,000 miles per year. Large versions on factory roofs could provide sufficient hydrogen for a fleet of delivery vehicles. In 2003 research into hydrogen-powered vehicles was boosted with funding in the USA when President George W Bush announced a $1.7bn investment to turn the country into the world leader of hydrogen-powered cars.

MEMORY MATTERS

Today, computers typically use three types of memory:

(1) Dynamic Random Access Memory (DRAM)
Inexpensive, slower than SRAM, and loses its information when power is removed.

(2) Static Random Access Memory (SRAM)
Faster than DRAM, but more expensive. Once again it requires constant power to hold its state.

(3) Non-Volatile Ram (NV-RAM)
Typically known as Flash RAM, this type of memory holds information when power is removed, but it is considerably slower and far more expensive than DRAM or SRAM.

Imagine now a type of memory that is fast, cheap, small, and non-volatile. It sounds like the best of all worlds, and several new types of memory are competing for the prize. Read on.

(1) Phase-Change Memory
Works similar to re-writeable CDs and DVDs, where the crystalline state of a tiny spot on the disk is changed so that when it is read it delivers either a digital '1' or '0'. In phase-change memory the spot is far smaller and it, along with a vast number of its cousins, are housed in a chip.

(2) Magnetic RAM (MRAM)
Stores a non-volatile magnetic state at each junction of a tiny grid within a chip by changing the spin of electrons, thus creating a stable magnetic field of one direction or another. Clearly this is an updated version of magnetic 'core' memory of the 1960s and 70s, which used an array of tiny ferrite rings.

(3) Nanotube RAM (NRAM)
Uses 1nm-long carbon nanotubes, the walls of which are but *one atom thick* to form billions of nano-scale, non-volatile, mechanical switches.

Next month I will go into a little more detail about these rival technologies. ♦

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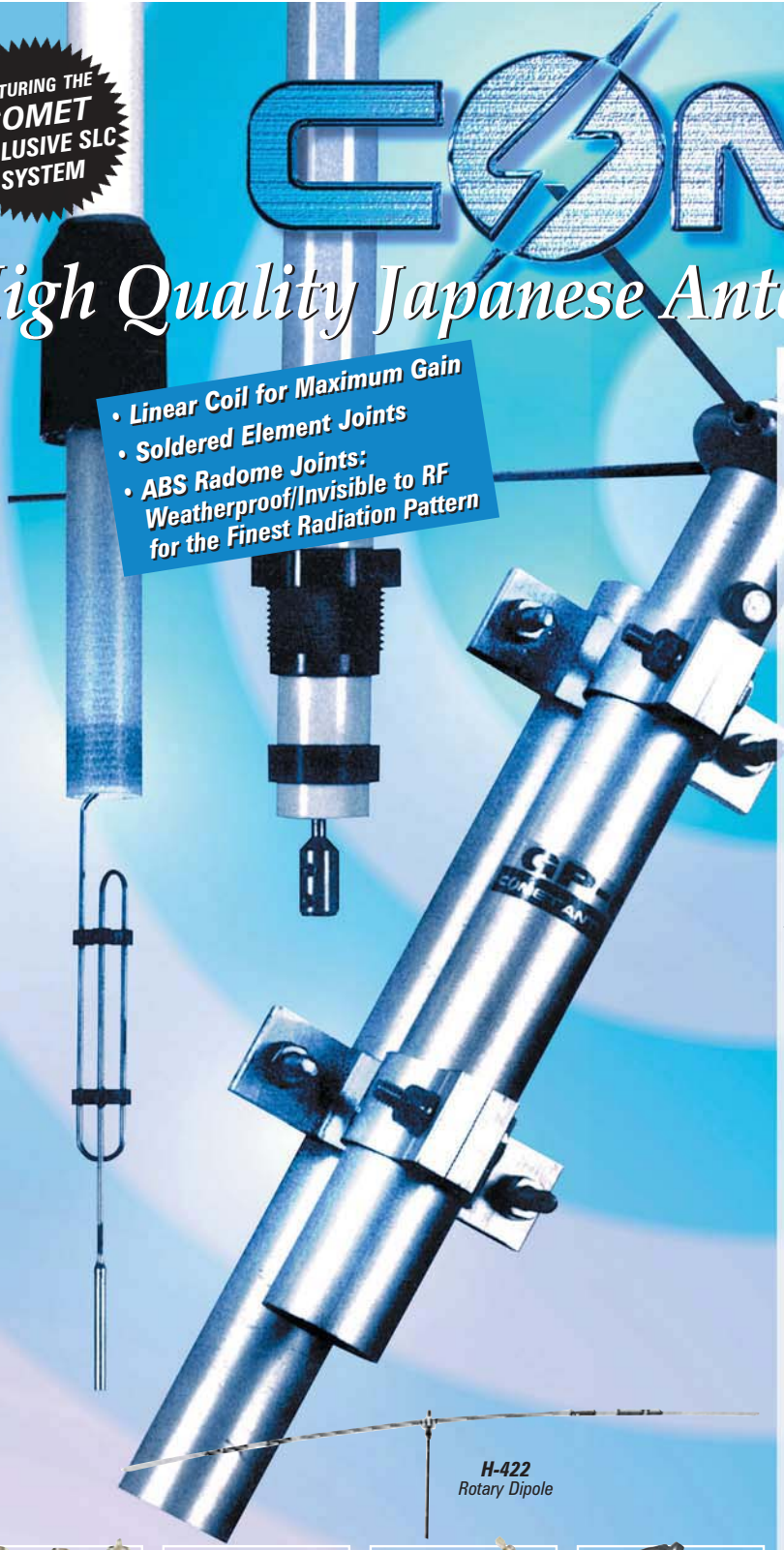

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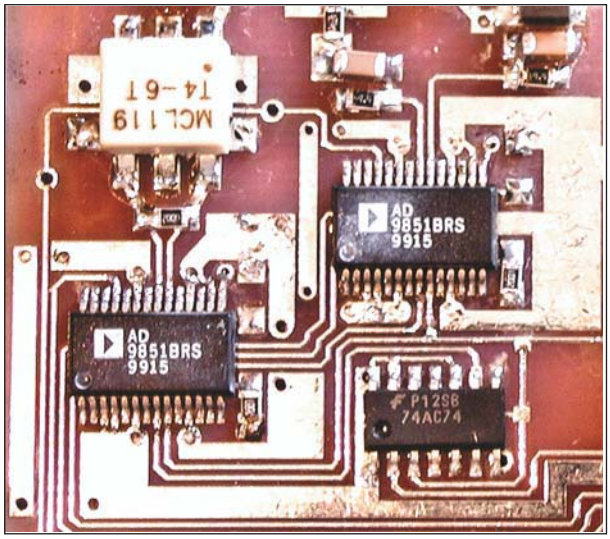
In practice

The N2PK Vector Network Analyser described in September's 'TT' is generating lots of practical questions. Since G3SEK was one of the early constructors, he is answering them here.



With a little practice, even these fine-pitch ICs can be hand-soldered successfully. (Photo: N2PK)

Q I read your comments about the N2PK VNA in 'TT', but what do *you* use yours for? What makes it so indispensable?

A If any of the following applies to you, you'll know instantly why an accurate VNA is indispensable.

- You need to know how accurate your so-called '50Ω' dummy load is, from LF through to VHF. If the impedance isn't exactly 50Ω, you want to know what it actually *is*.
- You need to know the same about my attenuators - I mean, their *actual* impedance and attenuation values.
- You need to know the length, impedance and loss of this length of coax.
- You need to measure the gain and phase shift of this amplifier, from LF through to VHF.
- You need to make really accurate impedance measurements on each vertical in your four-square array, so you can get the phasing absolutely spot-on.
- You need to measure a capacitor value at the actual frequency where you're going to use it. That means you need to know the *effective* capacitance, which is the actual capacitance minus the effects of stray lead inductance.
- You need to measure the impedance of an RF choke, all the way from LF to VHF. You need to know the *Q*, and where all the self-resonances are.
- You need to measure all the parameters of a crystal filter, like I described in the March 2004 column: passband, insertion loss, skirt rejection and frequency-swept group delay.
- You're building your own crystal filter. You need to know *everything* about a batch of crystals - the series and parallel resonant frequencies within a few hertz, the ESR (effective series resistance) and the parallel capacitance.

The answer in every case is: "Well, now you can!". This isn't the place to go into the details of specific measurement techniques, but the N2PK VNA can do all that, and more [1, 2]. As W4ZCB puts it: "It's a lab in a box.".

The N2PK VNA is remarkably accurate - in almost all respects, it is the equal of lab instruments that cost several hundred times more [3]. This is largely because, like the professional instrument, the N2PK VNA is computerised and self-correcting. It plugs into your PC, and a range of software is becoming available to drive the VNA and display the results. Before you make a measurement, a computerised VNA leads you through a calibration procedure to measure its own internal errors. When you measure the actual Device Under Test (DUT), the computer automatically subtracts the error data, leaving you with highly accurate data about the DUT. Compared with traditional test equipment, the improvement in accuracy is dramatic. Computing instruments still aren't perfect, but they do increase routine accuracy to a level previously unknown to amateurs.

A particularly clever feature of N2PK's VNA architecture is that there are no setup adjustments. All of its accuracy derives from basic hardware properties: the excellent linearity of the RF detector IC; the stability of the master oscillator that clocks the two DDS (direct digital synthesiser) ICs; and the ability of a dual DDS to generate two carriers with precisely 0° or 90° phase difference across the entire frequency range [3]. If you can overcome any lingering disquiet about there being nothing left to tweak, you'll appreciate why this feature makes the N2PK design particularly suitable for amateur construction.

A VNA is basically a two-port measurement device **(Fig 1)**. It has an RF OUT port and a DETector IN port, and will measure the gain/loss and phase shift occurring in any two-port DUT you connect between them. To make a one-port measurement of impedance, you have to add a bridge adaptor. Several configurations are possible, and Fig 1 shows the general-purpose Wheatstone bridge - the DUT forms the missing fourth leg of the bridge. The input signal comes from the VNA's RF OUT port, and transformer T1 routes the out-of-balance signal to the DET IN port. With the help of the adaptor, the VNA is still measuring the relative loss and phase change between those two ports.

The accuracy of impedance measurements depends on the quality of the open, short and 50Ω standards that you use during the three-step calibration procedure. A favourite trick of RF engineers is to apply the 'open-short-load' (OSL) calibration at the far end of a length of thin coax, because this effectively absorbs the whole length of coax into the calibrated bridge setup. Then the free end of the coax can be dabbed onto a circuit board at any point where an impedance measurement is needed. A similar technique was used to measure the parameters of a crystal displayed in **Fig 2** - here, the OSL calibration was applied to a screw terminal adaptor for the wire-ended crystal, and the calibration standard was a 47Ω resistor. Provided you tell the software exactly what you're using as calibra-

tion standards, the DUT results will be corrected so they still come out right.

I hope this has given you a first glimpse of the things you could do if you had a Vector Network Analyser of your very own. For more information, please read Paul Kiciak's extensive documentation on all aspects of his VNA design. These and many other background references are all downloadable from the web [1].

Q Where can I buy one? Or where can I buy the parts?

A You cannot buy an N2PK VNA ready-made. This has turned out to be a completely non-commercial project, so you have to build it yourself. Full components lists are in 'Part 2' of N2PK's documentation, but there are some practical problems if you don't live in the USA.

I will try to keep up-to-date information for European constructors on the 'In Practice' website [1]. Gian Moda, I7SWX (a familiar callsign to 'TT' readers), has a stock of PC boards, but some of the components are only available in the USA. Suppliers such as Digi-Key and Mini-Circuits are very easy to deal with over the web, although naturally there are extra shipping costs outside of the USA. Also, some items are subject to minimum order quantities. Don't worry about having to buy 100 SMD resistors or capacitors when you only need three of that value - they really are 'cheap as chips'! However, if you want to buy the master oscillator rather than build it, that is more difficult because the recommended unit is only available in multiples of 10, at $35-$40 each. A number of groups have got together to make bulk purchases from US sources, although large orders are sure to attract import duty and VAT.

Most of the semiconductors you'll have to buy, of course, but thanks to Analog Devices' enlightened policy of providing samples for amateur experimenters, you may be able to obtain the AD9851 DDS chips for *exactly* the right price!

All of these factors make it difficult to budget for the cost of the entire VNA project, but at the current very favourable exchange rates I'd estimate under £100 if you're careful.

In conclusion, purchasing the necessary components from outside of the USA is a bit awkward, but it *can* be done - and above all, it *will* be worth the effort.

Q Please tell me more about the construction. What are the problem areas?

A As you'll have gathered above, you need to know a certain amount in order to use this instrument. Likewise, you need some practical SMD experience in order to build it, so this is not a project for the beginner. As I've said before in this column, with the right tools, most of us *can* do small, fine work like this - but it definitely should not be your very first SMD project.

FIG 1 © RADCOM 259

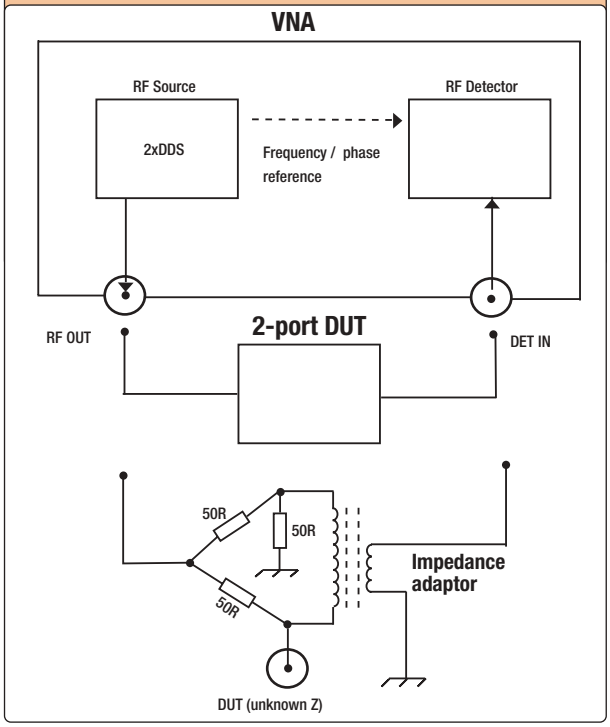


FIG 2

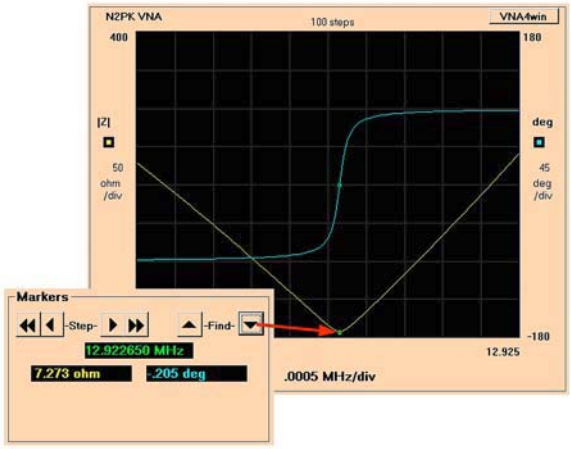


Fig 1
How a VNA measures the transmission properties of a two-port DUT (above), or the impedance/reflection properties of a single-port DUT (below).

Fig 2
Measuring the parameters of a crystal. The software finds the lowest point on the trace, and displays the results.

The main VNA board is factory-made and pre-tinned, which makes construction a lot easier. The construction notes [1] begin with the easier components, and build up your confidence to work with the more difficult parts. By the time you arrive at the stage shown in the photograph on p61, which is the most difficult part of the board, you'll already have had plenty of practice. Even 0.05in-pitch ICs like the 74AC74 (lower right) will seem easy - honestly! The key skills are:

- How to apply solder only where you need it
- How to avoid flooding solder over the rest of the pre-tinned tracks
- How to use solder-wick to pull off excess solder
- How to clean up and inspect your work carefully after each step
- How to re-work any suspect joints.

The two AD9581 DDS chips have an even smaller pin spacing, 0.025in, so they require a slightly different technique. You need to take extra care to position the chip very accurately in place on the narrow tracks, and tack-solder the four corner pins - but after that, you don't even try to keep solder out of the gaps between the tracks. Simply run enough solder along both sides of the IC package to make certain that every pin is well soldered onto its track, and then use the solder-wick to suck away the excess. You'll find it will remove solder from the gaps between the tracks, but not from the joints between the tracks and the IC pins. Clean off the flux, and use a very strong magnifier to check for dry joints or solder bridges. If you're not happy, add more solder and repeat the process. When the board finally looks neat and clean, and provided you have made no errors in parts selection and placement, the whole thing will work first time.

The master oscillator is a different kind of problem. Plan A involves paying $35-$40 (plus import overheads) for the recommended high-performance packaged oscillator which you simply solder in. Plan B costs $25 for a very high-quality crystal (again plus overheads) and a few pounds for other discrete parts. It then involves making your own tiny PC boards, followed by a tricky little exercise in three-dimensional SMD. Having hand-built two master oscillators, I thoroughly recommend Plan A! The only problem, as I said earlier, is organising the $350 minimum order.

Most experienced constructors will be able to build this project successfully... but it does need some SMD skills that you'll have to learn and practise. I'd hate to see anyone get into trouble because they're not ready for this project yet, so please let me warn you one last time: if you don't have *all* the right tools *and* enough experience of SMD construction, then you won't be able to manage it. No matter how much you want an N2PK VNA, please be realistic about your ability to build it. Try some easier SMD projects first, and come back to the VNA in a year or so. ♦

NOTES AND REFERENCES

[1] For details, follow the links from the 'In Practice' website (URL above).
[2] The VNA contains two low-noise DDS signal sources which you can use for many other purposes. Software is available to program each DDS independently, in 0.035Hz steps from 60MHz down to almost DC.
[3] N2PK has made an extremely thorough analysis of errors in this VNA concept, including comparisons with lab-quality instruments. It's all in the documentation [1].

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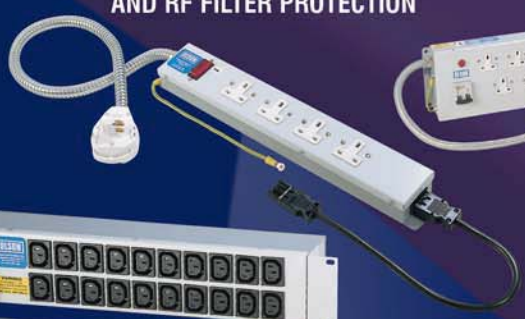

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David M Jones, G4FQR

56 Grebe Crescent, Horsham, W Sussex RH13 6ED

Standardising calibration ca meters using a notch filter

A notch filter method has been developed that leads to independent standardisation of calibration capacitors for L and C meters. Checks with professional instruments confirm that the method can yield calibration capacitors accurate to ±0.1%, appropriate for frequency shift L-C meters such as K6OLG's LC Tester [1].

The handiest way for an amateur to measure capacitors is with a DVM having a capacitance function. The accuracy of such instruments is in the range 4% to 1% depending on price [2]. A supplier will charge £30 for the periodic calibration needed to maintain accuracy. Of course, for the lowest range (such as 2000pF) where accuracy is most likely to be an issue, the amateur would buy a 1000pF 1% silver mica capacitor for £1, open up the instrument, and tweak the appropriate trimmers. Remember, when shopping for your DVM, to check that the handbook does include calibration instructions.

End of story? Well, certainly for many situations, but the art of amateur radio design has moved forward, propelled by the PC and the Internet. We can all now have powerful circuit design and simulation capabilities at very low cost. Provided a circuit is properly simulated and built with exact values, realised performance should be 'as advertised'. Trim caps, or variable inductors with their rather low *Q*-values, may be replaced by fixed components. (Inductors wound on powdered-iron toroids often have higher *Q* and can be adjusted to a target inductance by spreading or closing up the turns while the inductor is attached to an inductance meter.)

The capability to measure capacitors and inductors with confidence is crucial. The frequency shift technique is particularly neat and easily set up at home. Bill Carver's LC Tester [1] is a good example. This is a 1MHz oscillator coupled to a frequency counter. Unknown Ls or Cs are connected to the oscillator tank circuit to produce frequency shifts from which inductance or capacitance is calculated. The accuracy depends on a calibration capacitor. The fine discrimination and repeatability inherent in the frequency shift technique justifies a better calibration capacitor than the purchased 1% part discussed above. It is preferable to have someone check your calibration capacitor on professional equipment, leading to better than 0.1%, or 1pF accuracy. That option was available, but I wanted to find out if it was possible to match it using amateur facilities. What follows are descriptions of a method for producing calibration capacitors at home and checking them with professional instruments. I conclude that every amateur should be able to establish the value of a 1000pF nominal capacitor to within ±2.5pF, and those with good resistance measurement capability should reach ±1pF or better.

PROCEDURE

Fig 1 shows the test setup and could hardly be simpler. The RC notch filter is constructed incorporating a trio of capacitors to be standardised, and is inserted between a signal source and a detector. The notch frequency, F_n, is found by observing the detector as the source frequency is varied. The value of the capacitors is calculated from F_n and the resistor values.

Equation 1

$$F_n = \frac{\sqrt{\frac{2(R2 + R3)}{R1\ R2\ R3}}}{2\pi C}\ \text{Hz}$$

Equation 2

$$C = \frac{\sqrt{\frac{2(R2 + R3)}{R1\ R2\ R3}}}{2\pi F_n}\ \text{F}$$

The three capacitors in the notch filter must be *matched* to within your target tolerance. The frequency shift technique is perfect for selecting them out of a sufficient number of parts. Remember you only need to find one trio to use in the notch network. All the rest of the caps are calibrated by the frequency shift method from the value found for the trio and, for a club or group project, distributed to the members. Silver mica capacitors, bought new, will cost £1 or more each, but none is wasted! If cost is an issue, the far cheaper NP0 / C0G ceramic capacitors, surface-mount chips or the wire-ended variety, should be fine as calibration capacitors.

(The passive network technique was chosen after experimenting with various RC oscillator methods. Circuits using CMOS inverters, 555 timers, and 741 opamps were all badly-behaved in the sense that the operating frequency did not obey the formulas mentioned by their authors! Dave, G3UUR, confirmed this finding as fitting with his own experience years ago and explained that the active devices introduce phase shifts that seriously complicate the arithmetic!)

SIGNAL SOURCE REQUIREMENTS

1. Frequency variable over a narrow range to suit notch frequency for the network using the capacitors to be calibrated. For the network suggested and 1000pF nominal capacitors the notch is at about 9.2kHz and a tuning range of say 200Hz above and below is fine.
2. Excellent short-term frequency stability and smoothness of setting and returning to a frequency. Over five minutes while the notch is being explored, the source should

pacitors for L-C

LC Tester – interior.

be steady to 1Hz if the full potential of the technique is to be realised. The frequency indicated by *Spectrum Lab* [see 'Web Search'] should be perfectly usable, though you may want to check this initially using an ordinary frequency counter. The source itself need not be calibrated in any way.

3. Output level must be stable and compatible with the PC soundcard. These requirements are easily met using the sine-wave generator described in [4], although the purity of the source signal is not an issue here, thanks to the frequency selectivity of the spectrum analyser detector. It is a simple matter to set up the required frequency range. Making R11b (in [4]) 1700Ω, plus a series 200Ω, 10-turn pot, gave a range of 8.8 – 9.5kHz. The source can be mounted in a small box with the notch network PCB forming the lid as shown in the photos.

NOTCH NETWORK

F_n is repeatable to within 1Hz and so contributes no more than 0.01% to the uncertainty in C.

Scroggie [3] cites the bridged-T and parallel-T (twin-T) as being useful for this type of work and I chose the variation shown in Fig 1 which was found in [5]. Circuit simulation confirmed Scroggie's observation that F_n is not sensitive to terminating impedance. The signal source and PC soundcard are just connected to the notch network with no regard for impedance matching.

Working out the full equation for the notch frequency of this network is an instructive exercise for those so inclined – a worked example for a twin-T is given in [6]. When C1 = C2 = C3 = C, and using hertz, farads, and ohms, F_n is given by **Equation 1** and C by **Equation 2**.

With C = 1000pF, R1 = 120k, and R2 = R3 = 10k, F_n is 9189Hz, nicely in the range of an audio spectrum analyser – the chosen detector. Chip resistors size 0805, 0.1% tolerance, 15ppm/°C temp coefficient, costing 32p each from Rapid Electronics, are recommended. R1 is made by stringing in series 100k, 10k and 10k. With these tiny components, we can be confident of building a network virtually free from the parasitic/stray inductance and capacitance that must have plagued our forebears! But not completely free. I explored with the LC Tester connected to the capacitor sockets and concluded that deducting 0.7pF from the indicated value would be a reasonable allowance. This correction could probably be reduced by opening up a maximum-width gap in the copper track and PCB substrate under the chip resistors (suggested by G3ZBU), using a dentist's burr or Dremel tool, perhaps?

Using the suggested resistors, a short formula for C is:

C = (918900 / F_n) – 0.7 (the units are now Hz and pF, allowing 0.7pF for strays)

The effect of using 0.1% tolerance resistors is to contribute at most 0.25% or 2.5pF to the uncertainty in the final result. If you can measure the resistors to closer than 0.1%, you can insert the values into the longer formula and reduce this uncertainty further, of course.

Fig 2 is a layout for the network. SIL sockets suited the lead diameters of my capacitors.

DETECTOR

An amplifier and ears were rejected for amplitude detection since the 9.2kHz notch (**Fig 3**) is above the ears' best range and the hearing's 1dB amplitude discrimination is too

FIG 1 © RADCOM 256

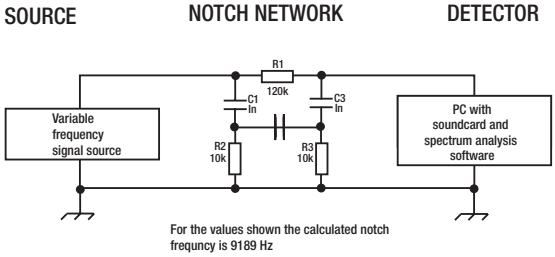


FIG 2 © RADCOM 257

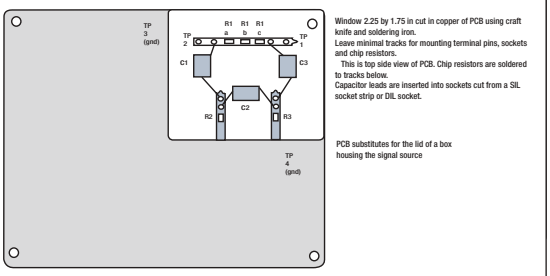


Fig 1 Arrangement of source, notch network and detector.

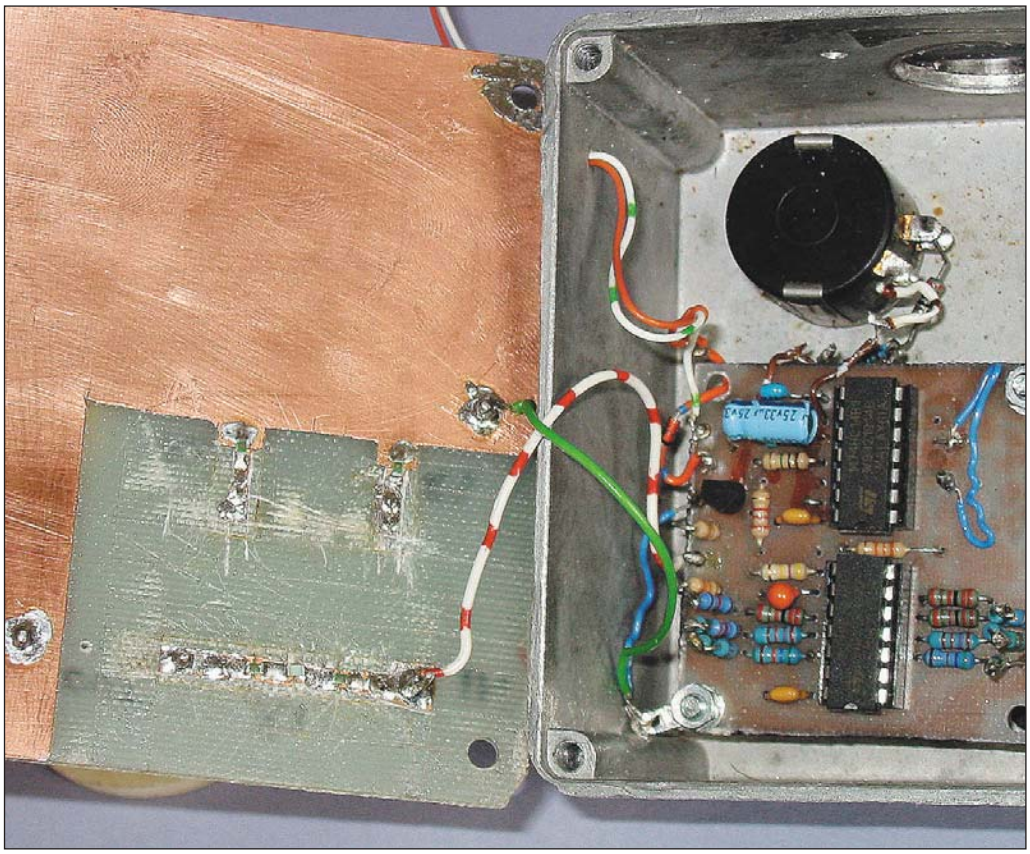
Fig 2 Layout of notch network.

coarse. The PC soundcard with spectrum analysis software (see 'Web Search') can do better.

As you move the source frequency through the notch you can see the output level change in one pixel steps on the PC screen (equivalent to 0.3dB) and fix the notch frequency, F_n, to within 1Hz. Some dedication is needed to get the best out of this technique, but the results repay the effort. The frequency indicated on the PC screen is probably accurate enough though it would be worth doing an initial check with a frequency counter. The whole setup is stable and measurements are exactly repeatable. The net result is that 1000pF nominal capacitors can be standardised to closer than 1pF.

ACKNOWLEDGEMENTS AND REPRODUCIBILITY TESTING

Many thanks to Tony, G3NPF, Dave, G3UUR, Peter, G3XJP, John, G3WZT, and Alister G3ZBU, for encouragement and/or helpful discussions. Those noted in **Table 1** applied professional or other high quality resources to labelled specimens of 1000pF and 330pF (G3UUR also measured 120pF) nominal silver mica capacitors which I had previously standardised via the notch filter and LC Tester. Tony's instruments had not been calibrated for a long time! The results amply confirm the usefulness of the method for supporting the accurate measurement of capacitance and inductance at home. ♦



Notch Network showing PCB copper side with chip resistors, and source fitted in box.

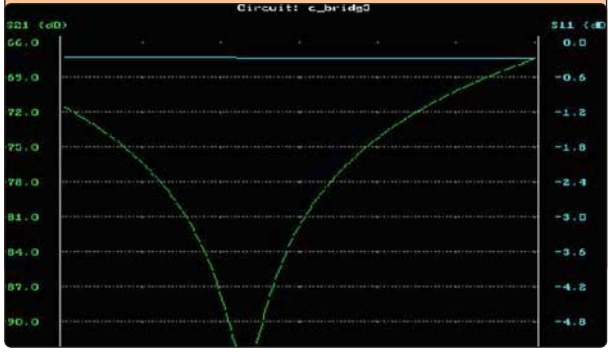
REFERENCES

[1] Bill Carver, K6OLG, 'The LC Tester', Communications Quarterly, Winter 1993, (This article is included in 'Experimental Methods in RF Design', ARRL, 2003, available from the RSGB Shop
[2] Rapid Electronics Catalogue, Oct 2003-Sep 2004
[3] M G Scroggie, Radio and Electronic Laboratory Handbook, Iliffe Books Ltd, London, 1961, p226
[4] D M Jones, G4FQR, 'A Low-Distortion Sine-Wave Generator', RadCom, Feb/Mar, 2003
[5] Andrew Leven, Telecommunication Circuits and Technology, Butterworth-Heinemann, 2000, p13
[6] F R Connor, Networks, 2nd edn, Edward Arnold, 1986, Appendix B

Fig 3

Image from circuit simulator modelling the notch network.

FIG 3



WEB SEARCH

Spectrum Lab **(freeware)** www.qsl.net/dl4yhf

Table 1: Comparison of results using the G4FQR notch filter / LC Tester method with those using professional instrumentation.

Sample Ident	Nominal pF	Tester	Result pF	Tester	Result (a) pF	Result (b) pF
62	1000 ±1%	G4FQR	997.1	G3NPF [1]	993.3	1005
64	1000 ±1%	G4FQR	994.2	G3NPF	990.4	1000
68	1000 ±1%	G4FQR	1004.2	G3NPF	999	1010
60	1000 ±1%	G4FQR	1001.5	G3UUR [2]	1001.8	1001.2
61	1000 ±1%	G4FQR	1006.4	G3UUR	1006.5	1005.7
63	1000 ±1%	G4FQR	998	G3UUR	997.7	997
65	1000 ±1%	G4FQR	1001.7	G3WZT [3]	1001.2	
66	1000 ±1%	G4FQR	996.4	G3WZT	996.3	
69	1000 ±1%	G4FQR	1008.8	G3WZT	1007.7	
13	1000 ±1%	G4FQR	1002.6	G3ZBU [4]	1001	
16	1000 ±1%	G4FQR	998.9	G3ZBU	999	
26	1000 ±1%	G4FQR	996.5	G3ZBU	995	
RS	330 ±1%	G4FQR	331	G3NPF [1]	325.6	340
AB	330 ±1%	G4FQR	331.2	G3UUR [2]	331.1	330.9
PQ	330 ±1%	G4FQR	330.9	G3WZT [3]	330.7	
TU	330 ±1%	G4FQR	332.4	G3ZBU [4]	332	
CD	120 ±1%	G4FQR	120	G3UUR [2]	120	119.8

[1] Measured: (a) at 1.6kHz using Wayne Kerr Universal Bridge type B221, calibration not current; (b) at 10kHz using Marconi Universal Bridge type TF868/1, calibration not current.
[2] Measured: (a) at AF and (b) at RF using home-made professional standard instruments.
[3] Measured at 10kHz using Wayne Kerr B905A precision bridge. Specified accuracy ±0.1%. Instrument calibration current.
[4] Measured at 1kHz using Marconi TF2700. Last calibrated 1990.

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By Don Field, G3XTT

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This month, Don Field returns to the role of the QSL Manager. Plus plenty of DX news for the beginning of the autumn / winter DX 'season'.

HF

John, G4IRN, with SU9BN in Dahab, July 2004.

The big event, or non-event, depending on how things worked out for you, was the YV0D Aves Island expedition, which was about to start when I completed last month's column. In the event, the team was at the mercy of both the Venezuelan Navy and Caribbean weather, with the result that the operation was rather shorter than hoped. They made 18,500 contacts in all in around 59 hours of operation. To achieve this, the team had a 30-hour wait-time in Venezuela and no less than 90 hours of travelling time!

The 3B9C team (see July *RadCom*, p36) has now QSLd 58,100 contacts, of which 39,600 were direct and most of the rest are bureau cards in response to electronic requests via the 3B9C web page (very few traditional bureau cards have arrived so far). This huge task has only been possible by having a QSLing team (of about 12 people), using *StarQSL*, a server-based QSL management system which allows every member of the QSLing team to see exactly which QSL requests have been dealt with and which are still in the pipeline. There will be a talk on the *Star* software suite of programs, as used by 3B9C, at the RSGB HF Convention. By the time this appears, the 3B9C log will also have been uploaded to the ARRL's Logbook of the World.

And talking about QSLing, bearing in mind that last month I discussed the role of the QSL Manager, Martin, G3ZAY, has kindly drawn my attention to the IARU Code of Practice for QSL Management. It is reproduced in the sidebar.

CODE OF PRACTICE FOR QSL MANAGEMENT

1. Any DX station appointing a QSL Manager must ensure that satisfactory arrangements are in place for receiving and responding to incoming bureau as well as direct cards. Adequate publicity must be given to such arrangements.
2. QSL Managers must respond to incoming SWL cards.
3. Any DX station appointing a QSL Manager must accept responsibility for that Manager's performance.
4. QSL Managers must respond 'direct' and within a reasonable period of time if sufficient funds / IRCs / stamps to cover the exact cost of return postage and a return envelope are enclosed with the request. Airmail must be used if sufficient funds / IRCs / stamps are enclosed.
5. QSL Managers must not insist on separate envelopes / applications for different QSOs or different stations. They must establish internal procedures to handle such multiple requests.
6. Recognising that mistakes of time and / or date are frequently made, QSL Managers must make a reasonably diligent search for QSOs that cannot immediately be found in the log.
7. In particular: It is unacceptable to demand a specific number of IRCs or 'green stamps' (US $ bills) if a smaller number would cover the costs mentioned in Point 4. It is unacceptable to return cards via the bureau if they were received direct with sufficient funds/IRCs/stamps as defined in Point 4.
8. There should be no time limit for applying for QSL cards. Old logbooks should be passed to responsible DX clubs when the manager no longer wishes to retain them.

DX NEWS

David, M0CNP, writes that special event station GB200CLB, which he is organising on behalf of the RNLI Cromer Lifeboat 200th anniversary celebrations, will be operating from the crew room of the **Cromer Lifeboat Station**, at the end of Cromer Pier, over the weekend 30 / 31 October. David says, "I need operators by the bucketful (about 50), so if anybody in Norfolk (or anywhere else) is interested, please let me know. I can be contacted on david@m0cnp.fsnet.co.uk Also, via my website".

Pierre-Marie, HB9DTM / F6FNL, is in **Burundi**, and has been issued with the callsign 9U6PM, valid until February. He has a TS-450 to a six-element log periodic and a folded dipole. At the time of writing, he is active daily on SSB, but hopes to be on CW and RTTY before too long. QSL to his home address (see 'QTH Corner').

Franz, DL9GFB, will be heading to Africa on 7 October. First stop will be **Namibia** (V5), followed by **St Helena** (ZD7) from 11 October, via ship. The trip will take about three and a half days between Walvis Bay, Namibia and St Helena. After operating from ZD7 he will go back to V5 for a few days of activity.

Willi, DJ7RJ, and Klaus, DJ4SO, will be on the air from the **Seychelles** from 3 October for two or three weeks. They will be operating as S79RJ and S79SO on 10 to 40m, CW, SSB, RTTY and PSK31. Use of the 80m band has not been authorised but they will be requesting permission to operate on 80m during weekends (around 3505kHz). QSL via their home calls.

Andre, FH/ZS6WPX, will be on the air from **Mayotte** from 1 to 13 October, all bands, SSB, digital, and some CW. QSL, direct only, to his home call.

Roger, G3KWK, reports that Brian (also known as Joe), G3MRC, has loaded his current 7Q7BC log to Logbook of The World. Paper cards will be available from Brian's UK Callbook address, but not until he returns to the UK later in the year.

Jack, F6BUM, will sign TO5M from **Reunion Island** from 23 to 31 October. He will use the callsign FR/F6BUM from 1 to 15 November. He then moves to **Mauritius** from 16 to 20 November as 3B8/F6BUM. QSL via F6CXJ. Mart, DL6UAA will be back in **Mauritius** as 3B8MM during October and November. He says that he may also operate once again as 3B9MM from **Rodrigues** for part of the time if there is sufficient demand, though it is hard to believe there will be, after the 153,000 QSOs made earlier in the year by the 3B9C team.

A Clipperton DX Club group will be in **Bhutan** from 24 October to 11 November, including the CQWW SSB contest and will set up a new radio club in Jakar, central Bhutan. The team includes Vincent, G0LMX. There is a website with further information. QSL via F9DK.

Jaak, ES1FB, will activate XU7ACE (**Kampuchea**) again from 15 October to 5 November. QSL to his home call.

Sigi, DL7DF, will lead a team to **Cameroon** from 6 to 20 October, where they will operate as TJ3SP and TJ3FR with four stations, three linears, two Yagis for 20, 15, and 10 and for the WARC bands two R7s. A Titanex V80DX will be used for the low bands and a ground plane for 30m. There will be plenty of low band and data modes activity. However, at the time of writing no 160m licence was forthcoming. More details from the DL7DF website.

Lanny, W5BOS, will be active from Pulap (Pollap) Island (OC-155), West Chuuk in the **Federated States of Micronesia** as V6O from 18 to 23 October. QSL via N6AWD.

The team which did such a good job from the Sudan as ST0RY will be heading this month to **Chesterfield Island** (TX0) for an all-band, all-mode effort. Exact dates had not been announced at the time of writing.

I had expected to be announcing a major DXpedition this month to **Kure Atoll** by the Pacific DX Group, which was behind the very successful K5K Kingman Reef DXpedition in 2000. However, the operation has been postponed as they have been unable to

raise sufficient funds in time. The team hopes to be able to undertake this operation in the not too distant future, maybe in Spring 2005. Check their website for the latest news.

Nob, JA7OV, and Hiro, JA7AQR, will operate as FW7OV and FW7AQR from **Wallis Island** (OC-054) between 9 and 15 October. They will be active on 10 - 40m, SSB and RTTY. There will be no CW activity. One or two days before and after the FW operation the two will operate as 3D2TY (JA7OV) and 3D2YT (JA7AQR) from Fiji. QSL to their home calls either via the bureau or direct.

Bill, VK4FW, and members of the Oceania Amateur Radio DX Group Incorporated have announced a two-week DXpedition to **Lord Howe Island** which will take place between 9 and 23 October. The team will include Laurie, G3UML. This is expected to be an all band operation with activity on 10 - 160, CW, SSB and RTTY. When further details are available, they will appear on the web page.

Johan, PA3EXX / VK4WWI, will activate **Marion Reef** (OC-NEW, not to be confused with DXCC entity Marion Island) from 8 - 12 November. However, prior to that operation he will be active from three of Australia's Most Wanted IOTA groups. Look for VK4WWI/8 from **Elcho Island** (OC-185) on 30 - 31 October, VK4WWI/8 from **North Island** (OC-198) on 1 - 2 November and VK4WWI from **Sweers Island** (OC-227) on 3 - 4 November. QSL via PA3EXX.

Ulli, DL2AH, will sign T30KU from **Kiribati** from 9 to 18 October, followed by an operation from **Tuvalu**, T20, 20 to 24 October. He will operate on 20 - 10m SSB, RTTY and PSK31 with an FT-897 and delta loop. QSL to DL2AH.

Florida DXpedition Group members Bill, W4WX (J75WX); Clarence, W9AAZ (J79AA); Larry, W1LR (J79LR); Cory, N1WON (requested call J79CM); and Vance, N5VL (requested call J79VL), will operate on all bands and modes from **Dominica** (NA-101) from 26 October to 2 November. QSL via their home calls. They will participate in the CQ WW DX Phone Contest as J75J (QSL via KR4DA).

An international team will be active from **Miquelon Island** (NA-032) as FP/VE7SV from 23 October to 2 November, including participation as a multi-two in the CQ WW SSB DX Contest. The operation will be on all bands, CW and SSB.

Finally, the January **Peter 1st Island** DXpedition looks set to go this time, with a big team. Full details in my January column. Meanwhile, their website is up and running.

CQWW PHONE CONTEST

Apart from those already mentioned there will, as always, be a large number of rare and semi-rare stations active in the CQWW Phone contest which, as always, takes place over the last full weekend of October. Look out for V26DX (Antigua) multi-op; HI (Dominican Republic) by N4SF and AA4V; VK9AA (Cocos Keeling) by VK2AI who will be there again in November for the CW leg (QSL DL8YR); P40A (Aruba), single-band 20m by KK9A; VP9 (Bermuda) by large multi-op team; VP5X (Turks & Caicos) by large multi-op team; 7P8Z (Lesotho) all-band, by ZS4TX; FS/AH8DX (St Martin) by AH8DX; JW5E (Svalbard) multi-single; IH9P (Pantelleria Is, AF-018) by large multi-national team; J3 (Grenada) multi-multi; OH0 (Åland Is), at least two operations; PJ4/T93M (Netherlands Antilles) by T93M; T88QQ (Palau) by JA1KAJ; PJ7/K7ZUM (Sint Maarten) by K7ZUM; C5 (Gambia) 20m by ON4ACA; V63B (Micronesia) by JA7HMZ; VK9XD (Christmas Island) by VK2CZ; FM (Martinique) by F5MUX; ZP0R (Paraguay) by ZP5AZL; XX9 (Macau) Multi-multi by Chinese group. There will be plenty more. Check the NG3K website for the latest list.

DXCC NEWS

ARRL DXCC Manager, NC1L, Bill Moore, released the following in late August: "Effective immediately, the ARRL DXCC Branch will accept QSLs for operation taking place in the Somaliland (north-western Somalia) and Puntland (north-eastern Somalia) autonomous areas as well as the southern and central areas of Somalia. Operations possessing written permission from any recognised authority that is acknowledged to be in control of a particular region will be accredited. These QSLs will count for the Somali Democratic Republic (Somalia). QSLs for past operations will be accepted where proper documentation has been submitted. This is subject to change based on future developments in Somalia."

This change in DXCC policy was made as there is no central government in Somalia. The immediate impact is that the 6O0X (1999 and 2002) and 6O1Z (1999) operations from Somaliland will count for Somalia for DXCC credit. The thinking is that Somaliland, though geographically a part of Somalia, is now separately recognised by most governments and world wide agencies. Somaliland has been trying, for several years, to secede from Somalia. This is a curious development, raising all sorts of questions about the moment at which a DXCC entity is considered no longer to have a legitimate central authority and, when that happens, who exactly constitutes a "recognised authority". Even if Somaliland has achieved a level of international recognition, why does the ARRL decision also extend to other regions within Somalia? An Australian amateur has recently been operating from Puntland as 6O0A, but acceptance of his QSL cards is not an issue, as he has a policy of not QSLing.

CORRESPONDENCE AND TABLES

Terry, G1UGH, makes contact again, having apparently been another victim of e-mails to the hf.radcom address going missing (in view of ongoing problems, can readers please use my direct address, as at the top of this month's column). Terry says he has now upgraded his antenna to a Carolina Windom 620. New ones include Aruba, South Africa, Martinique, Nigeria, Australia and, most recently, 9U6M in Burundi (mentioned above).

Lionel, MU3GSY, is a welcome new contributor. Licensed since last October, he is using an Icom IC-7400 and G5RV antenna. It's good to see so much HF activity nowadays from Guernsey.

Dave, G4WFQ, recommends a couple of sites for those wanting to get hold of up-to-date solar data and other useful propagation information. They are listed in 'Websearch' below.

Chris, G1VDP, is another new entrant to the tables. He writes that he has been active on HF since February and has been having quite a lot of success working the various DXpeditions that have been on the bands since then. I see from his log that 17m has been his most successful band of late, with SSB contacts that include 5N9NDP (Nigeria), VR2XMT (Hong Kong), FJ5IF (St Barthélemy), OX3HX (Greenland) and OJ0VR (Market Reef). Chris comments that he was licensed some years ago but became inactive

COUNTRIES WORKED, 2004

(sorted this month by data modes totals)

CALL	CW	SSB	DATA	MIXED
W1JR	233	233	167	257
G3LHJ	168	64	99	189
GU0SUP	0	0	96	96
GM8OEG	68	89	78	120
G4OBK	139	88	77	182
G3XTT	216	140	76	243
M0CNP	28	84	74	102
MM1APX	0	57	62	73
M0BKV	0	101	34	104
G0GFQ	32	77	33	85
G4DDL	80	10	14	80
GM0TGE	130	159	0	189
G4KFT	182	0	0	182
G4NXG/M	0	167	0	167
G3VDL	162	0	0	162
G4IRN	161	0	0	161
G3SXW	158	0	0	158
G3TXF	158	0	0	158
M5GUS	0	158	0	158
MU0FAL	151	91	0	156
G3YVH	153	21	0	153
VK4BUI	133	93	0	152
G4WXZ	146	68	0	146
G3ZRJ	129	9	0	129
G1VDP	0	120	0	120
G3YMC (QRP)	119	0	0	119
M0BVE	116	0	0	116
G4FVK	62	78	0	98
G0LGJ/M	0	94	0	94
MU3GSY	1	72	0	73
G7CLY	0	38	0	38
M5AEF	(1W)	9	20	0

QTH Corner

5B4AHJ	Alan Jubb, PO Box 61430, 8134 Kato Pafos, Cyprus.
9U6M	Pierre-Marie Calvet, Rue de Vermont, 22 CH-1202 Geneva, Switzerland.
AT0RI	PO Box 6073, Bangalore 560060, India.
CP4BT	Claus Braun, CP4BT, Casilla 26, Tupiza, Bolivia.
YV0D	Dianna Killeen, KB6NAN, POB 911, Pescadero, CA 94060-0911, USA.

around 1987. However, just before last Christmas he bought a used FRG-7700 which reignited his interest and he is thoroughly enjoying the opportunity to operate on HF. Chris thanks those who called him when he was operating from two of the Cornish lighthouses.

Mike, G6HOU, writes that he was the sole operator at GB4BPL, Burry Port lighthouse (WAL-035) in South Wales, over the Lighthouses / Lightships weekend. Running 100W to a 20m dipole at 38ft running north-south for 20, 17 and 15m and a 20m 'snake' antenna lying on a 5ft wall (north-south) for 80 and 40m, Mike made 625 SSB QSOs in 34 hours. He worked 65 DXCC countries including ZL4, ZS, ZP, LU, 9U, 5Z, 4X, VU, VK2, 7X, V4, A4 and A9. Contacts included 39 registered lighthouses from 23 DXCC countries including VP8, VK3, KP4, VE and PY.

Colin, MU0FAL, writes that after a lot of prowling he finally found 7P8DA on 15m for number 247 all-time. He also mentions taking part in the WAE CW contest and enjoying the challenge of coping with exchanging QTCs for the first time, a feature unique to this contest and one which requires some real operating skill.

Dave, G4FVK, laments not hearing the YV0D expedition, but he did manage to work two new ones on 30m, TF (Iceland) and CT3 (Madeira).

And just before I close, I really ought to remind you that the GB2RS news bulletin carries the latest DX news each week, often covering activity which has been announced after this column has gone to press. Apart from listening on Sunday you can, of course, have the bulletin e-mailed to you each week or download it from the RSGB website.

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 **December** issue by **16 October**. ♦

Chris Colcough, G1VDP, a new entrant to the 'Countries Worked' table.

WEB SEARCH

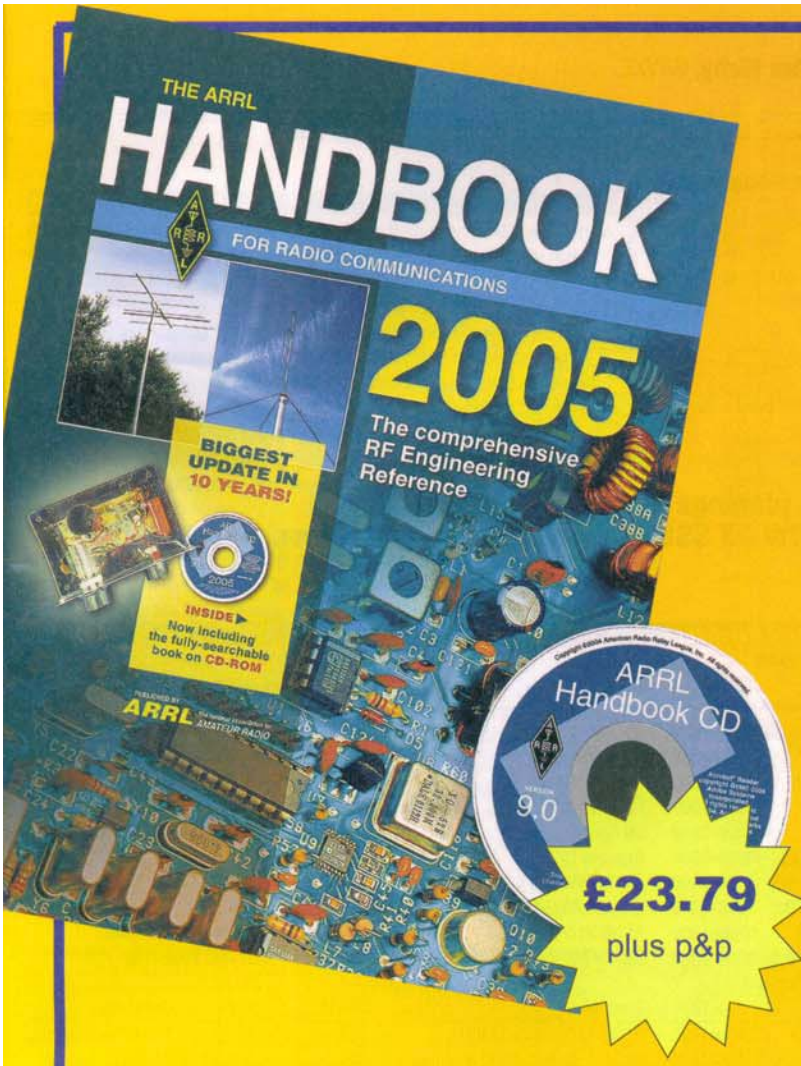
Clipperton DX Club, Bhutan:	www.cdxc.org/dxp/2004-Bhoutan/a5-en.htm
DL6UAA:	www.dl6uaa.com
DL7DF:	www.qsl.net/dl7df
FP/VE7SV:	www.bcdxc.org
HF Radio (Propagation):	www.hfradio.org/propagation.html
HF propagation:	http://dx.qsl.net/propagation/index.html
Kure Island DXpedition:	www.dxpedition.info
M0CNP:	www.qsl.net/m0cnp
NG3K (CQWW Phone operations):	www.cpcug.org/user/wfeidt/Misc/cqs2004.html
Oceania AR DX Group:	www.odxg.org
Peter 1st DXpedition:	www.peterone.com
VP5X:	www.vp5x.com
RSGB (GB2RS):	www.rsgb.org

HF F-Layer, Propagation Predictions for October 2004

Time	3.5MHz 000011111220	7.0MHz 000011111220	10.1MHz 000011111220	14.0MHz 000011111220	18.1MHz 000011111220	21.0MHz 000011111220	28.0MHz 000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	77.....5456	774...137667	..52123563..	..6556665...	...89999....	...8999.....	.....
*** Asia							
Yakutsk	.....11.	1.....2342	..3112433.42	..2553.....	...55.....	...21.....	.....
Tokyo	.....	.....1222.	.....1222..	....1.11....	....1.....	....1.....	.....
Singapore	.....	.....11..	.....231..	.....242...	.....1441...	.....132....	.....11.....
Hyderabad	.....	1	1.....13322	.....1341..	..321267....	..144574....	...5776.....
Tel Aviv	46.....2222	646.....6555	8.72..147278	...643565...	...65452....	....112.....	.....
*** Oceania							
Wellington	.....	...2..256...	...544656...	...666624...	...1221.....	....11.....	.....
Well (NZ) (LP)	.....	..7.....	248.....1	4.72.....332	...4.....5..	.....	.....
Perth	.....	.....111.	.....111..	.....1....	.....121....	.....11.....	...22.....
Sydney	.....	.....111..	.....121...	.....22....	....2563....	....333.....	...2.....
Melbourne (LP)	.....	...7.....	..182.....	...75.....	...63.....	.....	.....
Honolulu	...1.....	...311.1....	...1.1.11...	.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....14...	..1...1.61..	..1111..6...	...33.....
W. Samoa	...1.....	...44321....	...256511...	....253.....	....131.....	.....	
*** Africa							
Mauritius	.....	1.....111	.....11..	.....21...	.....31...	.....2....	.....
Johannesburg	35.....11	78.....2577	45.....5656	1.1....27521	..11..145...	...111254...	...35667....
Ibadan	.....	111.....	316.....1112	..72....22..	..6864356...	...986777...	...89699....
Nairobi	.....	.....	.1.....	.....	..31...11...	..52...12...	...55445....
Canary Isles	334.....332	6762....3666	6665...14466	...6422356..	...1677725..	....27788...	.....324....
*** S. America							
Buenos Aires	.....	3231.....23	...2.....	...3.....	...531..11..	...3421121..	....32121...
Rio de Janeiro	.....	.....	.....	.....	...5411133..	....532341..	....42232...
Lima	.....	.....	.....	.....	.....2.....	.....3111...	.....2111...
Caracas	.....	.....	...1.....	.....	....1.....	.....1..1...	.....5221...
*** N. America							
Guatemala	.....	.....	...1.....	.....	.....	.....	.....
New Orleans	.....	.....	1..1.....	.....	.....25441..	.....666...	.....43....
Washington	.....	3341.....13	5...1.....45	.....1..13..	.....54452..	.....4666...	.....11....
Quebec	444.....35	6333.....166	...21....1..	.....1.113..	.....77774..	.....7778...	.....56....
Anchorage	.12.....	3352.....12	.....1.	.....1...	.....	.....	.....
Vancouver	.....	.....	.....	.....	.....14...	.....2...	.....
San Francisco	.....	.....	.....	.....	.....12...	.....11...	.....
San Fran (LP)	.....	.....	.....1....	.....6....	.....72...	.....72...	.....5....

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

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at http://members.aol.com/g4fkhgwyn The page is updated monthly. The provisional mean sunspot number for August 2004 issued by the Sunspot Data Centre, Brussels, was 40.9. The daily maximum / minimum numbers were 76 on 13 August, and 9 on 31 August respectively. The predicted smoothed sunspot numbers for October, November and December are respectively: (SIDC classical method - Waldmeier's standard) 38, 36, 35 (combined method) 39, 38, 37. 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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Contest

This month Tim Kirby brings us the UK placings in a couple of overseas contests and looks forward to the CQWW DX SSB event at the end of October.

Contest Calendar

HF Contests

Date	Time	Contest	Mode	Bands	Exchange
2 Oct	1500-1859	EU Sprint	SSB	3.5,7,14	Ur Call+OtherCall+Name+SN
3 Oct	0000-2359	TARA PSK Rumble	PSK31	3.5-50	Name+DXCC Prefix
2/3 Oct	0800-0800	Oceania DX	SSB	1.8-28	RS+SN
3 Oct	0700-1900	RSGB 21/28MHz	SSB	21/28	RS+SN+District Code
9 Oct	1500-1859	EU Sprint	SSB	3.5,7,14	Ur Call+OtherCall+Name+SN
9/10 Oct	0800-0800	Oceania DX	CW	1.8-28	RST+SN
16/17 Oct	0000-2400	JARTS WW RTTY	RTTY	3.5-28	RST+Age
16/17 Oct	1500-1459	Worked All Germany	CW/SSB	3.5-28	RST+SN
17 Oct	0700-1900	RSGB 21/28MHz	CW	21/28	RS+SN+District Code
30/31 Oct	0000-2359	CQWW DX	SSB	1.8-28	RST+CQ Zone (14)

VHF Contests

Date	Time	Contest	Mode	Bands	Exchange
2/3 Oct	1400-1400	RSGB 432MHz to 248GHz	ALL	432 up	RST+SN+Locator
2 Oct	1400-2200	RSGB 1.3GHz/2.3GHz Trophies	ALL	1.3/2.3G	RST+SN+Locator
5 Oct	2000-2230 Local	RSGB 144MHz Activity & Club Championship	ALL	144	RST+SN+ Locator
12 Oct	2000-2230	RSGB 432MHz Activity	ALL	432	RST+SN+Locator
17 Oct	0900-1300	RSGB 50MHz	ALL	50	RST+SN+Locator +Postcode
19 Oct	2000-2230	RSGB 1.3GHz/2.3GHz activity	ALL	1.3G/2.3G	RST+SN+Locator
26 Oct	2000-2230 Local	RSGB 50MHz activity	ALL	50	RST+SN+Locator

Royce Hunt, M0RHI, ready for the start of SSB Field Day, 2003.

Roger, G3SXW, forwarded the leaders from the UK of the CQWW CW contest in 2003. In the High Power, All Band section, MW5A (G3WVG) was 6th place Europe, whilst G3TXF was 8th place Europe. On 14MHz, GI0KOW (GI0NWG) was 6th place World, 1st place Europe, winning the G3FXB Memorial Trophy. On 1.8MHz GU4YOX was 4th place Europe. In the Low Power section, on 7MHz, M4K (M0BEW) was 3rd place World, 2nd place Europe. In the QRP category, GW4ALG was 7th place Europe, G0DCK was 8th place Europe and G3YMC was 10th place Europe. In the Multi-Multi category, GM5A was 6th place in Europe.

Slightly further afield, but with plenty of UK interest, congratulations to the operators of 5U5Z, the Voodudes who have been awarded the Multi-Op DXpedition plaque, K2TT Trophy. Operators listed on the plaque are G0MTN, G3XTT, G4BWP, G4PIQ, K5VT, KC7V and KY7M.

Congratulations to all concerned.

CQ PLAQUES FROM 2002

Although 2002 seems a little while ago now, it takes a while to distribute some of the plaques for the international contests and I was delighted to hear from Steve, G4KIV, who might be better known to some of you as ZC4BS. Steve had just received a plaque from *CQ* magazine for the *CQ* WPX CW from 2002 for the winner of the SOAB (Single Operator, All Band) QRP category with a score of 2,655,048 as ZC4BS. This is Steve's second World number 1 placing, the previous one was in the CQWW SSB SOAB LP in 1991 (same call).

ARRL RTTY ROUNDUP 2004

Lee, G0MTN, takes 9th place in the Single Operator, DX, Low Power section, whilst MW2I (operators GW5NF, GW4JBQ and G4VXE) took first place in the Multi-Operator, DX, High Power section.

CONTESTS THIS MONTH

The highlight for many people will be the CQWW SSB on 30 / 31 October. Always great activity for this event and somehow, with the activity, the higher bands always seem to open. Closer to home, there are the RSGB 21 / 28MHz SSB and CW contests on 3 and 17 October, respectively. With these two events, there are always plenty of overseas stations looking for UK contacts, so try to come on and support them, even if you can't devote much time to the contests for a serious entry.

The excellent EU Sprints take place this month too, with the SSB event on 2 October and the CW leg on 9 October.

On VHF / UHF, the 432MHz to 248GHz IARU Contest on 2 / 3 October is always a good one, with the RSGB 1.3 / 2.3GHz trophies running concurrently on 2 October. 17 October shows the RSGB 50MHz contest, which could demand some real weak signal working for tropo if there isn't any DX propagation around... ♦

70MHz TROPHY 2003

Contests on 4m have a character all their own. With only the UK within tropo range QSO numbers are quite low and with Es propagation the only real mode available to extend distances, DX is quite rare. This seems to give proceedings a rather 'gentlemanly' quality. As M5MUF noted: "Only on 4m do you get contacts saying, 'We haven't worked before - welcome to the band'!" Many people make an effort to get on the band for this contest, either to put in an entry or just give away points. However, sadly, a number of stations seem to come on only to work their own club station, refusing to work anyone else. As QSOs are at such a premium on this band then this habit can also have a noticeable affect on the results. Although no table positions were affected this year, I would like to discourage this rather partisan operation in future.

This year's contest was again very well supported, with entries coming in from all ranges of experience from past winners to 4m rookies. Judging from the comments in the logs the weather seemed to be very variable over the UK - no surprise there then! It was generally agreed that conditions had been better the day before the contest; certainly the Es was better only a few minutes before. Nevertheless some good contacts were made although scores were well down on last year.

In the Open Section The Five Bells group returns to the top of the leader board, with the Northern Lights down to second. Geoff, G3NAQ, wins the single operator section from Roger, G3MEH. The top of the SO section is occupied by two stations from opposite corners of the UK, with Colin, GM4CWH/P, in 1st place just ahead of Peter, G4YPC/P, in second. Steve, G0AEV, gets the certificate for the highest placed entry in the SF section using a single Yagi and less than 25W, in his case only 15W.

Pete Lindsay, G4CLA

Section M

Pos	Call	Loc	QSOs	Mults	Points	Total	Best DX	Ant
1 *	GM4SIV/P	IO75DH	70	51	26250	1338750	S51DI	2x9
2 *	GD0EMG	IO74QD	73	53	24162	1280586	S51DI	2x8
3	GM3TCU/P	IO65VO	45	40	16690	667600	G4YPC/P	4x6
4	G4ADV/P	IO70JH	48	37	16227	600399	GM4AFF	2x7

Section SF

Pos	Call	Loc	QSOs	Mults	Points	Total	Best DX	Ant
1 *	G3NAQ	IO91HL	56	37	9270	342990	GM4AFF	7
2 *	G3MEH	IO91QS	52	38	8571	325698	GM4AFF	2x5
3	G3JYP	IO84SN	34	30	8459	253770	G4ADV/P	8
4	G3WGV	IO84QN	32	27	8759	236493	S52SK/P	4
5	G0ODQ	IO91NQ	41	32	7220	231040	GM4AFF	5
6	G3IKR	IO82XF	37	30	6402	192060	GM4AFF	4
7	G8SRL	JO01ED	31	27	6610	178470	GM3TCU/P	7
8 *	G0AEV	IO81WL	34	27	6180	166860	GM3TCU/P	8
9	G3LVP	IO81WV	34	26	5223	135798	GM4AFF	4
10	G3NKS	IO81XU	33	27	4842	130734	GM3TCU/P	6
11	GM4AFF	IO86ST	20	16	8068	129088	G4ADV/P	8
12	M5MUF	IO92JP	24	21	4192	88032	GM4SIV/P	DL
13	G4AFJ	IO92HO	23	21	3844	80724	GM3TCU/P	5
14	G4CZB	IO92MF	13	13	1767	22971	GM4SIV/P	Dipole
15	S51DI	JN76VL	3	5	3558	17790	GM4SIV/P	8
16	GM4DIJ	IO85IW	8	10	1142	11420	GD0EMG	4
17	M0WYE	JO01LE	8	8	1157	9256	GD0EMG	HB9CV

Section SO

Pos	Call	Loc	QSOs	Mults	Points	Total	Best DX	Ant
1 *	GM4CWH/P	IO74WV	52	43	15153	651579	G4YPC/P	5/5 + 2/2/2/2
2 *	G4YPC/P	JO00EW	44	44	13639	600116	GM3TCU/P	8
3	G1EHF/P	IO91GI	50	38	8080	307040	GM4AFF	44
4	G1KHX/P	IO81MH	43	34	8209	279106	GM6VXB	
5	G4BVY/P	IO82TF	39	28	5871	164388	GM4AFF	7
6	G6GVI/P	IO81PH	35	25	5391	134775	GM3TCU/P	5ele HB9CV
7	WH/P	IO82LQ	29	25	5096	127400	GM3TCU/P	3
8	G0PQF/P	JO01AX	19	18	3312	59616	GM4SIV/P	3
9	S52SK/P	JN86AI	5	5	3368	16840	G3WGV	2x6
10	G3VQO/P	IO90QW	2	3	150	450	G3NAQ	Whip

144MHz UK ACTIVITY CONTESTS 2003 RESULTS

The highlight of the 2003 UKAC contests on 144MHz was the August session, where even QRP operators were able to enjoy many contacts into Scandinavia and mainland Europe. This was as a result of the combination of having good tropo conditions, and also the coincident NAC contests which ensured there would be contest stations active at the other end of the path. The activity levels for the other months remained steady and reasonable throughout the year.

Bryn Llewellyn, G4DEZ, was the most active entrant in 2003 submitting logs for all 12 sessions. Whilst not the outright winner in all 12, Bryn's best six sessions put him at the top of the Single Operator Fixed section. Roger Piper, G3MEH, is again in second place this year.

The Open section strategy is always interesting. Most portable operation takes place during the summer months. However, getting active for other less popular sessions has left some entrants with little competition, and an easier way to get the maximum '1000' normalised points available each month. This year, Roger, GW5NF/P, operating with Julian, GW4JBQ, take top honours, followed by Steve, M0BPQ/P.

Lee Volante, G0MTN

Single Operator Fixed Section

Pos	Call	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Score	QSO
1*	G4DEZ	798	1364	1980	1608	2610	3400	1463	13585	3264	1794	2376	1554	6000	1134
2*	G3MEH	0	0	2024	1254	1978	0	0	4760	1896	1242	1440	1122	4413	672
3	M5FUN	608	705	1206	546	912	1518	645	0	1474	420	1026	136	3194	538
4	G4PIQ	0	0	0	0	0	0	0	0	6808	2268	0	0	2000	237
5	G8HGN	392	0	714	510	0	738	261	2759	684	0	0	0	1760	299
6	G0DVJ	209	0	0	0	390	242	396	2090	377	352	476	84	1191	313
7	G8ZRE	240	403	336	0	0	0	0	0	0	408	0	273	1118	137
8	G6GEC	0	0	0	0	0	0	280	1701	799	40	520	598	1055	265
9	G4RHR	0	384	476	324	722	0	0	0	0	0	0	0	995	143
10	PE1EWR	260	120	0	204	200	264	204	0	544	297	117	63	891	199
11	M0DDT	0	0	0	0	0	0	390	0	0	520	0	576	867	120
12	G3YDY	0	98	135	0	364	220	0	2079	646	270	338	0	721	256
13*	G4XPE	156	42	0	0	0	0	20	0	0	110	135	117	421	65
14	M0WYE	0	0	0	117	231	0	0	0	0	144	0	84	279	70
15	G3YJR	56	42	0	0	0	210	0	0	63	0	30	0	185	53
16	G8AHK	0	0	310	0	0	0	0	0	0	0	0	0	153	41
17	2E1GUA	35	0	84	0	0	0	0	112	0	0	30	33	127	57
18	G6UBM	35	0	0	0	0	136	55	0	0	0	0	0	121	45
19	M1DUD	0	0	0	0	0	0	35	0	126	60	0	0	69	32
20	G7KMM	0	0	0	0	0	0	91	0	0	0	0	0	62	13
21	G0GJV	0	0	0	0	0	0	0	0	384	0	0	0	56	34
22	M1MPW	0	0	0	0	0	0	0	0	0	105	0	0	46	15
23	G3JJZ	0	0	0	0	0	0	0	0	0	66	0	0	29	13
24	M0CGE	0	0	0	24	0	0	0	0	0	0	0	0	15	12
25	M0MAT	0	0	0	0	24	0	0	0	0	0	0	0	9	8

Open Section

Pos	Call	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Score	QSO
1*	GW5NF/P	0	0	0	615	1596	1560	1349	5868	1911	0	0	0	6000	535
2*	M0BPQ/P	6	518	935	300	705	0	0	1525	0	0	0	0	2707	234
3	G(W)8ZRE/P	0	0	0	0	720	1037	297	1311	864	0	0	0	2012	165
4	GM0WDD/P	0	0	0	0	0	779	0	0	0	0	0	0	499	42
5	G8XQS/P	0	0	0	0	0	364	0	0	493	0	0	0	491	55
6	G4PIQ/P	0	0	0	0	0	0	0	612	0	0	0	0	104	38
7	G1ORC/P	0	0	0	0	0	9	0	0	0	0	0	0	6	5

144MHz BACKPACKERS CHAMPIONSHIP 2003

Pos	Callsign	Total Points	Total QSOs	Best DX	km
1*	M0AFC/P	3000	565	F4CQY/P	829
2*	GW0PZO/P	3000	464	DK0PU	706
3	GW8ZRE/P	3000	556	F6KSL	793
4	GW5NF/P	3000	350	DL0WAE	783
5	G4HLX/P	2565	263	TM9R	673
6	G8NWM/P	2078	219	DC6HQ/P	758
7	G4HUN/P	1960	167	GM4ZUK/P	570
8	G0HDV/P	1807	151	GM4VVX/P	563
9	G1WKS/P	1731	247	GM4ZUK/P	671
10	M1LOL/P	1614	186	F6KFM/P	613
11	G0RMX/P	1564	256	GM4ZUK/P	547
12	M0BAO/P	1506	200	GM4ZUK/P	673
13	G3BPK/P	1316	212	GM0HTT	617
14	G8XQS/P	1304	159	F6IFR	586
15	G0PQF/P	1237	165	GM4ZUK/P	576
16	G0BVW/P	1175	145	GM4ZUK/P	561
17	G4RQI/P	1046	155	DK5DQ	659
18	G1ATZ/P	1000	158	PA6NL	502
19	GW7LQD/P	1000	144	PA0PVW	612
20	G3IZD/P	853	115	F6IFR	581
21	G4PIQ/P	837	80	DF0CI	622
22	MM0FVC/P	786	104	F6FLB	567
23	M1BAR/P	683	124	PA0PVW	547
24	GI7JYK/P	653	67	M0BAA/P	586
25	G3YDY/P	592	127	G5LK/P	458
26	GW4EVX/P	579	102	ON4WY	478
27	M0DBX/P	514	66	TM1Y	751
28	M5CSM/P	480	57	DF0OL	540
29	GM4IGS/P	471	71	G0JVR/P	539
30	G4CZB/P	462	67	F6KSL	500
31	G4EDR/P	453	30	G8NJA/P	440
32	G3JKV/P	411	42	GM4ZUK/P	655
33	G3LRS/P	408	81	F8KFV/P	479
34	G7ARW/P	379	127	GM4VVX/P	502
35	M0BPQ/P	366	102	MX0TRG/P	408
36	G4BXT/P	353	49	DK0BN	472
37	G6ZME/P	343	60	GM4ZUK/P	487
38	G0KYS/P	274	40	LX/PA1TK/P	723
39	G4VRC/P	227	41	G7ANV/P	483
40	G0NFO/P	219	75	F8KFV/P	430
41	M0BHE/P	162	41	G3XNO/P	349
42	G0LJD/P	154	46	PA6C	454
43	G1WAC/P	130	65	GM4ZUK/P	543
44	G1WAR/P	118	18	F6HPP/P	490
45	G0OIW/P	115	35	PA6NL	391
46*	M3CGC/P	110	24	GM4ZUK/P	571
47	G6GVI/P	93	52	G7ANV/P	443
48	G6DDQ/P	78	23	G4RRA	346
49	M3RNA/P	65	27	GM4ZUK/P	684
50	GI0OUM/P	60	16	G3TCR/P	481
51	G6BHB/P	50	12	G4ZAP/P	281
52	M3NSZ/P	45	40	GI6ATZ	388
53	G4WVD/P	10	9	G4DEZ	446
54	G4YNK/P	3	5	G4HLX/P	118

144MHz AFFILIATED SOCIETY CONTEST 2003

Affiliated Societies Section

Pos	Club	Call	Points	Norm	Call	Points	Norm
1*	Martlesham RS	G4PIQ	114512	1000	G4SWX	44712	968
2*	Five Bells	G4SIV	65260	570	G1ZJP	46174	1000
3	Colchester RA A	G4ZTR	30609	267	M0NAS	22643	490
4	Harwell ARS	G3NNG	30258	264	G8CUL	20061	434
5	Maidenhead & DARC	G4RGK	19572	171	G4WJS	18994	411
6	Chesham & DARS	G3MEH	55089	481	G0ODQ	18676	404
7	Wythall RC A	G1WAC	13677	119	G0NES	4508	98
8	Cray Valley RS A	G3JJZ	6385	56	M3CVN	4439	96
9	Bolsover ARS	G4AGE	7988	70	G3NEO	2032	44
10	Harwich ARI Group	G0DVJ	10615	93	M0ZZO	6399	139
11	West Kent ARS	G8SRL	22531	197	G6UBM	2872	62
12	AR Group of Sussex	M5FUN	14770	129	G3YNN	2141	46
13	Sutton & Cheam RS	G1POK	16058	140			
14	Colchester RA B	2E1GUA	3020	26	G4SOB	91	2
15	Wythall RC B	G1KEA	1015	9	G7OJO	380	8
16	Sheffield ARC	G0HSA	6974	61			
17	Telford & DARS	G3UKV	6089	53			
18	Reigate ATS	G8JXV	5426	47			
19	Cray Valley RS B	G0BRV	2086	18	G0WLF	1185	26
20	Addiscombe ARC	G3UFY	2134	19			
21	Clifton ARS	G4TJE	1193	10			

Individual Scores

Section M

Pos	Group	Call	Loc	QSOs	Points	Best DX	Dist	Power	Ant
1*	Martlesham RS	G4MRS	JO02PB	129	30977	HB9RDE	663	250	15
2*	Harwell ARS	G8CUL	IO91JO	122	20061	DK3EE	672	150	14
3	Five Bells	G4NPH	JO02BI	74	14307	DF2VJ	584	100	9
4	Wythall RC	G1WAC	IO92BJ	91	13677	DF2VJ	705	100	18
5	Ripon & DARS	G4SJM/P	IO94EB	52	13111	DJ3LE	731	100	9
6	Sheffield ARC	G0HSA	IO93GI	51	6974	PA1BVM	519	180	9
7	AR Group of Sussex	G3YNN	JO00EU	22	2141	GW3MFY	282	50	9

Section SF

Pos	Group	Call	Loc	QSOs	Points	Best DX	Dist	Power	Ant
1*	Martlesham RS	G4PIQ	JO01MU	388	114512	SK7MW	882	400	4 x 15 + 3 x 9
2*	-	G4DEZ	JO03AE	234	69857	DK8SG	768	400	2 x 12
3	Five Bells	G4SIV	IO92WS	226	65260	DF9IC	752	400	4x12
4	Chesham & DARS	G3MEH	IO91QS	233	55089	DJ3LE	750	400	2x10
5	Five Bells	G1ZJP	IO92WV	180	46174	DF9IC	759	400	4x12
6	Martlesham RS	G4SWX	JO02PB	165	44712	EI5FK	674	400	4x18
7*	Colchester RA	G4ZTR	JO01KW	137	30609	HB9RDE	672	25	16
8	Harwell ARS	G3NNG	IO91EP	164	30258	DK3EE	699	300	17
9	Colchester RA	M0NAS	JO01HW	118	22643	EI5FK	629	100	12
10	West Kent ARS	G8SRL	JO01ED	124	22531	GM4YXI	714	100	2x9
11	Maidenhead & DARC	G4RGK	IO91ON	97	19572	DF9IC	735	350	9
12	Maidenhead & DARC	G4WJS	IO91NP	127	18994	DF0WD	642	80	9
13	Chesham & DARS	G0ODQ	IO91NQ	119	18676	MM3ERP	644	120	11
14	Sutton & Cheam RS	G1POK	IO91VI	117	16058	DG9YIH	532	100	13
15	AR Group of Sussex	M5FUN	JO00DX	100	14770	GI6ATZ	567	100	12
16	Colchester RA	G3IRQ	JO02OD	67	14431	DK8SG	637	100	10
17	-	PE1EWR	JO11SL	60	13621	GM0GMD/P	637	80	10
18	Harwell ARS	G4HLX	IO91FP	95	13146	ON9CC	521	100	9
19	Martlesham RS	G4CXT	JO02PB	69	10631	GI6ATZ	548	50	7
20	Harwell ARS	M0DDT	IO91JR	82	10628	PA0PVW	481	100	9
21	Harwich ARI Group	G0DVJ	JO01MX	61	10615	DK3EE	514	50	5
22	-	G8ZRE	IO83NE	61	10191	ON1AEN	520	80	8XY
23	Five Bells	G6TTL	JO03BB	50	9126	DF0WD	572	100	9
24	Colchester RA	G0HKG	JO01IV	56	8003	DK8SG	653	100	5ZL
25	Bolsover ARS	G4AGE	IO93IF	55	7988	PA0PVW	496	100	8
26	Chesham & DARS	M5BFL	IO91OO	76	6800	GM4AFF	589	90	11
27	Harwich ARI Group	M0ZZO	JO01PW	51	6399	DL0SE	421	50	8
28	Cray Valley RS	G3JJZ	JO01AJ	62	6385	DK5DQ	504	25	8
29	Maidenhead & DARC	2E1IDU	IO91NO	57	6273	DF0WD	643	50	9
30	Telford & DARS	G3UKV	IO82RR	40	6089	G4CQR/P	292	50	8
31	-	G4XPE	IO92GU	35	5750	GM4AFF	445	25	10
32	Reigate ATS	G8JXV	IO91WE	60	5426	GW3LEW	324	100	9
33	Harwich ARI Group	M0CGE	JO01OV	35	4949	DF0WD	497	50	8
34	Colchester RA	G3FIJ	JO01KV	46	4838	G0KYS/P	362	15	10
35	Wythall Radio Club	G0NES	IO92BJ	35	4508	GM4BYF	399	25	2x13
36	Cray Valley RS	M3CVN	JO01AL	58	4439	G0KYS/P	293	10	9
37	Martlesham RS	G0RRC	JO02MB	33	3613	DO3VG	454	100	14
38	Wythall Radio Club	M0COK	IO92AJ	37	3496	GI6ATZ	346	25	7
39	Cray Valley RS	G4BUO	JO01CD	38	3472	G8BNE	339	25	9
40	Colchester RA	2E1GUA	JO01FR	34	3020	G0KYS/P	329	10	13
41	Five Bells	G0WUU	IO92SR	24	2920	DK3EE	619	50	5
42	West Kent ARS	G6UBM	JO01CE	30	2872	DK3EE	581	40	13
43	Wythall Radio Club	G0EYO	IO92BJ	24	2832	G4CQR/P	235	50	10
44	Wythall Radio Club	G7UGC	IO92BK	26	2686	M5FUN	220	50	-
45	Cray Valley RS	M3RCV	JO01AL	33	2447	GW3LEW	329	10	9
46	Maidenhead & DARC	G3TWG	IO91PN	33	2296	G4DEZ	188	40	5
47	Cray Valley RS	G7GLW	JO01AL	40	2273	G4DEZ	190	50	8
48	Addiscombe ARC	G3UFY	IO91WJ	33	2134	F8BRK	241	100	8
49	Cray Valley RS	G0BRV	JO01AJ	27	2086	ON1AEN	266	25	8
50	Bolsover ARS	G3NEO	IO93II	21	2032	GM0WDD/P	289	25	5
51	Bolsover ARS	G0RXT	IO93IF	23	1961	GM6TVR	231	30	5
52	Bolsover ARS	G6OKU	IO93GF	16	1443	GI6ATZ	323	50	4
53	Maidenhead & DARC	G3RZF	IO91QM	26	1431	G4DEZ	191	50	12
54	Clifton ARS	G4TJE	JO01BK	26	1193	G3NNG	123	40	5
55	Cray Valley RS	G0WLF	IO91WJ	28	1185	G1ZJP	167	25	-
56	Bolsover ARS	2E1OKT	IO93GF	12	1136	GI6ATZ	323	50	4
57	Wythall Radio Club	G1KEA	IO92CK	9	1015	G4PIQ	204	20	5
58	Chesham & DARS	G3XZG	IO91QQ	16	806	G4SIV	125	3	Vert
59	Harwich ARI Group	M0BVQ	JO01PW	14	403	G3MEH	133	10	Vert
60	Wythall Radio Club	G7OJO	IO92CK	10	380	G1ZJP	123	10	Dipole
61	Wythall Radio Club	M0AEJ	IO92BK	6	278	G0ODQ	108	40	5
62	Wythall Radio Club	M5DUO	IO92BH	3	184	M0BPQ/P	99	50	9
63	Wythall Radio Club	G6KMQ	IO92CJ	4	101	G3NNG	84	25	Vert
64	Harwich ARI Group	G3VMP	JO01NU	6	101	G4SWX	26	50	Vert
65	Colchester RA	G4SOB	JO01KV	7	91	G4SWX	34	4	Townsman
66	Bolsover ARS	G7GSX	IO93IF	7	45	G0HSA	18	10	2
67	Wythall Radio Club	M1EOQ	IO82WO	1	29	G7OJO	29	5	Vert

Section SO

Pos	Call	Loc	QSOs	Points	Best DX	Dist	Power	Ant
1*	G4CQR/P	JO00CR	121	29511	GM4AFF	699	250	13
2*	GM0WDD/P	IO85RU	71	27035	DJ3LE	784	120	9
3	M0BPQ/P	IO93HD	82	15192	DK3EE	686	150	9
4	G8XQS/P	IO94AO	46	10592	PE1EWR	506	25	9
5	G0KYS/P	IO80AQ	46	10482	PA0PVW	693	25	7
6	G6GVI/P	IO81PH	30	5545	G8BNE	313	40	HB9CV
7	G6DDQ/P	IO83VS	11	1895	G4FCN	379	20	5

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(see article on page 34/35/36)

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LF

News of a New-Zealand-Fiji LF contact ♦ As VLF station SAQ in Grimeton, Sweden, receives UNESCO World Heritage status, the Rugby VLF masts are demolished ♦ Tips on building the G0MRF transmitter

In late June, Laurence, KL1X, made a trip to Fiji and took his LF receiving gear along. The boys at Quartz Hill, near Wellington, were on hand to try for a cross-band contact. In the event, signals were so strong that Laurence had trouble deciphering the 10sec DFCW due to blooming of his *Argo* trace. Fading eventually brought ZM2E's signal up to audible strength and the contact was completed in Morse at 559. Laurence, operating as 3D2KL, was very pleased with the performance of his K9AY receive antenna, and he was also impressed with the FRG-100 receiver that he took along.

LF MASTS COME DOWN

Rugby Radio, built in the 1920s, is a famous landmark known to anyone who travels through the midlands on the West Coast main-line or the M1. Its twelve 820ft masts supported a vast top-loaded aerial which radiated a 16kHz transmission copied all over the world.

Now only the four masts nearest to the building remain.

On 19 June, eight of them were felled by breaking one of the four anchor points on each mast with an explosive charge. They then fell in a predictable direction.

It seems that the local rabbits tried to sabotage the event by chewing through the detonation cables; but even they couldn't stop the demolition for long and the skyline now looks very different.

The 60kHz time signal transmission still comes from the site, using a T-aerial supported by two of the remaining towers.

In contrast to the destruction at Rugby, another historic VLF radio station, SAQ at Grimeton in southern Sweden, has been declared a World Heritage Site by UNESCO. It was on air again in July and, despite noisy conditions, W1TAG copied the signals on 17.2kHz.

CANADIAN ACTIVITY

Scott Tilley, VE7TIL, is now regularly active around 137.5kHz with a home-brew transmitter which he hopes to crank up to several hundred watts eventually. This gives Steve, VE7SL, a local station with which to do tests, a very useful facility! They made the first Western Canadian LF contact on 10 July, and both their signals have been received in Southern Oregon.

More recently, they have been trying to get a signal over the Rocky Mountains to VE3OT who was on holiday north of Calgary. Results next time.

As has been noted in previous years, trans-Atlantic propagation isn't exclusive to the winter, it's only the static and the limited hours of darkness that make it more difficult in summer. To prove the point, VO1NA has continued his test transmissions over the summer months and some nights have yielded excellent copy. German listener Hartmut Wolff, in locator square JO52HO, is a regular 'viewer' of 137.777kHz, with great success

END FOR TASMAN TESTS?

New Zealand magazine *Break-In* reports that it is unlikely that Robert, VK7ZAL, will have his LF permit renewed when it expires in November. The callsign AX2TAR has been in force for the past 11 years and Robert has taken part in many ZL/VK tests. He is redoubling his efforts to cross the Tasman on SSB before time runs out.

Meanwhile, in New Zealand, things are improving with the announcement that their LF allocation is now extended to cover 130 to 190kHz! This means that all ZL LF stations can take part in trans-Pacific tests on the 136kHz band. Previously only ZL6QH (ZM2E) had special permission to use the band.

The New Zealand authorities have also scrapped the Morse requirement for bands below 6m, thus allowing all ZLs onto LF.

TRANSMITTER TIPS

Newcomer PA4VHF has been having trouble getting his transmitter to work properly. He had based it on the G0MRF design but had used a different output transformer made from a TV line-output core. The output transformer is all-important in these class-D designs and Jim, M0BMU, offers the following modifications which should be of interest to anyone building the G0MRF transmitter (see **Fig 1**).

Remove the 470nF capacitor C23. Increase L4 to 56µH (25 turns of 1mm wire on T106-26 iron dust core). Replace both C22 and C24 with a series combination of 4.7nF and 5Ω. For the PA transformer, use an ex-monitor line-output transformer core. The secondary should be 16turns of 1mm enamelled wire close-wound in the middle of the round leg of the core. The primaries, 2 x 4 turns bifilar, are to be wound directly over the secondary. Use home made 'Litz' wire for the primaries, consisting of three groups of 4 x 0.3mm enamelled copper wires, covered in thin heat-shrink sleeving.

The rest of the circuit is as shown in the original G0MRF design. The drive circuit and output filter is unchanged. With this arrangement, and a DC input of about 37V, 12A, about 400W is obtained with an efficiency something over 90%.

Jim reports that the temperature rise in the ferrite was acceptable after 30 minutes continuous 'key down' operation. ♦

FIG 1 © RADCOM 258

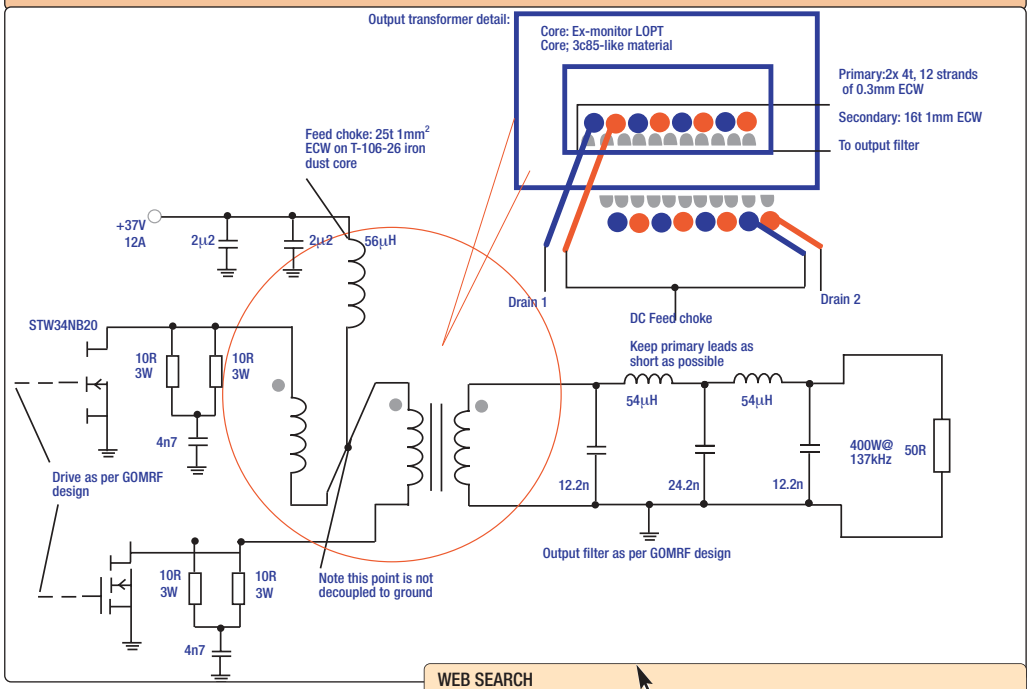

Fig 1: Modified 'current-fed' 137kHz PA by Jim Moritz, M0BMU.

WEB SEARCH

Videos and pictures of the Rugby demolition www.subbrit.org.uk/sb-sites/sites/r/rugby_radio/

News of Grimeton radio station, SAQ www.alexander.n.se/

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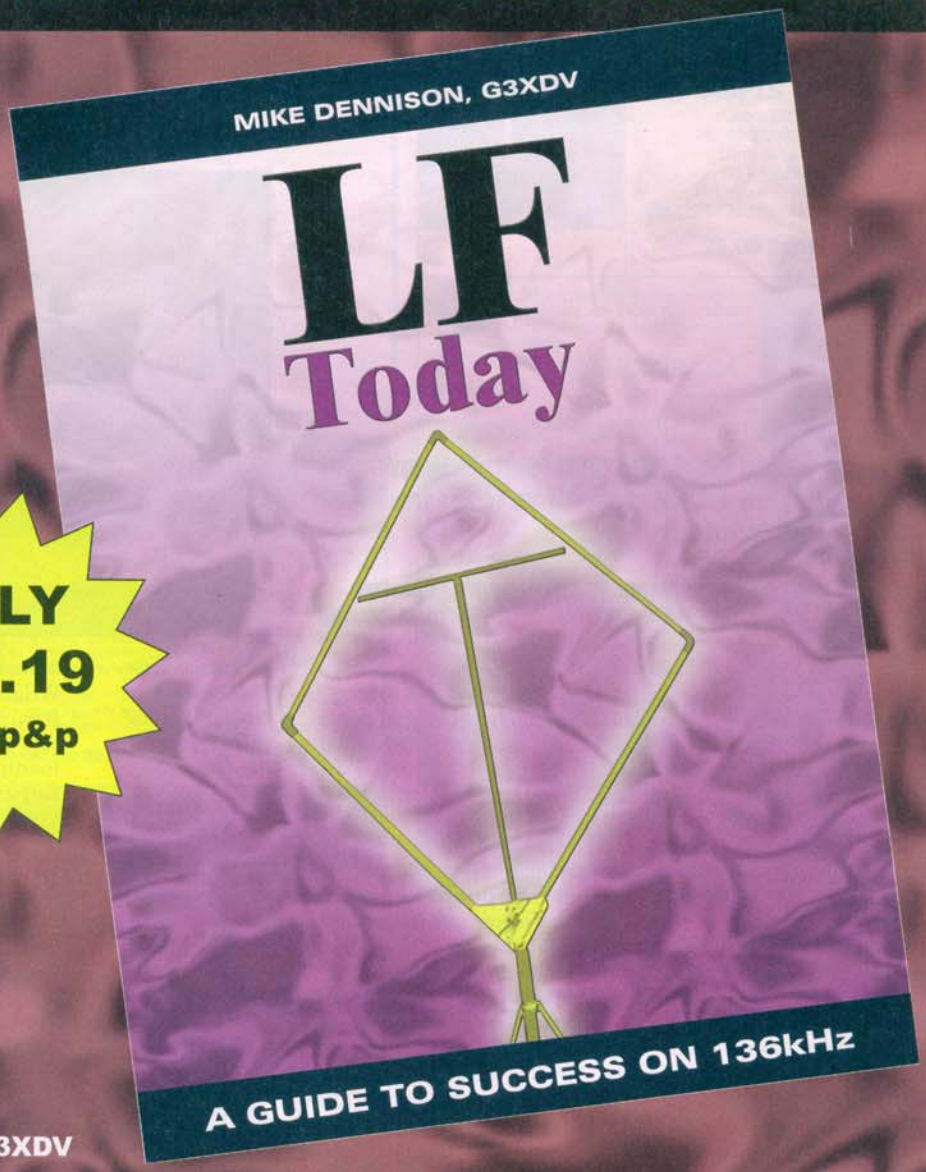

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By Mike Dennison, G3XDV

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LF Today contains some theory and a little maths, but it is first and foremost a practical handbook. Written by the leading authority on LF, Mike Dennison, G3XDV, this book is aimed at those who want to try out this fascinating amateur allocation, but it is also of great value to anyone already active on the band. It contains everything needed to succeed on 136kHz without unnecessary effort.
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QRP

You too can work the world on QRP ♦ The 'Buildathon' and the Dayton Hamvention ♦ QRP operation from Iraq ♦ News about the WQF QRP contest

Jim Leviston, G3NFB, took part in the QRP WARC - DX Speed Challenge organised by K7SS and N0AX. The challenge was to work as many DXCC entities as possible using QRP on the 'WARC' bands between 1st June 2003 and 31st May 2004. The challenge has now run its course and Jim has a set of interesting results.
He worked 140 WARC-band DXCC entities as follows:
10MHz CW, 43 entities;
18MHz CW, 60 entities;
18MHz SSB, 17 entities;
24MHz CW, 12 entities;
24MHz SSB, 8 entities.

His best DX during the year on 10MHz was 3B9C (Rodrigues Island DXpedition). R1A (Antarctica) was the best on 18MHz. On 24MHz, PY (Brazil) was the best DX. These results were all using 5W RF output from an FT-817 into an SG-239 tuner and 50ft doublet at about 30ft up.

Jim found the experience very satisfying and confirmed what more experienced QRPers are always saying – you don't need a lot of power and a big beam to work the world. Although Jim might modify this statement to include "But it helps"! There were many frustrating times when Jim called some good DX, but was not heard. It was surprising though, just how many pile-ups he was able to get into with a bit of patience.

Jim adds, "The next few years will be interesting on the WARC bands, as solar activity reaches its minimum. It will be a further challenge to keep working these bands. I am encouraged by the fact that I monitored the beacons on 28MHz all the way through the last solar minimum and it was surprising how many times they could be heard on a supposedly flat band. Unfortunately, there were very few amateur transmissions to be heard on 10m during those times," to which I can only add – well done, Jim.

COMMUNAL KIT- BUILDING AT DAYTON

Part of the 'Four Days in May' QRP event linked to the Dayton Hamvention this year was the 'Buildathon' hosted by the Flying Pigs QRP Club. The Flying Pigs are an 'open to anyone' QRP group with the motto, "No Dues, No Rules, Just Fun - and if we don't like it we fix it!" They can be found at www.mpna.com/fpqrp/

In the Buildathon, attendees were offered a reduced-priced kit and the opportunity to take part in group construction of the kit with guidance and test facilities. The project was a microcontroller development board using an Analog Devices AD9835 50MHz clock DDS SMT chip (the AD9835 chip was pre-soldered onto the board). This kit has been designed as a learning tool to improve the understanding of microcontrollers and the software that makes them work. A large hotel meeting room was full of kit-builders of varying ages and expertise and all of them came away with a working project. Details of the kit are available at www.partsandkits.com.

QRP FROM IRAQ

Dwayne Barbee, KE4RVT, is active as YI9RVT using QRP from Al Kut in Iraq. This is what Dwayne had to say about his activities: "While preparing for my return trip to Iraq I had the idea of setting up a station. So I grabbed my FT-897 and the KX1 I had just finished building. I also brought an MP-1 antenna from Super Antennas. Upon my arrival, I contacted the Coalition Provisional Authority and, within three days, I was YI9RVT operating out of Al Kut, Iraq. My MP-1 and the FT-897 have served me well, and I have made about 220 contacts, mostly European. I have also made about 10 contacts with my KX1 which is run into a random vertical wire vertically orientated with two ground radials."

The MP-1 is a compact loaded whip antenna, devised and manufactured by retired dentist Vern Wright, W6MMA. It covers all bands from 7MHz to 50MHz and dismantles to fit into a small space. The loading coil has a wiper mechanism, rather like to poplar Screwdriver antennas, and is easy to tune to the desired frequency. Details may be found at www.superantennas.com

YI9RVT is operating on and around the following frequencies: SSB – 1.845, 3.745, 7.045, 14.245, 18.145, 21.345, 24.945, 28.445MHz; CW – 1.845, 3.545, 7.045, 10.105, 14.045, 18.075, 21.045, 24.895, 28.045MHz. ♦

Participants in the 'Four Days in May' Buildathon at this year's Dayton Hamvention.

THE WQF QRP CONTESTS

The WQF Contests are devoted to the revival of The World QRP Federation (WQF). Organised by the Russian RU-QRP Club, entry is open to members of all QRP Clubs and individual radio amateurs using QRP power levels.
Date: 1st Friday of January (7th January 2005)
Time: 0000UTC to 2400UTC.
Participants: All licensed amateurs (QRP only). Single operator only. QSOs between participants only.
Bands: 160, 80, 40, 20, 15, 10 m - around the international QRP frequencies (1843, 3560, 7030, 14060, 21060, 28060 kHz)
Modes: CW, SSB and digital in accordance with licence.
Call: "CQ WQF TEST de CALL"
Power: Usual QRP standard: CW/digital –– 5W output; SSB – 10W PEP
Exchange: RS(T) / your QRP club / your membership number. Non-QRP club members – RS(T)/country DXCC / Power. Examples: 579/RUQRP/001 or 599/GQRP/4690 or 589/RUS/5W. Each participant can represent only a single QRP club.
Scoring: QSOs on the same continent (DXCC) – 1 point; different continent – 3 points. The same station may be worked on different bands or modes.
Multipliers: 1 multiplier point for every QRP club per band.
Final Score: Sum of QSO points multiplied by sum of multiplier points of all bands used.
Logs: Columns: UTC, Call, exchange sent, exchange received, multiplier points, QSO points. Separate log sheets for each band are required.
Cover sheet: own call, name/address, rigs/antennas and power used in the contest, final score claimed (operator honesty required), operator's signature.
Deadline: Deadline to send logs – 30 days after contest date. Check logs are welcome as well as any comments by participants. Only paper logs and comments are welcome.
Address: RU-QRP Club, PO Box 229, Lipetsk, 398043, Russia. (RU-QRP website: http://ru-qrp.boom.ru)

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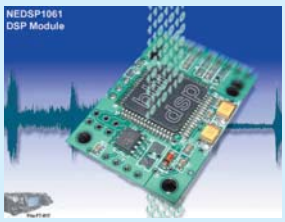

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VHF/UHF

The long-standing Annual Table based on RSGB district codes will be dropped and from 1 January 2005 will be replaced by a new Locators Annual Table. Meanwhile, Sporadic E and Auroras helped to liven up the VHF bands for many operators, as Norman Fitch reports . . .

The lack of interest in the Annual Table was mentioned in the August 'VHF/UHF', since when there has been some feedback from readers. It seems that the district codes are the main reason for so few entries. Paul Selwood, G3YDY, writes, "I do not have the time to research the post codes and since, especially this year, most contacts have been in contests, it would be difficult to work out the post codes." That is typical of the comments received so far.

The original idea of the annual table goes back many years to the time when the countries of the British Isles were divided into counties such as Rutland, Middlesex, Caithness and Pembrokeshire and several RSGB awards were based on these 'old' counties. Subsequently some counties were either absorbed into adjoining ones or merged with others to form larger new regions such as the Highlands in Scotland and Powys in Wales. There is now the prospect of further tinkering with local government in the form of new regional assemblies and quite what that would do to the present county structure is unclear.

Consequently it seems appropriate to drop the present district codes columns altogether in favour of a universal, non-political geographic system. The obvious choice is one based on the world-wide locator, originally known as the Maidenhead system, since all serious VHF/UHF operators know their locator. So from 1 January 2005, the district code figures will be replaced by the grid or 'square' reference, ie the first four characters of the locator such as IO91, JN27 or, further afield, EM50. I hope this will satisfy contributors and that there will be a lot more entries next year.

SOLAR AND GEOMAGNETIC DATA

Considering where we are in this solar cycle, the Sun has been quite active recently with some really huge spots appearing such as numbers 649 and 652. In the 30 days to 10 August the 10.7cm radio flux was above 150 units for six consecutive days in July peaking at 175 on the 20th. The lowest value was 83 on 1 August and the average for the period was 123.7 almost 25% up on last month's figure. The highest SESC sunspot number was 176 on 19 July with the lowest count of 32 on the 29th. Only 12 new regions were recorded.

Geomagnetic activity soared in the last week of July with the A-index at Fredericksburg reaching 64 on the 25th and 119 on the 27th when the estimated planetary A-index was 162, the K-index hitting the maximum of 9 for a while. So it came as no surprise that there were widespread auroras. Details of these and current events can be found on the excellent Space Weather website - see the list.

TRANS-ATLANTIC FM AGAIN

Paul Logan, MI3LDO (IO64), writes that during a Sporadic E opening on 19 June towards Iceland, a path opened up to North America which saw the MUF rise to at least as high as the FM broadcast band. An unidentified North American station on 88.5MHz was received between 1310 and 1330. At the time American TV carriers were copied on 55.25, 61.25, 67.25 and 83.25MHz (channels A-2, 3, 4 and 6). An MP3 audio file, lasting 80s, of a comedian with an audience can be downloaded - see the list. See also 'VHF/UHF' page 47 in the September 2003 *RadCom*.

BAND REPORTS

50MHz

Robin Burrows-Ellis, M1DUD (JO02), continues to make good use of his 2W on the band and at 0900 on 5 July he copied the SV1SIX beacon at S3. On the 10th he heard ZB2EO* at 1420 but failed to make contact so Gibraltar is still on his wanted list. For an hour from 1630 there was short skip Es to Scotland bringing QSOs with GM4SFW, MM5DWW, GM1VKI, MM0BSM and GM4VVX. An hour later the propagation shifted to the Baltic and Scandinavia resulting in contacts with LY1CX, SM7ASL, SM7XJF, SM1CQA, DL/PE1GUR, ES5AM and OZ6ABA. UT5UKY (KO50) was ODX at 2026km at 1818 and in the 1943-2020 period Robin worked DL, OK2, SP9, SP6 and OH1 stations. At 2030 SV1DH was copied at S9+ with a massive pile-up.

Kevin Jackson, M0XLT (IO83), spent an enjoyable July with Es and auroral propagation modes. He notes Es to I0, 6, 8 and IH9 on the 14th; to I1 and 4, CT, EH3 and 5 on the 15th; to SP, DL, F, SM0 and 7, LA, LY, ES and TF/F1AKK (IP15) on the 16th; to EH3 and I1 on the 18th; to I0-8, T9, S5, 9A, EH1 and 2, OK and DL on the 21st; to SP, OM, OK, I1, 3, 5 and 6, YU and S5 on the 21st; and to I0, 1, 2, 5, 6 and 8 and S5 on the 24th. On the 25th, although no QSOs were made, he heard OH, LA, GM, GW, G, OZ and DL stations in an aurora. There were more Es QSOs on the 26th with stations in EH2, 3 and 5, S5, I0, SM0, 1 and 4, ES and OH, with OY4TN (IP62) heard. In another aurora on the 27th he worked GM6NX (IO86) and G4WJS (IO91) and heard stations in GM, F, GI, PA, DL, LX, ON and HB9 all the

Ken Punshon, G4APJ/P, tried out a new site (IO93AO) in the 432MHz UKAC on 8 August in which he completed 31 contacts. The transceiver in the car boot is his base station Yaesu FT-736R powered by a Wolf 800 generator, the yellow top of which is just visible by the antenna pole. The antenna is a 21-ele Yagi 10ft AGL.

above on SSB. Kevin is a TV DXer of many years experience when Es openings of 14-22 hours were not unusual. However, he finds such events are now very much shorter in duration.

Ted Collins's, G4UPS (IO81), report covers the period 13-28 July when no DX was recorded on 13, 17, 19, 23 and 28. 23 UK and European beacons were heard plus CN8MC, CU3URA and 5B4CY. His highlights were contacts with TF/F1AKK (IP15) on the 16th; UR4PWC/P* (KN11) on the 21st and OH6DD/8 (KP35) on the 26th, all new grids via Es. On the 25th, 1418-1650, he completed CW and SSB QSOs with G, GM, OZ, DL and EI stations in the aurora with more of the same in the last aurora on the 27th. Ken Punshon, G4APJ (IO83), picked up some 'unusual ones' in that aurora including G3SBP (PL), MM0BSM (FK) and F6HRP (IN88).

Mike Pugh, G4VPD (IO92), highlights EA8, TF, ZB, HV and EA6 stations worked in June with 7X0AD (JM16) a new country on the 21st. In July there was a good Caribbean opening on the 6th with 9Y4AT and 9Z4BM (FK90) and WP4U (FK68) worked. Next day saw KP4EIT, HI8ROX (FK58), PJ7M (FK88) and KP2L (FL31) in the log. At other times there were Es openings to OH, EA, LY, 9H, IT9, CT and CN8 but he writes that these were less frequent than in any previous years.

Bob Harrison, G8HGN (JO01), was only using a dipole 5m AGL at the time of reporting yet copied a 4Z5 at 1138 on 22 July, although he faded away in 10min. Later, at 1316, he heard CT/G0JLO (IM57) working G, GW and OZ stations, also in deep QSB. His first QSO on 6m this year was with S56WKT (JN76) at 1045 on the 24th. In the UKAC on the 27th he completed 11 QSOs, ODX being F6IFR (JN09) at just 216km. Stations in IW8, EH7, S5 and SV2 were heard in the afternoon of the 31st. Stations in YU, I0, 9A, EH7 and I8 were copied in the morning of 1 August and in the evening of the 2nd he heard YZ, I0, LZ, EH6, CT1, CN2, EH1, 4 and 5 and S5 stations.

In July Clive O'Hennessy, GM4VVX (IO78), worked CT3FT at 1100 on the 11th. In an aurora on the 22nd, LA6HL (JO28) was a new grid and in the following two days there was more auroral propagation but little activity. GB3LER was S9A at 0700 on the 25th and his first QSO was with LA6MV (JP31) for another new grid. The next day brought short bursts of Es to CT3, DL, EH and SP. In the major aurora on the 27th there was lots of activity when G3IDT (IO83), G4LAA (IO84) and G4VCJ (IO94) were more new grids. There was Es propagation to I, HB9, F and EH on the 29th.

70MHz

Philip Town, G0ISW (IO84), finds his FT-847 rather 'deaf' on 4m. On 27 June at 1543 he worked 9A6R (JN83) for a new country and grid. He has completely revamped his website, which is well worth a visit as it has lots of information and numerous links - see the list.

David Butler, G4ASR (IO81), spent a short while on the band from 1330 at the start of the 27 July aurora working OZ3ZW* (JO54), GM3UAG* (IO87), EI3IO (IO63), EI7IX (IO53), GI4KSO (IO64), GM6VXB (IO97), OZ2LD* (JO54 and ODX at 1015km) and OZ3ZW* (JO54).

GM4VVX's activity was all via auroral propagation and on 22 July he completed with GW3LEW* (IO71) and next day with G3LQR (JO02) for a new grid. The 25th was a good day with G8VHI (IO92, a new grid), G4JCL (IO93), GM3WYL* (IO75), G3LQR*, OZ2LD*, G4FUF* (JO01), G8XVJ (IO83), G4DEZ* (JO03, a new grid), G4EZP (JO01), M0CTP* (IO93), EI3IO*, G8IYG (IO82), G4RGK* and G0EZY (IO91) and GI4KSO before the event collapsed at 1650. On the 27th Clive worked GM7VXB, G3JYP* (IO84), G1AJI, OZ2LD*, OZ3ZW and GI4KSO.

144MHz

Geoff Grayer, G3NAQ (IO91), was QRV in the 7/8 August contest weekend in what appeared to be less than average conditions. ODX was F6BUL/P (JN35) in Dept 74 at 836km and DL1ELY (JO40) at 670km was worked off the back of his beam.

G4ASR contacted 57 stations in the 27 July aurora from 1412 till fade-out at 1625. Countries worked were DL, F, HA, HB9, I, OH, OK, S5, SP, YU and 9A. ODX were:
YT1VV (JN94/1815km),
HA0HO (KN07/1802km),
HA0MK (KN08/1800km),
HA8V (KN06/1790km),
HA8CE (KN06/1786KM),
YT7IM (JN96/1771km),
OH1NOR (KP00/1745km) and
HA9EV (KN07/1736km).

Dave Lawley, G4BUO, was a member of the Cray Valley RS DXpedition to the Isles of Scilly (IN69), the main purpose of which was to participate in the HF RSGB IOTA Contest on the 24/25 July weekend. The aurora knocked out the 2m talkback so, using the club's callsign G3RCV/P, he completed 19 CW auroral QSOs between 1443 and 1557 on the Sunday using 100W to an 11-ele Yagi 20ft AGL. Many CQs went unanswered probably because some

stations didn't realise what a rare grid it was. ODX was SP2MKO (JO93).

G8HGN discovered auroral signals all over the band at 1440 on 25 July and went on to make contacts with 13 different stations in 12 grids. ODX was DL8DAU (JO40) at 622km and he worked into DL, F, G, GW and PA. The event ended at 1630 but he didn't hear any long DX. Bob was QRV in the UKAC on 3 August when he made 50 QSOs with stations in 16 grids. ODX was DC0NAC (JO43) at 661km, next best being DL8DAU (JO40) at 662km. There was lots of activity but not much DX and propagation to the north-west was poor. In the evening of the 7th he heard GU6EFB (IN89) calling CQ and a QSO resulted.

Things were very quiet at GM4VVX in July until the 22nd when the auroras started. From 2200 Clive worked into SM, LA, GW, G and EI, mostly on CW. Nearly 24 hours later, more of the same. A big event started at 0700 on the 25th but no QSOs resulted till 0958, "... when every man, his dog and his fleas..." called him. He worked most of Europe from KP41 to JO94 to IO53, the aurora ending abruptly at 1650. The next big one was on the 27th when he found G4RRA (IO80) at S9A+40dB at 0900, followed by GW3JXN (IO72) for a new grid, then SM2CEW (KP15) with traces of auroral-E propagation. The event was unstable with lots of fading and quiet periods till 1200 when proper Au-E began bringing QSOs with SM2ILF* (KP04), SM2CKR* and SK2AT (KP03). SM2CEW was worked again on SSB and reported making 40 QSOs via Au-E in the previous three hours. Later on normal auroral contacts were made with EI, G, GW, GM, F, DL, PA, ON, SM, LA OH and OZ stations till fade-out at 1540. Throughout all this activity Clive did not hear any LA or SM beacons but the German, British and Faeroe Islands ones were received.

430MHz

G4APJ was QRV in the QRP contest on 8 August and Ken says it was fun and moderately lively for the first couple of hours despite appalling conditions. G8HGN was on for the UKAC on 13 July completing 26 QSOs with stations in seven grids and four countries for a claimed total of 24,892 points. ODX was PI4DEC (JO21) at 294km. Bob reckons it was the poorest 70cm result for ages and wonders where all the DL, ON and PA stations were? On 7 August, after working GU6EFB on 2m, they completed on 70cm.

SIGN OFF

Thanks to Neil Clarke, G0CAS, for the June and July issues of *SunMag*. The deadline for copy for December is **12 October** and for January it's **9 November**. My telephone answering and fax machine is on 020 8763 9457 and my CompuServe ID is g3fpk ♦

LOCATOR SQUARES TABLE

Starting date: 1-1-1979

Callsign	50MHz	70MHz	144MHz	430MHz	1296MHz	Total
G3IMV*	846	20	619	125	53	1663
G0JHC	1040	26	48	4	-	1118
G0FYD	724	1	296	50	17	1088
G4DEZ	680	35	204	89	43	1051
GW7SMV	675	-	250	-	-	925
G1SWH	448	42	242	81	30	843
G4YTL	11	56	560	141	14	782
GW3HWR	478	31	187	34	-	730
GW3LEW	436	14	232	42	4	728
G4VPD	457	14	231	16	-	718
M5BXB	450	15	186	57	-	708
G8TOK	424	43	145	58	32	702
G6TTL	405	-	140	94	28	667
G8HGN	346	-	208	76	-	630
G3XDY	-	34	261	179	130	604
MU0FAL	540	-	49	9	4	602
G4OBK	469	28	79	11	-	587
M3CLY	262	-	285	20	-	567
GM4VVX	357	22	170	2	-	551
G7KHF	510	-	18	-	-	528
G3FIJ	278	29	108	51	23	489
G4ZHI	107	17	280	33	-	437
G3IKR	340	52	45	-	-	437
G0ISW	240	7	103	22	-	372
G8VHI	-	-	217	76	40	333
M1DUD	272	1	50	9	-	332
EA7IT	209	-	108	-	-	317
GW3EJR	313	-	-	-	-	313
M3CVN	249	-	46	5	-	300
G4APJ	192	-	64	31	-	287
G3FPK	30	-	246	-	-	276
M5MUF	155	23	70	-	6	254
M0XLT	170	-	7	2	-	179
G4FUJ	111	20	28	6	5	170
G8RWG	-	-	120	-	-	120
MM1FEO	59	-	26	1	-	86
2E1GUA	17	-	18	13	-	48

(* Silent key.) No satellite, repeater or packet radio QSOs. If no updates received for a year entries will be deleted. Next deadline is 12 October.

MOONBOUNCE

Howard Ling, G4CCH (IO93), continues his 23cm operation and in the July activity weekend (AW) he completed with W2DRZ, N2UO, VE6TA, K0YW, W2UHI on the 10th and next day with IK3COJ, OZ4MM, G3LTF, NA4N for initial (#) 191, VE6TA and W2DRZ. All were on CW with W2DRZ also worked on SSB. On the 24th he completed with SK0UX*, K9SLQ* who is much louder now with his 300W and N2UO*. Howard has a good website including some Real Audio files - see the list.

From the August issue of the *432 and Above EME News* edited by Al Katz, K2UYH, there are some notes on new rules for this year's ARRL International EME Competition. The main alterations are changing the scoring multipliers to US States / Canadian Provinces / DXCC Entities and with an additional weekend devoted to 2.3GHz and above. There are no other alterations to the rules which can be found on the ARRL website - see the list. The weekends are 9/10 October and 4/5 December for 50-1296MHz operation and the additional 30/31 October weekend for 2304MHz and above operation.

Peter Blair, G3LTF (IO91), was busy on 23cm CW in July completing with GW3XYW, OZ6OL, G4CCH, N2UO, OZ4MM, VE6TA, W2DRZ, IK3COJ and HB9SV in the AW on the 11th. On the 20th he completed with W2DRZ again and K9SLQ, while OH3MCK was #208 on the 21st. A test on 13cm with JR4ZSS was not completed due to problems at the Japanese end but Peter writes, "I'm sure we can make it another time. Note that these real weak signal QSOs were made when the excess path loss was approximately 1.4dB. I find the really fine-tuning of the TS-850S with 500Hz IF bandwidth and tuneable audio filter at 50Hz bandwidth is a real help with this level of signal, but it takes practice and doesn't come overnight." This issue includes a picture of the single FO20 Yagi in his small garden with which Paul Tomlinson, M0EME (IO93), worked HB9Q on 70cm. He now has an array of four and is slowly accumulating 23cm gear for portable use.

The next AW is on 9/10 October, the first leg of the ARRL contest, when London latitude stations will have 30.8 hours of Moon time. The declination varies from +21.37° to +13.59° and the signal degradation, referred to perigee, ranges from -1.71 to -1.45dB. The 144/432MHz sky temperature varies between 202/15K and 225/17K and the Sun offset at Saturday midnight is -50°. The following AW is 30/31 October, the second leg of the ARRL event, when the corresponding data, excluding the sky temperature figures, are: 32.5 hours, +22.07° to +27.33°, -1.67 to -1.86dB and -147°.

WEB SEARCH

Space Weather News:	www.spaceweather.com
AMSAT-UK	www.uk.amsat.org
G4CCH:	www.g4cch.com
ARRL:	www.arrl.org
MP3 file:	www.geocities.com/yogi540/unid
G0ISW:	www.qsl.net/g0isw

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An 80- and 40-metre loaded dipole

This antenna uses loading coils in place of more conventional traps to obtain two-band operation. The idea of using loading coils in this way was described by W J Lattin, W4JRW, over 40 years ago [1]. It offers the advantage of simplicity over trap construction, and also results in considerable shortening of the antenna, which now takes up less space than the popular G5RV with its 31.09m (102ft) top, and the standard 33.53m (110ft) trap dipole.

The coil used in the 40/80m dipole is made from standard 40mm (1.6in) diameter PVC pipe. It is 17.8cm (7in) long, with a winding length of 14cm (5.5 in). Holes are drilled at each end to secure the aerial wire.

The inductive reactance of a coil increases as the frequency applied to it increases.

In the 40/80m loaded dipole (**Fig 1**), the coils are sufficiently large that they show a high impedance on 40m, and provide inductive loading on 80m. Lattin found that values between 80µH to 120µH gave good results when used in this way, the larger values of inductance requiring less wire on the outer sections for 80m resonance.

However, Lattin acknowledged that no exact formulæ have been found to determine the relationship between coil size, wire lengths, and the two frequencies for dual-band resonance. Therefore, the published design may be regarded as a starting point for experimentation.

It should be appreciated that, when an antenna is inductively loaded, several things happen. The most noticeable is the reduction in bandwidth of the system. The greater the loading, the smaller the bandwidth.

The efficiency of the antenna also decreases. However, this decrease in efficiency is dependent on where in the aerial the loading coils are placed and, more importantly, on the construction of the loading coils. In a loaded wire aerial, the size and weight of the loading coils have to be important considerations, so to some extent there will always be some compromise between efficiency and what is practical.

As the loading is increased and the aerial becomes shorter, the feedpoint impedance decreases. With a very heavily-loaded antenna, it may not be possible to feed it with 50ohm coax, and some extra matching circuitry may need to be employed.

The 40/80m loaded dipole uses a commercial Ferromagnetics current-mode balun at its feed-point [5]. The aerial is made from flexible grey plastic-covered 14-strand copper wire.

LOADING COIL PLACEMENT

Using loading coils to achieve two-band resonance does mean that one has no choice but to place the coils a quarter-wavelength out either side of the feed-point on the higher frequency.

The advantage is that, on 80m, the radiation resistance is kept at a higher level in this configuration than if the coils were placed close-in to the feed-point.

The disadvantage is that it results in a narrower operating bandwidth when the aerial is used on 80m.

A good match is obtained to a 50ohm feeder on both 40m and 80m, although the bandwidth on 80m is restricted to about 60kHz between the 2:1 SWR points. No such problem occurs on 40m, where an SWR of about 1.5:1 was achieved across most of the band.

CONSTRUCTION

In my version of the 40/80m antenna I constructed the 120µH coils by close-winding 104 turns of 1.25mm (18SWG) enamelled copper wire onto a 17.8cm (7in) length of white PVC pipe of 40mm (1.6in) diameter. The winding length was 14cm (5.5in). Note that the total length of wire needed to construct these coils is a little more than that available from a standard 250g reel of wire. I used a 1kg reel of wire [3].

An alternative, although this has not been tried, could be to divide the wire from a 250g reel into two equal lengths and use these to wind as many turns as possible onto the two formers, making sure that they have the same number of turns. With care, it should be possible to achieve about 92 close-wound turns which will yield around 106µH. The dimensions of the antenna will be affected, but those given for the 120µH version should make a good starting point for experimentation. As always, when experimenting with antennas, make them longer than expected and then trim down for resonance.

The PVC piping is obtainable from most DIY outlets in 1.8m (6ft) lengths.

The antenna wire was fixed to each end of the loading coil via holes drilled in the PVC pipe. The ends of the coil were anchored through small holes in the coil, and soldered to the aerial wire.

A short section of the PVC piping was checked out in a microwave oven to examine for any heating effect. None was found, so it was therefore assumed that the material was quite suitable for use in this application.

Care should be exercised in the use of some PVC piping which may be quite lossy if it is carbon-filled.

The whole coil assembly was given two coats of marine yacht varnish. The operation of the aerial was not effected during periods of heavy rain, so the weather proofing provided by the varnish appeared quite adequate.

The aerial handled 400W from a linear amplifier without any problems, although this was only done when the SWR was no greater than 1.5:1.

The photos show the coil construction and the aerial components, together with a commercial Ferromagnetics current-mode balun [5].

Losses are greater in a voltage-mode balun if used off resonance where reactive components are present. A current-mode balun can easily be constructed by winding 5 to 8 turns of RG58 coax (5mm diameter) around a pair of stacked ferrite rings. For more information on baluns, see [2].

ADJUSTMENT

The 40m section needed to be 10.66m (35ft) per leg as opposed to 10.05m (33ft) for resonance. This was the same length as found by W4JRW.

If an aerial has end capacity-loading (as would be the case for a top-loaded vertical with a large capacity hat of wires fanning out from its top), its length can be reduced due to the end capacity. However, in the case of the 40m section in the 40/80m loaded dipole, inductive loading is seen at the end, and hence the opposite occurs with a resulting increase required for resonance at 7MHz. This effect should not be confused with inductive loading in series with an aerial rather than at its end. In the former case, the aerial will be electrically lengthened, and hence a shorter length of wire will be required for resonance.

The trimming of the end sections is very critical. I found that 1.27m (4ft 2in) gave resonance on 3774kHz with a resulting 1:1 SWR, the 2:1 SWR points occurring at 3805kHz and 3742kHz. The aerial should, of course, be trimmed for one's favourite part of the band.

The use of the auto ATU in my transceiver allowed for some limited excursion outside of the 2:1 SWR points on 80m. However, it should be appreciated that this in no way reduces mismatched line loss on the coaxial feeder.

As the coils also offer a high impedance on 15m, the inner section can be used as a 'near' 3lambda/2 dipole on that band. The actual resonance in this mode was found to be 20.2MHz but, using the auto ATU, the transceiver was able

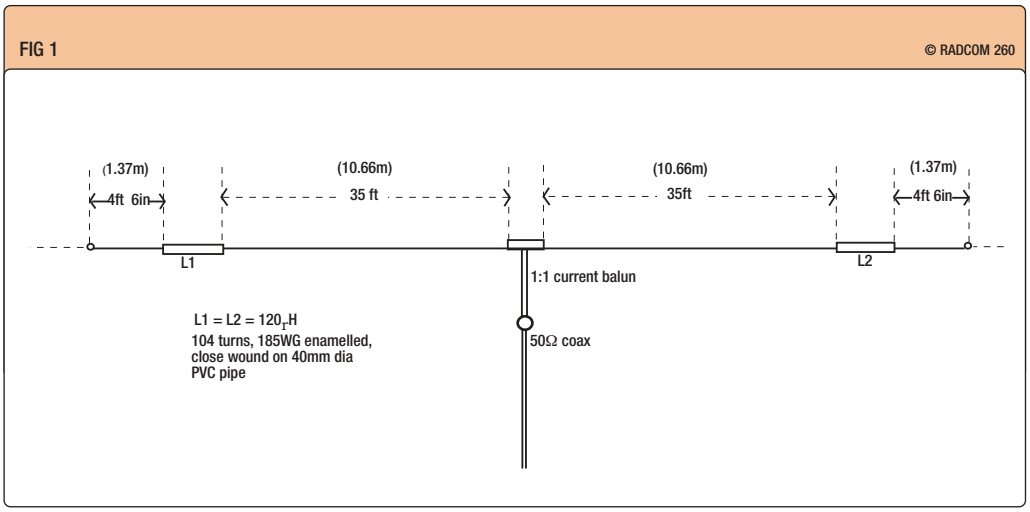

Fig 1
Dimensions of the 40 / 80m loaded dipole.

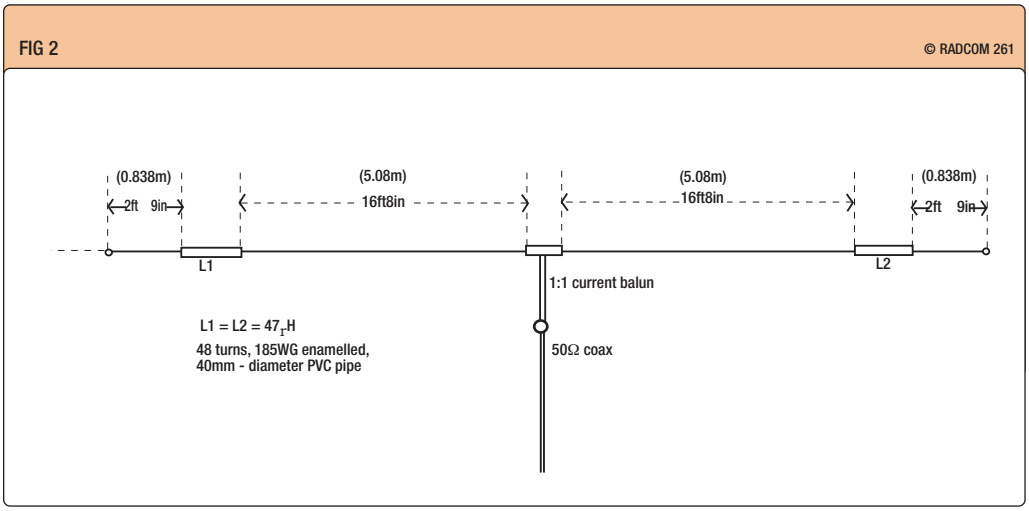

Fig 2
The 20 / 40m version.

to deliver full power across all of the 15m band.

160m OPERATION

The aerial may be used on 160m instead of 80m by extending the wires on the outside of the loading coils from around 1.22m (4ft) to 7.62m (25ft). This gave a 1:1 SWR on 1840kHz. The bandwidth between the 2:1 SWR points is in the region of 35kHz on 160m. The aerial will now function on 40 and 160m.

A 20/40m LOADED DIPOLE

A very successful 20/40m version was constructed and tested using the same principles as used for 40 and 80m (**Fig 2**). This had an overall length of 11.89m (39ft) and used coils of 47μH.

The coils were again made of 1.25mm (18SWG) enamelled copper wire, close-wound with 48 turns on standard 40mm (1.6in) diameter PVC pipe. Coil formers of 10cm (4in) length were used. The aerial had 5.08m (16ft 8 in) inner sections with 0.83m (2ft 9in) outer ends.

The SWR on 20m was less than 1.5:1 across most of the band, and the aerial showed a 1:1 SWR on 7072kHz with a 2:1 SWR bandwidth of 96kHz.

Typical dipole performance resulted on 20m, with good all-round reports on 7MHz.

EXTENDED OPERATION USING OPEN-WIRE FEED

If the standard 40/80m design is fed with open-wire line (or 450ohm ladder-line) coupled into the transceiver via a balanced ATU, the aerial could be operated efficiently on both 17m and 20m.

The inner section will operate as two half-waves in phase on 20m, and as a double extended Zepp on 17m with theoretical broadside gain figures of 1.6dBd and 3dBd, respectively [4].

On 21MHz and above, a multi-lobe pattern will result.

CONCLUSION

Using loading coils in place of traps, to get two-band operation, has the advantages of ease of construction and considerable reduction in antenna length. However, the main disadvantage is reduced bandwidth on the lower band.

The 40/80m design also offers useful operation on 15m. With the addition of a strapped 20m dipole at the feed-point, a reasonably compact four-band coaxial-fed antenna of just 24.08m (79ft) could be constructed.

Alternatively, the aerial could be fed with open-wire line to produce an inductively-loaded doublet.

The same principles outlined above could also be applied to multi-banding vertical or inverted-L systems.

Although the original intention of this article was to describe a compact and reasonably-efficient aerial for 40m and 80m, I have mentioned some other possible design variations that may encourage others to experiment further and develop a system suitable to their particular needs.

REFERENCES

[1] 'Multiband Antenna Using Loading Coils', W J Lattin, W4JRW, *QST* April 1961
[2] *Backyard Antennas*, Peter Dodd, G3LDO, available from the RSGB Shop
[3] Available from Scientific Wire Company, 18 Raven Rd, South Woodford, London E18 1HW. Tel: 020 8505 0002, website www.wires.co.uk
[4] *ARRL Antenna Handbook* 19th ed, available from the RSGB Shop
[5] Ferromagnetics, PO Box 577, Mold, Flintshire CH7 1AH. Website www.ferromagnetics.co.uk

DEDICATION

This article is dedicated to my long-time friend and neighbour, Ron Ford, G3NKO / C56RF, who was killed in the Gambia, West Africa, in September 2002 (see *RadCom*, Dec 2002, p10). ♦

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CORSAIR 2, Zetag 25A PSU, SEM ATU, Daiwa cross-needle PWR/SWR meter. All leads, £100 the lot. Les, 01296 682 556. FOR W3DDZ-type multiband antenna – pair of Oscar traps in g cond with info plus Balun (centre piece – no wire), £10. Prefer buyer collect from Hertford area. 01992 537 106 (Hertford). E-mail: g3vlu@dsp.pipex.com

FT-1000MP Good cond, little used, boxed, man, etc, £1000 cash, no offers, buyer collects. Chris, M0HMR, QTHR, 01453 832 725 (Nailsworth). E-mail: chris.harmer@V21mail.co.uk

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FT-847 multimode tcvr 100W on HF and 6m, 10W on 4m, 50W on 2m and 70cm. Exc cond, £750. 01202 460 174 (Poole). E-mail: les.g0faj@ntlworld.com

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KENWOOD TS-940S/T HF tcvr, ATU auto, vgc, £475. G4MIQ, QTHR, 0116 234 1055 (Leicester).

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SILENT key sale (G3IGW). TS-930, £500. TS-870S, £795. TS-440SAT, £300. CapCo ATU 3000D, £175. Linear Amp UK Challenge II linear, £950. FC-902, £150. FP-107 PSU, £100. Jim Fish, 01484 654 650 (Huddersfield).

SUPER Hunter frequency counter 10Hz-3GHz in vgc, £65. Watson WM-308, desktop mic in orig box, compressor & low noise amp, adjustable goose neck, vgc, £35. I will pay postage! M0FWC, QTHR, 01964 530 464/07960 634 672 (Hornsea). E-mail: msaunders113@hotmail.com

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YAESU FT-1000MP boxed, vgc, genuine sale, £1000. Can arrange delivery . Chris, G3NHL, 01326 377 233 (Falmouth). E-mail: g3nhl@tiscali.co.uk

YAESU FT-847 fitted Collins filter. With 25A PSU, box, man and mic. Genuine reason for sale, £785 ovno. Inspection invited if required. G8ILD, QTHR, 0161 430 2010 (Stockport). E-mail: roger.g8ild@virgin.net

SILENT KEYS

We regret to record the passing of the following radio amateurs:

DL7JF	Mr R Mertz	06/07/2004
G0DAG	Rev P McArdle	21/07/2004
G0JFT	Mrs D White	14/07/2004
G0VGA	Mr E A Nottingham	02/08/2004
G2BLL	Mr W Layton	18/12/2003
G3BOB	Mr G M Ward	24/07/04
G3EAY	Mr DJ Wood	11/08/2004
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RS20628	Mr E C Ringrose	
RS21564	Mr P T Stapleton	24/07/2004
RS173646	Mr C F Fitzgerald	13/8/2003
RS190387	Mr J F Rumer	

We apologise for mis-quoting the callsign of Mr R L Halls in last month's list. It should have been G3EIW.

CONGRATULATIONS

to the following, whom our records show as having reached 60 years' continuous RSGB membership this month:

60 years

G0RVQ	Mr A J W Harrison
GW3HGL	Mr B Clark

50 years

GW3JXN	Dr J E Tindle
G3JYO	Mr W J Grainger
G3MCA	Mr D F Owen

WANTED

12V CW band any crystals and holders, also variable capacitors 100pF and 140pF or near these values. Brian, M1EWP, QTHR, 01726 61549 (St Austell).

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HARD of hearing amateur wishes to buy a Panasonic VCR type NV-FJ710B or similar model that will record subtitles. John, G3YJD, 01908 379 250 (Bletchley).

IC-211E synthesiser chip SC-3062. Would consider faulty rig provided the synthesiser works. G4AEZ, QTHR, 07801 714 817 (London). E-mail: brian.oughton@baesystems.com

INSTRUCTION leaflet for the G4MH mini-beam. Jim Fish, 01484 654 650 (Huddersfield).

MICROWAVE test set or vector network analyser (VNA) 20GHz. Marconi, HP, Agilent or Anritsu. G3LZM, QTHR, 01432 271 162 (Hereford).

POWER supply and extender boards for Drake TR-7. GM2FVV, 01786 811 237 (Stirling).

RN 2m to 4m tvtr, also FT-847. GW0DQA, 01600 719 948 (Monmouthshire).

SILENT key clearout or just not needed. I collect QSL cards for their historic interest, preferably from periods before 1970. Please don't throw them away. I can collect or arrange collection. Tony, G4UZN, 01132 693 892 (Leeds). E-mail: g4uzn@qsl.net

VINTAGE ham radio gear: Codar, Collins, Drake, Eddystone, Heathkit, KW, Yaesu etc from the 1950s, 60s and 70s. Especially looking for KW-4B VFO, KW-160, Eddystone ext-S-meter and spkrs. Please let me know what you can help me with. Paul, G4CCZ, 01932 342 927 (Woodham). E-mail: g4ccz@6metres.com

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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.

1 / 2 OCTOBER 2004

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

1 – 3 OCTOBER 2004

WACRAL 2004 Conference – Slavanka Christian Conference Centre, Southbourne, Dorset. Geoff & Jan Grundy, 01323 721 352, g4yjw@wacral.org

3 OCTOBER 2004

BELGIUM Amateur Radio & Computer Rally – Hall 'La Louvière Expo', La Louvière, access direct from motorway 50km S of Brussels. OT 9am. FM, TS from UK, Holland, Germany & France. Michel, ON7FI, 0032 64 849 596.

9 OCTOBER 2004

G QRP CLUB Mini-Convention 2004 – St Aidan's Church Hall, Manchester Road, Rochdale. OT 10am, £1. Traditional-style rally, components, junk & kit vendors – no new equipment or computers! LEC, 'Pie & Peas' lunch. g3rjv@gqrp.co.uk

VERON Ham Radio Convention 2004 – Americahal, Apeldoorn. OT 10am, 6 Euros for non-VERON members. CP free, LEC (in Dutch), homebrew exhibition, equipment sales, FM, SIG, WIN, C, TI via PA6DVR on 145.500MHz.

10 OCTOBER 2004

GREAT LUMLEY AR & ES Rally – Great Lumley Community Centre, Front Street, Great Lumley, nr Chester-le-Street, Co Durham, just off the A1. OT 10.30, £2 (accompanied under-14s free). Radio, hobbies, model club, electronics, computers, satellites and component stalls. CP free, C, B&B, TI. Nancy, 0191 477 0036 or 07990 760 920, nancybone2001@yahoo.co.uk

National Vintage Communications Fair - Hall 11, National Exhibition Centre, Birmingham. OT 10.30am, £5, under-14s free. 300 stalls, vintage wireless, valve amplifiers, classic hi-fi, gramophones, records (shellac 78, vinyl and CD), early TV, etc. Exhibition '100th Birthday of the Thermionic Valve'. Terry, 07947 460 161, info@nvcf.org.uk [www.nvcf.org.uk]

17 OCTOBER 2004

BLACKWOOD & DARS Rally – Newport Centre, Newport, 1 mile from jn 25A, M4 (jn 26 travelling W to E). OT 10.30 / 10.45am, £1.50. CP free, TI, TS, SIG, LB, C, DF, WIN, B&B. George, 2W1JLK, 01495 724 942, or Dave, GW4HBK, 01495 228 516.

HORNSEA ARC Annual Rally – Floral Hall, Hornsea. OT 10am. B&B, etc. Richard, G4YTV, 01964 562 498, g4ytv@aol.com

22 - 24 OCTOBER 2004

RSGB International HF & IOTA Convention (HFC2004) – Gatwick Worth Hotel. LEC, 136kHz – 50MHz, IOTA 40th Anniversary, demonstrations. John, G3WKL, hfc2004@rsgb.org.uk [www.rsgb.org.uk/hfc]

24 OCTOBER 2004

GALASHIELS & DARS Annual Rally – The Volunteer Hall, St John's Street, Galashiels. OT 11am. TS, B&B, C. Jim, GM7LUN, 01896 850 245.

6 / 7 NOVEMBER 2004

18th North Wales Radio, Electronics & Computer Show – North Wales Conference Centre, Llandudno. OT 10am. Jenny, MW0BET, 01492 549 413. [www.nwrs.org.uk]

7 NOVEMBER 2004

24th North Devon Radio Rally – Holsworthy Memorial Hall. OT 10am. B&B etc. G8XMI, 01409 241 202.

14 NOVEMBER 2004

West London Radio & Electronics Rally – Kempton Park racecourse, Sunbury-on-Thames, Middx. Paul, M0CJX, 01737 279 108, m0cjx@ntlworld.com [www.kemptonrally.co.uk]

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 10am, £2.50. DF, TS, SIG, B&B. Ernie, G4LUE, 01226 716 339 or 07984 191 873.

4 DECEMBER 2004

ROCHDALE & DARS Traditional Radio Rally – St Vincent de Paul Catholic Church, Caldershaw Road, off the A680 Edenfield Road, approx 2 miles W of Rochdale. Follow the orange arrows from the M62 jn 20. Please note that this is a Saturday rally! OT 10.15 / 10.30am, £1. CP free, TS, B&B, C, TI on 145.550MHz. John, G7OAI, 01706 376 204 (eve), radars@mbc.co.uk [www.mbc.co.uk/radars]

5 DECEMBER 2004

BISHOP AUCKLAND RAC Rally – Spennymoor Leisure Centre. OT 10.30 / 11am, £1, accompanied under-14s free. B&B, C, CP, LB, MT, DF, FAM, TI on 144.550MHz. Mark, G0GFG, 01388 745 353, or Brian, G7OCK, 01388 762 678.

WEST MANCHESTER RADIO CLUB Red Rose Winter Rally – Lowton Civic Centre, just off the A580 East Lancs Road. OT 10am. TS, B&B, SIG, CP free, LB, C, RSGB bookstall, DF, and large social area. TI on 145.550MHz. Steve, 01942 895 198. [www.wmrc.org.uk]

21 - 23 JANUARY 2005

CONTEST CLUB FINLAND 10th Anniversary – [www.qsl.net/ccf/]

23 JANUARY 2005

OLDHAM ARC Rally – [www.oarc.org.uk]

29 JANUARY 2005

FENLAND REPEATER GROUP Horncastle Winter Amateur Radio Rally – Tony, G3ZPU, 07717 312 558.

6 FEBRUARY 2005

SOUTH ESSEX ARS Radio Rally – Brian, G7IIO, 01268 756 331, briang7iio@yahoo.com [www.southessex.ars.btinternet.co.uk]

20 FEBRUARY 2005

SOUTHGATE ARC Stevenage Radio & Electronics Show – stevenageshow@dsl.pipex.com [www.stevenageshow.dsl.pipex.com]

27 FEBRUARY 2005

SWANSEA ARS Amateur Radio & Computer Show – Roger, GW4HSH, 01792 404 422.

GB CALLS

These callsigns are valid for use from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 – 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Please send operational details of your special event station to the RadCom office at least five weeks before publication. The only QSL Bureau sub-manager for special event station callsigns is as follows: GBxAAA-MZZ – Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntl world.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

1 Oct	GB2AFC: Ambrose Fleming Centenary. LH2 (G3AQM)
	GB2WCM: Wheal Charlotte Mine. LHV27 (G7AGZ)
	GB50IBC: 50th Year Invalid & Blind Club. L (G0HHP)
2 Oct	GB0SM: Saint Mary's. TLH (G0PSE)
	GB5RSR: Ribble Steam Railway. LH (G1PIE)
6 Oct	GB0NPD: National Poetry Day. LHV2 (G0PFH)
8 Oct	GB200RBC: Rail Bi-Centenary. L (G0FQN)
	GB2RCC: Radio Caravan & Camping. TLHV27 (G0VEP)
9 Oct	GB2WHW: Welwick Heritage Weekend. LHV2 (M5EXY)
14 Oct	GB2ATC: Air Training Corps 2 (G4PSH)
16 Oct	GB4UY: University Of York. LH27 (M0PCB)
20 Oct	GB4BOT: Battle Of Trafalagar. LH2 (G3UUZ)
22 Oct	MB2HFC: (RSGB) HF Convention. TLH (G3LAS)
23 Oct	GB0FGR: First Generation Rolling Stock. LH (G3TXZ)
	GB4SCL: Settle & Carlisle Line. LH (G0FQN)
24 Oct	GB2LSM: Long Shop Museum. LH (G4XVE)

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13 MARCH 2005
BREDHURST RECEIVING & TRANSMITTING SOCIETY 18th Rainham Radio Rally – Mike, 01634 313 905.

20 MARCH 2005
CAMBRIDGE & DARC Rally – Ian, G4AKD, 01954 782 974.

NORTHERN AMATEUR RADIO SERVICES' ASSOCIATION (NARSA) Rally – Peter, G6CCF, 0151 630 5790, g6cgf.peter@ntlworld.com

10 APRIL 2005
21st Yeovil QRP Convention – George Davis, 01935 425 669, george@mudford.fstnet.co.uk

15 MAY 2005
MIDLAND ARS Drayton Manor Radio & Computer Rally – Norman, G8BHE, 0121 422 9787 or 07808 078 003, nlgutteridge@aol.co.uk [www.midamradio.co.uk]

5 JUNE 2005
SPALDING & DARS Annual Rally – Ambrose, M0DJA, 07989 636 520, or John, 07946 302 815. [www.sdars.org.uk]

26 JUNE 2005
SEVERNSIDE TV GROUP West of England Radio Rally – Shaun, G8VPG, 01225 873 098. [www.westrally.org.uk]

3 JULY 2005
NORFOLK ARC Barford Radio Rally – David, G7URP, 01953 457 322 or 01953 458 844, radio@dcpmicro.com [www.norfolkamateurradio.org]

7 AUGUST 2005
FLIGHT REFUELLING ARS Hamfest – Mike, M0MJS, 01202 883 479, hamfest@frars.org.uk [www.frars.org.uk]

RSGB MEMBERS' ADVERTISEMENTS

RSGB Members wishing to place an advertisement in this section should use the official form printed in *RadCom* each month. No acknowledgment will be sent. Ads not clearly worded, or which do not comply with these conditions will be returned. If an ad is cancelled no refund will be due. An advertisement longer than 60 words will be charged *pro rata*. Trade or business ads, even from members, will not be accepted. Traders who wish to use this facility must send a signed declaration that the items for sale are part of, or intended for, their own personal amateur station. The RSGB reserves the right to refuse ads, and accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange. Each advertisement must be accompanied by the correct remittance, as a credit card payment, cheque or postal order made payable to the Radio Society of Great Britain. Please note that because this is a subsidised service to members, no correspondence can be entered into. Licensed members are asked to use their callsigns and QTHR, provided their addresses in the current edition of the RSGB Yearbook are correct. RS members will have to provide their names and addresses or telephone numbers. Please include your town and phone number in the free boxes provided to assist readers. Advertisements will be placed in the first available edition. Please do not send members' advertisements to Danby Advertising (advertising agents). The closing date for copy is the first day of the month prior to publication, eg the deadline for the May issue is 1 April.

Warning: ***Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid. Members' Ads also appear on the members-only website: www.rsgb.org/membersonly/membersads***

The Member's 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, or recent copies of the carrier sheet. As a last resort, members may also send in their advertisements on seperate sheets of paper, but if you choose to do this, you must supply an accurate word count–and, of course the correct fee in the normal manner.

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HELPLINES

- Pat, G3MA, is looking for two relays (RL1 and RL2) for his Yaesu FT-102. They are marked 'FR 263-D012 04CS'. G3MA, QTHR. Tel: 01452 539 519.
- Ted, G8HLJ, would like to hear from anyone who has successfully built a G2DAF receiver, in particular the MkII with the balanced front end, and from anyone who has spare components such as the oscillator coils mad by Electroniques. He has several G2DAF receivers, built and working, which he would like to exchange for other home-brew valve sets, such as the G3PDM, or the Ultimate Receiver by Ray Howgego. G8HLJ, QTHR. Tel: 0151 632 0614.
- Peter, G4GEW, has acquired a Dell Latitude model PPL computer, and is looking for the user's manual. All costs will be refunded. G4GEW, QTHR. E-mail: pwlee13445@aol.com
- Bert, GM3JOA, would appreciate a copy of the diagram for the Daiwa NS660P SWR / power meter. The AVG power function is OK, but the PEP positions show no reflected power. Any costs will be refunded. GM3JOA, QTHR. Tel: 0131 669 2284 or e-mail bert.gm3joa@btinternet.com
- John, M0JXX, has obtained a Stoner SSB 40 MA (serial no 5492) transceiver, but has no power lead or handbook/circuit diagram. Any information/photocopies about this would be welcome. Please contact Robert, G0WHO, QTHR. E-mail: g0who@operamail.com Robert (G0WHO)
- Graham, G3SGC, requires the circuit diagram or operations handbook for the EMI & SE Labs oscilloscope model 101. All expenses will be paid. G3SGC, QTHR. Tel: 01493 661 003 or e-mail: grahamg3sgc@aol.com
- Cliff, G3THX, needs an original or copy of the handbook for the Eddystone 940 receiver. All expenses will be refunded. G3THX, QTHR. Tel: 01754 761 306.
- Bruno, G4FZG, requires instructions, manuals, circuits, etc for the following: Heathkit IM-12 harmonic distortion meter; Eddystone 940 receiver. Photocopies or loans would be fine. All expenses, reimbursed. G4FZG, QTHR. Tel: 01242 256 295 or 07881 602 989.
- John, G4BYV, the tank-mounted control box and handset for a DMW police motorcycle. Even the case would do. G4BYV, QTHR. Tel: 01362 638 142 or e-mail: g4byv@woodgate73.freeserve.co.uk
- Ted, G4TLY, would appreciate the circuit and details for adjusting the deviation on the FT-23R. G4TLY, QTHR. Tel: 01666 822 935 or e-mail: g4tly.ted@virgin.net
- Ken, G0HYP, has acquired a cavity and valves and is seeking someone to put together a two-valve amplifier for 23cm for him. All costs will be reimbursed. G0HYP, QTHR. E-mail: ken_ferguson@fsmail.net
- Des, G0JCF, would like a copy of the instructions for the Bricomm Safetune. All expenses reimbursed. G0JCF, QTHR. Tel: 01895 633 118 or e-mail: gonedes@aol.com
- Hilton, MW0OPS, has an Icom M-800 on his boat, but he is unable to use LSB when using the fitted UK EEPROM. He is able to vary the output power. Icom has supplied him with the USA version of the EEPROM. He can now operate on all modes, but the power level is fixed at 150W. Does anyone know a way of varying the power level with the USA EEPROM or, alternatively, using LSB on the UK EEPROM? MW0OPS, e-mail: hwillott@aol.com
- John, G3YJD, would welcome a circuit for the Defiant M234 broadcast receiver, and a control knob for the front panel. All costs gladly refunded. G3YJD, QTHR. Tel: 01908 379 250.
- James, EI4HH, is looking for information or a manual for the Farbbildgeber 957A TV Pattern Generator. EI4HH, QTHR. E-mail: holohaj2@hotmail.com

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BUSINESS CARDS

The last word

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"Break, break"

From: Stuart Davies, M1FWD

I moved home recently from south-east England to south-west England. In the south-east, one was never chastised for using "break" or "break break" to join a QSO. On my closest repeater here, however, the use of such terms causes many hackles to rise, with the assertion that such terms must be reserved for the "passing of emergency traffic" of one sort or another, and that casual usage of such expressions in amateur radio is an anachronistic leftover from the Dark Ages (ie CB).

The courteous method here is to announce one's callsign during a break in the ongoing QSO, which is fine by me; and my local repeater is equipped with two separate pips, allowing that to be done in a calm fashion.

I would be interested in knowing what protocols are in force elsewhere, and also in learning whether or not the 'break' business is enshrined in amateur radio law (or even lore?)

Perhaps a debate through your pages would be timely in preventing a few unfortunate blood pressure increases in this area! Personally, I'm inclined to think that some of us are in danger of taking our hobby too seriously . . .

One man's meat . . .

From: Mark Garton, M0CZE

With reference to the letter from Tim Beaumont, M3SDE ('The last word', August), I find the articles about DXpeditions to be of no interest at all, but the technical articles such as 'Technical Topics' to be most interesting. My interest in electronics caused me to become interested in amateur radio. However, I understand a lot of radio amateurs have no interest in electronics, so it's important to have a balance of technical and non-technical articles, which is what *RadCom* is.

However, I think it is important for people to have an understanding of theory as well as just operating a black box of which they may have little understanding of how it works.

[I felt that publishing the letter from M3SDE in August was almost an invitation for members to write in with an opposing view! M0CZE, in expressing that view, recognises the very wide range of interests encompassed by the hobby, one of the reasons that amateur radio is so fascinating to so many people. It is also that which makes it difficult, if not impossible, for all of *RadCom* to be of interest to all the members all of the time. If we cannot quite achieve that, it is good to know that there is at least something of interest in each issue for everyone - *Ed.*]

Outer outer space

From: R F E Bliss, G3JGC

Further to the very good article by Steve White, G3ZVW, in the September *RadCom* regarding magnetic reversal ('Whatever next'), in which the [earth's] magnetic field weakens and collapses and re-emerges with opposite polarity: well, well, here we probably have the answer to SETI, the Search for Extra-Terrestrial Intelligence. It would be quite possible that other civilisations may also have had the same reversal effect and are using reversal polarities. If one was to build a receiver using opposite polarities in the circuitry, not forgetting to use either mains reversal polarity or using batteries, then maybe the 21cm wavelength that corresponds to 1420MHz, called the waterhole, would be a good place to start for any up and coming newcomer to the world of radio astronomy? Further information on all SETI programmes can be obtained via www.setileague.org

From: Hugh Thurgood, M0AQU

....As one of very many people devoted (through business as well as pleasure) to both electronics and astronomy, I have been reading with great interest all so far accessible and published data on the progress of the Cassini satellite at present orbiting Saturn. Not once have I found any mention or description of how the successful two-way transmission of data has been achieved apart, that is, from telling us that it takes 83 minutes for signals to span the distance between earth and satellite. Multiplying the speed of electromagnetic waves in a vacuum, ie 299,792.458km/s by 60 and 83 gives a direct path distance between us of 1,492,966,650km.

Bearing in mind the fact that field strength varies inversely with distance, and that available satellite transmission equipment power must be very limited, immediately begs the question, how is it achieved? What is the field strength of received signals here on earth; instead of microvolts/m, are we dealing with signals down in the nano, pico or femto range? What frequencies, modulation, and error correction methods are employed? And what is the effect of the different rotational speeds of earth and satellite?

If *RadCom* could print an article on this topic, written of course by one of your many propagation experts, it would make fascinating reading.

[There's a challenge! Any propagation expert - or amateur radio space expert - wishing to take it up please contact the editor at RSGB HQ - *Ed.*]

Signal reports

From: Bob Purves, GM4IKT

On the subject of signal reports I do not think there is very much wrong with the present system if people were truthful about signal reporting. We have all heard the signal report of "you are 59 please repeat all your details slowly as I am having difficulty copying". Operators should say "you are 3 and 9 plus 10", meaning that the indicated signal strength is 10dB over S9 but because of QRM / QRN I am having difficulty reading your signal. All that is required is a better understanding of the present system and what it means.

From: Dick Whittering, G3URA

.....Because the T (tone) identifier does not fit in with PSK, many of us now use the PSB system of reporting on this mode, as mentioned last year in *Datacom* and *RadCom*. See www.psb-info.net for full info.

Lack of ham spirit

From: Paul Ferris, G0LLE

I read with disinterest the latest issue of *RadCom*, and with some wry amusement the letter entitled 'Radio amateurs an example'. A rapidly failing hip-joint meant that I had been unable to get to the London venue of a well-known amateur radio association, of which I was an associate member, to operate the radio station there. Just before membership renewal

was due, I was informed that as I hadn't attended for so long, my membership would not be renewable.

At about the same time, I found that it was now somewhat unrealistic for me to run Foundation courses (see my letter, 'The last word', May 2004) because of the new requirement that the examination takes place in a public building. I could not afford to hire such a place, nor would it have been easy for me to attend one.

Listening to CB-style conversations on 2m (even from some of the M3s that I taught!) and realising the loss of 40 metres to the same licence class, at the very time that amateur radio should have provided some relief from what has felt like enforced house-arrest, I felt discouraged, and have subsequently lost all interest.

My hip is now repaired; I'm hoping to be able to get around more - even on the increasingly accessible public transport I may soon be able to get to the association's London venue, opposite a famous London fortress. But, of course, I no longer belong.

Is this the spirit of amateur radio? I suggest that radio amateurism may not be still working as much as some people think!

[We are sorry to hear that G0LLE has "lost all interest", but he can hardly complain if Foundation licensees, many of whom he has no doubt helped to get their licence, are then enthusiastic enough to use 40m to such an extent that he regards the band as 'lost' to them! - *Ed.*]

N-types

From: John Tye, G4BYV

I think Tony, G0OVA ['The last word', September 2004] is wrong to condemn N-types just because he was sold a dud. I have never bought a new one but have maybe two dozen in use in the shack mostly on relays and filters. They are all used ones from rallies and are silver plated brass with a top hat connector for the braid and all PTFE. A quick dip in silver dip and they are like new. The pin is ready tinned! If I was going to buy one I would got to a well-known firm like Westlake. As the saying goes, you get what you pay for.

Broadcast harmonics

From: Peter Chadwick, Sen MIEEE, G3RZP, Past President

G3WUZ's problems with harmonics of broadcasting stations on 80m ('The last word' September) is a fairly common one. The CEPT Recommendation ERC 74-01 on the subject of spurious emissions only requires broadcast station harmonics below 30MHz to be -50dBc not exceeding 50milliwatts (http://www.ero.dk). These levels mirror those of ITU-R Recommendation SM329, so if they are being exceeded, if the transmitter was installed after 1 January 2003, the station is not in compliance with the requirements of S3 of the *Radio Regulations*, which have the force of international law. If the transmitter is older, the limits have to be met after 1 January 2012. CEPT Project Team SE21 is about to review the European spurious emission limits with a view to revising ERC REC 74-01, so it seems a good time for the RSGB to consider making some input on the subject.

From: Dicky Marshall, G3SBA, Member of the RSGB EMC Committee

.....Philip Brown, G3WUZ, noted what appeared to be harmonic emission from a broadcast transmitter "which appears so suddenly as to suggest that some human agency is involved". This is almost certainly not the fault of the transmitter but a consequence of the 'rusty bolt effect' which allows passive conducting objects like wire fences - and I guess ship's rigging - to receive power at the fundamental frequency from the transmitter, convert some of it to harmonic frequencies with a diode formed by a corroded joint, and re-radiate these.

I first discovered the effect when my 14MHz transmissions caused interference to the 42MHz sound of the old 405 line BBC TV channel. The problem was mostly due to the galvanised wire line on which we put the nappies to dry. It was fixed by putting egg insulators at the centre and at the each end of the line. Our neighbour's rusty iron guttering was also a problem - we had to move house to solve that. The problem came back a few years later when my son built his first crystal set. We had to agree that he would disconnect his aerial when I wanted to transmit. I now live about 16 miles from the BBC transmitter at Brookmans Park. Today the apparent level of their third harmonic is about 60dB down on the fundamental of 909kHz. Even this may be generated locally - and I can raise it 10dB by simulating a rusty bolt by putting an OA79 diode in parallel with an RF choke between my other wire aerial and ground.

If Philip is seriously inconvenienced by this effect I would recommend that he get hold of a DF receiver for the harmonic frequency. He will probably find that the interference does not come directly from the transmitter - and the source may be quite local to him. It may even be within his own antenna installation.

CFAs, again

From: Alan Boswell, G3NOQ

I read your articles on Crossed Field Antennas with interest (*RadCom* May 2004) and was disappointed that Maurice, G3HAT, repeated only sketchy details of the case for Poynting vector synthesis, and again gave no information about possible theoretical or experimental tests to indicate whether this often-quoted hypothesis is valid. No doubt there are radio amateurs who have bought CFAs and are happy with their purchases, because many people are extremely short of space; this is valid business covered by the usual rule of *caveat emptor*, and amateur antennas may be fit for their purpose even with low radiation efficiency. On the other hand Maurice's ex-student Dr Kabbary has exported CFAs for medium-wave broadcasting into six countries from his base in Cairo. Commercial broadcasting requires high efficiency because energy costs may be significant, making it a more demanding test-bed for novel antennas.

I understand none of these antennas is in service at present, and one might ask why this is so. The one near Sydney, Australia, was made to work by having its lower plate disconnected, the upper structure being tuned and matched as a monopole. Other results published in the *IEEE Proceedings* by Valentin Trainotti, LU1ACM, confirmed that a CFA works equally well without its D-plate. Both these antennas therefore worked to an extent, but without PVS.

Are CFAs efficient and is PVS valid as a scientific theory? Was a PhD awarded for the work? Has there been any positive evidence in the last 17 years? Perhaps some of the broadcast customers in Australia, Brazil, China, Germany, Italy and the UK could comment?

[Isle of Man International Broadcasting plc plans to operate a 500kW broadcast station on 279kHz using a CFA built on an off-shore platform. Their website www.longwaveradio.com states that they will "not be in a position to make test transmissions before late 2004". It will be interesting to learn how well the CFA works on a wavelength of 1075 metres - *Ed.*]

Free licences

From: Bill Abrahams, ON9CGB / G0MEU

Richard Gibson, G3JAX ('The last word', August) has accepted to pay the fee for 51 years, and did not complain in the beginning. However, by my calculations he will indeed soon reach the privileged age of 75 and not have to pay the fee any more. I wish Richard many healthy enjoyable years of use of his forthcoming free licence. ♦

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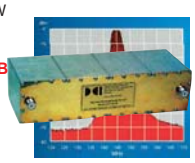

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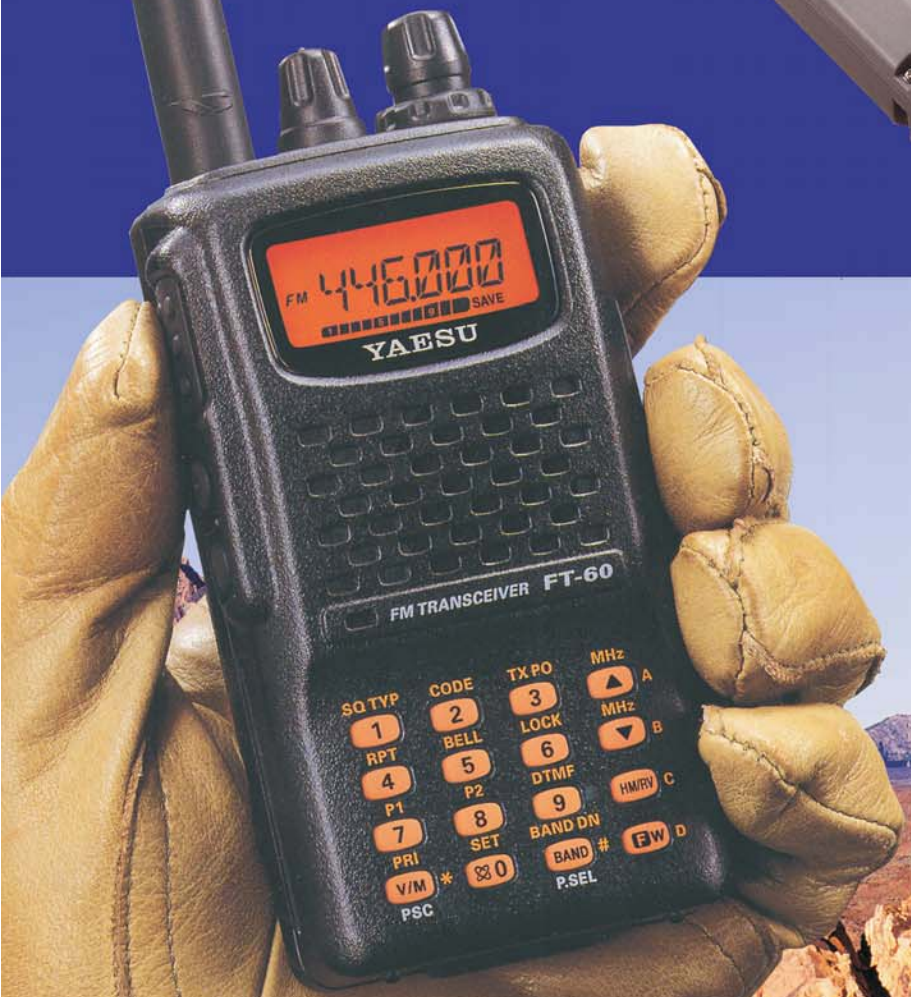
Rugged Waterproof Case

100W Power Handling



ACTUAL SIZE

FT-60E

New Generation Handheld

Dual Band 144/430 MHz FM

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