RSGB Contesting Guide 2003 - 12 Page Pull-Out

0103

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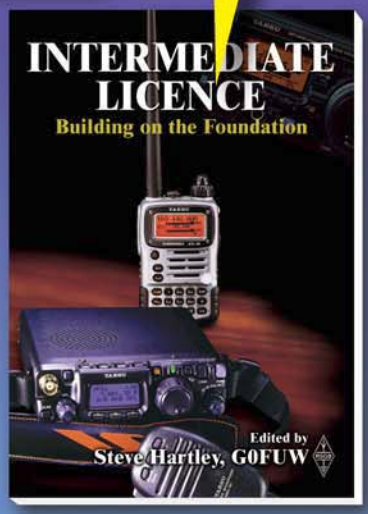
OUT JANUARY!

£3.95 Vol 79 No 1 ♦ January 2003 The Radio Society of Great Britain Members' Magazine



IARU Region 1 Conference in San Marino - Full Report

Build a 136kHz Class D Transmitter

Maldol HF, VHF & UHF Mobile Antennas Reviewed

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PRICE MATCH

FT-1000MP MKV FIELD £2199

NEW

YAESU

YAESU FT-897

NEW

100W HF 50W
2m and 20W
70cm
Plus 20W on
(optional)
Internal Battery

£1199

Power Tanks

FD-7021 £24.95 B

4 Ah supply with built-in 3/6/9V output plus 12V DC. Has built-in lantern and computer controlled battery state. Compact size: 180w x 85d x 210h mm, 3kg. Shoulder strap.

AC charger included

FD-1217 £59.95 B

17 Ah supply with max currant of 250 Amps. Big enough to run a 100 Watt HF radio. Hunky enough to jump-start your car! Key operated for safety. 250w x 140d x 350h mm. 8kg.

UK's largest Selection of HF Transceivers

We will price match on any currently advertised in-stock items that are of UK origin. Beware of none UK sourced items. If the dealer cannot get supplies from the UK distributors, then there may be a reason! All our gear is UK sourced with full manufacturers warranties.

ICOM HF Transceivers

IC-746 Only two remaining of this popular rig £1495		£999 C
IC-756-PRO II	160m - 6m 100W 12V	£2495.95 C

IC-756-PRO II

The flag ship of the ICOM range. Lovely big easy to read display

IC-7400	160m - 2m 100W 12V	£1449.95 C
IC-706 IIG DSP	160m - 70cm Tcvr with DSP 12V	£799.00 C
IC-718	160m - 10m 100W 12V	£599.00 C
SP-20	Speaker with filters	£164.95 B
SP-21	Speaker for IC-756	£74.95 B
SM-8	Base microphone	£129.95 B
SM-20	Base microphone	£144.95 B
PS-125	Icom tcvr PSU	£295.95 C

Yaesu HF Transceivers etc.

FT-1000mkV	160m - 10m 200W 230V	£2799.95 C
VL-1000	Quadra HF - 6m 1kW linear	£3799.00 D
FTV-1000	6m transvertor 200W Special	£499.95 C
FT-1000 Field	160m - 10m 100W 230V	£2199.95 C
MD-200ABX	Desk mic	£249.95 B
MD-100ABX	Desk mic	£110.00 B
FT-920AF	160m - 6m 100W 12V	£1099.95 C
FT-847	160m - 70cm 100W etc 12V	£1199.95 C
FT-817	160m - 70cm 5W Batt.	£595.95 B
FT-840	160m - 10m 100W 12V	£499.95 B

Kenwood HF Transceivers etc.

TS-870S	160m - 10m DSP 100W 12V	£1899.00 C
PS-33	AC power supply	£199.95 C
PS-53	AC power supply	£229.95 C
MC-60A	Desk mic	£117.95 B
MC-80	Desk mic	£72.95 B
MC-90	Desk mic	£187.95 B
TS-570DGE	160m - 10m 100W 12V	£849.00 C
YK-88CN-1	270Hz CW filter	£61.95 B
YK-88SN-1	1.8kHz SSB filter	£61.95 B
TS-50S	160m - 10m 100W 12V	£629.00 C
TS-2000	160m - 70cm <100W	£1695.00 C
TS-2000X	150m - 23cm <100W	£1999.00 C
TSB-2000	Computer controlled	£1449.00 C
RC-2000	Remote head for TS-2000	£199.95 B
ARCP-2000	TS-2000 software	£44.95 B

CAN'T DECIDE WHICH ONE TO BUY?
PHONE & SPEAK TO
BILL-NIGEL-STEVE-JOHN-DAN-NICOLA-ROY
FOR THE BEST ADVICE

29 YEARS in THE BUSINESS
WINNER of KENWOOD 2002 AWARD
YAESU's LARGEST UK DEALER
PLAY SAFE, GO TO W&S

FT-817

All bands & All modes gives you a totally portable HF DX or VHF/UHF station. Ours includes battery and charger. **£595.95**

MFJ-971 QRP Portable Antenna Tuner

The ideal QRP ATU to have on hand, a compact 160 x 150 x 60 mm.

£99.95

HL-50B Amplifier

£265.95

This model has been specifically designed for the FT-817. Enjoy up to 50 Watts output

FT-817 ADD-ONS

One Plug Power
1.8Ah pack module
80% capacity increase!

£79.95

One Big Punch
Speech processor. Dealer fit

£59.95

One Board Filter
Collins 500Hz & 2.3kHz dual filters fitted by us.

£259.95

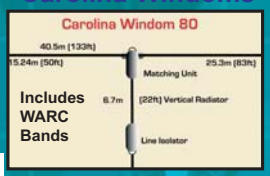
Triple Mag Mounts Upgraded

£39.95

Ideal for HF whips and large VHF whips. Amazing adhesion even at 70mph! SO-239 or 3/8" available

W-300T = 3/8" **W-300S** = SO-239

Carolina Windoms - DX from a wire!



Outperforms G5RVs and "Del-Boy" designs! The only antenna to give both high and low angle radiation even at 20ft above ground. Rated at 1kW, there's a model for you.

CW-160	160-10m 80.1m	£139.95 C
CWS-160	160-10m 40.5m	£134.95 C
CW-80	80m-10m 40.5m	£99.95 C
CWS-80	80m-10m 20.1m	£119.95 C
CW-40	40m-10m 10.3m	£94.95 C

Many more in our 2003 Radio Communications Guide 336 pages!
£2.95 plus post

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DISCOUNT WON'T CUSTOMER SERVICE THE ONLY THING WE

YAESU

FT-1500M 2m FM Mobile £159 C

SPECIAL OFFER SAVE £70

Small, compact yet built like a Battleship! Should last for years. Look at the Price!

KENWOOD

TM-D700E 2m + 70cm FM £449 C

Large detached screen and APRS, make this a firm favourite. 50W on 2m and 35W on 70cms. Features 200 memos, CTCSS, Band Scope, built-in TNC, DX cluster monitor, alphanumeric etc.

TM-G707E 2m + 70cm FM £289 C

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

TM-V7E 2m + 70cm FM £359 C

A lovely cool blue display, easy with 50/35W output. 50W/35W p;us 280 memos and five storable operating pro-files.

ICOM

IC-207H 2m + 70cm FM £279 C

A great budget class radio for VHF & UHF use.

IC-2800H 2m + 70cm FM £419 C

Large colour display with video input, and airband rx. 50W/35W and remote head unit.

IC-2100H 2m FM Mobile £229 C

Rugged design with switched receive filters 12.5/25kHz

IC-910 2m + 70cm All Mode £1249 C

Icom's new dual band all-mode base station radio with 23cms option.

YAESU

FT-7100 2m/70cm Mobile £299 C

NEW

Just arrived is this new dual band radio that has extended rx. Power is 50/35W. Features dual in-band reception and detachable display (requires YSK-7100).

One of the Best Buys in Dual Bamd Mobile!

VX-110 £99 B

Combining the ruggedness of the VX-150 with the simplicity of 8-Key operation, the VX-110 is a fully featured 2m handheld ideal for the most demanding of applications. It has a die-cast csae, large speaker and illuminated keypad

KENWOOD

TH-D7E 2m + 70cm £299 C

DATA COMMUNICATOR

One of the most successful hand-helds 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 out-put.

TH-F7E 2m + 70cm £249 C

NEW

WITH EXTRA WIDE RX COVERAGE

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

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

WEST MOUNTAIN

RIGRUNNER DC DISTRIBUTION £109 B

The *RIGrunner* 12-way 13.8V DC distribution system with Over voltage, Normal and Under voltage indicators.

NEW	4005	£49	5-WAY
	4008	£89	8-WAY
	4012	£109	12-WAY

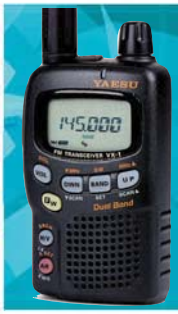
LINEAR AMPLIFIERS UK

NEW CHALLENGER III

CHALLENGER III	HF LINEAR AMP	10-160m	£1795 D
RANGER-811H	HF LINEAR AMP	10-160m	£895 D
DISCOVERY-2	2m LINEAR AMP 400-1000W OUT		£1395 D
DISCOVERY-6	6m LINEAR AMP 50-54MHz 400-1000W OUT		£1395 D
NEW DISCOVERY-70	70CMS LINEAR AMP 430-440MHz 50W IN/ 700W OUT		£1495 D

YAESU

YAESU VX1R 2m/70cm



Ultra-wide frequency coverage which includes VHF and UHF TV audio, AM broadcast, FM broadcast and AM airband.

£149 B

W-25SM 25AMP SWITCH-MODE POWER SUPPLY

THE QUIET ONE

£79.95 Carr. £6.00

Switched 230 / 115V AC input and fixed 13.8V output at 22 Amps continuous and 25 Amps peak. Over voltage and over current protected and fan cooled. Measures 180mm (W), 75mm (H) and 190mm (D)

IC-E90 6m 2m 70cms £269 B

ICOM

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

IN STOCK NOW

YAESU VX-7R

NEW

SUBMERSIBLE 3-BAND HANDIE

6m - 2m - 70cm

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.

~~£359~~ rrp

£329.00 B

THE FAMOUS ZX MONO BAND YAGIS DESIGNED BY ON4UN - BALUN MATCHED

Model	Elements	Gain	Price £
ZX10-2	2	6.3dB	£119.95 C
ZX10-3CL	3	9.1dB	£129.95 C
ZX10-3DX	3	10.3dB	£159.95 C
ZX12-2	2	6.3sB	£109.95 C
ZX12-3	3	9.1dB	£129.95 C
ZX12-4	4	11.4dB	£169.95 C
ZX15-2	2	6.3dB	£119.95 C
ZX15-3	3	9.1dB	£159.95 C
ZX15-4	4	11.4dB	£199.95 C
ZX17-2	2	6.3dB	£129.95 C
ZX17-3	3	9.1dB	£169.95 C
ZX17-4	4	11.4dB	£199.95 C
ZX20-2	2	6.3dB	£149.95 C
ZX20-3	3	9.1dB	£209.95 C
ZX20-4	4	11.4dB	£269.95 C
ZX20-5	5	12.1dB	£329.95 C
ZX20-6	6	12.7dB	£549.95 C
GP-3	-	0	£79.95 C
GP-2W	-	0	£79.95 C
GP-3W	-	0	£89.95 C
MN-2000	-	6.1dB	£339.95 C

NEW MINI-BEAM MN-2000

MN-2000 MINI BEAM

- *10 - 15 - 20m 1kW*
- *2m boom length*
- *Longest element 5m*
- *Gain 3.5 - 6.1dBd*
- *F/B ratio 8dB*
- *Mast 50mm max Weight 8kg*

This mini beam is designed to give good forward gain within the minimum of space. It has generous power handling and even with a small garden, the addition of a linear will make this a potent DX combination. But even at 100W you will find a big improvement over simple wire antennas and verticals.

WATERS & STANTON

PRICE MATCH

DISCOUNT CUSTOMER SERVICE THE ONLY THING WE WON'T

Get in Front with HUSTLER

CARRIAGE CHARGE CODES: A=£2.75, B=£6, C=£9, D: £12

5BTV

£209.95
Carr. £9.00

HUSTLER

BASE STATION ANTENNAS

Spec	4-BTV	5-BTV	NEW 6-BTV
Bands	4	5	6
Coverage	40m-10m	80m-10m	80m-10m
Bandwidth 10-40m	Full	Full	Full
Bandwidth 80m	N/A	100kHz	100kHz
Resonance	1.5:1	1.5:1	1.5:1
Power	1kW CW	1kW CW	1kW CW
Traps	1" forms	1" forms	1"forms
Tubing	1.25"	1.25"	1.25"
Bracket size	1.75"	1.75"	1.75"
Height	21ft 5" [8.52m]	25ft 1" [7.84m]	24ft [7.3m]
Weight	8.8kg	7.7kg	7.5kg
Wind (112kph)	-	13kg	-

These base antennas are very rugged and easy to set up. They can work well at ground level with just a good earth rod. Wire ground radials improve things. For mast mounting you need one quarter radial per band. No other antenna beats them at ground level! GREAT VALUE

HUSTLER Mobile Antennas

Model	Band	Bandwidth	Price
RM-10	10m	150-250kHz	£19.95 B
RM-11	11m	150-250kHz	£19.95 B
RM-12	12m	90-120kHz	£19.95 B
RM-15	15m	100-150kHz	£19.95 B
RM-17	17m	120-150kHz	£24.95 B
RM-20	20m	80-100kHz	£24.95 B
RM-30	30m	50-60kHz	£26.95 B
RM-40	40m	40-50kHz	£26.95 B
RM-80	80m	25-30kHz	£29.95 B

These antennas are are centre loaded so you you need one lower mast section, plus a resonator for each you operate on.

Model	Band	Bandwidth	Price
RM-10-S	10m	250-400kHz	£24.95 C
RM-15-S	15m	150-200kHz	£26.95 C
RM-20-S	20m	100-150kHz	£31.95 C
RM-40-S	40m	50-80kHz	£37.95 C
RM-80-S	80m	50-60kHz	£51.95 C
Lower mast sections			
MO-1	54" (FOLD @ 22")		£33.95 C
MO-2	54" (FOLD @ 27")		£33.95 C
MO-3	54" (NON FOLD)		£26.95 C
MO-4	27" (NON FOLD)		£22.95 C

The base of the antenna (lower mast) is fitted with a standard 3/8" stud. We can supply suitable 3/8" mounts - please ask

RIGblaster

A marriage of radio and computer

OVER 10,000 ON THE AIR

PSK31, MFSK, MT63, SSTV, RTTY,AMTOR, CW, PACKET-APRS,HELLSCHREIBER, REMOTE BASE, METEOR SCATTER, CLUB QST'S, REPEATER CONTROLLER, VOICE KEYER.

TRY THAT WITH A TNC!

All programmes and every lead included. Just change jumper lead to suit rigs mic socket pin-out

RIGblaster Plus	Auto mic switch 8-pin round (software and cables) £139.95 B
RIGblaster M8	Auto mic switch 8-pin round (software and cables) £109.95 B
RIGblaster M4	Auto mic switch 4-pin round (software and cables) £109.95 B
RIGblaster RJ	Auto mic switch RJ45 £109.95 B
RIGblaster nomic 8p	8-pin mic (software & cables) £62.95 B
RIGblaster nomic 4p	4-pin mic (software & cables) £62.95 B
RIGblaster nomic RJ	RJ45 mic (software & cables) £62.95 B

LDG USA

LDG AT-11MP Auto ATU £269.95 A

1.8MHz - 30MHz 150W

Requires no data leads - just 12V at 500mA . Just connect between transceiver and antenna. Handles all coax fed systems but with much wider impedance range than internal models. Should be OK for G5RVs etc.

CS-600 2-way Coax Switch £12.95 A

2-way coax switch ideal for use in antenna systems and service departments. Provides a very positive method of switching between two coax systems and offers very low loss.

B1-2K Balun £25.95 A

This balun is designed for dipoles, inverted V antennas, and similar 50 Ohm feed designs.

B4-2K Balun £34.95 B

The B4-2K 4:1 voltage balun is ideal for folded dipoles, delta loops or other medium impedance balance antennas where ATUs are not required.

REM-BAL4 Remote Balun £49.95 B

The REM-BAL4 is is a 4:1 current type balun and is ideal for open wire to coax interfacing, especially external to the operating position. Unlike voltage baluns, current type baluns maintain output balance over a wide range of loads. Can be used with a transmatch.

WATSON

WEP-300B EARPIECES £2.95 A

Over-the-ear earpiece, popular for security and emergency use. Its low cost and firm mounting even in arduous conditions make this a popular item. Fitted with 3.5mm jack plug.

WSA-1 PSK-31 Adaptor £39.95 B

All you need to connect up to your sound card and run PSK-31. Includes CD software.

YS-130 ROTATORS £79.95 B

Ideal for medium sized VHF antenna systems, the YS-150 is a good quality Japanese manufactured product. It is supplied with control box with rotary direction setting, plus upper and lower in-line mast clamps.

REVEX L-20 15W DUMMY LOAD £21.95 A

- Range DC - 500MHz
- Power 15W/50W
- VSWR 1.15:1
- Connector PL259
- 50 Ohms impedance
- Size 34 x 72mm
- Weight 70g

MASPRO VHF/UHF YAGIS

These high quality Yagis are made in Japan and superbly engineered. Features folded dipole, balun transformer, waterproof box and SO-239. You won't find anything better on the market.
Take a look at our prices!

144-WH5	2m 5 el. 6.6dBd 0.93m	£26.95 B
144-WH8	2m 8 el. 8.6dBd 1.79m	£37.95 B
144-WH10	2m 10 el 9.7dBd 2.3m	£41.95 B
435-WH8	70cms 8 el. 8.6dBd 0.8m	£29.95 B
435-WH12	70cms 12 el. 12.8dBd 1.51m	£35.95 B
435-WH15	70cms 15 el. 14.2dBd 2.19m	£41.95 B

To compare with dBi figures, add 2.4dB

WATSON

QS-112 SPEAKER MIC £16.95 A

Combined speaker-mic. with PTT switch. Models for Yaesu, Kenwood, Icom, Alinco and Motorola.

SPM-102 SPEAKER MIC £9.95 A

Incredible value!
Has 4-way 3.5mm plug for VX-1, VX-5, FT-50 and IC-G7E Handies

Limited stocks.

WM-308 BASE MIC £59.95 B

The perfect answer for a high quality base microphone. Built-in pre-amp powered from rig or 2 x AA, electronic PTT and FM/SSB response switch. Includes lead with 8-pin plug. The plug needs to be wired for your radio. We can do this but phone for quote.

WCT-321 LAPEL TALKER £19.95 A

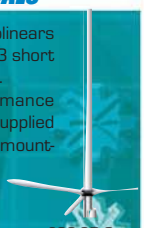
The elegant way of personal communications.
Earpiece with combined lapel hanging mic and PTT. Models to suit most radios.
State: Kenwood, Yaesu or Icom when ordering

AVAIR VSWR POWER METERS

Great value and great performance. There's one just right for you.

AV-200 1.8 - 200MHz 5/20/200/400W £49.95 B
AV-400 140 - 525MHz 5/20/200/400W £49.95 B
AV-600 1.8 - 525MHz 5/20/200/400W £69.95 B
All fitted with SO-239, PEP/RMS readings, 3W for FSD approx.

BASE VHF/UHF VERTICALS



2m / 70cm fibre glass colinears with stainless steel fittings, 3 short radials and SO-239 sockets.
These are high performance antennas, pre-tuned and supplied with all hardware for mast mounting.

Dual Band 2m/70cms		
W-30	3/6dB 1.15m long	£39.95 C
W-50	4.5/7.2dB 1.8m long	£49.95 C
W-300	6.5/9dB 3.1m long	£64.95 C
Triple band 6m/2m/70cms		
W-2000	0/6/9dB 2.5m long	£69.95 C

GREAT VALUE MOBILE WHIPS

W-285	2m 5/8th whip with PL-259 base £14.95 B
W-7900	2m/70cm 5 & 7.5dB length 1.58m £32.95 B
W-627	6m / 2m / 70cm 2 / 4.5 7.2dB length 1.6m £34.95 B
W-770HB	2m/70cm whip 3dB / 5.5dB length 1.1m £24.95 B

ALL WITH TILTOVER BASES.

RSGB Matters

INTERIM ARRANGEMENTS FOR INTERMEDIATE LICENCE EXAMINATIONS

AS FROM JANUARY 2003, the Foundation and Intermediate licences will become integrated. This means that newcomers into the hobby will have to achieve Foundation level before going on to the Intermediate licence.

Over the past year the RSGB and the RA have been working together to update and integrate the Intermediate licence syllabus to dovetail with the Foundation licence and at the present time the first 'Pilot' scheme is being run to test out the new syllabus.

With the City & Guilds decision to withdraw from providing the Intermediate examination from the end of 2002 the RSGB was concerned that the RA had not identified a new provider. Following talks with the RA, the RSGB is pleased to be able to announce the following interim arrangements for the provision of the Intermediate licence examinations from 1 January 2003. These arrangements will ensure continuity of the examination process until a new examination provider is appointed by the RA.

12 centres have already been identified to participate in the first controlled Intermediate pilot scheme. All pilot courses in this first scheme must be completed by 31 January 2003. Two examination dates have been agreed with the RA. These are Saturday 22 February and Monday 24 February 2003.

A second Intermediate pilot scheme is planned for March 2003. 20 locations will be identified nationwide to conduct an Intermediate Licence Examination. Venues will be selected from the pool of RSGB registered Satellite Examination Centres. Examination dates for the second pilot are Saturday 29 March and Monday 31 March 2003.

Until such time as a new provider has been appointed, the RSGB has agreed to administer the Intermediate Licence. From April 2003 monthly Intermediate examinations will be provided by RSGB registered Satellite Examination Centres.

These examinations will be on the last Monday of each month commencing at 6.30pm. Full details on where the examinations are being held will be available in due course on the RSGB website or by contacting the Amateur Radio Dept at RSGB HQ.

PETER SHEPPARD, G4EJP

LAST YEAR we brought you the news that Past President Peter Sheppard, G4EJP, had been involved in a motorcycle accident which resulted in Peter suffering serious brain injury. The Deputy RSGB Regional Manager for North Yorks and Humberside, Andy Russell, G0VRM, along with Nicola, M3ZTI, and Richard, G7MFO, visit Peter regularly at his rehabilitation centre and have even organised a meeting of the Hornsea Amateur Radio Club at the centre to aid his recovery. Andy reports that Peter has made great progress over the last few months with his memory, and with his awareness of what he doesn't remember, and that his sense of humour and unmistakable personality are returning.

Peter Sheppard, G4EJP, at his rehabilitation centre in November.

YOUR NEW LOOK *RADCOM*

AS IS NORMAL with the January issue of *RadCom*, we have made a number of changes to the magazine. Firstly, we now have the ability to print *RadCom* in full colour throughout. Previously, 32 pages were printed in black and white. The additional cost of printing in colour throughout has been more than met by ongoing savings. Since many of the advertisers paid for having their adverts printed in colour, it meant that each month we were obliged to print several editorial features, such as news stories and technical articles, in black and white. This will no longer be the case and from this month onwards all the features will appear in glorious colour.

Secondly, we have taken the opportunity of having the flexibility of being able to print in colour on every page to change the order of the features within the magazine. From this month you will find the news, including Club and Regional News, at the front of the magazine, followed by news features and reviews, then the 'newsy' regular columns such as 'HF', 'VHF / UHF' etc. Then comes the 'Down to Earth' section, followed by technical articles and the technical regular features, including 'Technical Topics', 'In Practice' etc.Finally, you will find the members' advertisements, classified advertisements and 'The Last Word', as you might expect, at the end of *RadCom*. Advertising will be spread evenly throughout, but there will no longer be a need to split articles up with adverts, something readers tell us they did not like!

Finally, we have made a minor change to the layout of most pages, which are now mainly set out in three columns rather than four, and are left-justified only. This has the effect of reducing that annoying habit of words at the end of lines being split with hyphens and also gives a more modern, 'cleaner' appearance to the page. We hope you like the changes we have introduced.

NEW VHF BAND PLANS

THE IARU REGION 1 Conference took place in San Marino in November. A report on the work of the Conference can be found on pages 18 / 19 this month. An RSGB proposal to redefine the principles of band planning in the VHF, UHF and Microwave bands was accepted and new 6m and 2m band plans (published here) come into effect immediately. New band plans will be adopted on the other bands at a later date.

The VHF, UHF and Microwave band plans now have three columns: MAXIMUM BANDWIDTH, MODE, USAGE. The MAXIMUM BANDWIDTH determines the spectral width (-6dB points) of all emissions allowed in a segment. The MODE indicates the modulation methods, eg telegraphy, SSB. A new mode designation, MGM, has been introduced for Machine Generated Modulation. This is for transmission systems where computer processing is an essential component of transmitting and receiving, eg PSK31, FSK441. The USAGE column indicates the specific meeting / calling frequencies; it is important to note that the USAGE section of all band plans has *not* changed although additions have been made to accommodate the new MGM modes, PSK, FSK etc.

CHANGE ON VHF COMMITTEE

THE RSGB VHF Committee has had a change recently. Iain Philipps, G0RDI, has taken over as UK VHF beacon coordinator from John Wilson, G3UUT. John has also resigned as IARU Region 1 VHF beacon coordinator due to the demands of a new job. Iain has stepped in and was elected to follow on at the recent IARU meeting in San Marino (see pages 18 / 19). This job involves keeping an up-to-date list of all Region 1 VHF and Microwave beacons and coordinating the allocation of beacon frequencies. So, if you are interested in having a go at a new beacon project on the VHF bands, Iain can be contacted at g0rdi@77hz.com

VHF AWARD NEWS ON THE WEB

UNFORTUNATELY, we do not always have sufficient space in *RadCom* to publish the VHF award news supplied by Tony Jarvis, G6TTL. Tony points out that this news is, however, always available on his website: there's a link from www.rsgb.org (go to 'Operating', then 'VHF / UHF').

'MORSE CAMP' IN CHESHIRE

ANOTHER RSGB Morse Camp will be held in **Frodsham, Cheshire**, over the weekend of **11 / 12 January**. There is a maximum of 24 places available. For further information, or to book, please contact the Amateur Radio Department at RSGB HQ on 0870 904 7373, or e-mail: ar.dept@rsgb.org.uk

AROS TALK

RSGB AMATEUR RADIO Observation Service (AROS) Coordinator Barry Scarisbrick, G4ACK, will be giving a presentation on the work of AROS at the **Itchen Valley Radio Club** in Hampshire on **Friday 10 January**. Details from Sheila, G0VNI, tel: 023 8081 3827 or e-mail: sheila.williams@ivarc.org.uk

Freq. MHz	Maximum Bandwidth -6dB	Mode	Usage	
50.000	500Hz	Telegraphy	50.000 - 50.080	Beacons
			50.090	Telegraphy centre
50.100				
50.100	2700Hz	All narrow band modes (telegraphy, SSB, MGM* etc)	50.100 - 50.130	Intercontinental Telegraphy/SSB
			50.110	DX calling
			50.150	SSB centre of activity
			50.185	Crossband centre of activity
			50.200	MS centre of activity
			50.250	PSK31 centre of activity
			50.255	JT44
			50.260 - 50.280	FSK441
			50.270	FSK441 calling frequency
50.500				
50.500	12kHz	All modes	50.510	SSTV (AFSK)
			50.550	FAX working frequency
			50.600	RTTY (FSK)
			50.620 - 50.750	Digital communications
			51.210 - 51.390	FM repeater Input channels (20kHz spacing)
			51.410 - 51.590	FM
			51.510	FM calling frequency
			51.810 - 51.990	FM repeater output channels (20kHz spacing)
52.000				

Freq. MHz	Maximum Bandwidth -6dB	Mode	Usage	
144.000	500Hz	Telegraphy		EME exclusive
144.035				
144.035	500Hz	Telegraphy	144.050	Telegraphy calling
			144.100	Random MS telegraphy
144.135				
144.135	500Hz	Telegraphy, MGM*	144.138	PSK31 centre of activity
			144.140 - 144.150	FAI & EME activity CW
144.150				
144.150	2700Hz	Telegraphy, MGM*, SSB	144.150 - 144.160	FAI & EME activity SSB
144.165				
144.165	2700Hz	Telegraphy, SSB	144.195 - 144.205	Random MS SSB
			144.300	SSB calling
144.360				
144.360	2700Hz	Telegraphy, SSB, MGM*	144.370	FSK441 random calling
144.399				
144.400	500Hz	Telegraphy, MGM*		Beacons only
144.490				
144.500	20kHz	All mode	144.500	SSTV calling
			144.525	ATV SSB talkback
			144.600	RTTY calling
			144.630 - 144.660	Linear transponder out
			144.660 - 144.690	Linear transponder in
			144.700	FAX calling
			144.750	ATV talkback
144.794				
144.794	12kHz	MGM*		Packet radio
144.990			144.800	APRS
144.994	12kHz	FM		Repeater input exclusive
145.1935				
145.200	12kHz	FM		Space communication (eg ISS)
145.206	12kHz	FM	145.300	RTTY local
			145.500	(Mobile) calling
145.5935				
145.594	12kHz	FM		Repeater output
145.7935				
145.800	12kHz	FM		Space communication (eg ISS)
145.806	12kHz	All mode		Satellite exclusive
146.000				

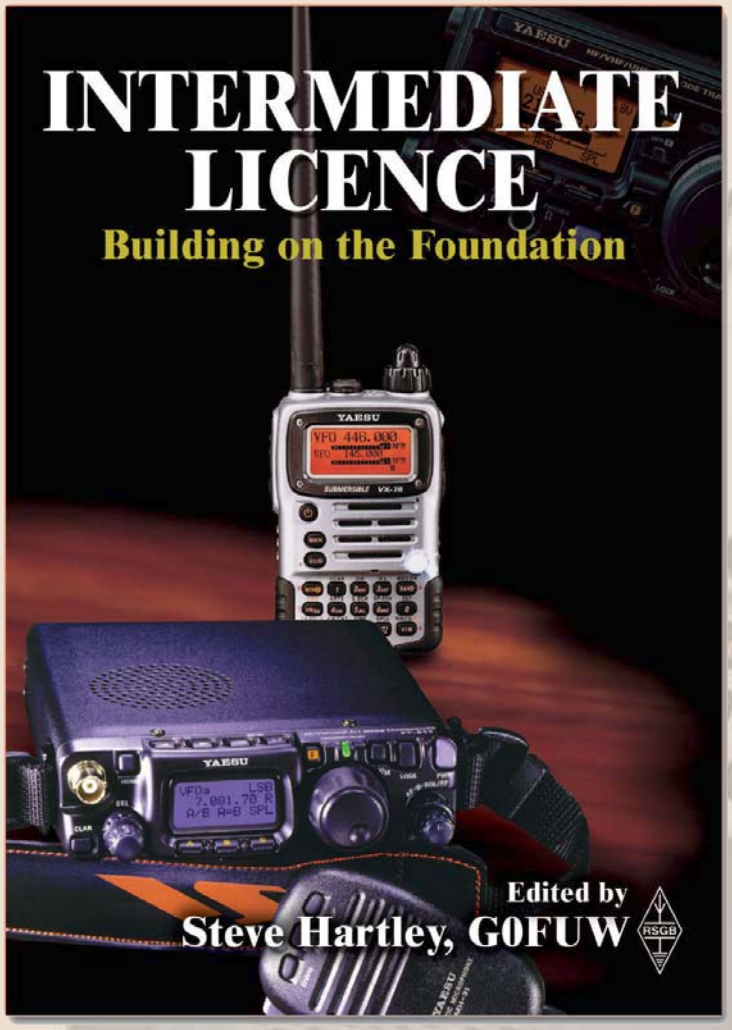
New 6m (top) and 2m (above) band plans, which come into effect immediately. * MGM = Machine Generated Modulation (see IARU Region 1 Conference report on pages 18 / 19).

NEW

FROM THE RSGB

Intermediate Licence

Building on the Foundation



With the introduction of the new Intermediate Licence Syllabus the RSGB is pleased to present our new companion book for those working to pass the exam. *Intermediate Licence - Building on the Foundation* draws heavily on the decade of success enjoyed by the Novice Licence scheme and in particular the *Novice Student's Notebook* by John Case, GW4HWR. However, this is more than a new edition with it adopting the easy to read and understand style of the hugely popular *Foundation Licence - Now,* that many readers will be familiar with. The book is broken down into manageable half-hour worksheets and contains practical exercises along with plenty of helpful advice and safety tips. This is the course workbook for the Intermediate Licence, and as such contains all the information covered during the 20 hours recommended for the course. This is the ideal book for every Intermediate Licence student.

ONLY **£4.92** + p&p (£5.79 non-members)

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Features

- 100 Watts HF
- 100 Watts 50MHz
- 100 Watts 144MHz
- Internal ATU for HF & 50MHz
- DSP noise reduction
- Large clear display
- Twin Pass Band Tuning
- Supplied with Microphone DC lead and 2 Year Icom Warranty

FINANCE EXAMPLE: ICOM IC-2800 AT £425
PAYMENT ILLUSTRATION: ZERO DEPOSIT: 36 payments of £18.45 *TOTAL AMOUNT PAYABLE:* £664.20 APR: 26.9%. If paid in January 2003 - 0% APR
ML&S is a licenced credit broker. *Finance offered subject to status. Full written details on request.* E&OE

NEW Icom IC-2725

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Only 349.00!

Icom IC-E90

The new 3-band 5 watt handheld from Icom with a host of features including wide band receive.

Special price of only £269.00

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Front Cover:

This month, a report on the IARU Region 1 Confernece in San Marino. Top: the final plenary session. Bottom: Members of the UK delegation and observers (see Lead Feature, pages 18 / 19).

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RadCom is published by the Radio Society of Great Britain as its official journal on the first day of the relevant month and is sent free and post paid to all members of the Society.

Closing date for contributions, unless otherwise notified, is five weeks prior to publication date.

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

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

Printed by Southernprint (Web Offset) Ltd, Poole, Dorset.

RSGB MEMBERSHIP - Annual Rates

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HamClub (under 18)	£16.50
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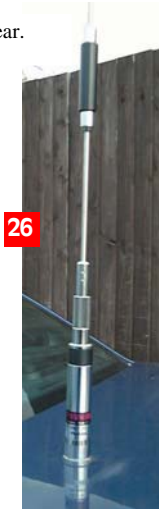
Special arrangements exist for blind and disabled persons.
Details and membership application forms are available from RSGB HQ.

RadCom This Month

January 2003

News and Reports

Reviews



Down To Earth - Amateur Radio From The Ground Up

Technical Features

Regulars

RadCom NEWS

International Lighthouse / Lightship Weekend

THIS HIGHLY POPULAR annual event attracts hundreds of amateur radio special event stations at lighthouses and lightships (316 last year in 45 countries). In 2003 the event will be held over the 48 hours of **16 / 17 August** and now is the time to start planning! The International Lighthouse / Lightship Weekend (ILLW) is organised by Mike Dalrymple, GM4SUC, with Kevin, VK2CE, as webmaster. Mike said, "Participants are not committed to being on the air during the entire period - operate as much as you can. There are no restrictions on aerials or power. We wish operators to enjoy themselves and have fun while making contact with as many stations as possible giving priority to other lighthouse / lightship stations. Please take some time to work the slow operator, the newly licensed and QRP stations." Stations do not have to be within the tower itself, as available space in many lighthouses is filled to capacity (field-day type set-up adjacent to the building is permitted). Please note that permission *must* be obtained from any interested parties.

Bill Williams, G3RFJ; Bill Horn, G4GPD, Selwyn Cox, G7MXG/MM, and Dennis Booty, G3KKQ, prepare to operate from the WWII generator room at Hurst Castle Light in ILLW2002.

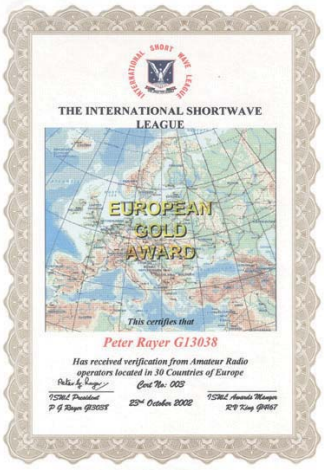
If you wish to join in, you are requested to register on-line at http://vk2ce.com/illw or by sending an e-mail to illw@vk2ce.com with details of name, callsign to be used, lighthouse / lightship, QSL route etc.

New Icom (UK) Sales Manager

ICOM (UK) has appointed Sam Taylor Nobbs to the position of Sales Manager. He was promoted from within the company and is tasked with developing the company's sales strategy and organising the day-to-day running of the sales office.

ISWL Revamps its Awards

THE INTERNATIONAL Short Wave League (ISWL) now has a new range of awards and certificates. They are available to *all* licensed amateurs and SWLs (you do not need to be an ISWL member to claim the awards, but they are free of charge to members). Most of the awards are available for working / hearing amateur stations, and also for receiving QSLs from broadcast stations, with different levels of attainment required for each. Further details are on the website at www.iswl.org.uk/awards.htm



Ware Do We Park?

TRAFFIC HOLD-UPS and parking problems dogged the London Communication & Computer Show when it took place for the first time at Wodson Park in Ware in November. On the Saturday morning so many cars arrived at one time that much of the town resembled a car park. The situation wasn't helped by atrocious rainfall that resulted in two contracted parking areas being made impassable and withdrawn at zero notice. The event itself was deemed to be a success, as the new venue is bright and modern with good facilities. There were plenty of exhibitor stands, and 80% of the exhibitors re-booked for the next event.

The organisers of the event express sympathy to those who were delayed or had to walk a considerable distance, and assure visitors that parking issues will be resolved before their next event takes place.

International Pharmacists Ham Group (IPHG)

THE IPHG WAS formed in March 2002 to unite pharmacists who are also radio amateurs, to promote radio initiatives, establish friendships and to help people who need aid that the group may be able to provide. Membership is free and open to all those who are both pharmacists and radio amateurs all over the world. At present there are 89 members in 23 countries. For more details see the website at www.malpensa.it/iphg/index.htm or e-mail Andrea Pagliula, IZ7ECB, at iz7ecb@tiscali.it

The Lizard Wireless Station

YOU MAY OPERATE from Guglielmo Marconi's original 1901 ex-railway hut wireless station. The National Trust bought it in 1996, saving it from demolition, and restored it to its original condition. It is located about one mile from the Lizard. The hut is leased to the Trevithick Trust, which with the help of volunteers has fitted it with replica wireless telegraphy equipment and opened it to the public.

Taunton & DARC members Tom, G0PSE; David, M0AOD, and Bill, G3WNI, recently operated from the historic site with the kind permission of the station officer, David Barlow, G3PLE (an ex-Portishead Radio Officer). Bill reports they all had a great time and were awarded certificates showing that they had operated from GB2LD. Take your amateur radio validation document along if you wish to operate GB2LD.

'Project Diana' Special Event

THE FIRST successful moon-bounce experiment was conducted by the US Army Signal Corps on 10 January 1946. To commemorate the anniversary, members of the Ocean Monmouth ARC will operate on HF from the historic 'Diana' site on 11 January 2003 between 1600 and 2400UTC. For more information on the project visit http://www.qsl.net/n2mo/

Operate from HS

THE RA HAS informed the RSGB that the UK has now signed a reciprocal licensing agreement with Thailand. Holiday visitors to Thailand may apply for a Thai licence with the format of 'HS0/own callsign', whereas long-term residents of Thailand receive a full Thai callsign in the series HS0Z, followed by two further letters.

Scandinavian HamVention

A MAJOR NEW European amateur radio event will take place in Gothenburg for the first time in April. The 'Scandinavian HamVention 2003' will be a big 'ham-fest' where Scandinavian and other European radio amateurs can get together. There will be a big exhibition with amateur radio dealers from all over Europe and it is planned to offer Scandinavia's biggest flea-market yet, allowing radio amateurs to trade, buy and sell everything to do with our hobby. A traditional Scandinavian amateur radio dinner will be held and there will also be a special ladies' programme. The Swedish national amateur radio organisation, the SSA, will hold its annual meeting at the same time. Further details are at www.scandiham.com

IEE Lecture

THE FOLLOWING (free) evening lecture by the IEE Surrey Branch may be of interest to radio amateurs living in the south east of England:

29 January, 7.30pm: 'Micro-satellite Technology', by Dr Craig Underwood (Surrey Satellite Technology Ltd), at Lecture Theatre M, University of Surrey (details from Rob Heaton, heatonrb@hotmail.com)

Please note that the IEE has a public lecture programme across the *whole* of the UK, details of which are on the IEE website at www.iee.org

First Anniversary of UK Foundation Licence Approaches

Happy New Year: M3 QSO Party Marks Foundation Success

IT MAY BE hard to believe, but in January 2003 the M3 licence has been with us for a year. There are now over 5500 people who have taken up the new licence, with ages ranging from 8 to 80; that's around 10% growth in just a year! Over half the five and a half thousand licensees are completely new amateurs. Even those who have been amateurs for years and who have taken the simple Morse Assessment to add HF to their existing licences are impressed. One amateur recently commented, "My MW3 call has given my amateur radio a new lease of life. I am like a kid with a new toy again!"

To celebrate the 'paper anniversary' of the Foundation Licence, there will be an 'M3 QSO party' on 1 January 2003 at 1000 and 1500UTC. All Foundation Licensees, and their tutors and other friends, are invited to join in. The event will take place on or around 7070kHz, depending on other band activity.

The Stevenage and DARS held its second Foundation course on 28 / 29 September. All 10 students were successful, after a couple of re-sits.

World-Wide Kudos

THE FOUNDATION Licence is easily the fastest-growing licence category ever in the UK and probably world-wide. The new licence is grabbing attention around the world, as witnessed by the recent discussions in places as far afield as the IARU Region 1 Conference in San Marino [see pages 18 / 19 - *Ed*] and the SEANET Convention in Perth, Australia (see below). Both the RSGB and the UK Radiocommunications Agency have received considerable kudos from the amateur radio world for their joint efforts in bringing in the new licence. The RSGB also takes a huge amount of credit for the implementation of the scheme through the tireless efforts of its affiliated clubs.

With courses costing only £10 (some clubs may charge additional fees for room hire etc) and requiring only about 12 hours study, it has never been easier to become a licensed radio amateur. If you already have a VHF licence, a simple Morse Assessment is offered which often involves no cost at all other than the new licence fee. Hundreds of courses are being run up and down the country so access to the exam has never been better. A list of suitable courses and assessors can be found on the RSGB website at www.rsgb.org or you can phone 0870 904 7373 and ask for more information

For those wanting to know more about the content of the Foundation Licence course, the RSGB has a book that contains all the course material - *Foundation Licence - Now!* Not just a textbook, it also tells you how and where to operate with the new licence, along with safety and EMC considerations.

We all look forward to continued massive growth in amateur radio numbers in the years to come, but as a start the Foundation Licence has proved a huge success!

SEANET Convention 2002

THE 2002 SEANET (South East Asia Network) Convention took place in Perth, Western Australia, on 1 - 3 November. The convention was held at the Acacia Hotel, an interesting building converted from a warehouse and with very modern decor. 110 delegates attended the event and were welcomed by Ben Koh, VK6XC, of the host society, the Northern Corridor Radio Group, and Neil Penfold, VK6NE, the WIA (WA) President. The evening banquet was followed by a computerised presentation by Godfrey, 9M6GY, on the history of SEANET and the SEANET Convention in Kota Kinabalu in 2001. Dr Ken Singh made a presentation on what is on offer for SEANET 2003 in Jahore Baru, Malaysia. Phil Weaver, HS0/G4JMB, put in a bid for the 2004 Convention to be held in Bangkok, which was accepted unanimously. Other matters discussed included the UK's Foundation Licence. The SEANET Convention is very much a social and cultural event, and in addition to the radio meetings, functions included displays of folk dancing and visits to Fremantle and a wildlife park to view the native Australian fauna. Thanks to Phil Weaver, 9M6CT / HS0/G4JMB, for the report and photograph.

Club & Regional NEWS

Region 1: Scotland West & Western Isles

LIVINGSTON DARS

7, 14, 21, 28, Meetings every Tuesday at Crofthead Centre, Dedridge, Livingston. Foundation Courses, RAE and Morse Classes available throughout the year. Foundation Morse Assessments and Morse Tests available on demand. Billy, MM0WKJ, 0131 475 7242.

PAISLEY (YMCA) ARC

8, 'How much power do you need?'. 22, Put your ATU in the shack without EMC problems. Jim, GM3UWX, 01505 862817.

WIGTOWNSHIRE ARC

18, 19, Foundation Course. Ian, MM3WIG, 01988 403 364.

Region 2: Scotland East & the Highlands

ABERDEEN ARS

10, Junk sale. Robert, 01224 896142.

LOTHIANS RADIO SOCIETY

13, Mini talks: 'Get Knotted', Norman Stewart, GM1CNH, 'Project 2003', Lawrence Calder, GM1BKF. 27, Vintage military communications equipment, David Stobey, GM3HOQ. Peter, 0131 446 0155.

Region 3: North West

FYLDE AMATEUR RADIO SOCIETY

14, AGM. Ken, G3RFH, 01253 407952.

MANCHESTER WIRELESS SOCIETY

7, On air & social. Enrolment for Foundation course. 14, PSK31 revisited, G0TOG. 21, Construction class for M3 licensees, upgrade to Intermediate licence. 18, 19, Foundation course. 28, How to be successful with 10 watts, M3TRC. Kev, G0TOG, 0161 330 0914.

MID CHESHIRE ARS

8, VHF on air. Niall, G0VOK, 01606 871413.

ROSSENDALE ARS

8, Nicads, Bob. Ken, G1RWK, 07899 084 331.

STOCKPORT RADIO SOCIETY

7, Feeders: coax & open wire, Bernard, G3SHF, & 'Mountain Leadership', Ray King, M1REK. 21, G3FYE Memorial Lecture: 'Amateur Radio in Antarctica', Richard Newstead, G3CWI. David, M1ANT, 0161 456 7832.

THORNTON CLEVELEYS ARS

6, Practical equipment. 13, 'Connecting Connectors'. 20, Video. 27, 'Packet and *DXClusters*', Jack, G4BFH, jack@jduddington.fsnet.co.uk

Region 4: North East

GOOLE R & ES

10, New Year discussion night at Black Swan Inn. 17, Visit to cinema museum. 24, Social night at Black Swan. 31, Junk sale at Courtyard Centre, Richard, G0GLZ, 07867 862169.

GREAT LUMLEY AR & ES

22, Aerial erection in Greece and other places. Nancy, 0191 477 0036, nancybone2001@yahoo.co.uk

GRIMSBY AMATEUR RADIO SOCIETY

16, 'ISWL', Cliff Jobling, G4YHP. 24, Dinner at Littlefields, Brian, G4DXB, 01472 231383.

HALIFAX & DISTRICT ARS

21, Members' talks, Tom, M0TKA, 01484 715079.

RIPON & DISTRICT ARS

1, 'Open Shack' 1000-1500, all welcome, M3 QSO party. Foundation and Intermediate courses. George Rowntree, M0CVV QTHR.

Region 5: West Midlands

BUSHBURY E & ARS

Contact Steve, M0SRB, 01902 865746 for Foundation and Intermediate licence courses.

CHELTENHAM ARS

3, Quiz. Ivan, G4BGW, 01452 731 956, ivan@g4bgw.freeserve.co.uk

GLOUCESTER AR & ES

6, 'Ready-Steady-Go'. 13, Workshop, on air. 20, Bring and show portable receivers. 27, Workshop, on air. Tony, 01452 618930, OH

MID-WARWICKSHIRE ARS

14, Mini talks by members. 28, 'Micro-stepping motors, Bernard, M1AUK. Bernard, M1AUK, 01926 420913.

STRATFORD UPON AVON & DRS

13, Technical hints and wrinkles, G3MXH. 27, Dummy's guide to operating overseas, G0EDT. Ron, 01789 267430.

TELFORD & DISTRICT ARS

1, Happy New Year members' net at 2000. 8, Open evening, on air. 15, Breadboarding Pt 1, Richard, M1RKH. 22, Breadboarding Pt 2 (TBC). 29, SMT, using mini-components, Richard, M1RKH (TBC), Mike, G3JKX, 01952 299677.

Region 6: North Wales

No club details received.

Region 7: South Wales

ABERYSTWYTH & DISTRICT ARS

9, Broadband in rural areas, Ray, GW7AGG. 30, Club net S21 (call on S20), GW7OZP. Ray, GW7AGG.

Region 8: Northern Ireland

BANGOR & DISTRICT ARS

8, Annual quiz. Mike, GI4XSF, 028 42772383.

Region 9: London & Thames Valley

AYLESBURY VALE RS

8, Annual dinner. Roger, G3MEH, 01442 826651 or g3meh@supanet.com

CHESHUNT & DISTRICT ARC

8, Members' forum. Jim, G0JXN, 01992 468204.

CRAY VALLEY RADIO SOCIETY

11, Registration for 2003 construction contest. Bob, BRS32525, 020 8265 7735 after 8pm & WE.

CRYSTAL PALACE R & EC

3, Morse instruction, technical discussions, club projects. 17, Code breaking Colossus, K. Myers. Bob, G3OOU, 01737 552170 or Victor, G1PKS, 020 86532946.

MAIDENHEAD & DISTRICT ARC

21, Transmitting and receiving aerials for topband, John, G3PQA. John, G3TWG, 01628 525275.

NEWBURY & DISTRICT ARS

22, Junk sale. Richard, G3ZGC, 01635 46241.

RADIO SOCIETY OF HARROW

10, D68C Comoros Islands DXpedition, Steve Telenius-Lowe, G4JVG. 17, 31, Informal. Jim, G0AOT, 01895 476 933 or 020 7278 6421.

READING & DISTRICT ARC

9, TBA. Pete, G8FRC, 0118 969 5697.

SILVERTHORN RADIO CLUB

24, Club Meal at *Queen Elizabeth* pub Chingford, G0LWS, David, G0KHC, 020 8504 2831.

SURREY RADIO CONTACT CLUB

6, Getting going on digimodes, Pat, G4FDN. Ray, G4FFY, 020 8644 7589.

WIMBLEDON & DISTRICT ARS

10, Near Vertical Incidence Skywave, George, G3DWW. 31, PicATUne construction evening. Jim, G4WYJ, 01737 356745.

Region 10: South & South East

ANDOVER RADIO AMATEUR CLUB

7, VHF activity night. 15, Slow Morse class, Keith, G0HKC, 145.250MHz. 21, How I discovered amateur radio, ARAC committee. Terry, G8ALR, 01980 629346.

FAREHAM & DISTRICT ARS

1, New Year's Day net on 2m at 2000. Steve, G7HEP, 01329 663673.

HASTINGS E & RC

15, Radio Kit Company. 26, Annual luncheon. R C Gornall, G7DME, 01424 444466.

HORNDEAN & DISTRICT ARC

7, Social evening. 28, Quiz. Stuart, G0FYX, 023 9247 2846

Region	RSGB Regional Manager
1. Scotland West & Western Isles	Gordon Hunter, GM3ULP
2. Scotland East & the Highlands	Position vacant
3. North West	Kath Wilson, M1CNY/M3CNY
4. North East	Geoff Darby, G7GJU/M3GJU
5. West Midlands	Roy Clarke, G8AYD/M0RLY
6. North Wales	Liz Cabban, GW0ETU
7. South Wales	Simon Lloyd Hughes, GW0NVN
8. Northern Ireland	Jeff Smith, MI0AEX
9. London & Thames Valley	Position vacant
10. South & South East	Position vacant
11. South West & Channel Islands	Barry Scarisbrick, G4ACK
12. East & East Anglia	Malcolm Salmon, G3XVV
13. East Midlands	Bryn Llewellyn, G4DEZ

RSGB Regional Managers with effect from 1 January 2003.

ITCHEN VALLEY RADIO SOCIETY

10, Amateur Radio Observation Service, Barry Scarisbrick, G4ACK. 24, Getting the Most from the MFJ SWR Analyser, Stan, G4MOE. Sheila, G0VNI, 023 8081 3827, sheila.williams@ivarc.org.uk

MID SUSSEX ARS

3, Annual members' round table discussion. 10, Shack operations and PicATUne project. Geoff, G6MJW, 01273 845103.

SWINDON & DISTRICT ARC

6, History of RSGB, its regional structure and the new licensing structure, Ivan Rosevear G3GKC. 23, 'The Ubiquitous PIC', Des, G8FIF, of Microchip. Den, M0ACM, 01793 822705.

THREE COUNTIES ARC

23, 'Arcs & Sparks', static electricity demo, Graham, G4WNT. Damian, KammDP@btinternet.com

WORTHING & DISTRICT ARC

15, Discussion on a current topic. 22, Video. 29, Construction evening. Roy, G4GPX, 01903 753893.

Region 11: South West & Channel Islands

BRISTOL RSGB GROUP

27, AGM, Martyn, G3RFX, 0117 9736419.

CORNISH RADIO AMATEUR CLUB

2, Fault finding (bring your own faulty equipment). 20, Computer section: programs for show and exhibition management, Clive. John G4LJY, 01872 863849.

EXMOUTH AMATEUR RADIO CLUB

8, Historical overhead lines. 22, The Norman Lockyer Observatory, Bill Hitchins. Mike, G1GZG, 01395 274172.

SOUTH BRISTOL ARC

8, Plans for club events in 2003. 15, Display of club archives. 22, Computer software exchange. 29, On air. Len, G4RZY, 01275 834282.

TORBAY AMATEUR RADIO SOCIETY

24, Construction cup, everyone welcome. G3HTX, 01803 663200, rally@tars.org.uk

Region 12: East & East Anglia

BURY ST EDMUNDS ARS

21, AGM & talk 'GBR Rugby'. George, G3LPT, 01359 259518.

CAMBRIDGE & DISTRICT ARC

10, 'The sun and sundials', Peter, M1EVB. 17, Tidy up the shack. 24, Informal & junk exchange. 31, Video. Ron, G3KBR, 01223 501712.

CHELMSFORD ARS

7, Home construction. 9, Foundation evening course. David, M0BQC, 01245 602838.

EAST KENT RADIO SOCIETY

6, Bring along your gadgets and talk for a few minutes. 20, 'Independent Custody Visiting', Nick, G8PFE. Paul, G3VJF, 01227 365384, EKRS@paulnic.com, www.paulnic.com/ekrs

HARWICH ARIG

8, Practical tips, Tony, G4EYE. Eugene, G4FTP, 01206 826633.

LEISTON AMATEUR RADIO CLUB

7, Quiz. Paul, M3MIG & Diana, M3VDT, 01728 746044, m3mig@aol.com

NORFOLK AMATEUR RADIO CLUB

8, New Year club competition: measure the frequency of a tuned circuit, bring tour own dip meter, Tony, G0MQG. 15, Informal and CW instruction. 22, ATV demo, Andrew, M1EOX. 29, Informal and CW instruction. Peter, G3ASQ (no contact details provided).

Region 13: East Midlands

DERBY & DISTRICT ARS

7, New Year Junk Sale. 21, 'The Wyvern Rail Project' illustrated update on work to re-open the Wirksworth Rail Line. Martin, G3SZJ, martin@martinshardlow.demon.co.uk

EAGLE RADIO GROUP

7, 'Wartime Mablethorpe' local historian & author Pete Chambers. G0SWS, 01507 478590.

RAF WADDINGTON ARC

9, Annual General Meeting, Bob, G3VCA, 01522 528708.

SHEFFORD & DISTRICT ARS

9, Welcome back: show off your new Christmas presents. 30, G8EMG challenge: bring along your winter project. Derek, G4JLP, 01462 851722.

PRACTICAL USE FOR FOUNDATION ANTENNAS

THE SOUTH Derbyshire & Ashby Woulds ARG recently completed its last Novice course before starting the new Intermediate courses in 2003. The course was made up of students all keen to progress from the M3 to the Intermediate licence. Two of the students have, since obtaining their M3 licences in March, made over 2500 contacts. At least three are already looking towards the RAE - and they haven't even taken the Novice exam yet.

Pete Asbury, M0PCA, comments, "Everyone who comes is so keen and eager to learn. We have had age 9 to 69 with all ages between, and all have been a pleasure to teach. I wholeheartedly believe that the new licence system is good for our hobby, when I see the results of our courses."

During a recent 'field day' operation, the students designed, made, tested, and erected their own antennas. Everyone had great fun, and a lot of practical lessons were learned. The antennas were used the next day for a special event station to raise funds for a national charity. They worked so well that a visitor asked "What aerial is that lady using to talk to Canada?" He was taken outside and shown one of the home made dipoles, strung between the roof of the building and a lamp post. He said, "Surely you need a better aerial than that?" But, she *was* talking to Canada, and yes, the antenna *was* made just of two lengths of wire, a plastic connector and string. Both days were a great success and over £100 was made for a good cause.

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

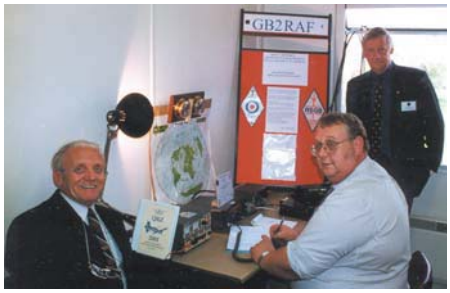
Club News is a service for clubs and societies affiliated to the RSGB. The announcements are intended to notify non-members and potential members of your club of specific events, therefore 'informal', 'committee meeting', 'natter night' and 'ragchew evening' etc will only be included if space permits. Basic, unchanged details about RSGB-affiliated clubs are published annually in the *RSGB Yearbook*.

DAVID ACHIEVES HIS GOAL

DAVID METHERELL, M3JTW, from Carrville, Durham, was recently presented with his Foundation certificate by Ernie, M0ERN, one of the instructors at the Phoenix ARC. David, a pupil at Belmont Junior School and a keen footballer, hung up his boots on Sunday 20 October so he could take the foundation exam. At 10 years old he was the youngest person to take the Foundation course at the club.

David had been having some tuition on club nights from Ian, M0RZE, who had always rated his ability and fast learning. Ian commented, "It's great to see young ones like David getting a keen interest in the hobby. At that age they're so easy to teach." Ian added that David's Morse isn't bad either: he is receiving 5WPM now so it won't be long before he has the Morse pass certificate as well and hopefully will then study for the RAE. "The interest came through listening to his granddad, M0JTW, a retired policeman, learning Morse code over 2 metres FM." David said, "I was pretty confident I could pass the exam and I was very happy when they told me how many questions I got right. I would like to thank all the members of the club who have been so supportive to me."

GB2RAF ON THE AIR



Left to right GB2RAF station manager Terry, G4PSH; Rex, G0CLR, and Doug the museum manager.

THE PERMANENT special event station GB2RAF is on the air on the second Saturday of most months between 10.00am and 4.00pm local time from the RAF Air Defence Radar Museum at RAF Neatishead in Norfolk. Members of RAFARS are welcome to operate the station, while guests from the RNARS and RSARS are also welcome but should take an ID with them. Please contact station manager Terry Owen, G4PSH QTHR, tel: 01692 582064 before hand if you wish to operate GB2RAF.

COURSE SPECIALLY FOR YOUNGSTERS

THE MANCHESTER Wireless Society, G5MS, ran a Foundation course in November for two youngsters, Kimberley, aged 10, from Oldham and Leon, aged 11, from Liverpool. Both students proved excellent at learning the Foundation material and passed with flying colours. Kimberley is now M3KMW and Leon M3LPJ.

Foundation tutors at the Manchester Wireless Society, G0HVT and G0TOG, run the courses on request and are pleased to have seven of their passes now sitting the Intermediate course ready for the new exam in 2003 and two are sitting the RAE in December 2002. Bill, M0WKB, is pleased that his construction classes are going very well and many of his students are also foundation licensees.

Members of the Manchester Wireless Society would like to thank all those who participated in working the Commonwealth Games stations earlier this year. They are pleased to announce that no fewer than 38,000 QSL cards have been sent out.

Kimberley, M3KMW, is pictured here with her dad Tom, G7WAE / M3KTL, and Leon, M3LPJ, with his uncle John, M3ZOV.

RADIO FUN DAY CONTEST

ON 6 OCTOBER 2002, the Eagle Radio Group held a low power (10 watt) contest as part of its 'Radio Fun Day'. Each team of two used the same equipment and aerials and operated for an hour each. The winning team, Nevil, G3VDV, and David, G7BUK, were presented with their winners' trophies by the Lady Mayor of Mablethorpe & Sutton, Councillor Audrey Thomas, at the group's November meeting.

David, G7BUK, and Nevil, G3VDV, receive their trophies from Councillor Audrey Thomas, the Lady Mayor of Mablethorpe & Sutton.

KDARS ON THE MOVE

DUE TO THE proposed redevelopment of their existing venue, members of the Kidderminster and District ARS will be gathering at new premises from the start of 2003. Agreement has been reached to use a meeting room at the Chain Wire Club, Zortech Avenue, Kidderminster, and the new venue provides excellent accommodation together with easy access to a large outdoor space for the erection of antennas and other activities.

Publicity Manager Phil Harris, G4SPZ, said, "Our new venue is ideally located, offers far greater scope for activity nights and, in addition, will save the Society £100 a year on room hire".

For further details of the Society's activities and programme of events, contact the Secretary Tony, G1OZB, tel: 01299 400172 or visit Www.kidder.thersgb.net

Suzanne, M3ZAN, of the Chelmsford ARS operating the 2m station at a special event station operated by the club at the Science Discovery Day held at Sandford Mill Museum.

ICOM

IC-2725E

IC-2725E Dual-Band FM Transceiver

Twice the versatility - twice the fun!

Get on the move with the new IC-2725E. This unique dual-band mobile provides VHF/VHF, UHF/UHF simultaneous receive capability along with VHF/UHF full duplex operation. The HM-133 hand-mic allows remote-control operation. Simply touch a button to change the main (transmit) band and sub-band. Operating two bands simultaneously is very simple with the symmetric layout and the wide, dual-colour LCD showing both band settings in an easy-to-read, side-by-side format. The IC-2725E provides separate tuning, volume, squelch knobs and function buttons for the left and right side bands. You can also listen to both bands independantly through separate left and right audio jacks.

Other features include...

- Dynamic Memory Scan (DMS)
- HM-133 Remote Control Microphone
- DTCS and CTCSS
- Access socket for 9600bps Packet Data
- 10dB RF Attenuator
- Selectable Squelch Delay
- 14 DTMF Memory Channels (24 digits)
- Sub-band Auto-mute function
- Wide/narrow Channel Spacing (Left side only)
- Newly-adopted MOS-FET Power Amplifier
- ...and so much more!!!

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DJ-X3
Ultra modern scanning receiver

- 100kHz - 1300MHz
- AM/FM/WFM
- 700 memory channels
- Steps: 5/6.5/8.33/ 10/12.5/15/20/25/ 30/50/100kHz
- Auto descrambler
- Bug detector
- Stereo FM (with headphones)

£129.95

DJ-S40 CQ
UHF Pager Sized Handheld

- Up to 1W output (with 13.8V supply)
- 100 memories +1 call channel
- Multi Scan functions
- 38 CTCSS tones for selective calling

£99.95

DJV5E
Compact Dual Bander

- 5W/1W/0.5W output power
- Super wide receive (76-999MHz)
- Includes wide FM mode

£225.95

with 8.33kHz for airband

DJ 193E
2 mtr Handheld

- New design 2m (144-146MHz) handheld
- Up to 5W VHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted

£139.95

GREAT VALUE

NEW DJ-596
Dual Bander

- 100 memory channels, any mix of VHF/UHF
- CTCSS, DCS encode+decode
- DTMF tones and autodial memories
- Three scan modes
- Wide and narrow FM TX/RX

£199.95

ALINCO DR-605E
Dual Band Mobile

- Ready for 9600 bps packet
- Extended RX capability 136 - 174MH, 420 - 470MHz
- 50W (2m) - 35W (70cms)
- 100 memory channels (+ CALL Channels)
- Cross band full duplex

£299.95

DJ-195E
2 mtr Handheld with Keypad

- New 2 metre (144-146MHz) handheld
- Up to 5W output (0.8W low power)
- 40 memory channels + 1 call channel

£159.95

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available from our dealers throughout the UK or direct RETAIL ENQUIRIES: 023 9231 3090 DEALER ENQU

DX-70TH *Fully Featured Portable HF+6mtr*

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

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

DX77E *HF Transceiver*

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

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

DR-605E *Dual Band Mobile*

The DR-605E is a no-nonsense twin-band mobile transceiver that delivers power and performance with user-friendly features. The command keys are simply laid out to enable intuitive operation.

- Ready for 9600 bps packet
- Extended RX capability 136 - 174MH, 420 - 470MHz
- 50W (2m) - 35W (70cms)
- 100 memory channels (+ CALL Channels)
- Cross band full duplex
- Tone search function
- Cable cloning function
- Channel indication mode
- CTCSS encoder fitted

DR-135E

- TX: 144 - 146MHz RX: Expandable 118 - 174MHz
- 50/10/5 Watts power settings
- 100 memory channels
- Frequency Steps: 5, 8.33, 10, 12.5, 15, 20, 25, 30, 50kHz
- Optional internal TNC operates 1200, 9600bps
- Front panel GPS input for APRS
- Rear panel DSUB9 computer connection
- Ignition key on/off feature
- CTCSS and DCS encode+decode
- Super-wide 7 character display
- Wide/narrow (25/12.5/2kHz) FM modes
- Theft alarm feature
- AM airband receive
- Ten auto dial memories
- Size: 142 x 40 x 174mm

DJ-S40 CQ *UHF Pager Sized Handheld*

Alinco has created a new UHF FM Hand held Transceiver that sets new standards in features, convenience and easy operation packed in a compact pager-size package. The DJ-S40T has an ergonomic design that's "user friendly" and capable of 1W output with optional Ni-MH battery pack. You'll be ready to travel the world with CTCSS encode/ decode and European tone bursts, all included at no extra cost.

- Up to 1 W output (with 13.8V supply)
- Large illuminated display
- Loud clear speaker horn system
- 100 memories+1 call channel
- Multi Scan functions
- 38 CTCSS tones for selective calling
- S-meter
- Cable Cloning
- External device control feature (outputs 3Vdc 5mA signal from an accessory port when squelch opens)
- Additional features, including anti-theft alarm and experimental mosquito repelling tone!
- Huge selection of accessories available

DJ-X3 *Scanning Receiver*

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

OPTIONAL EXTRAS: • Earphone
- Ni-Mh battery pack
- Lithium ion battery pack
- Drop in mains charger

Send in an A4 SAE for your FREE Alinco colour brochure & leaflets

NEW DR-620E
Dual-Band Mobile/Base Radio

Supports optional "digital voice" communications

NEW

- Wideband RX: 108 - 173.995 MHz, 335 - 480 MHz
- Receives Airband and Wide FM
- Dual Watch Receiver with V/U, V/V, U/U capability
- Dual Band TX: 2 Mtrs/70cm
- 200 Memory Channels
- CTCSS/DCS encode/decode
- Advanced 10F3 digital mode w/speech compression technology (EJ-47U required)
- Four different tone bursts.
- EMS47 Mic (optional) allows remote control/direct VFO input
- Front Panel seperation - (optional EDS9 kit)
- Programmable VFO and memory scan
- Direct GPS input for APRS mobile tracking (requires optional EJ-50U)
- Internal Duplexer - single PL-type antenna Socket
- Ignition Key activated power on/off feature
- Theft alarm feature
- Power supply Voltage display
- TNC (Optional EJ-50U) supports digipeat mode
- TX Output Power: 1/10/50 Watts VHF (selectable)
  1/10/35 watts UHV (selectable)

£299

ALINCO DX77E
HF Transceiver

- 100W HF transceiver
- General coverage RX 500kHz - 30MHz
- All modes: FM, LSB, USB, CW & AM
- 100 memory channels
- Built in speech compressor

SPECIAL
~~£599.00~~ **£499.00**

10W-100W SWITCHABLE

ALINCO DX-70TH
Fully Featured Portable HF+6mtr Transceiver

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

SPECIAL
~~£699.00~~ **£599.00**

10W-100W SWITCHABLE

DR135E

- TX: 144 - 146MHz RX: Expandable 118 - 174MHz
- 50/10/5 Watts power settings
- 100 memory channels
- Frequency Steps: 5, 8.33, 10, 12.5, 15, 20, 25, 30, 50kHz
- Optional internal TNC operates 1200, 9600bps
- Front panel GPS input for APRS
- Rear panel DSUB9 computer connection
- Wide/narrow (25/12.5kHz) FM modes

£235.95

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DJ 195E
2 mtr Handheld with Keypad

Alinco has created a new 2 mtr HT that sets new standards in features, convenience and easy operation. The DJ-195 sports an alphanumeric display for easy memory management. It has an ergonomic design that's "user friendly" and the 5W output battery is standard. You'll be ready to travel the world with CTCSS encode + decode, DCS and European tone bursts, all included at no extra cost.

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

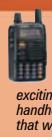
DJ 193E
GREAT VALUE 2 mtr Handheld

- New design 2m (144-146MHz) handheld
- Up to 5W VHF
- Wide RX possible (typical 135-173MHz)
- CTCSS + DCS enc/dec fitted
- 40 memory channels + 1 call channel
- Alphanumeric display
- DCS, Tone burst and DTMF
- 13.8V DC direct input facility with battery charge feature
- THEFT ALARM! Emits a tone when disconnected from power
- S Meter with easy to read display
- Audio dialler
- Call cloning facility
- Comp. programmable 3rd party software
- Experimental insect repellent feature! Can the DJ-193 actually repel mosquitoes? Activate the special tone and decide for yourself!

NEW DJ-596
Dual Bander

A feature packed dual bander - yet simple to use, with the capability of Digital Voice operation (where permitted - using optional digital voice board). A nickel metal-hydride (NiMH) battery is supplied as standard, for added power and convenience. VHF/UHF TX/RX including cross-band split operation

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



DJV5E
Compact Dual Bander

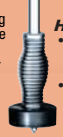
Alinco introduces an exciting new VHF/UHF handheld transceiver that will change the way you think about communications. The new Alinco DJ-V5 can fill a variety of roles and it does them all well. Loaded with technical features, 5W of output power and a wide array of operator conveniences, the DJ-V5 is an attractive radio in a compact package.

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

EDX2
Auto Tuner

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

£289.00



HFM-1

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

£59.95

IARU Region 1 Conference in San Marino

9 - 15 November 2002

*A report by RSGB General Manager Peter Kirby, G0TWW**

The importance of the meeting was recognised by the San Marino post office issuing commemorative stamps and this special first day cover.

Photos by Don Beattie, G3BJ

THE RSGB delegation returned to the UK on Saturday 16 November following a very successful IARU Region 1 conference in San Marino.

The focus of the conference was very much geared towards preparations for WRC2003 and the threats to amateur radio from the introduction of broad band data systems such as PLT.

WRC2003

THE TWO MAIN issues concerning amateur radio at WRC2003 are the simplification of the regulations covering amateur radio and the extension of 7MHz.

The changes to the regulations are centred on Articles 19 and 25 of the *Radio Regulations* and concern the removal of the mandatory Morse testing requirement and the callsigns which should be used for station identification.

The extension of our 7MHz allocation to 300kHz is still the subject of intense negotiation and several proposals are still being debated. It is possible that we will see the emergence of some clearer positions in the next month or so as the WRC conference preparatory meeting starts its work in preparation for WRC. Although there is a high expectation that these changes will be agreed, success in getting the changes through WRC2003 is by no means assured. Hopefully the picture will be clearer by the time of the RSGB AGM on 7 December.

* *c/o RSGB HQ.*

BAND PLANS

BOTH THE HF and the VHF band plans came under the conference microscope. It was agreed that the basis of planning for the HF, VHF, UHF and Microwave bands will be by mode and the *bandwidth* required by the signal. A new mode called Machine Generated Modulation (MGM) will now be used for those systems where computer processing is an essential component of transmitting and receiving, for example FSK441, JT44 and PSK31. This approach will make planning very much easier with a logical placement of the new digital modes. The new approach will initially be implemented on the 2m and 6m bands, but not in the first instance on 70cm due to the complexity of allocations on that band. The new 6m and 2m band plans can be found in 'RSGB Matters' on page 6 this month.

The beacon sub-band within the 430MHz band will change to a new frequency allocation, 432.400 - 432.490MHz with effect from 1 January 2004.

The RSGB 70MHz band will now feature in the IARU Region 1 band plan. It was interesting to note that several countries are now very interested in the possibility of an allocation at 70MHz.

OTHER CONFERENCE NEWS

CONFERENCE AGREED to adopt new 6m operating guidelines proposed by the UKSMG and supported by the RSGB as representing best operating practice.

There will be no changes to HF SSB Field Day but the restriction on band changes in the single operator category of the IARU Region 1 contests (a 10-minute rule) was eliminated.

The importance of a region-wide co-ordinated emergency communications policy was recognised when conference adopted with much acclaim the RSGB proposal to appoint a IARU Region 1 Emergency Services Coordinator. RSGB Board member Gordon Adams, G3LEQ, was appointed to fill this important new role.

To counter the threat of the introduction

IARU President Larry Price, W4RA, welcomes delegates to the Conference. On the left, Tim Hughes, G3GVV, outgoing secretary of Region 1.

RSGB President Bob Whelan, G3PJT (centre), pictured with the new Chairman of IARU Region 1, Ole Garpestad, LA2RR (left), and the new Secretary of the Region, Don Beattie, G3BJ.

Louis van de Nadort, PA0LOU, and his wife relaxing at the final dinner of the Conference. Lou retires from the Executive Committee after nearly 30 years service to the Region.

Wojciech Nietyksza, SP5FM, the retiring Chairman of the External Relations Committee, and a key player in working on the international privileges for amateur radio.

of broadband data systems carried by powerlines and the effect they will have on the HF spectrum, conference recognised the importance of the Region being a full member of European Telecommunications Standards Institute (ETSI) so that we could, as a region, co-ordinate and present our concerns to the responsible regulatory bodies.

UK FOUNDATION LICENCE CAUSES A STIR!

THE RESULTS OF THE Foundation Licence programme caused a great deal of interest amongst all delegates. The RSGB delegation answered many enquires and gave out dozens of Foundation Licence information packs to interested Societies. It appears that many other Region 1 and Region 3 societies such as PA, S5, 5Z, LY, 9V and VK will be trying to establish a similar programme.

ALL CHANGE AT THE TOP

THE IARU Region 1 executive has a new look with a new Chairman, Secretary and Treasurer.

Ole Garpestad, LA2RR, becomes Chairman; Don Beattie, G3BJ, replaces Tim Hughes, G3GVV, as Secretary; and Andreas Thiemann, HB9JOE, takes on the role of Treasurer. Tafa Diop, 6W1KJ, continues as Vice-Chairman and the other members of the committee are: Abdi Razak A Al-Shahwarzi, A41JT; Hans-Heinrick Ehlers, DF5UG; Panayot Davev, LZ1US; Hans Blondeel Timmerman, PA7BT; and Max Raicha, 5Z4MR.

The RSGB's influence in Region 1 remains strong with Bob Whelan, G3PJT, replacing John Bazley, G3HCT, as Chairman of the influential Radio Regulation Working Group. Martin Harrison, G3USF, Chairman of the RSGB Propagation Studies Committee, continues as the Region 1 Beacon Coordinator and Iain Philipps, G0RDI, Chairman of the RSGB DCC Committee, takes over as coordinator of the VHF and Microwave beacons from John Wilson, G3UUT. Graham Shirville, G3VZV, was appointed Region 1 satellite co-ordinator and will act as liaison with AMSAT, and as was earlier reported Gordon Adams, G3LEQ, becomes the region's Emergency Services co-ordinator.

LONG SERVICE RECOGNISED

LOUIS van de Nadort, PA0LOU, received the Roy Stevens, G2BVN, award for his long and distinguished service. Lou stepped down as chairman of the executive committee after 25 years! Wojciech Nietyksza, SP5FM, retiring from the EC and as chair of the External Relations Committee, and Tim Hughes, G3GVV, retiring as Secretary, were especially thanked by Conference for their long and devoted service to the IARU.

Region 1 medals were awarded to: John Bazley, G3HCT; Tim Hughes, G3GVV; Ron Roden, G4GKO; and Wojciech Nietyksza, SP5FM. ♦

Hans Blondeel Timmerman, PA7FT, the new Chairman of the External Relations Committee.

ON THE COVER

THE photograph on the cover of *RadCom* this month shows the members of the UK delegation and observers at the San Marino Conference. Left to right: Don Beattie, G3BJ; Hilary Claytonsmith, G4JKS; Graham Shirville, G3VZV; David Butler, G4ASR; John Wilson, G3UUT; Bob Whelan, G3PJT; Colin Thomas, G3PSM; Alan Betts, G0HIQ (RA); Peter Kirby, G0TWW; Denise Carter (RA). Missing from the picture is Mike Dixon, G3PFR.

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IC-R3

ML&S £399 ZERO DEPOSIT! 36 x £14.51

The latest scanner from Icom offering audio and Visual scanning facilities. Listening to your local repeater or watching Crossroads it does the lot.

IC-7400

With 32 bit DSP and 100W on HF/50MHz and 144MHz plus a built in ATU this radio offers performance at a value for money price.

ML&S £1499 ZERO DEPOSIT! 36 x £52.68

zero DEPOSIT

IC-718

ML&S £649 ZERO DEPOSIT! 36 x £23.60

If you are not fussed about FM and want an HF radio that performs well with minimal controls then the IC-718 could be the radio for you. With DSP and Keypad frequecy entry this is a popular choice with people who just want to connect up go!

IC-756 Pro Mk2

ML&S £2495 ZERO DEPOSIT! 36 x £90.71

zero DEPOSIT

The Icom Flagship is proving to be very popular with the SSB Audio fanatics on 20 metres.It is also a very popular CW radio with some of our CW only customers. Equally at home with newcomers as well as experienced operators! The 756 Pro 2 (or IC-756 MK3) offers Dual receive, multicolour TFT display,100W HF & 6m and built in ATU. This radio requires a good quality 25 amp 13.8v PSU. The features of this radio can not be given full justice in a few lines so call for a brochure.

ICOM R-75

ML&S £599 ZERO DEPOSIT! 36 x £21.78

PC Programmable Requires PC-R10 at £39.95

NEW!

Yet another winner from Yaesu. The all new FT-8900 offers 2m, 6m, 70cms and 10m. 50 Watts output (35 Watts UHF). Full duplex between bands. The features are endless! Call for a brochure today!
Before you ask who makes a quad band mobile whip for it?
Maldol do of course.

ICOM IC-R10

Covering 100kHz to 1300MHz with AM/FM/WFM and SSB. Complete with Nicads,Charger and rubber helical wide band antenna all for only £319.99 Add the Super Searcher (£99.95) and RT-R10 (£109.99) for reaction tuning to nearby transmitters

ML&S £279 ZERO DEPOSIT 36 x £10.14

KENWOOD TM-G707

ML&S £289 ZERO DEPOSIT! 36 x £10.51

Simple Twin Band VHF/UHF Mobile with large easy to read display. With the addition of the VS-3 Voice synthesiser this is an excellent radio for blind operators!

KENWOOD TH-F7E

ML&S £259 ZERO DEPOSIT! 36 x £9.42

A dual band hand held with built in Scanner. Full VHF/ UHF Dual band coverage plus 100kHz to 1300MHz scanner built in. SSB receive on all frequencies up to 470 MHz. Built in ferrite antenna for short wave.

KENWOOD THD7E

An excellent 6 Watt Dual band VHF/UHF hand held with built in TNC. Ideal for APRS or DX cluster watching.

ML&S £319 ZERO DEPOSIT! 36 x £11.60

AOR 5000

ML&S £1449 ZERO DEPOSIT! 36 x £52.68

zero DEPOSIT

AOR 7030

ML&S £749 ZERO DEPOSIT! 36 x £27.23

AOR 7030+

ML&S £879 ZERO DEPOSIT! 36 x £31.96

PC Programmable

AOR 8600 MK II

ML&S £699 ZERO DEPOSIT! 36 x £25.41

AOR AR 8200 MkIII

ML&S £389 ZERO DEPOSIT! 36 x £14.14

KENWOOD TS-2000E

ALSO AVAILABLE: 23cm version CALL FOR DEAL!

Kenwood bought us the first full DSP hf radio and now TS-2000 is the first DSP all band radio! Coverage is 160m-70cms with built in ATU (HF & 6m), Built in TNC, 100 Watts HF, 6 & 2m 50W 70cms!

TS-2000X

Same as the TS-2000E but with 10W23cms as well!

ML&S £1695 STD UNIT
ZERO DEPOSIT!
36 x £61.93

KENWOOD B2000

zero DEPOSIT

TS-B2000E and TS-B2000X Same spec as the TS-2000E and X but with no controls on the main unit. Operation is either via a PC or optional remote mobile head kit!

If you require the B2000 or 23cms CALL FOR A PRICE PACKAGE

ML&S £1599
ZERO DEPOSIT!
36 x £69.42

YAESU FT-1000MP MK5

zero DEPOSIT

The flagship of the Yaesu range goes from strength to strength and is the only 200 Watt base station in production.
Built in ATU

ML&S £2799
ZERO DEPOSIT!
36 x £101.76

YAESU QUADRA VL1000

zero DEPOSIT

This state of the art 1000W HF & 6m amplifier is in a class of its own. Couple it to any 100W HF or 6m radio and within seconds the ATU has tuned and you are ready to crack the pile ups *(in fact you will probably create a few of your own)*. Just because Yaesu make the amp you do not need a Yaesu to drive it. *(Not cheap but then the best never is!)*

ML&S £3999
ZERO DEPOSIT!
36 x £173.62

YAESU FT-847

zero DEPOSIT

This radio has established itself as a very popular Shack in a box! All bands 160m to 70cms *(including 4 metres)*. With DSP and options for Collins filters this radio is a serious DX machine with full Satellite capability

RRP £1699 ML&S £1199
ZERO DEPOSIT!
36 x £43.59

KENWOOD TM-D700E

zero DEPOSIT

Dual band VHF/UHF mobile with built in TNC! Ideal for Packet or APRS. The latest version can connect to the TS-870 and TS-570 for DX cluster auto QSY.
(FREE X band repeat for Raynet operators on request)

ML&S £449
ZERO DEPOSIT!
36 x £16.32

KENWOOD TS-570DGE

zero DEPOSIT

This is one of our most popular HF radios. Offering an excellent blend of simplified operation with state of the art performance. An ideal 1st radio as well as an excellent portable DX station! Built in ATU

ML&S £849
ZERO DEPOSIT!
36 x £30.87

ICOM IC-910H

zero DEPOSIT

The Only VHF/UHF base station Still in production. With full all mode dual receive. 100 watts VHF & 75 watts UHF. You can add the UX-910 to give 10 Watts of vb23cms.
UX-910 price £349

ML&S £1249 STD UNIT
ZERO DEPOSIT!
36 x £45.41

ICOM IC-7400

zero DEPOSIT

NEW ICOM RADIO!

The replacement for the popular IC-746 has 100 Watts HF, 6m and 2 metres all mode operation,
Built in ATU for HF and 6m.
Full IF DSP
Fast becoming a hot seller!

ML&S £1449
ZERO DEPOSIT!
36 x £52.68

ICOM IC-706 MK2G

zero DEPOSIT

Why did they not just call it the Mk3? Call it what you like this is one of the best mobile radios available with HF ,6m, 2m & 70cms plus DSP. All mode operation and DSP

ML&S £849
ZERO DEPOSIT!
36 x £30.87

KENWOOD TS-50S

zero DEPOSIT

If you do not want DSP or built in ATU but want a straight forward no nonsence 100 Watt HF radio look no further! The TS-50 is at home in the shack or in a mobile installation. 160m-10m all mode ML&S price £629

ML&S £629
ZERO DEPOSIT!
36 x £22.87

KENWOOD TS-870S

zero DEPOSIT

The original DSP radio Still a popular choice among serious HF operators. Covering 160m to 10 metres all modes.
Built in ATU
ML&S Price £1399.00

ML&S £1399
ZERO DEPOSIT!
36 x £50.86

ICOM PCR-1000

zero DEPOSIT

Computer controlled receiver 100kHz-1300MHz

ML&S £309
ZERO DEPOSIT!
36 x £11.23

ICOM IC-R8500

zero DEPOSIT

Covering 100kHz-2000MHz

ML&S £1299
ZERO DEPOSIT!
36 x £47.23

ICOM IC-R2E

This little handy scanner is very simple to operate and is very popular among our commercial customers

LAST FEW AVAILABLE
£139

MORSE TESTS

at Martin Lynch & Sons

ML&S provide the facility for Morse tests ON DEMAND on the morning of the last Saturday of every month *(except December)*. We offer the **5 WORD per MINUTE MORSE TEST** and the **Foundation Morse Assessment**. This is a unique opportunity to take your morse test in a relaxed environment. *Any questions call* ***CHRIS TAYLOR*** *on* **0208 566 1120** *or email:* **morse@hamradio.co.uk**

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YAESU FT-8900

zero DEPOSIT

ML&S £429
ZERO DEPOSIT!
36 x £15.60

NEW! YAESU VX-7R

ML&S £329
ZERO DEPOSIT!
36 x £11.96

Do those engineers at Yaesu ever sleep? The best 3 band radio we have ever seen is here and user reports are excellent. The first fully water-proof hand held has all the features the famous VX-5R had but has the addition of a second receiver. 2, 70 & 6 at 5 Watts from a Lithium Ion Battery This radio will last you for years. Call for a brochure!

YAESU VR-500

ML&S £199

YAESU VR-120D

100Hz-1300MHz AM/FM and WFM, a good all round pocket scanner with World Broadcast AM reception and a host of new features for a budget scanner

ML&S £159

Accessories

MD-100 Desk mike for most Yeasu radios £110.00
MD-200 Elite Desk Nike for most Yaesu HF radio's £249.00
SP-8 Matching Speaker for the FT-1000MP, FT-1000MP MkV , FT-1000MP mkV field and FT-920 radios £139.00
FP-1030 30 amp PSU Ideal for any 100 watt HF radio £229.00
MC-60A Amplified Desk Microphone for the Kenwood range of radio's. (Sounds good on the Yaesu FT-920 too) ML&S price.....£117.95
PS-52 PSU matches the TS-570,870 and TS2000 .....ML&S Price £229.95
SP-23 Matching Speaker for the TS-570 & TS-2000 .....ML&S price £68.95
SP-31 Matching Speaker for the TS-870S .....ML&S price £82.95

From the London showroom, Martin G4HKS & Chris G0WTZ proudly present the very first FT-897 in the U.K. Martin commented "With all the restrictions and difficulties the modern Radio Amateur faces putting up antenna systems at home, the whole concept of the "Transportable" FT-897 removes this obstacle. Take the transceiver with you, sling a wire up at any location from a hilltop to a supermarket car park and operate all day!"
Well done Yaesu, another first rate product.

MALDOL ANTENNAS

We have just received our new delivery from Maldol. Call today for a catalogue of the range.

YAESU FT-V1000

The Yaesu 200 Watt transverter will work with The FT-1000MP, FT-1000MP MkV, FT-1000MP Field. Covering the entire 6 metre band giving you 200 Watts of clean RF!

FP-29 *(required for FT-1000MP and FT-1000MP MkV Field)* £349

ML&S £799
CALL FOR A DEAL

YAESU FT-840 FM

zero DEPOSIT

now with FM!

This is an excellent starter radio is sadly discontinued so we are offering the TS-50S from Kenwood at £629 or we have a few used units available.

CALL FOR AVAILABILITY

YAESU FT-817

choose a package to suit you

The Yaesu masterpiece! This little radio offers 160m to 70cms For less than £600 you can have a take away shack !

Package 1

FT-817,Nicads,Charger,DC lead,Microphone,Shoulder strap & AA cell tray.
Only £595.00

Package 2

As package 1 but with Miracle whip,Case,PSU and a choice of Palm Mini Paddle or DTMF Microphone!
Only £799

Package 3

Package 1 plus 50 watt Tokyo Hi power amp, LDG Z11 ATU,SP-817 Speaker Plus Samlex SEC-1223 PSU.
All for £1199

FT-817 Accessories

THP 50 watt amp £299.00
LDG-Z11 ATU £209.00
Miracle whip antenna (MkII) ...£129.95
SP-817 Spealer £19.95
MP-817 Palm Mini paddle £49.95
ATX Walkabout antenna £69.95
CSC-83 protective case £19.95
MH-36E8J DTMF Microphone ... £51.00
YF-122S Collins SSB Filter £99.00
YF-122C Collins 500Hz CW filter £99.00

YAESU FT-920AFC

zero DEPOSIT

Offering 100 watts HF and 6metres this radio is a delight to operate. Fitted with FM,6kHz AM filter and 500hz CW filter plus simple to operate DSP this is an excellent base radio. (Requires 25a 13.8v PSU). Built in ATU

ML&S £1199
ZERO DEPOSIT!
36 x £43.59

YAESU FT-100D

zero DEPOSIT

Following on from the FT-100 the D offers 500Hz CW filter CTCSS Decode and bigger speaker for that extra punch. 160m-70cms all mode with wide band receive (100kHz to 999MHz) An absolute bargain at £849!

ML&S £899
ZERO DEPOSIT!
36 x £32.68

YAESU FT-897

NEW!

zero DEPOSIT

ML&S £2199
ZERO DEPOSIT!
36 x £79.95

FT-1000 Mark V Field

At last the New Multiband Yaesu has arrived. 160m-70cms all mode with DSP. Designed by the same team that gave us the amazing FT-817 - you know it will be good.
Options available are:-
Internal PSU, Internal batteries, Matching bolt on ATU, Collins CW filter, Collins SSB Filter,DTMF Microphone.
Order yours today for only £1099!

ML&S £1099
ZERO DEPOSIT!
36 x £39.96

Following on from the sucess of the amazing FT-1000MP the new FT-1000MP Mk V Field gives 100 watts plus all the features of The FT-1000 MP MkV ! This is the only HF radio available with a built in PSU! Built in ATU

- *High Efficiency Cooling system*
- *Conservative 100 Watt Low Distortion Final Amplifier Design*
- *High Speed Automatic Antenna Tuning System*
- *Dual Receive With Independent AGC Systems*
- *Enhanced Digital Signal Processing*
- *Selectable SSB Pattern Contour Filters*
- *Industry-Leading RF Front End Design*
- *3 RF Preamp Modes+ IPO (Direct Mixer Feed)*
- *Outstanding IF Filter Chain*
- *Full Breaking CW and Electronic Keyer*
- *Multifunction Display with Improved Contrast*
- *Enhanced Shuttle Jog Tuning Dial*
- *Direct Keypad Frequency Entry*
- *Twin Stacked VFO Registers*
- *Easy Digital Mode Interfacing*
- *And MORE.....*

LOOK! New Miracle Antenna has arrived!

MIRACLE WHIP MkII

This antenna has been designed with the FT-817 in mind and is a 55 inch whip with a tuning box at the base. The performance is staggering and it will work with any radio from 3.5-460MHz (25W max). It even works without a counter poise. Call for full details!

ML&S £129.95 IN STOCK!

YAESU VX-1R

Still the smallest handheld around with built in scanner offering up to 1 Watt on 2 & 70 and Lithium ion battery that last for ages this is the ultimate pocket radio at only £159!

zero DEPOSIT

ML&S £159
ZERO DEPOSIT!
36 x £5.78

YAESU FT-7100

zero DEPOSIT

For the same price most other manufacturers offer a twin band Yaesu offer a full blown Dual band mobile. With CTCSS, switchable deviation, dual receive, Built in Duplexer plus remote head *(requires YSK-7100 at £39)*

ML&S £329
ZERO DEPOSIT!
36 x £11.96

YAESU VR-5000

zero DEPOSIT

The new desktop scanner from Yaesu all bands and all mode with a host of features.

ML&S £599
ZERO DEPOSIT!
36 x £21.78

Kenwood TM-V7E

Dual Band Mobile giving VHF & UHF coverage with dual receive of VHF & UHF or HF & VHF/UHF & UHF.
Free wide band Receive on request!
ML&S price: £359.
ZERO DEPOSIT, 36 x £13.05

Icom IC-T90E

The new 3 band hand held from Icom is long over due and well worth the wait. The buttons have a very positive feel and audio is good on both TX and RX. With lithium Ion Battery giving 5 watts on 2,70 & 6 "Another winner from the Icom stable"
ML&S price £299.
ZERO DEPOSIT, 36 x £10.87

FT-1500M

50 watt 2m FM mobile with DTMF mike and CTCSS making it ideal for internet linking (See www.g7wfm.co.uk <http://www.g7wfm.co.uk> for details on internet linking)
ML&S price still only £159.00 ZERO DEPOSIT, 36 x £5.78

Icom IC-2725E

When I first saw the IC-2725 I thought it was just another dual band radio! When I connected it to an ariel I soon discovered it was the Dual Band Radio. The first radio I have seen to be able to monitor 2 Airband signals at the same time. Pagers do not seem to bother it at all. The remote head puts all the controls where you want them. The mike can completely operate the radio (including frequency entry and DTMF). If you want a serious dual band radio with excellent scanning facilities then the IC-2725 is ideal. ML&S price £349.ZERO DEPOSIT, 36 x £12.69

FINANCE EXAMPLE VX-7R AT £329.00
PAYMENT ILLUSTRATION: ZERO DEPOSIT: 36 payments of £11.96 *TOTAL AMOUNT PAYABLE:* £430.56
APR:19.9%. ML&S is a licenced credit broker.
Finance offered subject to status. Full written details on request. E&OE

BEST PRICES at ML&S - *where else!*

New RSGB EMC Service for Members and Clubs

by Charles Elliott, G4UJW*

ONE OF THE main strengths of the RSGB EMC Committee (EMCC) is the volunteer EMC Co-ordinator Scheme. Within this team we have a very high degree of expertise. In addition we also have a team of EMC Corresponding Members (CM).

ROOM FOR IMPROVEMENT

BUT THERE IS always room for improvement and the main weaknesses of this arrangement were:

1. They were limited to giving telephone advice only.
2. They were reactive, rather than proactive, in as much as that they waited for a problem to arise before trying to deal with it.
3. Our geographic structure was not in accord with the RSGB regional system.

In some cases our former structure worked quite well, but also had room for improvement, for the following reasons:

1. Conversing on the telephone could not always give a clear picture of the problem and limited the quality of help we could offer.
2. Carrying out the most basic tests often needs at least two experienced radio amateurs.

The EMC Committee, after consultation with the RSGB Regional Managers (RRMs), has made the following changes:

1. Restructured our EMC zones to match the RSGB regions.
2. Promoted an initiative to align our EMC Coordinator Scheme alongside the Regional Manager Scheme where the RRM and EMC Co-ordinator would work in close cooperation.
3. Promoted a scheme whereby our EMC Co-ordinators and CMs are invited to give talks to local clubs. Clubs would be encouraged to acquire a basic set of EMC equipment, including filters. The talk outlines would be prepared by the EMCC.

OBJECTIVES

- To give a better service to our members.
- Restructure in line with RSGB boundaries.
- Provide seamless cohesion with the RRM structure.
- Closer involvement of RRMs and deputies.
- Utilise the expertise of Coordinator team.
- Make better use of the expertise of CM team.
- Promote clubs by higher profile.

Following the announcement, and launch, at the AGM, on 7 December 2002, this new service is now in full operation.

In the past, whenever members experienced EMC problems, and requested assistance, they were guided through the process of first reading through the appropriate EMC leaflets (available on the EMC website or in printed form). If they then needed further help, they were referred to any one of the volunteer EMC Co-ordinators located in various parts of the UK.

This system has worked very well - over the past three years hundreds of EMC problems have been satisfactorily resolved. For obvious reasons, the help given by our EMC Co-ordinators had been restricted to giving advice by telephone only. We were unable to offer house calls.

However, there are occasions when a member is in need of personal assistance - perhaps needing another pair of hands to assist in carrying out tests. It is this area that we are now trying to resolve.

During the past few months, discussions have taken place between the EMC Membership Services Administrator and the RSGB Regional Mangers and the new approach has been warmly welcomed.

NEW PROACTIVE APPROACH

THIS IS A joint approach involving close co-operation between the individual radio amateur, the clubs, the RSGB Regional Managers and the EMC representatives.

How it Will Work

We have already restructured our team of EMC Co-ordinators into regions that correspond with the RSGB regions. Each of the RSGB Regional Managers has been sent a complete list of EMC Co-ordinators, together with the EMC Committee's Corresponding Members, who have been invited to give support to the new scheme.

The Regional Managers have agreed to spearhead the scheme by encouraging clubs to invite an EMC Co-ordinator or EMC Corresponding Member to give a talk at their club.

A talk outline has been sent to each EMC representative - some of whom have already expressed their enthusiasm for the scheme and are looking forward to receiving an invitation to visit the clubs in their region.

Who Will Benefit?

This really is a scheme where everyone gains. The individual member will have access to hands-on help when required. But we would stress that this system should not be abused: only when personal help is *essential* and the other steps (reading and following the advice given in the EMC leaflets) have been exhausted should the EMC representative be called in.

The clubs will be able to render valuable assistance to a fellow amateur who will (hopefully) in turn gain a new club member. They will be able to invite a speaker who will be able to provide up-to-the-minute information, together with solutions. They will also be given suggestions for suitable EMC club projects.

The Regional Managers will benefit by helping to provide clubs with a valuable and pertinent service.

The EMC representative will be able to call on clubs to assist whenever hands-on experience is required.

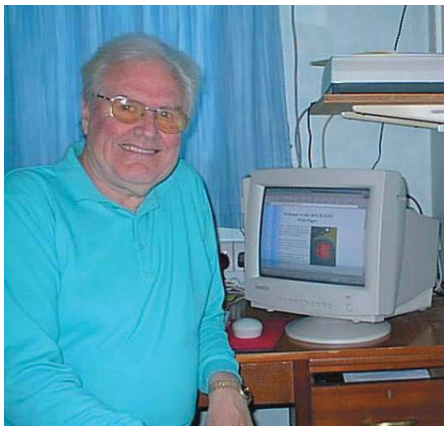
This new proactive approach will promote greater harmony between the clubs, Regional Managers and the EMC team. ♦

Vacancies for EMC Co-ordinators

WE CURRENTLY have vacancies in three regions. These are Northern Ireland, the South and South East, and East and East Anglia.

Being a volunteer EMC Co-ordinator is a very rewarding experience in the sense that you are able to offer much appreciated help to your fellow members and you will able to take part in the exciting developments outlined above.

If you would like to discuss the prospect of joining the EMC team in this capacity, please get in touch with Charles Elliott, G4UJW, the EMC Members' Services Administrator, either by phone on 01283 791213 or by e-mail to: g4ujw@qsl.net



Author Charles Elliott, G4UJW, who is also the RSGB EMC Committee's webmaster, updating the www.qsl.net/rsgb_emc website.

WWW.
RSGB EMC Committee www.qsl.net/rsgb_emc

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Book Review

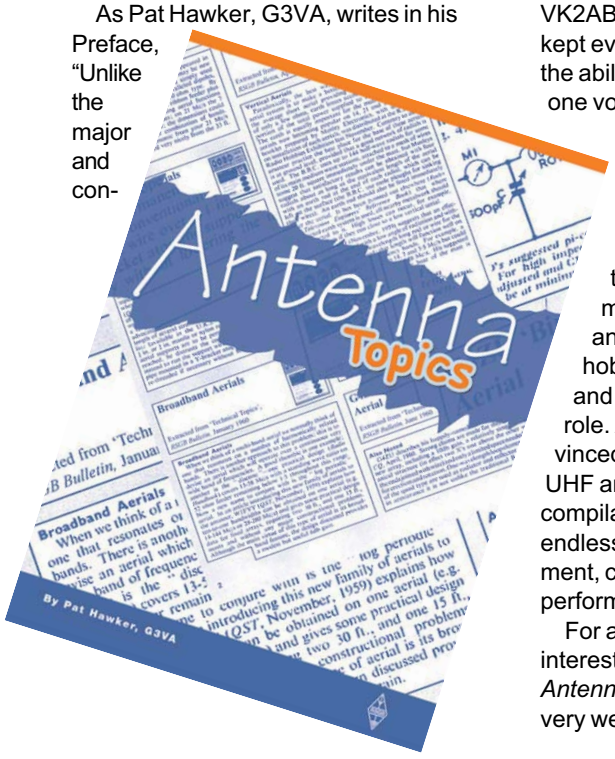
ANTENNA TOPICS

by Pat Hawker, G3VA
Reviewed by RSGB HQ Staff

ONE OF *RadCom's* most popular columns, 'Technical Topics' has been the source of numerous features on antennas in the 43 years since its inception. *Antenna Topics* is a compilation of virtually every article on antennas published in 'TT' between 1958 and 1999. And there are a lot of them: the book is A4 in size and runs to no fewer than 376 pages of 'scrapbook' type cuttings of articles. The book is divided into four sections, covering the years 1958 - 1969, 1970 - 1979, 1980 - 1989 and 1990 - 1999. In addition, there is a comprehensive index to make it easy to find that one article you want.

As with the popular *Technical Topics Scrapbooks*, *Antenna Topics* is essentially an ideas book based on reprinted extracts from 'TT', but in this case devoted entirely to material relating to antenna systems. It is *not* another antenna textbook, but instead provides, in understandable and largely non-mathematical terms, a unique compendium of useful suggestions and advice contributed by several generations of RSGB members, both in the UK and overseas. This is supplemented by digests of articles that have appeared in amateur radio and professional journals and magazines, or presented at national or international conferences.

As Pat Hawker, G3VA, writes in his Preface, "Unlike the major and continuous changes in equipment, the basics of antennas remain ageless. Antenna systems developed up to 100 years ago are as valid today as when they first emerged from such pioneers as Marconi, Levy, Franklin, Beverage, Uda-Yagi, George Brown of RCA, Kraus of Ohio State University and the Bell Laboratories' rhombic." In other words, good, sensible advice from 1958 is just as valid today as it was then. But despite the fact that the *basics* of antennas have remained unchanged for a century, there has been a myriad of antenna ideas and development in the last 40-odd years. For example, 'TT' was the first amateur radio column to draw attention to the development of compact, reasonably-efficient transmitting loops, initially developed by the US military for use in the jungles of Vietnam, while the 'new' Crossed Field Antenna was first described in 'TT' as long ago as 1989.



One of the great features of 'TT' is that it has attracted original contributions from antenna pioneers, both professional and amateur, throughout its existence. A casual glance through *Antenna Topics* reveals nuggets from such luminaries as Dud Charman,G6CJ; Les Moxon, G6XN; Fred Cator, VK2ABQ; John Belrose, VE2CV; and Laurie Mayhead, G3AQC. It is fascinating to follow the development of antenna ideas through the years, for example the G4ZU 'Birdcage' and the VK2ABQ mini-beam. Even if you have kept every issue of *RadCom* since 1958, the ability to follow these trends easily in one volume is worth the price of the book alone!

Amateurs have always experimented with antennas, but today, when the vast majority of amateurs use commercial transmitting and receiving equipment rather than 'homebrew', antennas remain the one part of the hobby in which home construction and experimentation play a significant role. As G3VA says: "I remain convinced that the LF, MF, HF and VHF / UHF antenna systems described in this compilation . . . will provide an almost endless source of interest and experiment, capable of achieving a useful performance at an acceptable cost."

For any radio amateur who is at all interested in antennas (and aren't we all?), *Antenna Topics* is a must-buy. It will be a very welcome addition to the Christmas stockings of all amateur radio enthusiasts.

Antenna Topics
Published by RSGB
ISBN 1 872309 89 5
376 + viii pages, soft covers
Members' price: £16.14 + P&P (£18.99 non-members)
Available now from the RSGB Shop, tel: 0870 904 7373, www.rsgb.org/shop

SIMPLE TEST EQUIPMENT FOR THE QRPer

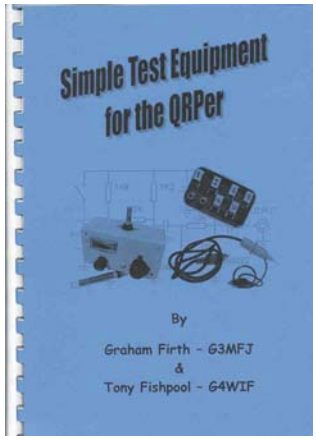
by Graham Firth, G3MFJ, and Tony Fishpool, G4WIF.

DON'T BE misled by the title, this book will be useful for *any* amateur, not just those of a QRP disposition. It contains 20 mini-projects which result in useful pieces of test equipment.

The book is simply presented in A5 format with a plastic binding that allows the book to lie flat, no matter whether you are working from the front, middle or back. This is a big bonus for any experimenter.

There are 58 pages, filled with simple, straightforward circuits that should be within the capabilities of any amateur to build and troubleshoot. The explanations and instructions are clearly presented, although the printing process has not always been able to cope with the presentation of equations. If you need to 'crack the code', try a textbook such as the *Radio Communication Handbook* (available from the RSGB Shop) or ask a friend what the equations are supposed to represent.

Amongst the items of test equipment you will find in the book are an RF signal generator, a current-limiting power supply, a spectrum wavemeter, a noise bridge, a sweep oscillator and a crystal tester.



If you want to build something that you will use over and over again, this is an excellent source book.

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Available from Mr G Firth, 13 Wynmore Drive, Bramhope, Leeds LS16 9DQ. £6.00 post paid in UK. UK Cheques payable to 'G Firth', otherwise an International Money Order in pounds Sterling. Information on overseas rates from www.fishpool.org.uk

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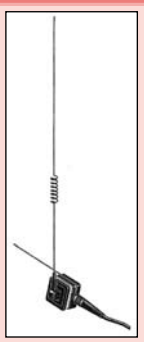

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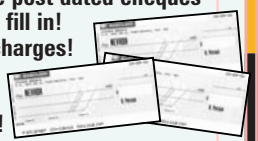

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An Overview by Carlos Eavis, GOAKI*

Carlos adjusting the HMC multi-band HF - UHF antenna.

HOW MANY TIMES have you heard it said that the most important piece of radio equipment is the antenna? Even the best transceiver available will fail to perform if connected to an inefficient radiator. When this statement is applied to a mobile antenna, the efficiency of which is normally compromised due to its size limitations and its height above ground, it does mean that a little more has to be considered when choosing the right mobile antenna for your application.

Off the wall . . . The Maldol VHF / UHF antennas, HFC monoband antenna with 80m loading coil, and HMC multi-band.

With 24 years of mobile radio experience behind me, covering most bands and modes from 160m to 70cm, you can imagine my delight when the Maldol antenna catalogue was placed on my desk, accompanied by a request to review a few samples.

My motor car already had a convenient SO-239 socket in the middle of the boot and a multimode 'DC to light' radio.

When evaluating any product, one of the first parameters that should be taken into account is the environmental condition to which the item is going to be subjected. A close second is how it will be applied. The world that the average mobile antenna has to survive in is far removed from the cosy roof top on which your base station antenna resides. The constant changes in vibration, wind loading, and heating effects are far more pronounced on a mobile antenna. The design has to incorporate relatively easy installation and removal processes, yet be strong enough to withstand coming into contact with low-flying tree branches.

HF ANTENNAS

THE MALDOL range of mobile HF antennas is grouped into two categories, the HFC mono-band units which individually cover 3.5MHz to 50MHz, and the HMC multi-band mobile antenna which can be made to cover 3.5MHz through to 430MHz in one assembly.

The HFC monoband antenna, with 80m coil attached.

The **HFC** mono-band antennas are well-constructed electrical quarter-wave base-loaded whips, varying in length from 2110mm for the 3.5MHz antenna down to 1010mm for the 50MHz units.

They are listed as having a maximum input power of 120W PEP (but note this does require that you resonate the antenna before applying this amount of RF, or you will overheat the loading coil).

Close-up of the top of the loading coil and bottom of the whip section of the HFC monoband HF mobile antenna.

A usable operating bandwidth of 20kHz was noted on the 3.5MHz antenna, increasing to 500kHz on the 28MHz one. The adjustment on all the mono-band units is with a small hexagonal key provided. They are attached to the mount with a very robust PL-259 connector. The base-loaded design reduces the stress placed on the mount from even the 2110mm-long antenna, allowing this to be a very practical series of HF mobile antennas. In use, the only limitation found when using this series was the need to alter physically the length of the whip when changing frequency, something that the mobile operator in general tries to avoid.

Close-up of the HFC 80m loading coil attached to the top of the car boot.

Compared with my normal 80m mobile antenna, the HFC-80 performed well. It was tested while driving and I found its narrow-band design helped to limit out-of-band interference which the receiver can suffer from. The signal reports received from the various 80m nets I usually drop into were favourable (I did not let it be known that I was testing a different antenna) and many commented that the mobile sounded like a base station, with very little mobile 'flutter' observed.

MULTI-BAND HF

THE **HMC** multi-band antenna is electrically a centre-loaded quarter-wave from 3.5MHz to 50MHz, a half-wave at 144MHz and 2 x 5/8-waves at 430MHz. In its

* 33A Welldon Crescent, Harrow, Middx HA1 1QP.

Looking up at the HMC multi-bander.

standard form it only covers 7 / 21 / 28 / 50MHz on the HF bands and requires optional coils for the other bands. When assembled the antenna is 2460mm in height and weighs 800g. The power rating and the observed bandwidths are the same as the mono-band units and the same warning applies to tuning at low power first!

The centre-loading coil design, the weight and its height makes this antenna unsuitable for true mobile operation. The wind loading when driving at moderate speeds could easily break the sturdiest of mounts, but it would certainly lend itself to being used when the vehicle was parked or on a stationary caravan.

VHF / UHF

THE MALDOL range for VHF and UHF is covered by their 'Apex' series, the 'Exceed' series and the 'SHG' series. The modern radio amateur would seem to be far more fashion conscious than his predecessors, as at one time any hastily-constructed contraption nailed to a motorcar would suffice to radiate a signal. Now it appears to have become a requirement to ensure that the antenna in use is not only resonant for the band, but is also the right colour! Matt black, stainless steel, silver grey and some with more chrome than a 1959 Cadillac seem to be the order of the day.

The Apex, Exceed and SHG series of VHF / UHF verticals all have the same PL-259 screw fitting.

There are six **Apex** (AX) antennas in the series, which are all designated dual-band, 144 / 430MHz. Some are a quarter-wave at 144MHz, while others are a half-wave with 2 x 5/8-wave being predominant on 430MHz.

They are all very light weight, ranging between 110g and 150g, and varying in height between 425mm and 1100mm. They are nominally power rated at 60W (maximum power input) and have a quoted gain of between 0dBi and 6.0dBi.

The smart silver / grey design, tilt-over for low access, moderate power handling and the different sizes available take into account that amateurs often need to consider these aspects especially when trying to blend it in on the family car.

The **Exceed** series is a range of 12 antennas with the same physical specifications as the Apex series, only differing by Maldol's claim to use a coreless 24k gold-plated coil. Maldol has included a tri-band version in this range to cover 50MHz as well as 144 / 430MHz.

The **SHG** (standing for Super High Gain) range of 15 antennas shares nearly the same technical specifications as the Apex series, with the main differences being that the power handling has been increased to 150W and that the physical construction of the antennas is more robust. Along with the tilt-over design, some of this range also include an impact-absorbing spring at the base of the whip - very useful when installing on a high vehicle and using country lanes.

As with the Exceed series, Maldol has included a tri-band version in the SHG range to cover 50 / 144 / 430MHz.

Being more than a little involved with the UK repeater network enabled me to use known signal sources to evaluate the various VHF / UHF antennas. At fixed points on my usual drive to and from work I noted down the received signal level and also my ability to access the different repeaters. Allowing for the various path loss conditions on a day to day basis, very little difference was observed between any of the range that I tested.

A direct comparison between my normal mono-band VHF antenna showed that the receive on the Maldol range was at the same level, but on transmit the reports I received showed my mono-band antenna had the advantage. This was to be expected and the comparison is not really a fair one: the trade-off between the better radiation pattern of a mono-band antenna against the convenience of dual-band antennas should be considered (after all, how many antennas will your boot hold?) The choice between the antennas is governed by where you can mount the antenna on your vehicle, how discreet you wish the installation to be, and the power handling requirement.

A mount for just about every part of the car.

"More chrome than a 1959 Cadillac"? Close-up of the Maldol SHG for 144 and 432MHz.

SUMMING UP

MALDOL has included in its catalogue a range of antenna mounts designed to fit almost every part of a motor vehicle, from the standard gutter mount to roof bar clamps, boot lips and even clip-on window glass mounts. All of these are well constructed and Maldol has put a lot of thought into trying to cover this important area, because amateurs are often reluctant to drill holes in their company car (remember that a hole drilled in the middle of the roof can stand in the way of your future promotions!) These mounts include all the hardware you require to install them as well as the hexagonal wrench. They are matt black in colour and will easily blend in. If all this fails you can always use their magnetic mount - but don't try to attach a large 3.5MHz antenna to it!

In conclusion, the range that Maldol has produced covers most of the requirements for the mobile amateur. The physical construction of the antennas is good and each one that was tried pre-formed as was expected. The range of mounting hardware available should be sufficient to cover every installation satisfactorily.

Thanks to ML&S (140 - 142 Northfield Avenue, Ealing, London W13 9SB; tel: 0208 566 1120; fax: 0208 566 1207; e-mail: sales@hamradio.co.uk; website: www.hamradio.co.uk) for the loan of the mobile antennas tested. For details of prices, please contact ML&S and ask for the Maldol catalogue and pricelist. ♦

STOP PRESS: Maldol has just released the HMC4 to match the Yaesu FT-8900 four-band transceiver. It covers 10m, 6m, 2m and 70cm.

PRODUCT NEWS

HEIL PRO-SET PLUS

THE HEIL Pro-Set has for several years been the *de facto* standard headphone and microphone combination for DX, DXpedition and contest use. Now, the Pro-Set Plus has been released, with dual microphone inserts, the Heil HC-4 and HC-5. The HC-4 is recommended for DX and contest operation, while the HC-5 has a wider audio range for 'normal' operating.

The headphones incorporate a phase reversal switch which allows for a 'spatial widening' effect.

The Pro-Set Plus comes with an adapter wired for Kenwood / Alinco, Icom or Yaesu transceivers (state which when ordering) and costs £199.95.

We plan to review this headset in *RadCom* in the near future. It is available from: **Waters & Stanton plc, 22 Main Road, Hockley, Essex SS5 4QS; tel: 01702 206835; fax: 01702 205843; e-mail: sales@wsplc.com; website: www.wsplc.com**

TRIDENT 6m BEAMS

TRIDENT - the newest UK antenna manufacturer - has announced the release of its 'DX Buster' series of 6m Yagi antennas. These antennas are designed for the serious 6m DXer. They are computer optimised for both performance and survival in the worst of the UK's weather. Using a riveted construction, the antennas are extremely lightweight, yet strong. The Yagis are pre-assembled so that they can be put together quickly without the need for measurement on site. The top-of-the-range 7-element 30ft-long boom Yagi boasts a gain of 13.3dBi with an impressive radiation pattern. It's ideal for stacking applications (weighing only 11kg) yet with wind survival of over 118MPH.

Two Trident 7-element long boom 6m Yagis spaced 22ft apart, 75ft high at the home station of Mike Devereux, G3SED.

Full details are available from Trident distributors **Nevada, Unit 1, Fitzherbert Spur, Farlington, Portsmouth PO6 1TT; tel : 02392 313090; fax: 023 9231 3091** or from the Trident website: **www.tridentantennas.co.uk**

FIRST SUB-£100 DIGITAL RADIO

PURE DIGITAL has released its PURE EVOKE-1 DAB digital radio, the world's first sub-£100 DAB digital radio. The EVOKE-1 is a stand-alone DAB radio. It has a scrolling LCD text display, station selection and volume knobs and controls for presets, display-settings, power and auto-tuning. EVOKE-1 has an integrated full range hi-fi speaker and features a reflex port for enhanced bass performance. EVOKE-1 has an RRP of £99.99 (inc VAT). It is available from retailers including Argos, John Lewis and Maplin Electronics.

'PURE Digital' is the new name for VideoLogic Systems - a division of Imagination Technologies. **PURE Digital, Home Park Estate, Kings Langley, Herts WD4 8LZ; tel: 01923 260511; fax: 01923 270188; e-mail: david.harold@pure-digital.com; website: www.pure-digital.com**

● W H WESTLAKE, supplier of coaxial cable and other feeders and antenna plugs to generations of radio amateurs, now has a new website at: www.whwestlake.co.uk

GWM MOVING PREMISES

WELL-KNOWN supplier of ex-PMR equipment, GWM Radio in Worthing is moving to new premises. Details of the new address will follow shortly, but the phone and fax numbers remain the same. Simon McDonald will still be with the business and says he looks forward to continuing to deal with customers in 2003. **GWM Radio; tel: 01903 234897; fax: 01903 239050; website: http://gwmradio.netfirms.com**

TWO NEW ICOM RIGS

THE **IC-2725** is an easy-to-use **2m / 70cm dualband FM mobile transceiver**. With a maximum power output of 50W on 2m and 35W on 70cm, the IC-2725 has CTCSS and DTCS tone signalling systems fitted as standard. Also new from Icom is the **IC-E90 tri-band FM handheld**. Operating on 6m, 2m and 70cm, the IC-E90 also features a wideband receiver which covers 0.495 - 999.990MHz in AM, FM and WFM. The IC-E90 has a 1300mAH Li-ion battery as standard and features 5W output on all three bands. Look for reviews on both these transceivers in the near future.

Icom (UK) Ltd, Sea Street, Herne Bay, Kent CT6 8LD; tel: 01227 741741; fax: 01227 741742; e-mail: info@icomuk.co.uk; website: www.icomuk.co.uk

LIQUID ELECTRICAL TAPE

'**LIQUID ELECTRICAL TAPE**' is a product made by **Plasti Dip**. Intended for use on boats, cars, pumps etc, the manufacturers have discovered that it is also ideal for use on amateur radio antennas. You just paint it on and, when dry, it forms a dielectric coating that seals out moisture, prevents corrosion and is acid and salt resistant. The manufacturers say it won't crack, peel or harden, remaining flexible even under extreme conditions. We hope to test a sample on a typical amateur antenna installation in the near future.

Plasti Dip, Unit 1, Harvesting Lane, East Meon, Petersfield, Hants GU32 1QR; tel: 01730 823823; fax: 01730 823321; e-mail: Beaumt@aol.com

LATEST FROM WATSON

A NEW **WATSON** budget **frequency counter** is scheduled to be released in early 2003. The **SC-1** is the first budget-priced portable counter able to read digital signals in the range 30MHz to 2.8GHz.

The SC-1 will be supplied with an internal nicad battery, an AC charger and BNC telescopic antenna. The price has not yet been finalised but it should be below £150 inc VAT.

Watson has also released a series of brass-based Morse keys. There are four models, the Miniature Morse Key at £36.95; the Morse key with counterpoint connector at £39.95; the Morse key with bearings at £41.95, and an iambic paddle key at £49.95.

Waters & Stanton plc, 22 Main Road, Hockley, Essex SS5 4QS; tel: 01702 206835; fax: 01702 205843; e-mail: sales@wsplc.com; website: www.wsplc.com

MICRO RADIO PRODUCTS

MICRO RADIO produces a range of simple, cheap kits for the Novice constructor. Two of the kits, a medium wave radio and an AF amplifier, were reviewed by Robert Snary, G4OBE, in the July 2002 *RadCom* [see page 36 - *Ed.*] Other kits available include a regenerative short wave broadcast receiver at £10.20, an 80m DC receiver at £12.00 and an HF crystal set with IC amplifier to boost reception at just £8.70. For further details please contact: **David Rowlands, Micro Radio Products, Dept RC, 7 Broomfield Road, Swanscombe, Kent DA10 0LU; e-mail: microradio@telco4u.net**

The GB4FUN Supporters' Honour Roll

GB4FUN 'Big Hitters'

A C E Germaney, G0LGT
Cheltenham Amateur Radio Association, G5BK
K Bearpark, GD4TOW

We asked members when renewing their membership to include a donation to help to continue to finance the GB4FUN mobile amateur radio demonstration vehicle. 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 'GB4FUN', c/o RSGB HQ.

N P Batchelder, 2E0NPB
B Davies, 2W0AVC
T W D Aliaga-Kelly, EI3G
CERN Amateur Radio Club, F6KAR
Mrs E P Tyler, G0AEC
J E Pepper, G0CHQ
J E Sidnell, G0DFF
M G Kendall, G0EMK
H Wright, G0LKB
R C Pardoe, G0MHZ
E Caligari, G0MRM
M R Watkins, G0NBB
J Cope, G0OUF
A C Dennis, G0PZX
R N Gibbs, G0RBQ
J Worsnop, G0SNV
South Derbyshire & Ashby Woulds Amateur Radio Group, G0SRC
L J Crow, G0TNH
A Davies, G0UYN
M Cowley, G1LAJ
T Jones, G1UMV
P A Van Falier, G1VAN
CJ Hine, G2FZO
Midland Contest Group and Radio Enthusiasts Society, G2HDF
J L Townend, G3BBD
P J H Matthews, G3BPM
H G Kimber, G3HAC
R Turner, G3IMG
D J Weaver, G3IZW
T S Waller, G3KBI
D S Booty, G3KKQ
J Anthony, G3KQF
K Day, G3LDJ
W G H Blanchard, G3LHB
G H Robbins, G3LNG
D B Smart, G3MGB
F A Robinson, G3TPV
Thames Valley ARTS, G3TVS
I M Fraser, G3TVT
G Bloor, G3UD
W A Coates, G3WAC
F R Bridges, G3WPM
E Hodgetts, G3WPY
D Evans, G3ZWL
J T Clegg, G4BIC
J Taylor, G4ERU
R P Rawle, G4FPJ
S J Perkins, G4FPV
D A Earle, G4FTA
V K Tatman, G4IMH
Dr G A Lester, G4JBF
S P Richardson, G4JCC
S C P Dunn, G4KCR
R K Taylor, G4KTI
N R Higgins, G4ZQL
Manchester & DARS, G5MS
M H Chace, G6DHU
A J Tite, G7KQM
PT Gaskin, G8AYY
M A North, G8CGO
J Renaut, G8DJL
J W Noble, G8FEQ
D L Herke, G8IBC
G W Allen, G8LZG
A McKee, GI7RGM
M C Hately, GM3HAT
G Moore, GM3JQJ
R B Harkness, GM3PSJ
T C McCabe, GM4XGW
W D Evans, GW3CDP
U Bianchi, I1BIN
T Arakawa, JA3AER
G E Ashton, M0AUG
E Gouldsbrough, M0GEM
K W Higgins, M0KWH
R Vickerstaff, M1ADT
P Wilkes, M1FDB
D J Reeve, M3DJR
E R Newby, M3ERN
F G Buck, M3FGB
T Rodgers, M3TAR
J G Fleming, MI0CMY
D S Jones, MW0BLQ
M E Macleod, N2KWF
R J Reynolds, RS177866
R A Barden, RS183208
F H Brindley, RS19063
D Foster, RS34817
J R Lewis, RS36870
B A Emson, RS43610
J W Honhold, RS94832
T A Blixt, SM5ADS
Lord MacGregor of Stirling, VE7MM
C J Dodd, VK6DV

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.

Helplines
FOR MEMBERS

● Ivan, G4WIA, needs spare push-on knobs for the bank of slide controls situated across the bottom of the **Heathkit Valve Tester**. Can anyone help or suggest a source? G4WIA, QTHR. Tel: 01480 461 331 or e-mail ivan.whitmore@ntlworld.com

● Ted, G8HLJ, is looking for a circuit diagram for the **RS Components TF200 LCD Frequency Meter**. He also would appreciate information on the **DANCOM ships' radio**, the **Harris RF3200 transceiver**, and the supply of a non-working **Trio JR-599 Custom Special Receiver**, as he need parts for a refurbishment project. All expenses paid. G8HLJ, QTHR. Tel: 0151 632 0614.

● Tony, G3NPF, is looking for service / operating manuals or circuits for the **Wayne Kerr Universal Bridge type B221** and the **Gould Advance Signal Generator type J3B**. G3NPF, QTHR. E-mail: a.wadsworth@ tesco.net

● Dick, G4HXH, would appreciate a copy of the circuit and any information on the **Heathkit Regulated HV Power Supply, model IP-17**. G4HXH, QTHR. Tel: 01279 656 149 or e-mail g4hxh@thersgb.net

● Quentin, MW1SZC, is searching for information about his grandfather, **Phillip Congreave, G3BV**, who died a couple of years ago. His licence dates back before WWII. Do you have G3BV in your log books? Have you a QSL from him? From old photos, QSL cards from G5VU, W1CBN and G2WS are visible. Any information would be appreciated. MW1SZC, QTHR. Tel: 01970 639 180 or e-mail mw1szc@thersgb.net

- IMPORTANT NOTE -

Respondents to items in the 'Helplines' column are advised not to send original documents, but to copy them and send the copies. This is to protect your (often valuable) property in those very few instances where the originals are not returned.

'Helplines' is a free service to members. Requests for help are published in the order in which they are received. We regret it is not possible to provide an undertaking of when any submitted request will appear.

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e-mail: hf.radcom@rsgb.org.uk

WELCOME TO THE first column of a new year (even though it should still be 2002 when you actually read this!) What might the HF bands have in store for us during 2003? Certainly we are now on the slippery slope of the sunspot cycle, and we will start to notice a significant decline in high-band openings as the year goes on. The good news, especially for M3 licensees with no access to 10m, is that 12m often opens up even when 10m is dead. It is always worth checking the beacon part of the bands for propagation indicators, even when (perhaps especially when) you can hear no amateur signals. I always find the *RSGB Yearbook* the most convenient source of beacon information.

It will be interesting to see the extent to which the table scores this year compare with those of 2002. Of course, final numbers for 2002 have yet to reach me - please ensure you have them to me by 18 January (table deadlines are always the same as the general deadline given at the end of the column). The final 2002 tables will appear in the March column. For 2003 I propose staying with the 'Countries worked regardless of band' format. I know some of you have asked for specific bands, but the 'any band' format seems to suit the majority, as it doesn't disenfranchise those who specialise in (or are limited to) certain bands only. Of course, if you do have a speciality (QRP, 5MHz, RTTY, 160m, or whatever), I am always interested to hear about your exploits, and to put a brief note here in the column, where appropriate.

With a new year upon us, it is perhaps a good time to review some of the issues, techniques, and general know-how surrounding HF operation, and I will be devoting at least some of each column to just those matters. When John Butcher, G3LAS, and I ran two sessions on HF DXing at the RSGB HF Convention in October, it was quite clear that even the more experienced of you enjoy a refresher from time to time. At the same time, those of us who have been on the bands for longer than we care to remember sometimes criticise newcomers for making the same mistakes which we made all those years ago. Instead, we should be passing some lessons on.

A BRIEF REFRESHER

LAST MONTH I mentioned band plans, and it led me to thinking about how things have developed on the HF bands in the 34 years since I was licensed (and somewhat more since I started short-wave listening). In the mid-60s, at the peak of that particular sunspot cycle, although SSB had been around for some years, the majority of HF operation was still on AM and CW. Not only that, but I well remember listening to US amateurs calling CQ on 10 metres AM, and tuning low to high (or vice versa) for calls, a practice which, even on the VHF / UHF bands, went out many years ago. Although SSB receivers were available, they tended to be pricey, and most people copied SSB on their AM receivers (frequently WWII surplus), with the aid of a BFO (beat frequency oscillator). So although SSB was potentially a more efficient user of bandwidth than AM, this was rarely realised in practice. CW was heavily used, of course, but many operators' signals were unstable and, again, it was best to use fairly wide filters to copy CW. RTTY was very much a specialist mode, with a few dedicated enthusiasts using ex-commercial teleprinters such as the Creed 7B, which required an extensive knowledge of mechanical engineering to keep going.

How things have changed! The number of active HF operators globally has increased dramatically during the intervening years, as a look at the number of active participants in the DXCC programme or the major contests will quickly demonstrate. But fortunately, equipment has improved dramatically too, with much more stable signals, receivers with high dynamic range and intercept point and almost ubiquitous use of good, narrow filters with excellent shape characteristics. The result is that the bands are able to accommodate much heavier usage than before, added to which we now have the 12, 17 and 30 metre bands which were approved for amateur service at the World Administrative Radio Conference of 1979 (and phased in over the ensuing few years). On other bands, our exclusive allocations have increased too. I well remember struggling on 160m in the face of LORAN navigational signals and ship-to-shore telephony, all of which has now gone.

There has also, of course, been a huge increase in the use of datamodes, principally as a result of developments in the PC world. Baudot RTTY is still the most common of these, though nowadays most RTTY operators will be using some RTTY software and the sound card of their PC, rather than a dedicated RTTY terminal. Packet is rarely used for real-time QSOs, but is handy for unattended mailboxes. PSK and other new modes take advantage of the huge processing power of modern PCs to bring a level of error detection and correction to signals which, with traditional RTTY, would be unreadable.

But perhaps the other great change on

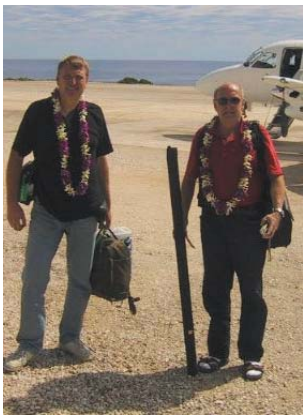
Photos from the 8N1OGA Ogasawara operation, clockwise from top left: JA1MRM, JS1DLC, JA1LZR, W6TBS, JA1WSX. View of centre of Chichijima, JD1. Left to right: JA1WSX, W6TBS, JA1MRM, JA1LZR. Setting up the 80m vertical, JA1LZR (top) and JA1MRM.

COUNTRIES WORKED, 2002
(sorted this month by SSB totals)

CALL	CW	SSB	DATA	MIXED
M0AWX	0	245	0	245
G4PTJ	226	224	0	271
ZC4BS	186	221	84	239
M5PLY	0	220	0	220
G0GFQ	0	203	26	203
G3YVH	215	200	0	256
M3RDX	0	197	82	203
G4WXZ	174	193	0	233
M0CNP	8	169	46	169
G3JFS	177	154	143	221
GU4YOX	128	143	0	191
G3SED	192	140	3	222
G4FVK	58	140	0	145
M0BZK	0	136	67	144
G0LGJ/M	0	134	0	134
M5GUS	0	133	0	133
MU0FAL	147	131	0	177
MW5VZW	42	131	0	140
MU3DHI	3	119	0	119
G3LHJ	199	116	136	223
G4YWY/M	0	112	0	112
G3XTT	131	109	93	173
ZC4DW	151	107	115	180
MM0BQI	59	103	104	148
M3CLY	0	92	0	92
M0CAL	3	85	0	85
M3FSI	0	85	0	85
G4OBK	153	76	86	190
GM4ELV QRP	72	69	0	93
M3VAM	0	65	0	65
M5AEF QRP	50	61	0	71
G4IDL	111	41	0	125
G4DDL	72	26	13	74
ZC4VG	153	14	36	156
G0NXX	257	0	0	257
G3TXF	255	11	0	255
G3SXW	243	0	0	243
G4IRN	201	0	0	201
G0ARF	0	0	190	190
G4UCJ	187	0	47	187
G3YMC QRP	150	0	0	150
G4DJX	145	0	0	145
GU0SUP	0	0	118	118
M0BVE	110	0	0	110
G3ING	102	0	0	102
G3WP	97	0	0	97
G0URR	0	0	81	81
G3URA	0	0	65	65
M5AFA QRP	0	0	38	38

the HF bands, during the last 30 years or so, has been the vast increase in expedition operation. In the 60s, just a handful of expeditions took place each year, and the exploits of W9WNV, W4BPD, VP2VB, W6KG and W6QL, as they operated from rare spots around the world, were the subject of endless fascination among HF operators. Nowadays, the availability of ubiquitous and cheap air travel, along with small, hand-carriable, radios has led to a situation in which, literally every day, we can find expeditions of some sort or another, all over the bands. At the same time, there has been a noticeable decline in the number of resident operators in many out-of-the-way places. In the 50s and 60s most European countries still retained their colonies, and there was daily activity from places like CR6 (Angola), OQ5 (Belgian Congo), VS9 (Aden) etc. Of course, you would have had to keep a weather eye on the bands to find these folk, as the concept of *PacketCluster*, or the *DX Summit* facility on the Internet would have seemed the stuff of science fiction.

What does it all mean for our day-to-day operating? I suppose that, while the technology has changed and band activity has increased, the underlying thrill of hearing and working stations around the world with modest power levels is still strong, offering us an excitement that the Internet or mobile phones can never emulate. Yes, we might complain about behaviour on the bands, but look at the letters columns of 30 or 40 years ago and the same complaints occur there too. More importantly, for most of us the thrill and the challenge remain the same, too. It is the ever-changing nature of the HF propagation which keeps us on our toes, just as the changing nature of the sea is of endless fascination to sailors. Long may it continue!



Photos from the October 2002 Swedish South Cooks operation from Rarotonga (IOTA OC-013) and Mangaia (OC-159). Left: Ben, SM7EQL (ZK1EQL), and Ron, SM7DKF (ZK1DKF), arrive in Mangaia. Right: The antennas on Mangaia: a mast supporting vertical dipoles and a 13m-long bamboo pole supporting 7 and 10MHz verticals. Ben and Ron together made 10,000 QSOs.

DX NEWS

WHICH BRINGS US nicely to ask what the bands might have in store for us in the weeks to come.

Hiro, JA1CQT, is now in Kabul, **Afghanistan**, and signing YA1CQ. Hiro is working with the NGOs (non government organisations) IARV (International Amateur Radio Volunteers) and BHN (Basic Human Needs Association). The BHN, which mostly works with telephone and satellite communications, has a club station, YA1JA. QSL YA1CQ via JA1CQT.

Sid, DM2AYO, and Hans, DL7CM, will operate from **Haiti** as HH2/DL7CM and HH2/DM2AYO from 30 January until 16 February. They will place special emphasis on the low bands and on RTTY.

Alan, K4AVQ, will sign P40AV from **Aruba** 4 - 18 January, with emphasis on 160 and 80 CW. QSL to Alan's home call.

VP5/W6XK and VP5/N6EE will be on from the VP5B contest station in the **Turks and Caicos** from 1 - 7 January including the ARRL RTTY Roundup, when they will use the callsign VP5NN. Before and after the RTTY event, they will emphasise RTTY on all bands and CW and phone on the WARC and low bands. QSL via their home calls and QSL VP5NN via NN6NN.

Andy, G0VUH, will be in **the Gambia** 10 - 17 January, signing C56/G0VUH on all bands. QSL to his home call.

At the time of writing, Ron Wright, ZL1AMO, who has over the years activated many of the Pacific islands, has been airlifted from Fiji, and is critically ill and on life support. I was also saddened to hear of the death of Dan, KL7Y, one of Alaska's most enthusiastic amateurs, who died in a motorcyle accident in Hawaii, having been on the island with the KH7R team for the CQWW Phone contest.

CONTESTS

FROM THIS MONTH'S contest calendar, I would draw your attention to various RTTY events: the SARTG New Year RTTY Contest on 1 January, the ARRL RTTY Roundup on 4 / 5 January and the BARTG

ARRL International DX Phone Contest 2002
(A=QRP, B=Low Power, C=High Power)

G3FNM	78,300	A	
MU3EFB	4116	A	
G3VAO	548,397	B	
M0CSU	213,048	B	
G4NXG/M	158,250	B	
GW0AJI	138,294	B	
G0/N9LYE	119,667	B	
2U0ARE	110,745	B	
MM0LEO	106,605	B	
G3KKP	98,820	B	
GM4UYZ	16,008	B	
G0MTN	8190	B	
G0MRH	3000	B	
G0AEV	25,1871	B	10
GM0EGI	63,666	B	10
G0VOK	40,500	B	10
M0GTO	30,375	B	10
M0AQM	13,908	B	10
M4T (G0VQR op)	7722	B	20
M6T (G4PIQ op)	3,799,275	C	
GM4YXI	3,267,252	C	
G4BUO	3,242,034	C	
GM7V (GM3WOJ op)	2,317,560	C	
GM0LYM	145,794	C	
G3MXJ	130,572	C	
G3UFY	94,734	C	
G3LZQ	81,510	C	
G4JVG	262,980	C	10
G4IUF	62,694	C	10
GW7X (GW4BLE op)	196,272	C	40
Multi-single			
M2A	3,002,784	C	
(ops: G3ORY G4EOF M0TTT M5BOP M5ZAP)			
M0SDX	2,652,360	C	
(ops: M0SDX M0DXR)			
M5W	148,458	B	
(ops: M0COP G0EYO G0MTN)			

QTH CORNER

3XY7C	Sigi Presch, DL7DF, Wilhelmsmuehlenweg 123, D-12621 Berlin, Germany.
5A1A	(new address) Assid, Hardehauser Weg 4, 33100 Paderborn, Germany.
8N1OGA	Saburo Asano, JA1MRM, 3-26-8, Toyotamakita, Nerima, Tokyo 1760012, Japan.
8P8P	David Patton, NT1N, 324 Ashford Center Rd, Ashford, CT 06278, USA.
EP6KI	Phil Marsh, G4WFZ, 2 Orcheston Rd, Charminster, Bournemouth, BH8 8SR.
HC4T	Francisco Lianez Suero, EA7FTR, Asturias 23, 21110 Aljaraque, Huelva, Spain.
HK3JJH/4	Pedro Allina, HK3JJH, Carrera 7 No 67-09 Ap 701b PO Box 81119, Bogota, Colombia.
ST0F	Bernie van der Walt, ZS4TX, PO Box 28691, Danhof, 9310 Republic of South Africa.
TO5A	Albert Crespo, F5VHJ, Limousin, 47120 St Astier de Duras, France.
TT8ZZ	Pascal Roha, F5PTM, 21, Rue du Cheval Rouge Ecuelle, 54770 Bouxieres Aux Chenes, France.
TX0AT	Alessio Roma, IK0CKJ, Via Sterparo 43, Ceccano (FR), Italy.
V63RE	Ferdinando Rubino, IT9YRE, PO Box 30, 96012 Avola - Sr - Sicily Island, Italy.
XT2ATI	Ricardo J Hartasanchez, EA4YK, PO Box 41079, 28080 Madrid, Spain.
YC9BU/7; YC9WZJ/7; YB9COD/7; YB9AY/7	Kadek Kariana Sp, YC9BU, PO Box 106, Singaraja Bali 81100, Indonesia.
ZA/Z35M	Vladimir Kovaceski, Box 10, Struga 6330, Macedonia.
ZL7C	Ken Holdom, ZL4HU, Kermadec DX Association, PO Box 7, Clyde, Central Otago, New Zealand.

RTTY Sprint on 25 / 26 January. G3URA of BARTG has written with details of the last of these, which takes place at 1200 on 25 January for 24 hours, 80 - 10m. Exchange serial number only, no RST is required. Further details from the BARTG web page or send me an SASE. The other event which is always popular is the CQWW 160m CW Contest on 24 - 26 January.

Results of the 2002 ARRL International DX Phone Contest appear in the table. Congratulations especially to M6T (World 9th, European 2nd, single-op high power), J6/G3TBK (World 3rd, single-op low power) and GW7X (World 1st, 40m).

DX RENTAL QTH

I MENTIONED EARLIER the easy availability of air travel, making DXpeditions so much more straightforward to mount than in years gone by. As an example, several bulletins have recently carried details of the hotel 'Hogar de Don Guido', owned and operated by the family of Guido Rosillo, HC8GR, in the seaside town of Puerto Baquerizo Moreno (San Cristobal Island) in the Galapagos. Reservations are being handled by Trey, N5KO. Further details from the website. Other similar locations around the world can be found on the DX Holiday web page (see WWW.)

UPDATE

I STILL CAN'T get it right! At the end of last month's Contest piece I corrected GW0KYN to GW3KYN. The correct call should have been GW3KJN. My apologies to Ian.

I also mentioned Don Miller, W9WNV. Various readers have mentioned that Don is now licensed as AE6IY and has been worked recently from the UK.

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 **March** issue by **18 January.** ♦

WWW.

BARTG Sprint Contest:	www.bartg.demon.co.uk
CQWW Phone QSL info:	www.arrakis.es/~ea5eyj
DX Holiday:	http://www.dxholiday.com
HC8GR rental QTH:	www.donguido.com
ST0F:	www.qsl.net/st0f
XT2ATI logs:	www.qsl.net/ea4ati

HF F-Layer **Propagation Predictions** for **January 2003**

	3.5MHz	7.0MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe							
Moscow	882....78888	7482..398888	...77788....	..1999982...	...99997....	...2886.....	....774.....
*** Asia							
Yakutsk	4332	542...267677	...884133..2	...55.....	...23.....	....2.....	.....
Tokyo	.....11.	...1..14424.	...31.....	...2.....	.....	.....	.....
Singapore	.....	154221	.....771...	.....486....	.....573....	....256.....	....234.....
Hyderabad	.....	1.....12222	.....573...	...225882...	...66798....	...88996....	...88994....
Tel Aviv	771....46777	737....88878	3..877893.23	...77786....	...37773....	...47763....	...36552....
*** Oceania							
Wellington	.....1....	...376785...	...59997....	....7872....	....676.....	....676.....	....463.....
Perth	.....	.....2222.	.....661...	.....487....	.....576....	...45785....	...4566.....
Sydney	.....	.....2211..	.....684....	....7995....	....788.....	...4888.....	...4787.....
Honolulu	.....	...2...1....	.....1...	.....	.....	.....	.....
W. Samoa	.....	.....3....	....7885....	....576.....	....265.....	.....52.....	.....3.....
*** Africa							
Mauritius	.....	3.....1112	.....32...	.....5....	.....14....	.....11....	.....
Johannesburg	62.....44	98.....3888	5.....58745	.....1662..	...112374...	...667884...	...46778....
Ibadan	.1.....	666.....4556	2..711267512	...98889731.	...9998962..	...9999962..	...999885...
Nairobi	.....	33.....2211	2.4....56625	..24235773..	...655784...	...76678....	...77776....
Canary Isles	666.....7666	8885....8888	22.865568842	...98888952.	...7888893..	...278884...	....78872...
*** S. America							
Buenos Aires	1215.....	6639.....25	...7.....	...72...11..	...532122...	....33242...	....2224....
Rio de Janeiro	...1.....	11.7.....1	...6.....	...851.242..	...663245...	....64253...	....5325....
Lima	.....	...3.....	...2.....	...2.3111...	.....6432...	.....654....	.....654....
Caracas	.....	22.2.....22	....3....1..	.....2112...	.....4233...	.....7773...	.....777....
*** N. America							
Guatemala	.....	12.3.....1	.....	.....	.....	.....42....	.....32....
New Orleans	.....	32.2.....3	.....	.....2777...	.....885...	.....884...	.....882...
Washington	111.....2	7727.....77	.....511431.	.....6677...	.....3787...	.....783...	.....87....
Quebec	667.....576	77182....887	.....4225...	.....8898...	.....6997...	.....6997...	.....4996...
Anchorage	555.....	873631147657	.....2...	.....2...	.....	.....	.....
Vancouver	.....	32.1.....1	.....21...	.....54...	.....22...	.....2....	.....
San Francisco	.....	22.1.....	.....	.....42...	.....3....	.....3....	.....

Key: Each number in the table represents the expected *circuit reliability*, eg '1' represents reliability between 1 and 19% of days, '2' between 20 and 29% 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 the signal is expected to be strong.

The RSGB Propagation Studies Committee provides propagation predictions on the Internet at www.g4fkh.demon.co.uk The page is updated monthly. The provisional mean sunspot number for November 2002 issued by the Sunspot Data Centre, Brussels, was 95.0. The maximum daily sunspot number was 145 on 7 November and the minimum was 49 on 26 November. The predicted smoothed sunspot numbers for January, February and March are respectively: (SIDC classical method – Waldmeier's standard) 91, 88, 86 (combined method) 75, 72, 68.

ROGER BALISTER, G3KMA
La Quinta, Mimbridge, Chobham, Surrey, GU24 8AR.
E-mail: g3kma@dial.pipex.com

THE WINNERS OF the three IOTA Shell Trophies awarded by the IOTA Committee for DXpedition performance in 2001 were announced at the RSGB HF & IOTA Convention at Egham on 11 October. The trophy for the Most Courageous IOTA DXpedition was awarded to the Russian team that joined the 'Lost Islands' expedition to the Arctic and activated Ushakova Island, RI0B, and Uyedineniya Island, RU0B. Operators Valery, RW3GW; Yuri, UA9OBA; and team leader Victoria, RA0BM, who were attending the Convention accepted the trophy on behalf of the team.

The trophy for the Most Outstanding IOTA DXpedition in Africa, Asia and Europe was awarded to the JW0PK team that operated from Prins Karls Forland, EU-063. The equivalent trophy for the Most Outstanding IOTA DXpedition in North and South America and Oceania went to the team led by Frank, VE7DP, that operated from the Philippine IOTA groups OC-091, OC-093, OC-126 and OC-244.

Premier IOTA Awards for consistent service to the IOTA community were also presented to Bert, PA3GIO; Marcel, ON4QM; Take, JI3DST; and Alain, F6BFH.

ACTIVITY ON THE BANDS

QUITE A BUMPER two months with seven new ones! The scheduled operations mentioned last time all came up: VI3JPI from Lady Julia Percy Island (OC-251),

RSGB IOTA Programme, PO Box 9, Potters Bar, Herts EN6 3RH; e-mail: iota.hq@rsgb.org.uk

Yaesu, Principal Sponsor of the IOTA Programme

V63RE and V63WN from both Nomwin Island in the Hall Islands (OC-253) and Satawan Atoll in the Mortlock Islands (OC-254) and VK4WWI from Woody Wallis Island (OC-255).

Signals were not too good in some cases and one or two of the operations were shorter than planned. However, they showed impressive determination to overcome the logistical problems and delighted the many chasers who were around to take advantage of the openings.

The Indonesian operation, also briefly mentioned last time, appeared in mid-October from Temaju Island (OC-252) off Borneo, using the calls YC9WZJ/7, YC9BU/7, YB9AY/7, YB9COD/7, YB7FHO/P, YC7FEP/P and YB7CJR/P. Unfortunately Kadek, YC9BU; Made, YB9AY; and Joni, YC9WZJ, all went down with malaria on returning from the island. Joni was hospitalised for a while but has now recovered. QSLs to YC9BU direct.

At about the same time Pedro, HK3JJH/4, appeared on the air from Titumate Island in North Choco Division (SA-093), the last of the Colombian IOTAs to be activated. Anyone who knows Colombia will be aware of the dangers of visiting certain areas. The northern part of Choco, around the Gulf of Uraba, is one of the very worst, few dare to travel there. Despite the dangers he was determined to go ahead and 'do' this last one. Few know that barely six weeks earlier while on Pirata Island (SA-040) he had had the nasty experience of being robbed. With SA-093 Pedro now has the distinguished record of having operated from every one of the Colombian IOTA groups. One gutsy pensioner! QSLs to HK3JJH direct.

If this were not enough, a phone call from our friend Victor, UT8LL, in late October alerted us to the possibility of imminent activity from the first of the Iranian IOTAs. The International Air Show was scheduled to take place within a few days on Qeys (Kish) Island and with assistance from local amateurs Victor had managed to get a licence to use the special event call, EP6KI, for the period of the show. A very successful operation notched up 4380 QSOs. QSLs to G4WFZ direct or via RSGB bureau.

NEW REFERENCES

AS-163	R0Q	Laptev Sea Coast East group
AS-164	R0Q	East Siberian Sea Coast West group
AS-166/Pr	EP	Hormozgan Province group
OC-251/Pr	VK3	Victoria State West group
OC-252	YB7	Kalimantan's Coastal Islands West
OC-253/Pr	V63	Hall Islands
OC-254/Pr	V63	Mortlock Islands
OC-255/Pr	VK4	Queensland State (Gulf of Carpentaria) North group
SA-093	HK4	Choco Division North/Antioquia Division group

Pr = provisional

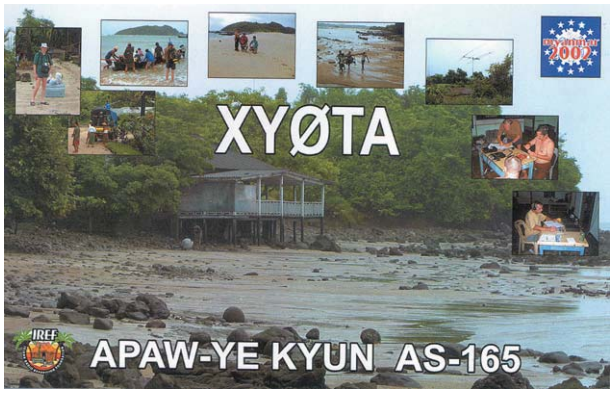
REMINDERS

IOTA ENTHUSIASTS are reminded that the last date for mailing applications or updates to checkpoints for inclusion in the 2003 Honour Roll and other performance tables is 1 February 2003. If postmarked after that date, they will be processed in the normal way but the scores will be held over to the following year's listing.

Listing in the 2003 tables will be restricted to those members who have updated their scores since February 1998. This implements the new rule in the latest IOTA Directory that limits inclusion in the listings to those members who update their scores at least once every five years. It is important that members who have not updated since the 1998 annual listings and wish to remain listed should make a submission on or before 1 February 2003.

'Lapsed' members should note that their records on the IOTA database have been amended to reflect changes in *Directory 2000* arising from the splitting of a number of island groups. This reminder applies additionally to any member who has not converted his / her record to the revised island listing during the last two years. The maximum 19 credits concerned were either confirmed or repositioned where HQ knew the correct group or, failing that, deleted. Checkpoints should be able to provide information on revised scores in time for replacement card action to be taken before the end-January 2003 annual listings deadline.

All members should be aware that the second and last round of changes comes into effect in 2005. The credits concerned are marked with a leading '/' on each member's record - this signifies that the relevant card needs to be resubmitted before 1 February 2005 to the checkpoint for confirmation that it is from an island that is listed as valid in the *Directory* or, alternatively, should be replaced with another. ♦



The 'New One' in Myanmar activated by a multi-national team in August 2002 - see November 2002 'IOTA' column.

WWW.

RSGB IOTA Programme:	http://www.rsgbiota.org
IOTA Manager's website:	http://www.eo19.dial.pipex.com/index.shtml
IOTA Contest rules:	http://www.rsgbhfcc.org

BOB TREACHER, BRS32525
93 Elibank Road, Eltham, SE9 1QJ.
E-Mail: brs32525@compuserve.com

SWL

JANUARY - TIME to think about 'the low bands' (40, 80 and 160m). Although we are not far enough down the sunspot cycle for the low bands to be really humming with DX, we are now in the 'winter DX season' and if you are a serious DX listener you really should give these bands some of your listening time over the next six weeks. With the shorter days, there will be more DX opportunities through late December, January and February. In the mornings, if band conditions are good, you can hear JAs at their sunset on both 40 and 80m, while at our sunset (at the end of December / early January) west cost W / VE will be heard on 80m. I am of the view that February is always a better month for DX on 40m, while 80m tends to provide the better DX opportunities in January. We may well have to wait a couple more years for 160m to provide some good DX, but consider taking a look perhaps before heading off to bed just in case some DX is available.

CRAY VALLEY SWL CONTEST 2003 RULES

The Cray Valley Radio Society will be organising this contest for the third time in 2003. Please read the rules carefully. There are more categories this year: 4 SSB, 4 CW. *Please indicate clearly which category you are entering*. The idea of the contest is to hear as many stations and multipliers as possible on 7, 3.5 and 1.8MHz.

WHEN: 1600UTC 11 January 2003 to 1100UTC 12 January 2003

BANDS: 7, 3.5 and 1.8MHz only - SSB or CW (no mixed modes)

SECTIONS: Section A: Single Operator SSB (*no* external help allowed)
Section B: Multi Operator SSB (more than one SWL; use of *PacketCluster* or DX Summit allowed)
Section C: Single Operator SSB (*no* external help - 6 hours only)
Section D: Single Operator Assisted SSB (External help allowed - 6 hours only)
Section E: Single Operator CW (*no* external help allowed)
Section F: Multi Operator CW (more than one SWL; use of *PacketCluster* or DX Summit allowed)
Section G: Single Operator CW (*no* external help - 6 hours only)
Section H: Single Operator CW (External help allowed - 6 hours only)

SCORING: 7 and 3.5MHz - 5 points for any station heard from outside the SWL's own continent, 2 points for stations heard from the SWL's own continent.
1.8MHz - 10 points for any station heard from outside the SWL's own continent; 3 points for stations heard from the SWL's own continent.
Any station heard will count for points, except /AM and /MM stations. All stations logged *must* be in QSO.

MULTIPLIERS: Each country heard on each band will count as 1 multiplier point. The call areas of Canada, Japan, Australia and New Zealand will each count as a separate multiplier. All other countries will be determined using the ARRL DXCC List.

LOGS: Logs should show: Date, Time (UTC), Station heard, Station being worked, RS(T) of station heard at SWL's QTH, Multipliers, Points. If both sides of a QSO are heard, they may both be claimed for points. Each station *must* be shown in the station heard column. A separate sheet showing multipliers heard on each band *must* be submitted. Computer generated entries, especially those using EI5DI's *SDL* software, will be welcomed but please remember to include a Multiplier Check Sheet.

ENTRIES: Entries should be sent to Cray Valley Radio Society, c/o 93 Elibank Road, Eltham, London SE9 1QJ, England. E-mail logs will be accepted if sent to brs32525@compuserve.com
All entries *must* be postmarked no later than 28 days from the end of the contest.

AWARDS: Cray Valley Radio Society will issue certificates at its discretion. All decisions made by the society will be final in all cases. A copy of the results can be obtained by enclosing 1 IRC or $1 with your log.

50MHz – WILL IT OR WON'T IT?

WILL 6m PROVIDE some F2 propagation again this year? That is the hot question at the time of compiling this column. The number of listeners interested in 50MHz has grown recently, and another few weeks of F2 propagation will do wonders for the All Time list. The signs are good. F2 propagation seems to be providing good DX to DX QSOs, but few are finding their way to the UK. Hopefully, by the time this appears, there will be a few contented listeners who have added some real DX to their All Time lists.

Simon, RS177448, did hear 9M2TO (OJ05) on 13 November for his 83rd DXCC entity on 50MHz. He also heard ZD7MY (IH74) on 22 October and 3XY7C (IJ39) on 8 and 9 November.

Most frustratingly, however, a few hours in the shack on 3 November provided no signals, but in the USA they were working into CO, HC8, HK, HR, J3, PY0F, TG, TI, VP2M and 8R - all of which would have been 'new ones'!

HF NEWS

THE SOLAR FLUX index is high as I write this, and 24 and 28MHz are both in particularly good shape - 28MHz has just provided CY0MM (Sable Island) for number 308 on that band. Elsewhere on the band were CB1C (CE), FP5BU, FS/VA3RA, 6J1DHN (XE), while 24MHz also provided AP2JZB, CB1C and TU0PAX.

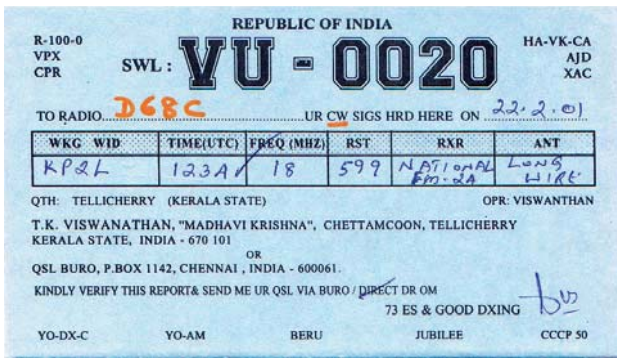
Robert Small, BRS8841, provided further news on recent DX happenings. Thanks to the excellent 3XY7C DXpedition, Robert collected his first new country on 160m for a very long time, and he logged it on 80m CW for another new one. Another good DXpedition, ZL7C from Chatham Island, gave him a new one on 40m CW. Other DX on that band included V51WM, 9Y4TBG, TI5N, J3A and ZD8Z. 20m had also been good to Robert, giving him N6XVI/KH9, J75ZH, FR/PA3GIO/P, VP2MWM, K8T and K8O (both in KH8).

15m conditions had been mixed, the highlights being HK3JJH/4 (SA093), JT1CN, XX9C, EP6KI (AS166) and VK4WWI (OC255). 12m had been very good. Again, 3XY7C was new. Other highlights were EY8/F5CW, C98DC (AS072), 8N1OGA (Ogasawara Is) and TY3M. Robert found nothing new on 10m, but highlights were 7Q7HB, TY0T, V31BD and 9N7ZK (QSL direct only to SM4AIO).

MORE *WXSAT*

REFERENCE to *WXSAT* certainly drew some correspondence. Thanks to all. Mike, G1HWY, receives all NOAA satellites every day, 24 hours a day. If any listeners are interested in the results that can be obtained from high resolution weather satellites they can visit his website at www.weathersatellite.info There are links to his HRPT images and APT-style images. The APT-style images are generated from HRPT data and strictly speaking are not true APT but give a good idea of what an APT image will be like. There are also links to Meteosat images produced with his RIG / Timestep geostationary setup. Mike is on e-mail at g1hwy@amsat.org if listeners (or our transmitting colleagues) want to find out more about this facet of the hobby.

The articles actually prompted some to download software and try *WXSAT* for themselves. ♦


REPUBLIC OF INDIA
R-100-0 VPX CPR
SWL: VU - 0020
HA-VK-CA AJD XAC
TO RADIO D68C ... UR CW SIGS HRD HERE ON 22.2.01

WKG WID	TIME(UTC)	FREQ (MHZ)	RST	RXR	ANT
KP2L	1234	18	599	NATIONAL RM-2A	LONG WIRE

QTH: TELLICHERRY (KERALA STATE) OPR: VISWANTHAN
T.K. VISWANATHAN, "MADHAVI KRISHNA", CHETTAMCOON, TELLICHERRY KERALA STATE, INDIA - 670 101
OR
QSL BURO, P.BOX 1142, CHENNAI, INDIA - 600061.
KINDLY VERIFY THIS REPORT& SEND ME UR QSL VIA BURO / DIRECT DR OM
73 ES & GOOD DXING
YO-DX-C YO-AM BERU JUBILEE CCCP 50

One of the few DX SWLs to QSL D68C.

CONTEST

TIM KIRBY, G4VXE
11a Vansittart Road,
Windsor SL4 5BZ
E-mail:tim@g4vxe.com

THE VHF ACTIVITY Contests on Tuesday evenings, instituted in 2002, have proved popular and have galvanised some regular activity on the VHF bands. These contests will continue in 2003, but with one important change. The Microwave event on the third Tuesday of each month will now cover all bands between 1.3 and 24GHz. This should provide lots of interest to the growing number of people who have access to the higher bands - be it from home or portable. The system of moving a well-equipped station through the different bands will provide lots of interest in terms of operation and propagation.

AFFILIATED SOCIETIES' CONTESTS

AT HF, THE key RSGB events this month are the two Affiliated Societies' Contests. The CW event is on 12 January, while 18 January brings the SSB event. The essential element is that your local club or group forms a team (up to five operators for the CW event and up to three operators for SSB). Remember a club can field more than one team, so just get as many people on as you can and you can then assign the entries into the different teams after the event. The format of the contest is simple: single band 80m and the contest exchange is RS(T) and serial number. On CW, less experienced operators can find slower speed contacts further up the band - and the more experienced operators will likely reduce speed and look in this part of the band to increase the number of contacts that they make.

OTHER EVENTS THIS MONTH

RTTY CONTESTERS will need no reminding that the ARRL RTTY Roundup takes place on 4 / 5 January. This is a good event with plenty of activity world-wide and from the USA. There seems to be growing activity in RTTY contests from the UK, so we hope to see plenty of activity.

On 70MHz, the Cumulative contests start on 12 January. This series of short contests through the winter usually stimulates some good activity on the band. Conditions can be quite variable on the band, particularly at this time of year, but it is often possible to make contacts the length and breadth of the country if the activity is there. If you have some capability for the band, try to pop up during the sessions and give the regular entrants some points. Some stations have been known to come on for the last half hour of the contest, call CQ and watch the pile-up develop!

Topband enthusiasts will enjoy the CQ 160m CW contest on 24 - 26 January. This is a fascinating chance to try and work some DX on topband. If you have a reasonable dipole, you should be able to make some trans-Atlantic QSOs and possibly further afield, particularly if you have a low local noise level. The serious entrants to this contest will have a variety of different antennas for transmitting and receiving. But, as ever, take advantage of *their* great stations to make some challenging contacts.

Here's the reason that VE3EJ has such a commanding signal in major international events such as *CQ* 160m - part of the antenna farm at his station near Grassie, Ontario.

ROPOCO 2, 2002

ROPOCO2 2002 was again a close-run affair, and was resolved ultimately by logging accuracy, fitting perhaps. After the dust had settled, Steve Knell, G0CKP, tops the table by a very narrow margin from Fraser Robertson, G4BJM, a previous victor who must settle for second position on this occasion. However, Fraser recorded the highest aggregate score in both this year's events, and therefore wins the G5MY trophy. The highest-scoring perfect log was submitted by Nigel Cawthorne, G3TXF, who therefore receives the G3XTJ memorial trophy. Congratulations to all concerned.

The timely production of contest results hinges on making the adjudication as straightforward as possible. The adjudicator would like to thank those who produced their logs in well-known standard formats. Paper logs, of course, need retyping into an electronic format. If you are able to produce your log electronically, please do so. It makes our job so much easier.

Clive Whelan, GW3NJW

ROPOCO 2, 2002

Pos	Call	Score	Eqpt
1	G0CKP	690	4C1
2	G4BJM	680	4C17
3	G4BWP	650	
4	G3BJ	640	4C18
4*	G3TXF	640	4C15
6	GW3WWN	590	3C12
7	G0MTN	570	3C12
8*	G3RSD	550	3C13
9	G4RCG	530	4C16
9	G4OGB	530	3C13
9	G4CXT	530	3C13
9	G3LIK	530	3C13
13	G3TJE	520	3Q13
14	GW0GEI	510	4C13
15	G3ZGC	500	4W13
15	G4IIY	470	4C13
17	G2HLU	470	4C12
18	G4CZB	450	4C13
18	G0IVZ	450	
18	G3JJZ	450	3W1
21	G4CWH	420	4W14
21	G4EBK	420	3C13
23	G0WHO	410	3C13
23	G4ARI	410	1C14
25	G3GC	380	3C13
25*	G4XPE	380	3C11
27	G3MA	370	2C1
27	GW3NJW	370	4C13
27	G3RFH	370	3C1
30*	G3ZDD	330	
31*	G3LHJ	320	3W1
32	G0DHZ	300	3C1
33	G0WBC	280	3C13
33	G3GMM	280	3C1
35	G3VQO	270	3W1
36	G4PTE	250	3G1
36	G3VDF	250	3C1
36	G4BUO	250	3W1
36*	G0RDO	250	3W1
40	GW3SB	240	3W1
41	G3CQR	220	3C13
41*	G3IZD	220	3W12
43*	G3YMC	200	1W12
44	G3GMS	180	3G12
45	G3XTT	160	4C14
46*	M0AJT	150	3C14
47	GW4KVJ	140	3C1

* indicates a perfect log

CONTEST CALENDAR

HF Contests

Date	Time	Mode	Contest	Bands	Exchange
4 - 5 January	*1800-2400*	*RTTY*	*ARRL RTTY Roundup*	*3.5 – 28*	*RST+SN*
12 January	1400-1800	CW	RSGB Affiliated Societies	3.5	RST+SN
18 January	1400-1800	SSB	RSGB Affiliated Societies	3.5	RS+SN
19-19 January	*1200-1200*	*CW/SSB*	*Hungarian DX*	*1.8-28*	*RST+SN*
24-26 January	*2200-1600*	*CW*	*CQ 160m*	*1.8*	*RST+Country Prefix*

VHF Contests

Date	Time	Mode	Contest	Bands	Exchange
7 January	2000-2230	ALL	RSGB 144MHz Activity	144	RST+SN+Locator
12 January	1000-1200	ALL	RSGB 70MHz Cumulative #1	70	RST+SN+Locator
14 January	2000-2230	ALL	RSGB 432MHz Activity	432	RST+SN+Locator
21 January	2000-2230	ALL	RSGB 1.3-24GHz Activity	1.3-24G	RST+SN+Locator
26 January	1000-1200	ALL	RSGB 70MHz Cumulative #1	70	RST+SN+Locator
28 January	2000-2230	ALL	RSGB 50MHz Activity	50	RST+SN+Locator

Microwave Contests

Date	Time	Mode	Contest	Bands	Exchange
26 January	0900-2100	ALL	RSGB All-Band Activity Day	All	Non-competitive

The full rules of RSGB HF, VHF/UHF and Microwave contests were published in the RSGB Contesting Guide in January 2002 *RadCom*. Brief rules for non-RSGB contests, which are listed in italics above, can often be found in the 'HF' and 'VHF/UHF' columns. The HF and VHF Contest Committees both have websites from which comprehensive details are available. These are www.rsgbhfcc.org and www.blacksheep.org/vhfcc RSGB Microwave Contest rules can be found on the Internet at: http://www.g3pho.free-online.co.uk/microwaves/calendar2002.html

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MLP62 same spec as MLP32 but with increased freq. range 50-1300 (Length 2000mm) ***New Low Price*** **£169.95**

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(with 3/8 base fitting)

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(Length 7'approx)
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(Length 7'approx)
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(Length 7'approx)
AMPRO 17 mt **£16.95**
(Length 7'approx)
AMPRO 20 mt **£16.95**
(Length 7'approx)
AMPRO 30 mt **£16.95**
(Length 7'approx)
AMPRO 40 mt **£16.95**
(Length 7'approx)
AMPRO 80 mt **£19.95**
(Length 7'approx)
AMPRO 160 mt **£49.95**
(Length 7'approx)
AMPRO MB5 Multi band 10/15/20/40/80 can use 4 Bands at one time (length 100') **£69.95**

VHF/UHF MOBILE ANTENNAS

MICRO MAG 2 Metre 70 cms Super Strong 1" Mag Mount (Length 22") **£14.95**
MR700 2m/70cms, 1/4 wave & 5/8,Gain 2m OdB/3.OdB 70cms (Length 20")
3/8 Fitting **£7.95**
SO239 Fitting **£9.95**
MR 777 2 Metre 70 cms 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60")
(3/8 fitting) **£16.95**
(SO239 fitting) **£18.95**
MRQ525 2m/70cms, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cms (Length 17") S0239 fitting commercial quality **£19.95**
MRQ500 2m/70cms, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8db 70cms (Length 38") S0239 fitting commercial quality **£24.95**
MRQ750 2m/70cms, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cms (Length 60") S0239 fitting commercial quality **£39.95**
MRQ800 6/2/70cms 1/4 6/8 & 3x5/8, Gain 6m3,OdBi/ 2m 5.OdB/70 7.5dB (Length 60") S0239 fitting commercial quallty **£39.95**

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(SO239 fitting) **£5.00**
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MR268S 2 Metre 5/8 wave 3.5dBd Gain (Length 51")
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SO239 fitting **£29.95**
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(All above end fed antennas are without ground planes)

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(2 mts 3dBd@ (70oms 6dBd)
(Length 39')
BM200 Dual-Bander **£39.95**
(2 mts 4.5dBd) (70Cms 7.5dBd)
(Length 62")
SQBM200 Dual-Bander **£49.95**
(2 mts 4.5dBd) (70cms 7.5dBd)
(Length 62")
SQBM500 Dual-Bander Super Gainer **£59.95**
(2 mts 6.8dBd) (70cms 9.2dBd)
(Length 100")
BM1000 Tri-Bander **£59.95**
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(70cms 8.4dBd) (Length 100")
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(70cms 8.4dBd) (Length 100")

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All of the above are suitable to any transceiver or scanner.
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All fittings Stainless Steel

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All fittings Stainless Steel

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(please phone for 100 metre discount price)

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..... SO239 fitting **£14.95**
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..... SO239 fitting **£12.95**
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The Following Supplied in 50 metre lengths

Enamelled 16 gauge copper wire **£9.95**
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Multi Stranded Equipment wire **£9.95**
Flex Weave **£27.95**
Clear PVC Coated Flex Weave **£37.95**

TRAPS

10 Metre trap 400W **£23.95**
15 Metre trap 400W **£23.95**
20 Metre trap 400W **£23.95**
40 Metre trap 400W **£23.95**
80 Metre trap 400W **£23.95**

HF BALCONY ANTENNA

BAHF-4 FREQ: 10-15-20-40 Mtrs LENGTH: 1.70m HEIGHT: 1.20m POWER: 300 Watts **£129.95**

HF DELTA LOOP

DLHF-100 10/15/20 Mtrs (12/17-30M) Boom Length 4.20m Max Height 6.80m Weight 35 KG Gain 10dB **£399.95**

VISA SWITCH MasterCard

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 ... **£329.95**

ADEX-3300 3 BAND 3 ELEMENT TRAPPED BEAM
FREQ: 10-15-20 Mtrs GAIN: 8dBd BOOM 4.42m
LONGEST ELE: 8.46m POWER: 2000 Watts **£269.95**

ADEX-6400 6 BAND 4 ELEMENT TRAPPED BEAM
FREQ: 10-12-15-17-20-30 Mtrs GAIN: 7.5dBd BOOM: 4.27m LONGEST ELE: 10.00m POWER 2000 Watts ... **£499.95**
40Mtr RADIAL KIT FOR ABOVE **£99.95**

HF VERTICALS

VR3000 3 BAND VERTICAL FREQ: 10-15-20 Mtrs GAIN: 3.8dBd HEIGHT: 3.80m POWER 2000 Watts (without radials)
POWER: 500 Watts (with optional radials) .. **£89.95**
OPTIONAL 10-15-20 Mtr radial kit **£34.95**

VR5000 5 BAND VERTICAL FREQ: 10-15-20-40-80 Mtrs GAIN: 3.5dBd HEIGHT: 4.00m RADIAL LENGTH: 2.30m (included) POWER: 500 Watts **£169.95**

EVX4000 4 BAND VERTICAL FREQ: 10-15-20-40 Mtrs GAIN: 3.5dBd HEIGHT 6.50m POWER: 2000 Watts (without radials)
POWER: 500 Watts (with optional radials) .. **£99.95**
OPTIONAL 10-15-20 Mtr radial kit **£34.95**
OPTIONAL 40 Mtr radial kit **£12.95**

EVX5000 5 BAND VERTICAL FREQ: 10-15-20-40-80 Mtrs GAIN: 3.5dBd HEIGHT: 7.30m POWER 2000 Watts (wihtout radials) POWER 500 Watts
(with optional radials) **£139.95**
OPTIONAL 10-15-20 Mtr radial kit **£34.95**
OPTIONAL 40 Mtr radial kit **£14.95**

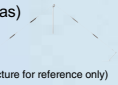
EVX6000 6 BAND VERTICAL FREQ: 10-15-10-30-40-80 Mtrs HEIGHT: 5.00m RADIAL LENGTH: 1.70m (included) POWER: 800 Watts **£249.95**

EVX8000 8 BAND VERTICAL FREQ: 10-12-15-17-20-30-40 Mtrs (80m optional) HEIGHT: 4.90m RADIAL LENGTH: 1.80m (included) POWER: 2000 Watts **£269.95**
80 Mtr radial kit for above **£79.00**

(All HF verticals require grounding if optional radials arenot purchased to obtain a good VSWR)

TRAPPED WIRE DI-POLE ANTENNAS

(Hi Grade Heavy Duty Commercial Antennas)



(picture for reference only)

UTD160 FREQ: 160 Mtrs LENGTH: 28m POWER:1000 Watts **£44.95**
MTD-1 (3 BAND) FREQ: 10-15-20 Mtrs LENGTH: 7.40m POWER: 1000 Watts **£39.95**
MTD-2 (2 BAND) FREQ: 40-80 Mtrs LENGTH: 20m POWER: 1000 Watts **£44.95**
MTD-3 (3BAND) FREQ: 40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts **£79.95**
MTD-4 (3BAND) 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 **£69.95**

(MTD-5 is a crossed di-pole with 4 legs)

TELESCOPIC MASTS

(aluminium and fibreglass options)

TMA3 - 3" to 11\4" Heavy Duty Aluminium Telescopic mast set, approx 40ft when erect 6ft collapsed **£149.95**
TMA2 - 21\2" to 11\4" Heavy Duty Aluminium telescopic mast set, approx 30ft when erect 6ft collapsed **£129.95**
TMA1 - 2" to 11\4" Heavy Duty Aluminium telescopic mast set, approx 20ft when erect 6ft collapsed **£99.95**
TMAF - 2" to 11\4" Heavy Duty Fibreglass telescopic mast set, approx 20ft when erect 6ft collapsed **£99.95**

WINDOM WIRE DI-POLE

MWD-3 Freq: 10/20/40 Length: 20mtrs Power:500 watts Balun: 6:1 included Socket: SO329 ..... **£44.95**
MWD-5 Freq: 10/20/40/80 Length: 36mtrs Power: 500 watts Balun: 6:1 included Socket SO239 ..... **£54.95**

MISCELLANEOUS ITEMS

CDX Lightening arrestor 500 watts **£19.95**
MDX Lightening arrestor 1000 watts **£24.95**
AKD TVI Filter **£9.95**
Amalgamating Tape (10mtrs) **£7.50**
Desoldering Pump **£2.99**
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Purley, Surrey CR8 1EZ.
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A VERY HAPPY New Year to all readers and contributors. In 2003 this monthly column will begin with a short theme. If there are any VHF/UHF subjects you would like to read about please let me know. This month's topic is:

ANTENNAS

IF YOU ARE serious about working reasonable distances on the VHF/UHF bands rotatable antennas with some gain are essential. Horizontal polarisation is the recognised mode for terrestrial DX working. Although it is possible to work DX with an indoor antenna, an outdoor system, however modest, will always produce better results.

Ideally we would all like to have a big array on a tall telescopic tilt-over tower, but most of us have to settle for less for a variety of reasons. A pole attached to the side of a house or a mast in the garden is probably a typical installation but it is essential to ensure that it is safe and will not come to grief in high winds. Manufacturers of commercial masts and towers usually quote the maximum head loads and the wind area of antennas that should not be exceeded.

Rotators come in all sizes from cheap ones suitable for small VHF antennas to really big and expensive models intended for heavy arrays for moonbounce (EME) work. Always choose the best you can afford and read the specification with regard to head load and the limitations to the length of stub mast and wind area of the beam(s) you propose to install.

In the pages of *RadCom* you will find a range of VHF/UHF antennas on offer from established manufacturers through several dealers. These adverts usually state the number of elements, the boom length and the claimed gain in dBd - decibels compared to a dipole. Query if it just states dB as this could mean dBi - decibels compared to a purely theoretical isotropic radiator. The difference is 2.15dB, so 10dBi is 7.85dBd, for example.

As with most products you get what you pay for, so you have to consider your environment when choosing antennas. If you live in a sheltered valley with low air pollution they will survive longer than they would if you live on a windy cliff by the sea in a hostile marine, salt atmosphere.

Construction details are very important and stainless steel clamps, bolts and screws are far better than galvanised steel components. Almost all amateur antenna booms and elements are made from aluminium alloy. Some of these seem to corrode fairly quickly while others remain bright and shiny for years. It is vital that the box where you connect the feeder to the driven element will remain waterproof for years and will not suffer from extremes of temperature or deteriorate from ultraviolet solar radiation.

If you have bought or made a gainy antenna don't skimp on the cable with which you feed it. At VHF, and even more so at UHF, losses in coaxial cables can be significant. For example at 432MHz a 20m length of 50Ω URM67/RG213 has a matched attenuation of 3.1dB; H100 2.0dB and Westflex 103 1.5dB. If you can afford 7/8in cable the loss drops to 0.56dB.

For those who like to design their own antennas there is a wealth of literature and software available: just look at the titles available from the RSGB Bookshop. Then there is Peter Dodd's, G3LDO, regular 'Antennas' column in *RadCom.* Derek Hilleard's, G4CQM, super interactive website is a must for those wishing to design their own antennas - see the list.

PRAGUE FEEDBACK

IAN WHITE, G3SEK, has e-mailed concerning the write-up on the 10th International Moonbounce Conference that took place in Prague last August. He writes, "Just one correction, but an important one: I only chaired the discussion - not the whole conference! That honour (and all the work that went with it) belongs to Dan Glanc, OK1DIG." Thanks for putting that right, Ian.

INTERNET NOTES

VOLKER GRASSMANN, DF5AI, points out that there is a large number of data services useful to radio amateurs available on the worldwide web. His web page - see the list - provides a catalogue of more that 70 selected resources covering the Sun, the Earth's space environment, the magnetosphere, the ionosphere, radio observatories, science magazines and

TRANS-ATLANTIC TESTS ON 144MHz

THE MAY 2002 issue of *RadCom* included an article 'An Innovative 2-metre Trans-Atlantic Recipe' by Ev Tupis, W2EV. He described this development of the successful 10m system known as BEACONet^31, based on Roger Barker's, G4IDE, *UI-View* software.

Ev has posted an appraisal of the 2002 experiments on the Internet and writes that using a combination of an APRS variant and PSK31 (BEACONet^31) on 141.131MHz USB + 1500Hz PSK audio, stations aimed their antennas into the open Atlantic Ocean. The system transmitted once every 10min with callsign and station information using PSK31. Between transmissions it listened for signals from other participating stations. If anything was heard it plotted an icon on a computer map at the location of the transmitting station.

A study of weather front progress in the Northern Hemisphere suggested that a 'best path' across the Atlantic may be from the Caribbean islands to Portugal. He writes, "The warm waters of the Gulf Stream may very well have a significant influence on the creation of an over-ocean duct, but in an unexpected way. There is evidence that it causes the duct to form at a higher altitude than what is actually useful for typical ground-based operation.

"Duct formation on the European side seems to be at heights which users may launch into. On the North American side the duct seems to form at altitudes of 4000+ feet, effectively overshooting any of the participants so far. If this is a correct assumption, then it is entirely possible that the best North American locations for success also happen to be the least accessible, the mountain tops of the Caribbean islands, with the 'next best' being central and southern Florida as well as the Atlantic side of Georgia, South Carolina and the Appalachian mountains.

"The North Eastern portion of North America is frequently swept by weather fronts making trans-Atlantic ducts much more difficult to form for any significant length of time. Any successful effort from there should probably include extremely high power, high-gain antennas and some customised modulation scheme and DSP in an attempt to take advantage of tropo ducting, scatter or ionospheric scatter linked to Es. Of course, there is always the assumption that double-hop meteor scatter (MS) is always a possibility."

There are now three high-powered stations on each side of the Atlantic that may certainly begin operation much earlier in 2003. No QSO took place but Ev writes, "A hearty round of applause to everyone who participated in 2002. Be ready for the 'go' in 2003." Meantime, have a look on the website - see the list.

science on-line services. From it you can, "Access the latest data from satellite and ground-based observatories and visit the largest radar facilities in the world by a simple mouse click."

Dave Edwards, G7RAU, has recently replaced his comprehensive website. Now web-based live MUF data are available which will be more useful later in the year when we get some Sporadic E (Es) propagation. There is also a new *test.exe* facility for live MUF users with a clx/MUF warning voice engine. For this new version you will need Windows 2000 or XP. He has dropped the contest calendar since such information is readily available from other sites. Log search/e-qsl will return when he has time to re-write the pages. See the list for the site index.

GEOMAGNETIC AND SOLAR ACTIVITY

IN THE 29 days up to 7 November the middle latitude A-index at Fredericksburg was quiet for 16 days, unsettled for 11, and two days - 24 and 25 October - were just into the sub-storm band at 22. In only one three-hour period did the K-index reach 5. The 10.7cm radio flux was remarkably constant in the 30 days up to 7 November, varying from a low of 157 on 27 October to a high of 190 on 7 November, giving an average of 172.8. That is 4.4% above last month's figure.

45 new sunspot regions were recorded and their areas in millionths of the Sun's visible disc varied between 920 and 1770 equating to a daily average of 1390. For those interested in SESC sunspot numbers, there were seven days when they exceeded 200, the maximum being 259 on 7 November. The lowest value was 116 on 23 October.

METEOR SCATTER

THE QUADRANTIDS meteor shower is the first major stream of the year and, according to the OH5IY software, it should peak at about 2300 on 3 January with a probable Zenithal Hourly Rate (ZHR) of 115. The peak is always quite short-lived and at this time the East/West and Northwest/Southeast directions are best. The Northeast/Southwest path should not give very efficient reflections, though.

On behalf of the VHF-DX-Group DL-West, Guy Juenkersfeld, DL8EBW, advises that version 1.90 of the *MS-Database* is now available from several sites, one of which is via the DK3XT homepage - see the list.

MOONBOUNCE

G3SEK HAS PROVIDED some notes about the 2003 European World-Wide EME Contest which is the main Spring event on EME. The rules are similar to those of the ARRL competition, but with some important differences. 1) Multipliers are DXCC countries plus *individual* W/VE/VK states. 2) The rules strongly favour random QSOs but do not penalise skeds on 2.3GHz and above. 3) There is only one weekend's activity for each band to give the contest more of a 'sprint' character. The dates are 15/16 March for 432MHz and 2.3-5.7GHz only. 12/13 April is for 144MHz, 1.3 and 10GHz only. 4) There are separate QRP and QRO categories on each band.

Photo: Henryk Kotowski, SM0JHF

Antennas for every band imaginable at the QTH of Marco, IS0KEB, in Sassari, Sardinia.

The contest is sponsored by the REF, the French national society, and *DUBUS* Magazine. Winners will receive free subscriptions to *DUBUS* and full rules are on its website - see the list. Ian's Lunar Weekend Calendar for 2003, is published in *DUBUS* issue 3/2002.

Howard Ling, G4CCH (IO93), was QRV on 23cm for part of the first leg of the ARRL EME Contest. On 26 October he operated throughout the night. At first there was just a light breeze but after a few hours the wind started to increase and at times he had trouble with his tracking system. Even so he managed 30 QSOs between 0002 and 0809 during which W9IIX* was initial number 173. All contacts were on CW except the last, I0UGB on SSB.

About the 27th he writes, "The wind was too strong to risk using the dish. The only thing that was heard all night was the howling of the wind and stuff being blown around outside!" He was QRV on 2 November and at 1310-1315 he was called by an unidentifiable station, N8OU? He worked G3LTF* but a sked with K7XQ at 1400 produced nothing and the Moon's elevation was too low.

The best weekend for January activity will be the 18/19 period when London latitude stations will have 30.5 hours of Moon time. The declination drops from +25.19º at the start to +19.67º at the end. The 144/432MHz sky temperature varies from 338/24K to 210/15K and the signal degradation, referred to perigee, ranges from -1.04dB to -0.60dB.

BAND REPORTS

WELL, IT SHOULD be Band *Report* this time, as 6m was the only one for which any input was received. I cannot recall this happening before, so let's have some more reports on activity on other bands.

All times are in UTC, ODX indicates best DX and QTHR signifies that the operator's address is in the current *RSGB Yearbook.* An asterisk (*) after a callsign denotes a CW contact, (CW), (MR) etc refers to the postcode area and (KG33), for example, is the Maidenhead grid.

50MHz

The main news this month concerns some real DX openings on the band. In his October report Ted Collins, G4UPS (IO80), heard PY5CC (GG54) on 50.110MHz at 2103 on the 16th working a GW. He then QSYd to 50.120MHz and Ted worked Peter at RS59+ each way at 2111, but by 2120 he had faded out. On the 18th at 1050 he heard VK6JQ* calling CQ at S3. At 1047 on the 21st he had a brief QSO with VU2ZAP*.

At 0720 on the 22nd SM7BAE was heard calling a JA6 and there were reports of 9M2TO working into Europe. From 0907 VK6JQ was heard working YU1AD, IK2WXU and some UK stations but nothing was heard of him after 1000. VU2ZAP was copied briefly at S4 at 1100. VK6JQ was copied again at 0909 on the 23rd as was VK4BLW* shortly afterwards but nothing was heard after 0927.

On the 25th at 1051 Ted heard G3ZYY (IO70) working VK4CP/6; at 1109 a JA6 working a GW and at 1135 he copied A45XR* (LL93) briefly. During the late afternoon of the 27th a couple of TR8 stations worked into the UK and next day at 1400 a GW was heard working a 6W4. On the 31st at 1510 Ted heard D44TD* at up to S7 but he faded out in 4mins.

Coming to November and on the 2nd at 1049 3XY7C (IJ39EA, QSL via DL7DF) was S4 working stations to the north of Ted giving them S9 reports and he worked him at 1624 on the 4th in an excellent opening. On the 7th at 1107 G3HBR (IO91) reported working VK6JQ.

In his report posted on 4 November, Bryn Llewellyn, G4DEZ (JO03), wrote that he was still getting patchy Es nearly every day. During the activity period on 22 October he worked into ZD7 and ZS and on 4

November he contacted 3XY7C.

From IO88 Jim Rabbitts, GM8LFB, enjoyed some Scandinavian DX in October. Following the aurora on the 7th, from 1935 he contacted OH2TP, OH2BBC, OH2RH and OH3WE (KP20), OH2BAX (KO19) and SM0GJK (JO99) in an auroral-E opening. On the 20th the JX7SIX beacon was S9 from 2210 to 2250 but there was no activity: it was the same story 2000-2115 on the 30th. On the 21st, 1025-1050 the first F_2-layer propagation of the autumn brought reception of the 4X4SIX and OD5SIX beacons, plus Band 1 TV from the Middle East and Asia but no amateur stations were heard. On 4 November Jim worked OH1ZAA (KP01) via auroral-E at 2216. Beacon LA7SIX (KP09) was copied from 2145 along with Norwegian TV on Channel E3 till about 2230.

Jamie Ashford, GW7SMV (IO81), worked some fine DX in October. On the 10th at 1417 TR8CA (JJ40); 16th at 2105 PY5CC; 22nd from 1241 ZS6XJ (KG33) and ZS6RAD* (KG44); 23rd at 1546 TY0T; 25th at 1133 A45XR* and 29th from 1426 6W/F6HLC (IK14) and 6W4RK (IK26). Coming to November he contacted 3XY7C* at 1059 on the 2nd and again on SSB at 1345 on the 4th. Back in October Jamie heard two JAs and VU2ZAP on the 21st; VK6JQ*, VK4BLK* and JA5AIE* on the 22nd and on the 25th JA6RJK*, JO6EDD* and JH5FIS* on the 85º scatter path but did not have enough ERP to work the mode.

ANNUAL VHF/UHF TABLE - JAN TO DEC 2002

	50MHz		70MHz		144MHz		430MHz		1.3GHz		Total
Call	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Dist	Ctr	Points
G4DEZ	81	79	32	7	101	24	45	14	14	5	402
G3FIJ	35	27	24	6	52	9	28	3	6	1	191
G4APJ	12	9	-	-	44	7	38	4	-	-	114
G3YDY	-	1	-	-	40	14	23	7	-	-	85
G6TTL	15	43	-	-	-	-	10	5	-	-	73
G7CLY	5	15	-	-	31	8	5	3	-	-	67
G8RWG	-	-	-	-	16	12	-	-	-	-	28

The District Codes are the 124 listed on page 56 in the January 2003 *RadCom*. Up to 6 different GI stations and up to 3 different GM stations in each Scottish district may be counted. Countries are the current DXCC ones plus IT9. The deadline for the final 2002 entries is 21 January.

THANKS

SPECIAL THANKS TO Neil Clarke, G0CAS, for the October 2002 issue of *SunMag*, to Dr Steve Reed, G0AEV, for the copy of the August 2002 *Six and Ten Report* and to the publishers of *DUBUS* Magazine for sending issue 3/2002. All publications are greatly appreciated and read with interest.

DEADLINES

THAT'S IT FOR another month and I wonder what this year's Leonids, Geminids and Ursids meteor showers will have brought?

So let's have your reports in time for the March deadline **21 January**, *a week later* than stated in the December notes, when I'll need your final claims for the 2002 Annual Table. The April date is **18 February**. My telephone answering and fax machine is on 020 8763 9457 and the CompuServe ID is g3fpk. ♦

WWW.

G4CQM antenna design:	**http://www.g4cqm@btinternet.co.uk**
DF5AI data:	**http://www.df5ai.net**
G7RAU:	**http://www.g7rau.co.uk/default.asp**
BEACONet:	**http://www.BEACONet.org**
DK3XT (MS-database):	**http://www.meteorscatter.net/database.htm**
EME contest rules:	**http://www.dubus.org**
REF:	**http://www.ref-union.org**

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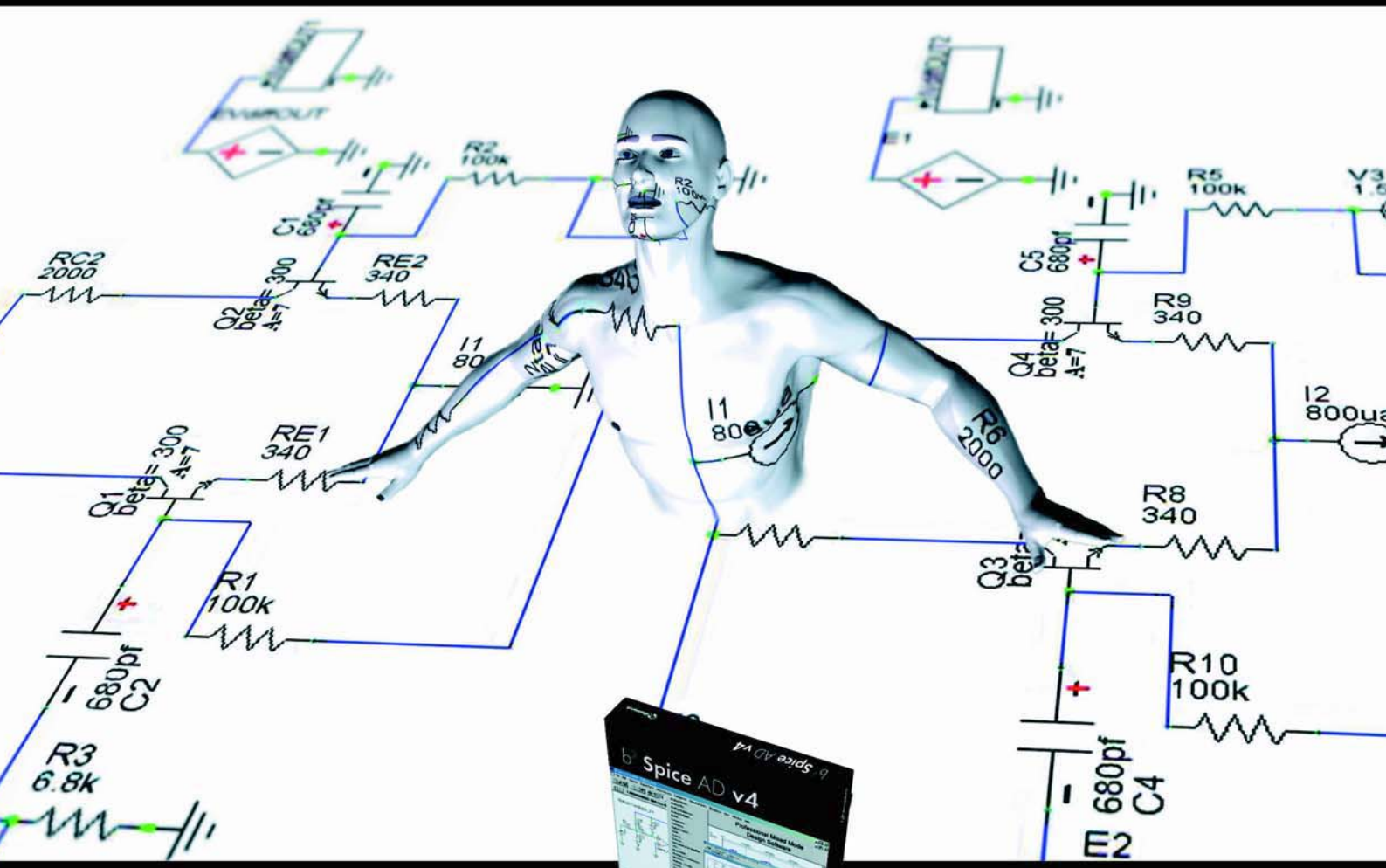

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ONE OF THE aspects of radio with which I have never quite come to terms is the need to collect awards. Not that there is anything wrong with it, but I have wondered why one should want an award; does it prove to you or to the world that you have worked so many Asiatic stations, rare DX, or does it simply cover the shack wall with impressive certificates, much as my dentist boasts (on paper) that he subscribes to painless odontology and wants me to know?

At any rate, any doubts I have are quite inconsistent with the fact that in my earliest HF days, I covered the walls proudly with QSL cards and pushed pins mercilessly into the map at each new region of the world worked. Yes, of course it is fun to track our progress in any field that matters to us, and awards are attractive and give lustre – and perhaps even justification – to our hours at the radio, listening for elusive islands we shall never see or visit.

TYPES OF PAGE

SO I LOOKED for Internet sites dealing with awards. There are quite a few, as the list on this page testifies. Some are parts of bigger sites and some are lists of awards (useful for reference) and some are award pages with rules and examples, etc. The first site I looked at was that of Paul, GW0GVQ, which has a variety of items but includes some on awards. Of WAB, for example, we read, "…it was designed to promote amateur radio's interest in the United Kingdom by sponsoring awards based on the geography of Great Britain and Northern Ireland," which is a fair summary. Maps and details follow. Other links include WACRAL and Ten-Ten which get the same treatment.

BIG LISTS

A MORE comprehensive list of awards (a links-type page) is on the DXBands.com pages. No prizes for guessing its URL. It includes the biggies: DXCC; CQ (various); YASME; RSGB etc as you would expect, but includes, by country, an irresistible trail to follow to some of the less well-known awards. Disappointingly, some of those I would have liked to follow (Korea, Italy, France) led nowhere. Others did work, though. I know it is a wretched nuisance when links fail; webmasters ought to check their lists periodically. Never mind, I ended up on the RAC (Canada) pages, which told of the Trans-Canada Award, Seaway, Provincial Capitals, 5-Band Canada etc, all of which would doubtless grace any shack wall.


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President ..... Awards Manager ..... Certificate No. ..... Date .....

The Quarter Century Award certificate from BARTG. See 'British Pages'.

Having been to Brazil, I ended up by curiosity on the CWCP Brazilian Award page of QSL.net. It's the 'Grupo de CW de São Paulo', in case you wondered. To get it you need to work five members of that group. Other Brazilian awards include BRCW (Territories); CWYL (YLs on CW); WABr (Worked all Brazil), and WMM (Worked Maritime Mobiles).

BRITISH PAGES

NEARER HOME, don't forget the BARTG Awards pages; all those bleeps must be worth something. I see now they include PSK31, a mode which has never seen an oily rag… (old joke, sorry). I belong to that generation that still thinks of RTTY as being typified by a chugging machine needing copious draughts of oil. The Quarter Century, North America and Africa awards, etc all look impressive and well worth working towards.

The RSGB awards pages lie in the 'members-only' section of its pages. Amongst the lesser-known awards might be the 73kHz award, "... for a confirmed two-way QSO on 73kHz within the UK by holders of the 73kHz NoV, any mode, over a distance in excess of 8km. This award can be endorsed for distances in excess of 32 and 128km." That would take some work I would think. Now the idea of awards which recognise serious experimentation is another matter altogether. The IOTA pages are very colourful and well worth a visit; they are extensive, inviting, detailed and interesting. They are also up to date. Well done that webmaster!

FOREIGN AND VARIOUS

HAM RADIO Awards - Amateurfunkdiplome pages are part of a German suite of pages and links. They are very detailed and useful. Stopping off at Greece from that list I came across the Alexander the Great Award. "This special full-coloured award (32 x 23cm) is available to all hams and SWLs for confirming contacts / reports with three SV2 or one special-call prefix (SX2, SW2, SZ2, SY2, J4) stations and a following countries' list which are included in ex-empire of Alexander the Great."

Although the site is more about DXpeditions, awards are linked on the elegant F5NOD pages with a QSL slide-show, and is well worth a visit. The Ham Radio Reward Reflector is for serious award-chasers, it says. "… [the] purpose of this reflector is to provide a forum for all amateur radio award enthusiasts. Any licensed ham or SWL with a genuine interest in amateur radio award-hunting is welcome to join this list." I didn't try joining myself, but I suspect it would be quite an interesting and useful site, providing messages and live chat for people of like minds.

LONG WINTER NIGHTS

WHATEVER YOU DO on these long winter nights, you couldn't do better than sort out those thousands of QSL cards in shoe boxes and just see what you qualify for. Let's get some awards up there on the wall. If nothing else, it'll be fun finding out what there is to apply for. ♦

WWW.

GW0GVQ	http://gw0gvq.tripod.com/paul/id26.html
DXBands.com	www.dxbands.com/awardsindex.htm
RAC (Canada)	www.rac.ca/awards.htm
Brazilian Award	www.qsl.net/cwsp/awards.htm
BARTG awards	www.bartg.demon.co.uk/awards/
RSGB awards	www.rsgb.org/membersonly/awards/hfawards.htm
IOTA	www.rsgbiota.org/
Amateurfunkdiplome	www.agnld.uni-potsdam.de/~martin/Funk/diplom.html
F5NOD	www.qsl.net/f5nod/index1.html
The Ham Radio Reward Reflector	http://users.pandora.be/egbert.hertsen/awardlist.htm
Belgium Public Transport	www.qsl.net/on4cjj/

JOHN HEATH, G7HIA
Chestnuts, Desford Lane, Kirkby Mallory, Leicester LE9 7QF.
E-mail: g7hia@amsat.org

SPACE

RS12/13 IS A PAIR of amateur radio transponders flown as a secondary system on board the Russian navigation satellite Cosmos 2123. This, our only satellite with an HF uplink, has ceased operations.

There has been no 'official' news from Russia, but the following reached us from RV3TH in Novgorod. "Electronic devices on Cosmos 2123 perished after super-power proton flashes on the sun in July / August 2002. Control devices and receivers perished first, then the beacon."

The Russian space programme has been a good friend to amateur radio, providing us with some excellent satellites over the years. RS12/13 will be missed by many operators worldwide.

NEW SCIENCE FROM OLD SPACECRAFT

LAUNCHED IN THE early 1970s, Pioneers 10 and 11 were the first interplanetary probes to fly by the gas giants Jupiter and Saturn. They continued out into space and, by the 1980s, were over 200 million miles away from the Earth, making them the furthest man-made objects in the solar system. Beyond effective solar illumination, both satellites are powered by 70W plutonium heat sources. Their radio signals are monitored by the giant dishes of NASA's Deep Space Network. The new science comes from the surprise observation that *both* satellites are further away from the Earth than calculations predicted. Perhaps gravity weakens more rapidly with distance, and does not obey the inverse square law proposed by Newton. On the other hand, is this evidence for dark matter exerting a very small gravitational pull and which can only be observed at such large distances? The Pioneers use simple spin-stabilisation, making them a predictable source of data. The later Cassini and Voyager probes will also leave the solar system, but their on-board thrusters for attitude control, add accelerations in the order of 10 times the effect being observed, and so will not add anything useful to the debate.

W W W .

AMSAT-ZL	www.amsat-zl.org.nz
AMSAT-INDIA	www.amsat-india.org
Transolar Holidays	www.transolarholidays.com

EARTHQUAKES AND SATELLITES

THE European Space Agency's satellite ERS-2 was launched in April 1995 by an Ariane 4 rocket. Its mission is to carry out Earth observations using cloud-piercing Synthetic Aperture radar. This data has wide applications in earth sciences, including the study of earthquakes. Researchers at the Scripps Institute of Oceanography have been able to document vertical and horizontal terrain displacements in the centimetre range across kilometre-wide zones centered on geological fault lines. This information was not previously available using ground-based measurements.

KiwiSAT

AMSAT-ZL IS CURRENTLY working on a satellite project to design, build, and launch a tiny satellite based on a 100mm cube and weighing just 1 kilogram. The 1W EIRP downlink will be in the 2m band and uplinks in the 70cm and 23cm bands. This choice of frequencies will give us the popular combination U / V, previously known as 'Mode B'. Telemetry will be 400-baud PSK and 1200-baud AFSK. More details on the AMSAT-ZL web site.

KiwiSAT. **(Photo: AMSAT-ZL)**

NEW SATELLITE FROM AMSAT-INDIA

INDIA HAS A well-developed space programme, and Indian radio amateurs joined together recently to plan VUSAT which will be launched in 2003, probably on board India's Polar Satellite launch vehicle as an auxiliary payload. The main payload will be an Indian remote-sensing satellite for Earth observations.

A 40kg 'Microsat', VUSAT, will be placed in an 800km-high circular orbit. Of cubical construction, the satellite will be spin-stabilised. The transponders are an Indian / Dutch / Italian collaboration, and will have the U / V frequency combination using CW and SSB. There will be two FM beacons so that VUSAT can be monitored with FM handhelds, making the signals accessible for school science projects. [Signals from orbiting spacecraft can be very useful for education purposes. Japanese schools routinely use the digital voice transmissions from the FUJI satellites in classroom work.]

More information on VUSAT is available from the Amsat-VU web site.

SPACE TOURISM

TEN YEARS AGO, most people would have dismissed this as something for the distant future. Perhaps it will happen sooner than you think. There have been two paying passengers visiting orbiting space platforms (Mir and ISS) in recent years. There has also been at least one international conference on space tourism, where serious proposals for hotels in space were discussed. Recently, *Spaceflight*, the respected journal of the British Interplanetary Society, carried an advert from Transolar Holidays which offers sub-orbital flights to the edge of space (100km) for £67,585 available for 2005. In the same advert, you can book a trip to the ISS on a Soyuz for just £12.9m!

OLD CHIPS IN SPACE

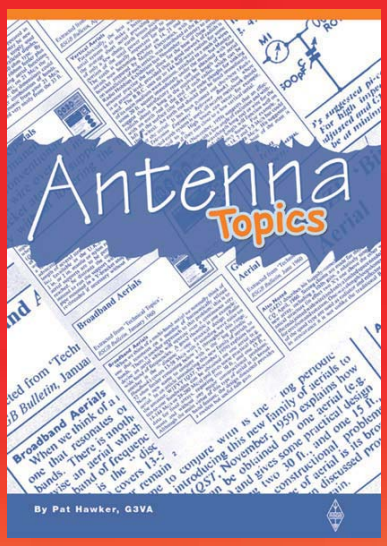
FIRST LAUNCHED IN 1981 the shuttle fleet still uses some very old computer technology by current standards, some of it in critical systems. For example, 8086 chips are used in the systems that monitor the solid rocket boosters. NASA frequently searches for old components to keep the shuttles operational, and has even used the Internet auction company eBay to help locate parts. So, when you next reorganise the shack, don't be in a hurry to throw out that old PC.

LUNAR CONSPIRACY

READERS OF THIS COLUMN will no doubt be aware of the 'conspiracy theory' suggesting that the American Apollo Moon landings were a giant hoax, that no one walked on the Moon, and everything took place in a film studio. I would very much like to hear from anyone who has any evidence from monitored radio signals. It may be that some recordings exist and that the people holding them do not appreciate their significance, believing them to be just an interesting reminiscence from the past. If you have any information, I would be very pleased to hear from you. ♦

NEW

LATEST PUBLICATIONS FROM THE RSGB



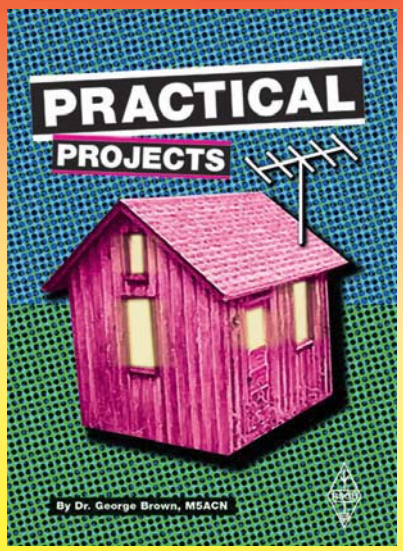
Antenna Topics by Pat Hawker, G3VA

If you are interested in antennas this book is a goldmine of information and ideas on the subject. Pat Hawker has been writing his "Technical Topics" column in Radcom since 1958 and has produced much excellent work in this time. This book is a chronological collection of cuttings of Pat's words over the years. Hundreds of areas and subjects are covered and many a good idea is included. Carefully indexed this book is not only a great reference work but also a history of over forty years of antenna design.

297x210mm

ONLY £16.14 + p&p (£18.99 non-members)

PRACTICAL PROJECTS

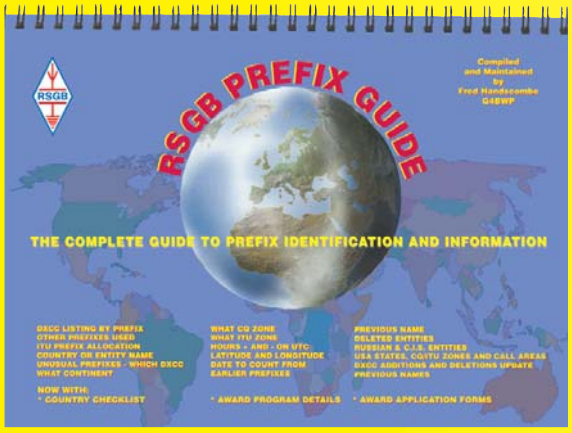


Packed with around fifty "weekend projects" Practical Projects is a book of simple construction projects for the radio amateur and those just interested in electronics. A wide variety of radio ideas are covered with everything from an 80m Transceiver, Antennas, ATUs and simple electronic keyers all included. Other simple electronic designs are such as dry battery testers, mobile microphones and various meters and monitors are also added. The book also contains a handy section on "now I've built it what shall I do with it?" questions answered. This book is excellent for those just looking for interesting ideas to construct and for the newcomers to the hobby looking to expand their knowledge.

240x174mm

ONLY £11.04 + p&p (£12.99 non-members)

RSGB Prefix Guide



Ever wondered what that "unusual" callsign was?

The fully updated "RSGB Prefix Guide" answers the question. The World's most comprehensive list of prefixes is newly revised and improved. Not just a listing of prefixes and their entities the guide provides a host of useful additional material. References include a prefix's continent, CQ Zone, ITU Zone, Latitude and Longitude and many other details.
The new edition still includes all the elements that have made the book so popular over the years such as the DXCC deleted entities, Russian & CIS entities etc. With this edition the book has had many new elements included for the first time. The popular DXCC checklist has been added along with details of various award programs IOTA, CQ WAZ, DXCC, WAS and others. This book is an excellent tool for the beginner and the experienced hand alike. Designed with a "lay flat" wire binding for ease of use the new "Prefix Guide" is a must for every shack.

210 by 297 mm

ONLY £7.64 +p&p
(£8.99 non-members)

www.rsgb.org/shop or Tel: 0870 904 7373

RSGB Contesting Guide 2003

A 12-page pull-out and keep guide to all RSGB HF, VHF, UHF and Microwave contests for the year.

WELCOME TO the 2003 *RSGB Contesting Guide*. The rules for *all* the contests for the year that are organised by the RSGB HF and VHF Contests Committees, as well as those organised by the RSGB Microwave Committee, are included in this year's *Guide*.

MICROWAVE CONTESTS

THIS YEAR SEES SOME major changes to both the microwave contest calendar and format of the actual events. These changes have been introduced to encourage activity on all bands from 1.3GHz up and to provide something for everybody, from low power portable stations to high power home stations, from the lower microwave band exponent to the millimetre wave enthusiast. In planning the year's contests we have tried to avoid clashes and adjacent weekends with major VHF contests and events such as rallies and microwave meetings but, inevitably, this has not been possible in all cases.

We are also trying to encourage activity on the 'neglected' bands such as 3.4GHz and 5.7GHz. Kitset transverters are now easily obtainable for these bands and surplus solid-state PAs can be found at very reasonable cost.

24GHz is now given its own series of contests. We feel there is sufficient potential UK activity on this band to support its own contest. 47 and 76GHz, however, are still relatively underpopulated and the committee feels these bands cannot yet support more that the single event shown on the calendar for this year.

New certificates have been designed for all of the contests and a new trophy, the G3KEU Memorial cup, introduced for the 5.7GHz Cumulative Contest.

With the introduction of new contest events and the modification of existing ones, the Microwave Committee believes they are offering the UK microwave operator a wide choice of events and chances to have an enjoyable year of operating and interesting contacts.

Microwavers in Europe are most welcome to join in our UK contests. There is already a core of French, Dutch and Belgian stations who appear regularly in our summer contests. We would like many more to do the same!

Just a small selection of the magnificent trophies awarded annually to winners of RSGB contests. Take part: it's fun!

VHF / UHF CONTESTS

FOR 2003 THE RSGB VHF Contest Committee has decided to continue with the UK Activity Contests with one major change. The 23/13cm event on the third Tuesday of each month has been extended to cover all microwave bands between 1.3GHz and 24GHz. The VHFCC along with the Microwave Committee felt that this was a good opportunity to promote microwave activity within the UK.

Please note that there will be a change of address for all VHF contest postal entries for the year 2003. This is: VHFCC, c/o 5 The Howsells, Lower Howsell Road, Malvern WR14 1AD.

The VHF Contest Committee has also considered and revised the wording of Rule 4j concerning the use of the *DXCluster* and other spotting networks for 2003. The intent of this rule is to prevent the flooding of the *DXCluster* network with self-generated spots and announcements, but not to prevent the setting up of scheduled QSOs. See page 51 for further details.

HF CONTESTS

THERE ARE NO alterations to the contest calendar for this year, however, there are some important changes to the way e-mail logs should be prepared and submitted. Each RSGB HF contest now has its own individual e-mail address to which logs should be sent. Cabrillo format logs are the preferred format for entries to RSGB HF contests. Please visit the HF Contest Committee website for the latest information: www.rsgbhfcc.org/index.html Section 9 of the general rules has been re-written to reflect these changes. These changes are part of a wider effort by the Committee to improve the efficiency and quality of the adjudication process during the coming year. There are some minor changes in the rules of the RSGB IOTA contest.

SPECIAL SHORT CONTEST CALLSIGNS

THE HOLDER of any UK Full Class A *club* licence may apply for a special short contest callsign. The callsign consists of 'G' or 'M', a regional locator (if operating outside England), a chosen digit and a single chosen suffix letter, eg G0A, M9B, GM8C, MW7D etc.

The contest callsign may only be used during the contests specified in the NoV, and at no other times. The list of contests is as follows: ARRL DX (CW and SSB); ARRL 1.8MHz (CW only); ARRL 28MHz (Multi-mode); *CQ* WPX (CW, RTTY and SSB), *CQ* World Wide (CW, RTTY and SSB); *CQ* World Wide 160 (CW and SSB); IARU Championship (Multi-mode); RSGB IOTA (Multi-mode); WAE DX (CW, RTTY and SSB); ARRL RTTY Roundup; BARTG RTTY, IARU 50MHz Trophy (Multi-mode); IARU 144MHz Trophy (Multi-mode); IARU 432MHz - 248GHz (Multi-mode); March 144 / 432MHz Contest; May 432MHz - 248GHz Contest; November Marconi Memorial 144MHz Contest.

If you hold a Class A club licence and would like to apply for a special short contest callsign, please contact the Amateur Radio Department at RSGB HQ, tel: 0870 904 7373; or e-mail: ar.dept@rsgb.org.uk

RSGB MICROWAVE CONTEST RULES 2003

THE RULES listed below are final and binding for 2003 (there are significant changes from 2002). The following contests are scheduled for 2003:

- Low Microwave Bands - 1.3GHz/2.3GHz/3.4GHz (2 contest days)
- 5.7GHz Cumulatives (6 contest days with 3 to count for scoring purposes), on the same days as the 10GHz Cumulatives.
- 10GHz Cumulatives (6 contest days with 3 to count for scoring purposes), on the same days as the 5.7GHz Cumulatives.
- 24GHz Cumulatives (3 contest days with 2 to count for scoring)
- 47GHz and 76GHz (1 contest day)
- 10GHz Trophy (1 contest day, arranged by VHFCC, see the VHF listing for further information.)
- In addition there are three non-competitive winter activity days.

The full contest programme and rules are also published in the January 2003 issue of the *RSGB Microwave Newsletter* and are also available on the Internet at: http://www.g3pho.free-online.co.uk

General Rules (applicable to all events)

ALL THE CONTESTS (except the 10GHz Trophy) run from 0900 to 2100UTC on a Sunday.

The Contests are open to all comers (you do not have to be an RSGB member), except for the 10GHz Trophy where contestants must be members of RSGB if they wish to submit logs.

Contestants are expected to enter in the true spirit of the event and to adhere strictly to any equipment or power restrictions that apply to the particular contest.

Operators may enter as home station or portable (either mixed or separately).

The following VHF/UHF/SHF General Rules will apply unless stated otherwise: **1** a, e, f, h; **2** e, i; **3** b, c unless the Rover rule is invoked, d, f, g; **4** d, e, f unless the Rover rule is invoked, g, h, i, k; **5** b, c; **6** a.

Scoring: Contacts are scored on the basis of 1 point per kilometre for full, two-way microwave contacts and at half points for one-way (ie crossband) contacts.

Exchanges: Contest exchanges on the microwave bands consist of RS(T) + serial number (starting at 001). In addition, the six (or eight) figure QTH Locator must be exchanged either via the microwave band or on the talkback frequency. Where the Locator is not known, a full six-figure National Grid Reference (UK only) must be provided. In multiband contests, the serial number will start at 001 for each band (ie a common sequence across the bands is NOT to be used).

Mobile phones must not be used to exchange any contest log information. All such information may only be exchanged by amateur radio.

Paperwork/Entries: Contestants are asked to make sure their entries have been scored correctly and that all relevant bonus points and multipliers have been claimed. The adjudicator will not do this for you!

All entries must be prefaced with an appropriate summary / cover sheet (either an RSGB VHF / UHF type or a personal one) showing: Title of contest, name(s) of operator(s), location(s) of station, section entered, callsign used, band score(s), multipliers or bonus points, final claimed score. The sheet should also detail equipment used, particularly the power output, antenna and receiver for both the microwave band and the talkback. This is very important if the logs are entered in one of the restricted sections. Where the contest has a 'rover' facility, it is essential that each location used is clearly stated.

Where Locator squares and / or countries are used as multipliers for bonus points, a summary list of the squares and countries worked must be attached to the contest cover (summary) sheet. This list should include the callsign and date of the first contact for each square / country.

Log entries may be submitted directly on paper, using standard RSGB VHF Contest sheets or self-prepared contest sheets, on a 3.5in diskette (IBM PC format), or via e-mail. For electronic entries, the format should be one of the following: ASCII text, Microsoft Excel, Microsoft Word, or the G4JNT contest software format. E-mail entries will be acknowledged to confirm receipt.

All logs should be sent to the Contest Adjudicator, G4KNZ, *within 16 days of the end of the contest*. Late entries will be acknowledged but not used in the final ranking. G4KNZ's address is: 17 Haywood, Bracknell, Berks RG12 7WG, UK; or e-mail: steve.davies@nokia.com

Awards: Certificates will be awarded to overall contest winners and individual section leaders and their runners up. Additional Certificates of Merit may be awarded at the discretion of the RSGB Microwave Committee. With these, as with the logs, the adjudicator's decision is final.

Special Rules: Applicable if called up for the specific contest:

Rover Concept: The 'Rover' concept is to encourage lightweight, low power portable activity. This allows the location of the station to be moved as many times as desired and by a minimum of 16 linear kilometres, at any time during the contest period. From each new location, stations worked from any of the previous locations during the event may be worked again, both stations involved in the contact gaining points. The serial number, however, will not revert to 001 each time a move is made but will carry on consecutively from the previous contact. Details of the equipment used for this type of operation should be included on the log summary/cover sheet.

Low Band Microwave Contest Rules

THIS CONTEST AIMS to encourage home station operation on the three lowest bands in the amateur microwave allocation, particularly as there is growing UK interest in 3.4GHz equipment and triband antenna feeds for these three bands. Portable operators are, of course, welcome to enter, in spite of the chances of inclement weather at the time these contests are staged!

1. The General Rules listed above apply.

2. There are two contests, one in March and the other in November.

3. There is only one section - open.

4. Each band will be scored and tabulated separately. The total points for each band will then be normalised by the adjudicator to 1000 and the normalised band totals added up and tabulated.

5. Each session will be scored separately - there are no cumulative scores.

6. For each session, March and November, certificates will be awarded to

- the leading entry on each band
- the overall leading entry across the three bands
- the runners up to both the above categories

7. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of each of the two contests.

5.7GHz Cumulatives Rules

THE 5.7GHz and 10GHz cumulatives have been run concurrently because of the growth in activity on 5.7GHz, and the ease of combining the two bands on the same dish. Although they are on the same days, they are completely separate contests. Either band or both bands can be used on any of the 6 days, and any three days submitted for either band.

1. The general rules shown above apply.

2. There are six, monthly, events, from May to October inclusive.

3. Any three of the six events may be used for final scoring purposes. Logs for all events entered should be submitted.

4. There are two sections:

Open: No power or antenna restrictions (other than those laid down in the amateur licence) on either 5.7GHz or on the talkback band. Moving location during the contest is allowed - the Rover concept is applicable.

Restricted: 5.7GHz transmit output not to exceed 1 watt to the antenna. No power restrictions on the talkback band. No antenna restrictions Moving location during the contest is allowed - the Rover concept is applicable.

5. The final results table will show entries in rank order for each section. In addition to the usual leader/runner-up certificates for each section, the following certificates/trophies will be awarded:

- leading entry in the Open section - 5.7GHz the G3KEU Memorial Trophy
- leading home station in each section

6. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of the final session of the contest.

10GHz Cumulatives Rules

THE 5.7GHz and 10GHz cumulatives have been run concurrently because of the growth in activity on 5.7GHz, and the ease of combining the two bands on the same dish. Although they are on the same days, they are completely separate contests. Either band or both bands can be used on any of the 6 days, and any three days submitted for either band.

1. The general rules shown above apply.

2. There are six, monthly, events, from May to October inclusive.

3. Any three of the six events may be used for final scoring purposes. Logs for all events entered should be submitted.

4. Contestants may submit logs for any one of the following sections:

Open: No power or antenna restrictions (other than those laid down in the amateur licence) on either 10GHz or on the talkback band. The 'Rover' concept does not apply to this section.

Restricted: 10GHz transmit output not to exceed 1.0 watt to the antenna. No power restrictions on the talkback band. No antenna restrictions. Moving location during the contest is allowed - the Rover concept is applicable.

Wideband: 100 milliwatts maximum transmit power to the antenna. Modulation bandwidth to exceed 50kHz. This section includes wideband modes such as FM (voice), MCW, ATV and data. Moving location during the contest is allowed - the Rover concept is applicable.

(There is no separate section for portable stations.)

5. The final results table will show entries in rank order for each section. In addition to the usual leader/runner-up certificates for each section, the following certificates/trophies will be awarded:

- leading entry in the Open section - The G3RPE Memorial Trophy
- leading home station in each section.

6. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of the final session of the contest.

24GHz Cumulatives Rules

IT IS FELT THAT there is now a sufficient number of UK stations equipped with moderate power equipment to make this type of contest viable. The Committee earnestly hope that those so equipped will make every effort to support these contests and thus give 24GHz the attention it deserves.

1. The General Rules listed above apply.

2. There are three sessions to the 24GHz cumulative in April, July and August. The best 2 sessions out of three will be used for scoring purposes.

3. There is only one section - open.

4. Operation may be from portable sites or home stations.

5. Moving location during the contest is allowed - the Rover concept is applicable.

6. Certificates will be awarded to:

- the leading station and runner-up for the two sessions combined
- the leading home station for the two sessions combined

7. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of the final session of the contest.

47 and 76GHz Contest Rules

THERE WILL BE one event of this type. With the relatively low numbers of operators presently active on these bands, it is hoped that the contest day will provide opportunities for experimentation with equipment and paths, thus providing an enjoyable and valuable day out.

1. The General Rules listed above apply.

2. There is one contest in September.

3. There is only one section - open.

4. Moving location during the contest is allowed - the Rover concept is applicable.

5. Each band will be scored and the results tabulated separately. The total points for each band will then be added up and the results tabulated.

6. Certificates will be awarded to

- the leading entry on each band
- the overall leading entry across the two bands
- the runners up to both the above categories

7. All logs should be sent to the contest adjudicator, Steve Davies, G4KNZ, within 16 days of the end of each of the two contests.

Other Microwave Contests

THE FIRST WEEKENDS of May and October see the RSGB 432MHz - 248GHz Multiband Contests staged in parallel with the Region 1 IARU UHF/SHF Contests. As a result of considerable discussion, The RSGB Microwave Committee feels there is no need to add yet a third 'layer' of contest activity on those weekends.

The 10GHz Trophy is run by the VHF Contest Committee on 4 May, and the rules can be found in the VHF contest rules.

In addition there are many other Continental UHF/SHF Contests held over the summer months and interested UK microwavers are urged to be active during these. Their details may be found on the Internet.

MICROWAVE CONTEST CALENDAR 2003

Dates	Time UTC	Contest name	Sections
26 Jan	0900 - 2100	All-band Activity Day	Non competitive
23 Feb	0900 - 2100	All-band Activity Day	Non competitive
30 Mar	0900 - 2100	1.3GHz/2.3GHz/3.4GHz	Open
13 Apr	0900 - 2100	1st 24GHz Cumulative	Open
3 May		10GHz Trophy	See VHFCC Rules
25 May	0900 - 2100	1st 5.7GHz Cumulative	Open
25 May	0900 - 2100	1st 10GHz Cumulative	Open, Restricted, WB
22 Jun	0900 - 2100	2nd 5.7GHz Cumulative	Open
22 Jun	0900 - 2100	2nd 10GHz Cumulative	Open, Restricted, WB
13 Jul	0900 - 2100	2nd 24GHz Cumulative	Open
27 Jul	0900 - 2100	3rd 5.7GHz Cumulative	Open
27 Jul	0900 - 2100	3rd 10GHz Cumulative	Open, Restricted, WB
10 Aug	0900 - 2100	3rd 24GHz Cumulative	Open
31 Aug	0900 - 2100	4th 5.7GHz Cumulative	Open
31 Aug	0900 - 2100	4th 10GHz Cumulative	Open, Restricted, WB
21 Sep	0900 - 2100	5th 5.7GHz Cumulative	Open
21 Sep	0900 - 2100	5th 10GHz Cumulative	Open, Restricted, WB
28 Sep	0900 - 2100	47GHz and 76GHz	Open
19 Oct	0900 - 2100	6th 5.7GHz Cumulative	Open
19 Oct	0900 - 2100	6th 10GHz Cumulative	Open, Restricted, WB
30 Nov	0900 - 2100	1.3GHz/2.3GHz/3.4GHz	Open
28 Dec	0900 - 2100	All-band Activity Day	Non competitive

General Rules for RSGB VHF / UHF / SHF Contests 2003

1. Entries

a. In submitting an entry to a contest, you agree to be bound by the rules and spirit of the contest, and you agree that the decision of the RSGB shall be final in cases of dispute.

b. All paper and / or disk entries should be addressed to: VHFCC, c/o 5 The Howsells, Lower Howsell Road, Malvern WR14 1AD.

c. Alternatively, entries may be submitted by e-mail to vhf.entry@rsgb.org.uk. Please ensure that you use this address rather than any previously published one.

d. Entries should be postmarked or e-mailed not later than 16 days after the end of the contest, or, for cumulative contests, the last activity period.

e. Entries become the property of RSGB and cannot be returned.

f. Proof of contact may be required. Any station may be approached, without notice to the entrant, for confirmation of contact details.

g. In case of dispute, in the first instance, the Chairman of the VHF Contests Committee (VHFCC) should be contacted in writing. The VHFCC may refer cases of appeal to the RSGB Board. The Board's decision shall be final.

h. In multi-band contests, single-band entries are always acceptable.

i. Queries about the contests may be addressed to the VHFCC Chairman, tel: 0870 740 7909 (calls are charged at BT national rate), evenings / weekends. e-mail: vhfcc.chairman@rsgb.org.uk

2. Paperwork

a. The preferred method of entry is by electronic log in DOS format supplied on diskette or by e-mail. Handwritten or typed entries on paper are always acceptable. If you use a computer to prepare an entry, we reserve the right to require an electronic copy of the entry.

b. Acceptable file formats include .LOG from SDV, G0GJV, G3WGV and CONLOG programs, N6TR .DAT, RSGB standard format, REG1TEST and ADIF. We will endeavour to work with any other reasonable format - please contact the VHFCC to discuss this. Free software is available from VHFCC Chairman or http://www.blacksheep.org/vhfcc

c. e-mail entries should include a plain text file which contains the same information as the paper coversheet (form 427). Entries on diskette can use either a file or paper coversheet. A suitable plain text template can be found at www.blacksheep.org/vhfcc/stationery/stationery.htm

d. Diskettes and e-mail subject headers must clearly indicate the relevant contest(s) and callsign(s). The file names should consist of the callsign and the extension .LOG or .COV, eg G9XXX.LOG. Where the same callsign is used on more than one band, add some reference to the band, eg G9XXX144.LOG.

e. All paper entries should be accompanied by a VHF / UHF contest cover sheet (form 427) for each band used, or a similar form which supplies the same information. Please include a contact telephone number or e-mail address in case of query.

f. The logs for paper contest entries should be made out on current RSGB VHF / UHF log sheets or a close replica. These forms may be photocopied from the *RSGB Yearbook*. Larger quantities may be purchased from RSGB HQ. Each sheet should be headed with the entrant's callsign, IARU locator, contest title and sheet number. Logs should be tabulated as follows:

i. Date / time (UTC)
ii. Callsign of station worked
iii. My report on his / her signal and serial number
iv. His / her report on my signal and serial number
v. IARU Locator received
vi. QTH or county received (when required) or comments
vii. Points claimed.

g. In contests with a multiplier scoring system, when submitting paper logs, please also submit a list of multipliers worked, showing at least the callsign, and either serial number sent or time of QSO, for each contact claimed as a new multiplier.

h. Any complaints / adverse comments received or made about signal quality must be recorded in the comments column of the paper log or electronic log.

i. If you wish to receive a copy of the results as soon as they are available, please send an SASE labelled 'results' and the contest name.

3. Station / Operators

a. All operators must be RSGB members except in VHF NFD and the Affiliated Society contests - see individual rules.

b. Stations entering a fixed station section or contest must operate from permanent and substantial buildings located at the main station address as shown on the licence validation document. The spirit of the contest will be paramount.

c. Entrants must not change their location or callsign during the contest. In multi-band events, all stations forming one entry must be located within a circle of 1km radius.

d. Stations located outside of the UK (G, GW, GM, GI, GD, GU, GJ) may enter a contest, and will be tabulated within the overall results tables, but will only be eligible for their own awards.

e. There must be only one frequency used for transmit on any band at any one time.

f. The lower of the contest power limit or the standard licence power limit must not be exceeded during the contest. Contacts made under a high-power permit will not count for points. Severe action may be taken against infringements of this rule.

g. Stations which persistently radiate poor quality signals, cause deliberate interference to other stations, or otherwise contravene the code of practice for VHF / UHF / SHF contest operation may be penalised.

h. Entrants must permit inspection of their stations by members of VHFCC or its representatives, and give site access information if requested to do so. The inspector must be permitted to remain for as long as desired, and to return to the site for subsequent inspections at any time during the contest. Contestants must demonstrate to the inspector's satisfaction that they are obeying the rules of the contest.

4. Contacts

a. The contest exchange consists of at least both callsigns, RS(T) signal reports followed by a serial number, and the IARU locator. Particular contests may require additional information to be exchanged as described in the individual contest rules.

b. Serial numbers start from 001 on each band and advance by one for each contact. In cumulative contests serial numbers start from 001 for each activity period.

c. Crossband contacts do not count for points below 2.3GHz. On 2.3GHz and above, crossband contacts are scored at 50% of the two way score.

d. No points will be lost if a non-competing station cannot provide an IARU locator, serial number, or any other information that may be required. However, the receiving operator must receive and record sufficient information to be able to calculate the score.

e. Contacts with callsigns appearing as operators on any of the cover sheets forming an entry will not count for points or multipliers. In AFS contests, stations within the same AFS team may work each other for points / multipliers.

f. Only one scoring contact may be made with a given station on each band, regardless of suffix (/P, /M, etc) during an individual contest or cumulative activity period. All non-scoring contacts must be clearly marked in the log, and unmarked duplicates will be penalised at ten times the claimed score for that contact.

g. Contacts made using repeaters, satellites or moonbounce will not count for points.

h. The IARU / RSGB band plans must be observed.

i. All information must be copied off air at the time of the QSO. Databases must not be used to fill in missing information.

j. Use of the *DXCluster* and other spotting networks (including Internet facilities) is allowed in all contests. However, persistent self-spotting by the entrant or any close associate is not allowed. The intent of this rule is to prevent the flooding of the *DXCluster* network with self-generated spots and announcements, but not to prevent the setting up of scheduled QSOs by the use of talk channels, WW Converse servers and similar forums.

k. Any band may be used for setting up contacts or talkback. No confirmation of QSO details must take place on the talkback frequency. All exchanges for the contest band in use must be made on that band. The talkback channel can be used for antenna alignment signals and confirmation that signals are audible, but not for giving reports and serial numbers.

l. In contests with a section 6S or 6O, stations may choose any continuous 6 hour period in which to operate (eg 1500 - 2100, or 1917 - 0117). Serial numbers must start at 001 for this period, and you cannot enter both this section and the full contest. Section SS is for single operator fixed stations, section OS for all others. In multi-band contests, a single 6 hour period must be used on all bands.

5. Scoring

a. Scoring will normally be at 1 point per km. Contacts with stations in the same small locator square as your station (eg IO92AA to IO92AA) will score 1 point.

b. For computer purposes a conversion factor of 111.2 km / degree must be used.

c. Multi-band contests will contain an overall results table in addition to the individual band results. The scores in this final tabulation will be formed by taking the sum of the normalised scores on each band. The normalised scores will be calculated by:

Normalised score for each band / session =
(Score achieved x 1000)
(Band/session leader score)

6. Awards & Results

a. Certificates will be awarded to the leading and second placed station in each section of the contest. Additional certificates of merit may be awarded at the adjudicator's discretion.

b. In all contests / sections where the power limit is above 25W, a certificate will be awarded to the leading fixed station using 25W or less into a single antenna.

c. Placement certificates showing the result achieved in the contest can be obtained by including an A4 SASE with the entry marked with callsign, contest and (if applicable) group name.

d. A certificate will be awarded to the leading Intermediate and leading Foundation licensees in each section.

e. A certificate will be awarded to the leading Overseas station in each section.

7. Multipliers

a. Where a contest uses multipliers, the score for each band will be the number of points made on that band multiplied by the number of multipliers contacted on that band.

b. The type of multiplier scheme for a particular contest will be referred to in the individual rules for the contest. Not all contests will use multipliers.

c. Each new multiplier must be clearly marked in the log.

d. In post code multiplier contests, each Scottish Post Code may be worked up to three times for multiplier credit, and BT for Northern Ireland may be worked up to six times for multiplier credit. The TD area counts three times regardless of whether the stations contacted are in England or Scotland.

e. In contests using Post Code Area multipliers the exchange will include the first 2 letters of the postcode (eg EN from EN5 7JE). Where a post code consists of only a single initial letter (eg B6 9AA), the exchange will be padded out to 2 letters - ie in this case 'BM'. This extended exchange is used to keep a common format, but entrants need to be aware that some non-contestants may not be aware of their extended code.

2003 Special Rules

CERTAIN OF THESE rules are invoked for individual contests as listed in the individual contest rules.

S1. Instead of 1 point / km scoring (rule 5a), scores will be calculated at 1 point / QSO.

S2. In addition to the IARU locator, QTH information must be exchanged. This should be given as a point identifiable on an Ordnance Survey route planning map or equivalent (scale 1:625,000) or as a direction and distance not greater than 25km from such a point, eg 10km West of Skegness.

S3. This is an Affiliated Societies contest and is open to both individual entrants (who must be RSGB members), and to teams made up of a number of operators who must all be members of the same affiliated society, but not necessarily RSGB members themselves. Scores from portable stations will be included in the results but will not count towards team tables.

a. All members of the team must operate from within 50km of the normal meeting place of the society. No station may represent more than one society. No operator is allowed to use more than one callsign during the contest. In the case of national societies, each team must define a separate meeting place, and each team member must operate within 50km of that designated meeting place.

b. QSOs with other members of your team will count for points.

c. Multiple teams are encouraged from both local and national societies. For the purpose of calculating the overall AFS team score, each member of each team will be placed in one of 5 sections (3 for the 432MHz contest) Sections A, B, C etc. The highest-placed member of each team will be placed in Section A, the second highest in Section B etc. All stations in each of the sections will have their score normalised against the highest score in that section, with the highest score gaining 1000 points. The final AFS team score will be the sum of the team members individual normalised scores.
d. Please mark your RSGB Zone (which can be found in the *Yearbook*) on the cover sheet.
e. Logs should be sent as a single package for each club and should include a declaration by a club official that all operators are members of the Affiliated Society, and listing the QTH locator of the normal meeting place of the club.
S4. This contest runs concurrently with a 'Backpackers' contest. Stations entering the Backpackers contest only may be worked once from a fixed location and once from their portable location for points.
S5. This is a cumulative contest. The following special rules apply:
a. For cumulative contests the overall score will normally be calculated from the best 3 normalised session scores - the normalised score being calculated as above in rule 5c. It is impossible for you to determine your best sessions without knowing everyone else's scores, so please submit your logs and scores from all sessions in which you were active and allow the adjudicator to calculate your best sessions.
b. Stations may move location between individual cumulative activity periods.
c. For cumulative contests, please summarise your scores from each session on the reverse of the cover sheet.
S6. This contest runs concurrently with the first few hours of an RSGB 24 hour event. You may submit entries to both contests with a single set of logs, but please include 2 cover sheets - one for the shorter contest and one for the 24 hour event. Entries may be automatically submitted into the 24 hour event unless you specifically request otherwise.
S7. This contest runs concurrently with all or part of an IARU co-ordinated contest. You may submit a single set of logs for entry to both the RSGB and IARU events. Entries will be submitted to the IARU event unless you specifically request otherwise.
S8. This is an activity contest. The following special rules apply:
a. These contests are timed to coincide with the last two hours of a number of European 2m activity contests, with an extra half hour at the end to encourage intra-UK activity. They take place on Tuesdays from 2000 - 2230 local time with 144MHz on the 1st Tuesday of the month, 432MHz on the 2nd Tuesday, microwaves on the 3rd Tuesday, and 50MHz on the 4th Tuesday. There will be no such contest on any 5th Tuesday.
b. Please submit an entry after each session in which you are active. There are separate sections for Single Operator Fixed Stations and All Others.
c. This contest is scored at 1 pt / QSO with a QTH locator multiplier (multiplier type M2) on 50MHz and 144MHz, and at 1 pt / km with a QTH locator multiplier (multiplier type M2) on 432MHz and microwaves.
d. At the end of the year, on each band an overall score will be calculated from the best 6 normalised session scores - the normalised score being calculated as above in rule 5c. It is impossible for you to determine your best sessions without knowing everyone else's scores, so please submit your logs and scores from all sessions in which you were active and allow the adjudicator to calculate your best sessions.
e. Stations may move location between individual activity periods.
f. A trophy will be awarded to the winner of each section on each band. Certificates will be awarded to the overall winners and runners-up in each section and on each band in the same way as per the general rules. No certificates will be awarded for the individual events.

Multiplier Types

ONE OF THE following rules as defined in the individual contest rules will apply to any contest using multipliers. In each case, a QSO with your own post code, country or large square as appropriate to the contest counts for multiplier credit, and any appropriate QSO can count as more than multiplier (eg your first G QSO in an M3 contest will count for a new locator, postcode and country).
M1. Post Code and Country Multipliers. The multiplier for a band is the sum of the number of different DXCC countries and UK post code areas worked on that band.
M2. QTH Locator Multiplier. The multiplier for a band is the sum of the number of different large locator squares (eg JO01,IO91 etc) worked on that band.
M3. Post Code, Country and QTH Locator Multiplier. The multiplier for a band is the sum of the number of different DXCC countries, UK post code areas, and large QTH locator squares (eg JO01, IO91 etc) worked on that band.
M4. Country and QTH Locator Multiplier. The multiplier for a band is the sum of the number of different DXCC countries, and large QTH locator squares (eg JO01, IO91 etc) worked on that band.

Code of Practice for VHF / UHF/SHF Contests

1. Obtain permission from the landowner or agent before using the site and check that this permission includes right of access. Portable stations should observe the Country Code.
2. Take all possible steps to ensure that the site is not going to be used by some other group or club. Check with the club and last year's results table to see if any group used the site last year. If it is going to be used by another group, come to an amicable agreement before the event. Groups are advised to select possible alternative sites.
3. All transmitters generate unwanted signals; it is the level of these signals that matters. In operation from a good site, levels of spurious radiation which may be acceptable from a home station may well be found to be excessive to nearby stations (25 miles away or more).
4. Similarly, all receivers are prone to have spurious responses or to generate spurious signals in the presence of one or more strong signals, even if the incoming signals are of good quality. Such spurious responses may mislead an operator into believing that the incoming signal is at fault, when in fact the fault lies in the receiver.
5. If at all possible, critically test both receiver and transmitter for these undesirable characteristics, preferably by air test with a near neighbour before the contest. In the case of transmitters, aim to keep all in-amateur band spurious radiation, including noise modulation, to a level of -100dB relative to the wanted signal. Similarly, every effort should be made to ensure that the receiver has adequate dynamic range.
6. Remember that contesters cannot claim exclusive use of any part of any band. Please respect other operators at all times by avoiding using, or causing interference to, frequencies set aside for other legitimate users. This applies whether the other use is prescribed by an official band plan (eg the 144.300MHz SSB calling frequency on 2m), by recognised code of practice (eg the 50.100-50.130MHz DX window on 6m), or by common convention (eg the GB2RS news broadcasts on 144.250MHz). If asked to QSY because of interference to any such use, please do so quickly and courteously.
7. Above all, be friendly and polite at all times. Be helpful and inform stations apparently radiating unwanted signals at troublesome levels, having first checked your own receiver. Try the effect of turning the antenna or inserting attenuators in the feedline; if the level of spurious signal changes relative to the wanted signal, then non-linear effects are occurring in the receiver. Some synthesised equipment has excessive local oscillator phase-noise, which will manifest itself as an apparent splatter on strong signals, even if there is no overloading of the receiver front-end. Pre-amplifiers should always be switched out to avoid overload problems when checking transmissions. If you receive a complaint, perform tests to check for receiver overload and try reducing drive levels and switching out linear amplifiers to determine a cure. Monitor your own signal off-air if possible. Remember that many linear amplifiers may not be linear at high power levels under field conditions with poorly regulated power supplies. The effects of over-driving will be more severe if speech processing is used, so pay particular attention to drive level adjustment. If asked to close down by a Government Official or the site owner, do so at once and without objectionable behaviour.

VHF National Field Day 2003 Rules

General Rules apply.
1. Date / time of contest
1400 Saturday 5 July 2002 until 1400 Sunday 6 July 2003.
2. Site Notification
Each Group intending to compete must supply the following details:
Name of Club / Group
Contact name and address/telephone number in case of query
Section entered
Choice of Bands (see section 7)
Callsign for each band
NGR of site
Site access information (maps are not required)
A suitable form is available in the *RSGB Yearbook*, from the VHFCC web site (www.blacksheep.org/vhfcc) or from the VHFCC Chairman.

Post the details to: VHF Contests Committee, c/o 5 The Howsells, Lower Howsell Road, Malvern WR14 1AD or e-mail to vhf.entry@rsgb.org.uk The postmark of the letter or date of the e-mail must not be later than 30 June 2003.

Each group may only register one site although essential changes may be acceptable provided the VHFCC Chairman is informed before the contest: tel.: 0870 740 7909, evenings / weekends; e-mail: vhfcc.chairman@rsgb.org.uk
3. Bands
The chosen bands must be stated on the site registration form. See individual section rules (see section 7 of these rules) for the choice of bands during the contest.
4. Operators
Any RSGB member or group of members operating from the British Isles (excluding the Irish Republic) may enter. Also, affiliated RSGB societies may enter (operators *must* be members of the Affiliated Society (AFS), but not necessarily members of RSGB themselves). In this case, a declaration signed by an officer of the AFS that the operators are members of the society is required with the entry. RSGB members are allowed to operate in AFS groups whether or not they are actually members of that AFS group.
5. Stations
All equipment including antennas and accommodation must be installed on site not more than 24 hours before the contest. Only portable accommodation can be used to house the stations. Power for all equipment must be derived from an on site generator, battery, wind or solar power.
6. Contest exchanges
a. On each band report, serial number and 6 character (e.g. IO91OJ) locator must be exchanged.
b. Additionally, on 70MHz only, QTH information must be exchanged (Special rule S2).
7. Sections
7.1 Open section (O):
(i) Maximum output power as permitted by standard licence conditions.
(ii) General rules apply
(iii) Operate on up to 4 bands from the following list:
50MHz (6m) 1400 to 2200 Saturday (all mode)
70MHz (4m) 0800 to 1400 Sunday (all mode)
144MHz (2m) 1400 Saturday to 1400 Sunday (all mode)
432MHz (70cm) 1400 Saturday to 1400 Sunday (all mode)
1.3GHz (23cm) 1400 Saturday to 1400 Sunday (all mode)
Single band entries for any band are also acceptable.
7.2 Restricted section (R)
(i) The power output of any band must not exceed 100W PEP at the transmitter.
(ii) The height of the antenna's driven element must not exceed 10 metres above ground level.
(iii) Only one antenna per band may be used (ie no stacked, bayed or collinear arrays or switching between two or more antennas). A slot fed Yagi or Quad antenna is permitted. Dish or Backfire antennas must not exceed 2m diameter.
(iv) Operate on up to 4 bands from the following list:
50MHz (6m) 1400 to 2200 Saturday (all mode)
70MHz (4m) 0800 to 1400 Sunday (all mode)

144MHz (2m) 1400 Saturday to 1400 Sunday (all mode)
432MHz (70cm) 1400 Saturday to 1400 Sunday (all mode)
1.3GHz (23cm) 1400 Saturday to 1400 Sunday (all mode)
Single band entries for any band are also acceptable.
7.3 Low Power section (L):
(i) The power output of any band must not exceed 25W PEP at the transmitter.
(ii) The height of any part of the antenna's driven element must not exceed 10 metres above ground level.
(iii) Only one antenna per band may be used (ie no stacked, bayed or collinear arrays or switching between two or more antennas). A slot fed Yagi or Quad antenna is permitted. Dish or Backfire antennas must not exceed 2m diameter.
(iv) Operate on up to 3 bands from the following list:
50MHz (6m) 1400 to 2200 Saturday (all mode)
70MHz (4m) 0800 to 1400 Sunday (all mode)
144MHz (2m) 1400 Saturday to 1400 Sunday (all mode)
432MHz (70cm) 1400 Saturday to 1400 Sunday (all mode)
1.3GHz (23cm) 1400 Saturday to 1400 Sunday (all mode)
Single band entries for any band are also acceptable.
(v) Each band may be operated for no more than 16 hours (except for 6m and 4m: see 7.3 (iv) above) during the contest period. Each rest period must last at least 1 hour.
7.4 Mix and Match (M)
(i) A group can elect to place different bands into Restricted, Low-Power or Open sections, eg 4m in Restricted, 2m and 70cm in Open, and 23cm in Low Power. This decision must be made at registration time and the details shown on the site registration form. At least one station must be in a different section to the other stations (eg 6m, 4m and 2m in the Open section, 70cm in the Restricted section).
(ii) Individual band entry will be tabulated in the appropriate main section, and a normalised score for the band produced on this basis.
(iii) The sum of the normalised scores will appear in a separate Mix & Match section table.
(iv) Operate on up to 4 bands from the following list:
50MHz (6m) 1400 to 2200 Saturday (all mode)
70MHz (4m) 0800 to 1400 Sunday (all mode)
144MHz (2m) 1400 Saturday to 1400 Sunday (all mode)
432MHz (70cm) 1400 Saturday to 1400 Sunday (all mode)
1.3GHz (23cm) 1400 Saturday to 1400 Sunday (all mode)
(v) Note that 2m, 70cm or 23cm stations entered in the Low Power section may be operated for no more than 16 hours during the contest period. Each rest period must last at least 1 hour.
7.5 SWL section (S): as per general rules.
8. Inspections
All stations are subject to inspection by members of the VHF Contests Committee or nominated representatives. Should the inspector be unable to locate the site due to inadequate or incorrect information, the entry may be disallowed. In the event of a last minute site change it is the responsibility of the group to make suitable arrangements for the inspector to find the site. The inspector must be given immediate access to all parts of the site with the right to stay as long as desired, and the ability to return at any time during the contest.
9. Entries
(a) All entries must be postmarked no later than 31 July 2003.
(b) Entries must be addressed to VHF Contests Committee, c/o 5 The Howsells, Lower Howsell Road, Malvern WR14 1AD, or via e-mail: vhf.entry@rsgb.org.uk
(c) A Form 427 cover sheet or near facsimile is required for each band.
10. Awards.
The Surrey, Martlesham, Arthur Watts and G5BY Trophies will be awarded to the overall winners of the Open, Restricted, Low Power and Mix & Match sections respectively. The Tartan Trophy will be awarded to the leading resident Scottish entry in the Open section, the Cockenzie Quaich to the leading Scottish station in the Restricted Section and the Scottish Trophy to the leading Scottish entry in the Low power section. Certificates will be awarded to the winners and runners-up on all bands in each section, and to the leading stations in each country.

The Backpackers Series of Contests

Aims:
a. To promote the fun of contesting and to develop skills in contesting and operating.
b. To increase access to major contesting events.
c. To encourage low power portable operation with operators working fellow low power enthusiasts from a variety of hilltop sites within the UK.
d. To introduce the art of contesting to those who, for various reasons are unable / unwilling to form / join contest groups or those who simply do not have the time for 'full-blown' contests.
e. To promote innovation, home construction and an awareness of how equipment actually works, particularly in the development of receivers, transmitters, antennas, preamplifiers and feeder systems. It is in the spirit of the contests that the equipment should be capable of being carried to the operating site by the operator(s) or being transported / erected outside a car.
Times:
'Socially acceptable' *four* hour periods. Timing of the contests should allow participants time to (walk) reach their destination, set-up, operate, clear away and return home with a good margin of daylight. Times will be staggered to co-ordinate with existing contests. For dates and times, see the individual contest rules table.
Modes: All mode.
Sections:
a) 10W Single Operator Portable.
b) 10W Multi-Operator Portable.
c) 3W Single Operator Portable.
d) 3W Multi-Operator Portable.
The listed power is output from the transmitter. Participants will be expected to demonstrate how their power level was determined, particularly where the basic commercial equipment is rated at higher output power.
Restrictions:
1. All operators must be RSGB members.
2. The contest is open to all stations, but only portable stations may submit a contest entry.
3. Although any number of antennas or groups are permitted, no fixed or mobile towers, cranes or any other 'significant structure' (in excess of 2in outside diameter) is to be used as support. The highest feedpoint of the antenna(s) driven element will be limited to 30ft (9m). Any part of any antenna will be limited to 10m above ground level. On 144MHz a maximum of 20 half wave elements (or equivalent) in total is permitted for the antenna.
4. All equipment must be battery powered. If a mains rotator is envisaged, they must also be powered from a single source battery (with suitable converter circuitry) supply not exceeding 28V.
5. Petrol / Gas / Diesel generators for charging are not permitted. This includes a motor vehicle engine. If operating from a vehicle supply, the engine must be switched off for the duration of the contest. Wind and solar power generation and charging is permitted.
6. In addition, the General Rules apply.
Scoring: This is at 1 point per km (General Rule 5a) with a multiplier applied. The multiplier type differs between individual contests in order to match the exchange in the main contest running at the same time - check the individual rules table carefully.
Award: Each session should be treated as a separate contest. Please submit an entry after each session. Session winners and runners-up certificates will be awarded. In addition, a certificate will be awarded to the leading station running one watt or less into a single antenna for each session.

On 144 MHz, The Backpacker's Trophy will be awarded to the leading stations in either category, the best three placings out of a maximum of five sessions. Scores will be normalised as in general rule 5c. In the event of a tie, if appropriate, the remaining session will be taken into consideration. The 50MHz Backpacker's Trophy will be determined from the two sessions.
Recommendation: If stations intend to enter any of these Backpacker's contests, they are requested not to call stations in the major events which run alongside from home before the contest as they may, in effect, appear to be working the same station twice. This in fact is not the case as the Backpackers series should be seen as separate, independent events. However, the reality of the situation is such that stations operating in the major events will effectively register the second, portable contact as a 'dupe', thereby causing some confusion and delay. Should this happen, the second contact should be corrected and scored at a later time. This anomaly has arisen as a result of attempting to create more activity by co-ordinating two quite different contests simultaneously. Backpacker's participants, in particular, are requested to bear this in mind in order to help both contests to run as smoothly as possible.

The VHF Contests' Championship

1. The VHF Contests' Championship aims to provide an overall result for the year based on a representative selection of contests. The contests which count towards the championship are:
i. March 2m / 70cm (The overall 2 band normalised score)
ii. 432MHz Trophy
iii. May 144MHz
iv. 50MHz Trophy
v. 144MHz Low Power
vi. 432MHz Low Power
vii. 144MHz Trophy
viii. 70MHz Trophy
ix. 1.3GHz Trophy & 2.3GHz Trophy (combined score)
All stations entering 3 or more events are automatically included in the championship. Stations may opt out of the championship by contacting the VHFCC chairman but individual contest results cannot be excluded.
2. The championship is open to UK stations. Scores from overseas stations will be disregarded when calculating championship scores. There is a Single Operator Fixed Station section (SF), a low power section (LP) and a section for All Others (O).
3. The low power section is open to single operator fixed stations which enter any of the above contests using 25W or less output and a single antenna. If a station enters some contests with high power or extra antennas, and some with low power and a single antenna, only the low power, single antenna scores will count towards this award.
4. The overall score is calculated from the sum of the normalised scores for each event listed above. The normalised scores are calculated as in general rule 5c. Low power entrants will be normalised against the best low power score.
5. Stations entering the single operator fixed section of a contest may elect to submit their score towards an All Others championship score if they wish. In this case their score will be normalised against the leader of the All Others section. Please mark your cover sheet clearly with the name of your contest group / club if you wish to do this.
6. The John Pilags Memorial Trophy is awarded to the winner of section SF, and the Racal Radio Cup to the winner of section O, and the Low Power Championship Trophy to the winner of section LP.

VHF / UHF Listeners' Contests

1. Listeners' contests are open to all non-licensed members of the RSGB and foreign SWLs. Only one entrant may operate the receiving station. Every VHF contest is open to listeners' entries.
2. Logs must show in columns:
i. Date / time (UTC).
ii. Callsign of station heard.
iii. My report on his / her signals.
iv. Report and serial number sent by station heard.
v. Callsign of station being worked.
vi. IARU Locator given by station heard.
vii. QTH given by station heard (if appropriate).
viii. Points claimed.

On 144MHz, the callsign in column (v) may occur once in every five contacts logged. CQ and test calls do not count for points and should not be logged. If both sides of the QSO can be heard, both can be claimed for points.
3. The Hanson Trophy will be awarded to the entrant with the highest aggregate score in all SWL contests between March and September inclusive of each year. The aggregate score will be calculated in accordance with General Rule 5c.

RSGB VHF / UHF 2003 Contest Calendar

Every 1st Tuesday	2000-2230 LOCAL	144MHz Activity	SF, O	This contest is scored 1 pt/QSO with QTH locator multipliers (M2) Activity Contest (S8)
Every 2nd Tuesday	2000-2230 LOCAL	432MHz Activity	SF, O	This contest is scored 1 pt/km with QTH locator multipliers (M2) Activity Contest (S8)
Every 3rd Tuesday	2000-2230 LOCAL	1.3 to 24GHz Activity	SF, O	This contest is scored 1 pt/km with QTH locator multipliers (M2) Activity Contest (S8)
Every 4th Tuesday	2000-2230 LOCAL	50MHz Activity	SF, O	This contest is scored 1 pt/QSO with QTH locator multipliers (M2) Activity Contest (S8)
12 / 26 Jan 9 / 23 Feb 16 Mar	1000-1200	70MHz Cumulatives	SF,SO,M	Full QTH Information to be sent (S2). Cumulative contest rules apply (S5).
2 Feb	0900-1500	432MHz AFS	SF,SO,M	AFS rules apply (S3), 3 stations per team, only fixed stations count towards AFS tables.
1 / 2 Mar	1400-1400	March 144/432MHz	SF,SO,M 6S,6O	Low power stations running 25W or less at the transmitter will be specially identified in the results and the leading and second placed low power stations in each section will receive certificates.
13 Apr	0900-1300	1st 70MHz	SF,SO,M	Full QTH Information to be sent (S2)
27 Apr	0900-1300	50MHz	SF,SO,M	Postcode, Country & QTH Locator Multiplier (M3)
3 / 4 May	1400-1400	432MHz - 248GHz	SF,O	
3 May	1400-2200	10GHz Trophy	O	Country & QTH Locator Multiplier (M4) This contest runs concurrently with the first 8 hours of the 432MHz - 24GHz event (S6). The 10GHz Trophy is awarded to the winner of this contest.
3 May	1400-2200	432MHz Trophy	SF,O	This contest runs concurrently with the first 8 hours of the 432MHz - 24GHz event (S6).The 1951 Council Cup is awarded to the overall winner of this contest.
11 May	0900-1200	70MHz CW	SF,SO,M	Postcode & Country multiplier (M1). Full QTH Information to be sent (S2)
17 / 18 May	1400-1400	144MHz	SF, SO, M,6S,6O	Postcode/Country Multiplier (M1)
18 May	1100-1500	144MHz Backpackers #1	S, M	Postcode, Country & QTH Locator Multiplier (M3) See separate Backpackers rules.
7 / 8 Jun	1400-1400	50MHz Trophy	SF,SO,M 6S, 6O	Co-ordinated with IARU contest (S7). Country & QTH Locator Multiplier (M4). The Telford Trophy is awarded to the overall winner of this contest, and the Six Metre Cup to the highest scoring UK single operator entrant.
8 Jun	1100-1500	50MHz Backpackers #1	S, M	Country & QTH Locator Multiplier (M4) See separate Backpackers rules.
15 Jun	0900-1300	144MHz Backpackers #2	S, M	Country & QTH Locator Multiplier (M4) See separate Backpackers rules. This event is co-ordinated with the first 4 hours of the *PW* QRP contest.
5 / 6 Jul	1400-1400	VHF NFD		See separate VHF NFD rules.
6 Jul	1100-1500	144MHz Backpackers #3	S, M	Country & QTH Locator Multiplier (M4) See separate Backpackers rules.
13 Jul	1100-1500	50MHz Backpackers #2	S, M	Postcode, Country & QTH Locator Multiplier (M3) See separate Backpackers rules.
19 Jul	1400-2200	144MHz Low Power	SF,SO, M	25W maximum output from the transmitter. Postcode, Country & QTH locator multiplier (M3)
20 Jul	0800-1400	432MHz Low Power	SF,SO,M	25W maximum output from the transmitter. Postcode, Country & QTH locator multiplier (M3)
27 Jul	1100-1500	144MHz Backpackers #4	S, M	Postcode, Country & QTH Locator Multiplier (M3). See separate Backpackers rules.
10 Aug	0900-1500	70MHz Trophy	SF,SO,M	Postcode & country multipliers (M1) The VHF Manager's Trophy to winner of Section 'M'. The Four Metre Cup to winner of Section 'S'.
6 / 7 Sep	1400-1400	144MHz Trophy	SF,SO,M, 6S, 6O	Co-ordinated with IARU contest (S7). The Thorogood Trophy is awarded to the winner of section S, and the Mitchell-Milling Trophy to the winner of section M of the contest.
7 Sep	1100-1500	144MHz Backpackers #5	S, M	Country & QTH Locator Multiplier (M4). See separate Backpackers rules.
21 Sep	0900-1300	2nd 70MHz	SF,SO,M	Full QTH Information to be sent (S2)
4 / 5 Oct	1400-1400	432MHz - 248GHz IARU	SF,O	Co-ordinated with IARU contest (S7)
4 Oct	1400-2200	1.3 / 2.3GHz Trophies	SF,O	These contests run concurrently with the first 8 hours of the IARU contest (S6, S7). The VHF Contests Committee cup is awarded to the winner of the 1.3GHz contest, and the G6ZR Memorial Trophy to the winner of the 2.3GHz event.
19 October	0900-1300	50MHz	SF,SO,M	Postcode, Country and QTH locator multiplier (M3)
1 / 2 Nov	1400-1400	144MHz CW Marconi	SF,O	The RSGB and European Marconi Memorial events run concurrently (S7)
2 Nov	0800-1400	6 hour 144MHz CW	SF, O	This event runs in the last 6 hours of the European contest (S7)
7 Dec	0900-1700	144MHz AFS	SF,SO,M	AFS rules apply (S3), 5 stations per team, only fixed stations count towards AFS tables.
26 / 27 / 28 / 29 Dec	1400-1600	50/70/144/432MHz Christmas Cumulatives	SF, O	Cumulative contest rules apply (S5). Score at 1 pt / QSO (S1). QTH locator multipliers (M4) applies, and the same multipliers may be claimed for credit on each band on each day.

Key to sections: S - Single Operator; M - Multi Operator, SF - Single Operator Fixed, SO - Single Operator others, 6S - Six hour single operator fixed, 6O - Six hour others.

General Rules for RSGB HF Contests for the Year 2003

1. These rules apply to all RSGB HF Contests, except where superseded by the specific Contest Rules.

2. UK means England, Scotland, Wales, Northern Ireland, Channel Islands and Isle of Man.

3. Entrants must abide by their licence conditions.

4. Contacts

(a) A contact consists of an exchange with incrementing serial number commencing from 001 and acknowledgement of receipt of callsign and contest data. Incomplete contacts must be logged with zero points claimed. Points are not lost if a non-competing station does not send appropriate information, but a report *must* be logged and any other exchange sent by that station must be recorded. The full contest exchange must be sent to all stations worked.

(b) One contact only with the same station per band counts for points, regardless of that station's operator or callsign. More than one contact with the same operator using different callsigns may not be claimed. Contacts with stations which have no other contest contacts may be disallowed. Duplicate contacts must be logged, with zero points claimed.

(c) Cross-band contacts do not score.

(d) Contacts scheduled before the contest do not count for points. Schedules may only be made during the contest.

(e) Simultaneous transmissions on more than one frequency below 30MHz are not permitted, ie in multi-operator / assisted events use of VHF / UHF to access the DX Cluster is permitted.

(f) Proof of contact may be required.

(g) For contest purposes, /AM and /MM stations are treated as /M stations in their own country. Other stations are regarded as being in the call area / country indicated by their callsign as sent.

5. Multipliers, where applicable, are scored per band, and consist of (a) for UK stations: Countries as per the DXCC countries list, except that JA, W, VE, VK, ZL and ZS call areas count as separate countries. (b) for non-UK stations: one for each UK district. (c) IOTA and SSB Field Day contests, see specific rules.

6. Portable stations

(a) Entrants must operate from the same site for the whole contest.

(b) Stations must not be located in a permanent building or shelter.

(c) No permanent building or structure may be used as an aerial support (trees are acceptable).

(d) Power must be obtained solely from on-site batteries, portable generators or solar cells, without use of mains.

(e) All equipment, aerials and supports must be set up on site no more than 24 hours before the start of the contest. This does not apply to short term storage of equipment on site.

7. All operators of UK stations must be RSGB members except visiting amateurs, not normally resident in the UK. UK stations may not use special (eg GB, GX etc) callsigns nor be /MM or /AM.

(a) A single-operator station is operated by one person, who receives no assistance whatsoever from any other person in operating, log-keeping, checking and so on, and who does not receive notification from others by radio (including packet), telephone or any other method, of band or contest information during the contest.

(b) Multi-operator entries are those not covered by 7a. One operator must act as Entrant and sign the Summary Sheet.

8. Adjudication

(a) Errors in sending / receiving are penalised by the loss of all points for the QSO.

(b) Points may be deducted or entries disqualified or excluded for any breach of the rules or spirit of the contest. The decision of the RSGB is final.

9. Entries

(a) Log entries may be submitted by e-mail, on 3.5in disk or on paper. Paper entries are acceptable only if logging during the contest was not done on computer. The adjudicator reserves the right to treat a paper entry derived from a computer as a checklog. Unless specified otherwise in a particular contest's rules, the entry must be sent no more than 16 days after the end of the contest. Log entries become the property of the RSGB.

(b) The preferred log format for computer entries is Cabrillo. Where a contest exchange includes information not covered by the basic Cabrillo definition, the contest-specific Cabrillo format is defined on the RSGB HFCC webpage www.rsgbhfcc.org Entrants unsure of what information is required for a particular contest are encouraged to use software which provides full support for RSGB contests, such as *SD* by EI5DI.

(c) Computer entries must be named with the station's callsign and the extension .log. Portable stations should use a hyphen, eg g3xyz-p.log. For Cabrillo entries this is the only file that is required. For a limited period other ASCII formats may be accepted and for these, in addition to the log file a summary file (eg g3xyz-p.sum) must also be submitted.

(d) Each RSGB contest has a specific e-mail address for log entries, given in the rules for that contest. Log entries should be sent as an e-mail attachment, and the subject line of the e-mail must include the station's callsign. An automatic acknowledgement of the entry should be received after a short period but if no acknowledgement is received please allow a few days before resending.

(e) Disk and paper logs should be sent to RSGB - G3UFY, 77 Bensham Manor Road, Thornton Heath, Surrey CR7 7AF, England. Acknowledgement will be sent if a stamped, addressed postcard or IRC is enclosed.

(f) Paper logs (and any not in Cabrillo format) must ensure the following information is shown for each contact: Time, Callsign worked, RS(T)/serial sent, RS(T)/serial received, other data (specific to the contest), new bonus/multiplier, QSO points. Send a single log in time sequence, not separate logs for each band.

(g) Paper summary sheets should include the following declaration *"I declare that this station was operated in accordance with the rules and spirit of the contest and within the conditions of my licence. I agree to the data from this entry being entered into a computer for the purposes of contest adjudication and production of statistics. I agree that the decision of the Board of the RSGB shall be final in all cases of dispute."* Submission of an entry in Cabrillo or any other format implies acceptance of the wording of this declaration.

(h) Ensure that the section or category being entered is clearly shown in the Cabrillo header or summary sheet. Entrants are encouraged to use soapbox lines in the Cabrillo header to give information about the equipment and antennas used as well as comments about the contest.

10. Receiving Contests. The above rules apply, but also:

(a) Only SWLs or holders of licences to transmit *only above* 30MHz may enter.

(b) The callsigns of both the 'station heard' (for which points are to be claimed) and the 'station being worked' must be logged.

(c) The same callsign may appear only once in any group of three consecutive entries in the 'Station being worked' column.

(d) The Summary Sheet declaration to include: "I do not hold a licence to transmit on frequencies below 30MHz."

11. Awards. Trophies as specified will be presented at the annual HF Convention and will be held for a maximum period of one year for any particular annual event. Certificates of Merit will be awarded to leading stations in each category / band as appropriate.

Note: A variety of contest logging programs can be used in RSGB contests. The most popular is SD by EI5DI, and it's the only one which supports all the Society's contests and produces a correctly scored log. Full details can be found on the website www.ei5di.com or by writing to EI5DI, QTHR (e-mail: paul@ei5di.com). If you use a different logging program you must take steps to ensure that your entry is correctly formatted and that QSO points, bonuses and multipliers are correctly shown for each contact. The demo version of SD is unrestricted for overseas entrants in all RSGB contests with district codes. SDL (SD for Listeners) is a freeware SWL contest logger. It supports RSGB and other major contests.

RSGB HF Contest Calendar 2003

Date	Contest Name	Mode
12 Jan	Affiliated Societies (AFS)	CW
18 Jan	Affiliated Societies (AFS)	SSB
8 / 9 Feb	1st 1.8MHz	CW
8 / 9 Mar	66th Commonwealth	CW
6 Apr	RoPoCo 1	CW
24 Mar, 1 Apr, 9 Apr, 17 Apr, 25 Apr	Slow Speed Cumulatives	CW
7 / 8 Jun	National Field Day	CW
20 Jul	Low Power	CW
26 / 27 Jul	IOTA Contest	SSB/CW
3 Aug	RoPoCo 2	CW
6 / 7 Sep	IARU Region 1 SSB Field Day	SSB
1 Sep, 9 Sep, 17 Sep, 25 Sep, 3 Oct	Slow Speed Cumulatives	CW
5 Oct	21 / 28MHz	SSB
19 Oct	21 / 28MHz	CW
8 Nov	Club Calls Contest	SSB
15/16 Nov	2nd 1.8MHz	CW

HF Contests Championship

EVERY UK Single Operator Station entering two or more of the events listed below will automatically be entered for the Championship. For each event the entrant will be awarded points according to their score expressed as a percentage of the score achieved by the leading UK station in that event. These points will then be multiplied by the appropriate factor for the contest. The winner will be the station with the highest number of points at the end of the year and will be awarded the G2QT Trophy. Operations using Special Contest Calls are not eligible for the championship. The callsign used in each event will be the one used in the championship tabulation.

Event	Factor
1st 1.8 MHz	10
Commonwealth Contest	30
RoPoCo 1	10
IOTA Contest	30
RoPoCo 2	10
21 / 28 MHz SSB	20
21 / 28 MHz CW	20
2nd 1.8 MHz	10

Affiliated Societies Team Contests

This popular club event has something for everyone. What better way to start contesting than in AFS? You can contribute by just participating and gathering points for your team and Club. Enjoy the local rivalry, it's great fun! You don't need to have a high or complex antenna either, a simple low dipole works well.

Dates:
CW Event: Sunday 12 January 2003.
SSB Event: Saturday 18 January 2003.
Time: 1400 - 1800UTC.
Frequencies:
CW: 3510 - 3590kHz.
SSB: 3600 - 3750kHz.
Exchange: RST plus serial number
1. Eligible Entrants: (a) Each entering club must be affiliated to the RSGB. **(b)** Each operator of a team station must be a member of the club they represent. The operator is not required to be a member of RSGB. **(c)** All stations representing a club must be located within a radius of 50 miles of the normal meeting-place of the club. Where a club has 'branches', eg RNARS, it may define separate 'branch' meeting-places, and the team(s) entered by each branch will be considered to be entirely separate from those entered by other branches, except in respect of affiliation. **(d)** Each station may be single or multi-operator, but no station or operator may represent more than one affiliated club or branch.
2. Teams: Teams comprise of up to five stations for the CW section and three for the SSB section. A club may enter as many teams as they wish. Which stations make up each team is determined by the club entering the event, as defined on the summary sheet.
3. Contacts: In the CW section, 3570 to 3590kHz is reserved for slower-speed contacts. It is intended that operators less experienced in CW and contest techniques should be able to make contacts here in a more relaxed environment. Experienced contesters using the segment are required to keep their speed down.
4. Scoring: 10 points per contact including overseas.
5. Entries: E-mail logs to: afscw.logs@rsgbhfcc.org for the CW event and afsssb.logs@rsgbhfcc.org for the SSB event. Entries should be submitted by an officer of the affiliated society. A summary sheet showing: name of team, callsign of each station in each team, individual scores, team score, the normal meeting place of the club / branch and a declaration that each operator is a member of the affiliated club should accompany each entry. Each log within the entry should include a completed Summary Sheet.
6. Awards: CW: The Edgware Trophy to the leading team. The Marconi Trophy to the leading single-operator individual station. SSB: The Flight Refuelling ARS Trophy to the leading team. The RSGB Lichfield Trophy to the leading single-operator individual station.

1.8MHz CW Contests

Competitive with some long haul DX available. There will be other European 1.8MHz contests running at the same time, increasing activity and interest. A challenging band for antennas and receiving skills. Please note these are two separate events.

Dates:
1st event: 8 / 9 February 2003.
2nd event: 15 / 16 November 2003.
Time: 2100 - 0100UTC.
Frequency: 1820 - 1870kHz.
Mode: CW.
Exchange: RST + serial number & district code.
1. Sections: Single-operator entries. **(a)** UK **(b)** Overseas including EI.
2. Scoring: Section (a) 3 points per contact plus a bonus of five points for the first contact with each UK District worked and the first contact with each Country outside the UK worked. **Section (b)** 3 points per contact plus a bonus of five points for the first contact with each UK District worked. Overseas sta-

District Codes for use in RSGB Contests

The District Codes are based upon the main postcode areas within the UK. The two letter code is generally derived from the first two letters of the postcode for the address or location of the station. In a few areas the code that applies differs from the actual postcode district but the list below should enable you to work out what code applies to your station (or the station you are working). The locations given below are a geographical guide and do not necessarily agree with the Royal Mail definition of an area.

AB	Aberdeen	EL	London E1-18	LE	Leicester	SK	Stockport
AL	St. Albans	EC	London EC1-4	LL	Llandudno	SL	Slough
BM	Birmingham	EH	Edinburgh	LN	Lincoln	SM	Sutton
BA	Bath	EN	Enfield	LS	Leeds	SN	Swindon
BB	Blackburn	EX	Exeter	LU	Luton	SO	Southampton
BD	Bradford	FK	Falkirk	MR	Manchester	SP	Salisbury
BH	Bournemouth	FY	Blackpool	ME	Medway	SR	Sunderland
BL	Bolton	GS	Glasgow	MK	Milton Keynes	SS	Southend on Sea
BN	Brighton	GL	Gloucester	ML	Motherwell	ST	Stoke on Trent
BR	Bromley	GU	Guildford	NL	London N1-22	SW	London SW1-20
BS	Bristol	GY	Guernsey	NE	Newcastle on Tyne	SY	Shrewsbury
BT	Belfast	HA	Harrow	NG	Nottingham	TA	Taunton
CA	Carlisle	HD	Huddersfield	NN	Northampton	TD	Twead
CB	Cambridge	HG	Harrogate	NP	Newport	TF	Telford
CF	Cardiff	HP	Hemel Hempstead	NR	Norwich	TN	Tonbridge
CH	Chester	HR	Hereford	NW	London NW1-11	TQ	Torquay
CM	Chelmsford	HS	Scottish Isds	OL	Oldham	TR	Truro
CO	Colchester	HU	Hull	OX	Oxford	TS	Teeside
CR	Croydon	HX	Halifax	PA	Paisley	TW	Twickenham
CT	Canterbury	IG	Ilford	PE	Peterborough	UB	Uxbridge
CV	Coventry	IM	Isle of Man	PH	Perth	WL	London W1-14
CW	Crewe	IP	Ipswich	PL	Plymouth	WA	Warrington
DA	Dartford	IV	Inverness	PO	Portsmouth	WC	London WC1-2
DD	Dundee	JE	Jersey	PR	Preston	WD	Watford
DE	Derby	KA	Kilmarnock	RG	Reading	WF	Wakefield
DG	Dumfries	KT	Kingston on Thames	RH	Redhill	WN	Wigan
DH	Durham	KW	Orkney	RM	Romford	WR	Worcester
DL	Darlington	KY	Kirkcaldy	SD	Sheffield	WS	Walsall
DN	Doncaster	LP	Liverpool	SA	Swansea	WV	Wolverhampton
DT	Dorchester	LA	Lancaster	SE	London SE1-28	YO	York
DY	Dudley	LD	Llandrindod Wells	SG	Stevenage	ZE	Shetland Isds

tions may only work UK stations.

3. E-mail logs should go to: 1st160.logs@rsgbhfcc.org for the first event and 2nd160.logs@rsgbhfcc.org for the second event.

4. Awards: 1st event: The Somerset Trophy to the leading UK station. **2nd event:** The Victor Desmond Trophy to the leading UK station. The Maitland Trophy to the Scottish entrant with the highest aggregate number of points in the 1st and 2nd events.

66th Commonwealth Contest

The Commonwealth Contest promotes contacts between stations in the Commonwealth and Mandated Territories. A more relaxed contest environment which gives the opportunity to work some choice DX. Note that the start time has been moved forward two hours to 1000UTC. With this being the Golden Jubilee year, the Call area award will require contacts with 50 call areas.

Date: 8 / 9 March 2003.

Time: 1000 -1000UTC.

Bands: 3.5, 7, 14, 21, 28MHz.

Mode: CW.

Exchange: RST plus serial number.

1. Eligible entrants: UK entrants must be members of the RSGB and may not use special (GB, GX etc) callsigns nor be /MM or /AM. Overseas - Licensed radio amateurs within the Commonwealth or British Mandated Territories. Apart from section (c), all entries must be single operator and may not receive any assistance whatsoever during the contest, including the use of spotting nets, packet cluster or other assistance in finding new contacts or bonuses.

2. Sections:

(a) Open, no limit on operating time.

(b) Restricted, operation is limited to 12 operating hours. Off periods must be clearly marked and be a minimum of 60 minutes in length.

(c) Headquarters stations, one only per Commonwealth Call Area and may be multi-operator.

3. Frequencies: Entrants should operate in the lower 30kHz of each band.

4. Scoring: Contacts may be made with any station using a Commonwealth Call Area prefix, except those within the entrant's own call area. Note that for this contest, the entire UK counts as one call area, and therefore UK stations may not work each other. Each contact scores 5 points with a bonus of 20 points for each of the first three contacts with each Commonwealth Call Area on each band.

5. Headquarters stations: A number of Commonwealth Society HQ stations will be active during the contest and will send 'HQ' after their serial number, to identify themselves. Every HQ station counts as an additional call area and entrants may contact any HQ station (including in their own country) for points and bonuses.

6. Logs: Each entry must be accompanied by a summary sheet indicating the section entered and the scores claimed on each band.

(a) Paper Logs: Separate logs and lists of bonuses claimed are required for each band.

(b) Computer Logs: In any format approved by the Society, showing clearly the points and bonuses claimed for each contact. In both cases entrants are requested to include a duplicate check list with their entry. E-mail logs should be sent to: commonwealth.contest.logs@rsgbhfcc.org

7. Closing date for logs: Logs must be postmarked no later than 7 April 2003.

8. Awards:

(a) Open: The Senior Rose Bowl to the overall leader. The Col Thomas Rose Bowl to the highest-placed UK station.

(b) Restricted: The Junior Rose Bowl to the section leader. The Ross Carey Rose Bowl to the highest placed UK station.

(c) A Commonwealth Medal will be awarded to the entrant who in the opinion of the HF Contests Committee has most improved their score or contributed to the contest over the years.

(d) Special Certificates will be awarded to every entrant in each section who makes contact with more than **66 Band-Call Areas** in the 2003 contest. One certificate per entrant. For example, VP9 worked on three different bands counts as three Band-Call Areas. Entrants are asked to note their claimed Band-Call Area total on the summary sheet.

Commonwealth Contest Call Areas - 2003

3B6/7	Agalega and St Brandon	J8	St Vincent	VP5	Turks & Caicos Islands
3B8	Mauritius	P2	Papua New Guinea	VP6	Pitcairn Island
3B9	Rodriguez Island	S2	Bangladesh	VP6	Ducie Island
3D2	Fiji	S7	Seychelles	VP8	Antarctica
3D2	Rotuma	T2	Tuvalu	VP8	Falkland Islands
3D2	Conway Reef	T30	W Kiribati	VP8	South Georgia
3DA	Swaziland	T31	C Kiribati	VP8	South Sandwich
4S	Sri Lanka	T32	E Kiribati	VP8	South Shetland
5B	Cyprus	T33	Banaba	VP8	South Orkney
5H	Tanzania	TJ	Cameroon	VP9	Bermuda
5N	Nigeria	V2	Antigua & Barbuda	VQ9	Chagos
5W	Western Samoa	V3	Belize	VU	India
5X	Uganda	V4	St Kitts & Nevis	VU4	Andaman & Nicobar Is
5Z	Kenya	V5	Namibia	VU7	Laccadive Islands
6Y	Jamaica	V8	Brunei	VY0	Nunavut
7P	Lesotho	VE1	Nova Scotia	VY1	Yukon
7Q	Malawi	VE2	Quebec	VY2	Prince Edward Island
8P	Barbados	VE3	Ontario	YJ	Vanuatu
8Q	Maldives	VE4	Manitoba	Z2	Zimbabwe
8R	Guyana	VE5	Saskatchewan	ZB2	Gibraltar
9G	Ghana	VE6	Alberta	ZC4	Cyprus (UK Bases)
9H	Malta	VE7	British Columbia	ZD7	St Helena
9J	Zambia	VE8	North West Territories	ZD8	Ascension Island
9L	Sierra Leone	VE9	New Brunswick	ZD9	Tristan da Cunha & Gough Island
9M0	Spratly Islands	VK0	Heard Island	ZF	Cayman Islands
9M2	W Malaysia	VK0	Macquarie Island	ZK1	North Cook Islands
9M6/8	E Malaysia	VK1	Australian Capital Territory	ZK1	South Cook Islands
9V	Singapore	VK2	New South Wales	ZK2	Niue
9Y	Trinidad & Tobago	VK3	Victoria	ZK3	Tokelau
A2	Botswana	VK4	Queensland	ZL0, /ZL	New Zealand Reciprocal
A3	Kingdom of Tonga	VK5	South Australia	ZL1	New Zealand - Area 1
AP	Pakistan	VK6	Western Australia	ZL2	New Zealand - Area 2
C2	Nauru	VK7	Tasmania	ZL3	New Zealand - Area 3
C5	Gambia	VK8	Northern Territory	ZL4	New Zealand - Area 4
C6	Bahamas	VK9C	Cocos (Keeling) Islands	ZL6	New Zealand
C9	Mozambique	VK9L	Lord Howe Island	ZL7	Chatham Islands
CY0	Sable Island	VK9M	Mellish Reef	ZL8	Kermadec Islands
CY9	St Paul Island	VK9N	Norfolk Island	ZL9	Auckland & Campbell Is
G, GD, GI, GJ, GM, GU, GW etc	United Kingdom (all one area)	VK9W	Willis Island	ZS1	Western Cape Province
		VK9X	Christmas Island	ZS2	Eastern Cape Province
H44	Solomon Islands	VO1	Newfoundland	ZS4	Free State Province
H40	Temotu	VO2	Labrador	ZS5	Kwa-Zulu Natal Province
J3	Grenada	VP2E	Anguilla	ZS6	Gauteng Province
J6	St Lucia	VP2M	Montserrat	ZS8	Marion Island
J7	Dominica	VP2V	British Virgin Islands	ZS0	South Africa Special Event

Slow Speed Cumulative Contests

The aim of these events is to provide training and encouragement for those less experienced in CW and contesting. It is intended primarily for Intermediate, Foundation and newly-licensed operators; more experienced contesters are asked to support the event by inviting an entrant to guest-operate their station.

Dates	UTC	Frequency	Mode	Exchange
Mon 24 Mar				
Tue 1 Apr				
Wed 9 Apr	1900-2030	3540-3580kHz	CW	RST+First name
Thu 17 Apr				
Fri 25 Apr				
Mon 1 Sep				
Tue 9 Sep				
Wed 17 Sep	1900-2030	3540-3580kHz	CW	RST+First name
Thu 25 Sep				
Fri 3 Oct				

1. Sections: (a) Transmitting, single or multi operator. No limit on the number of operators in a team, nor need they be the same for each session. **(b)** Receiving, single operator only.

2. Speed Limit: No faster than 12WPM.

3. Exchange: RST and First Name. Multi-operator stations must send only one name during any particular session, regardless of who is operating, although different names may be used during different sessions.
4. Maximum Power: 10W RF output for all entrants.
5. Scoring: Section (a) Any station may be worked once during each session. Any contact with an Intermediate or Foundation callsign at either or both ends scores 20 points. Contacts between two Full licence-holders score 5 points. The overall score for each session is the total of the best three out of five events in a session as chosen by the entrant. **Section (b)** Listeners may log only stations actively participating in the contest. Each Intermediate or Foundation call logged scores 20 points, each Full call counts 5 points.
6. Logs: Entrants are requested to submit logs for all sessions during which they are active to assist with checking other entries. The name of the operator worked / heard should be record-ed in column 5. E-mail entries to: qrs.logs@rsgbhfcc.org
7. Awards: Section a: Certificates of Merit to the leading Intermediate, Foundation and Full licence-holders, and also to the highest placed station entering any RSGB HF CW Contest for the first time (please note on your Cover Sheet if you qualify for this last award). Section b: Certificate of Merit to the leading listener.

RoPoCo

A real test of your CW operating skill. Chinese whispers using Rotating Post-codes!

Dates:
First Event: Sunday 6 April 2003
Second Event: Sunday 3 August 2003
Time: 0700 - 0900UTC
Frequency: 3520 - 3570kHz
Mode: CW
Exchange: RST + Postcode received
1. Exchange RST plus for the first contact, the entrant's own postcode. For each subsequent contacts, RST plus the postcode received from the previous contact.
2. Scoring: Ten points for each contact with another UK station.
3. E-mail logs to: ropoco1.logs@rsgbhfcc.org for first event and ropoco2.logs@rsgbhfcc.org for second event.
4. Awards: Trophy and certificate to the highest scoring entrant with the most accurate log; in RoPoCo 1 the Verulam Silver Jubilee Trophy and in RoPoCo 2 the G3XTJ Memorial Trophy. The G5MY Trophy to the entrant with the highest aggregate score from both events.

National Field Day

An excellent club activity with varied areas of expertise required, such as antenna design, construction and erection, generator maintenance and, increasingly, computer expertise. Give your CW operators some support! The QRP section is limited to 12 hours of operation. This should assist groups who have difficulty in finding operators to cover the night shift. It is not an absolute requirement to pre-register to enter Field Day, but you are encouraged still to register and must do so in order to qualify for awards.

Date: 7 / 8 June 2003
Time: 1500 - 1500UTC
Bands: 1.8, 3.5, 7, 14, 21 & 28MHz.
Mode: CW
Exchange: RST + Serial number.
1. Registration: In order that inspections can be arranged, each group intending to compete should send details of the site to be used to: D J Lawley, G4BUO (QTHR, or by e-mail to: g4buo@compuserve.com) to arrive no later than 5 May 2003. Details must include the name and address of the person responsible for the entry; section to be entered; name of group; callsign(s) to be used; national grid reference and sufficient access information to enable an inspector to locate the site.

In the event of a late change of site, it is the responsibility of the members of the group to make suitable arrangements for the inspector to find the new site. Groups not registering may take part in field day but will not be eligible for awards.

All stations are subject to inspection by representatives of the HF Contests Committee, whose brief will be to ensure that the rules and spirit of the contest are being observed. The inspector must be given immediate access to the site and may make return visits.
2. Sections: All sections are multi-operator. This is a portable contest as defined in General Rule 6.

(a) Open Section. There is no restriction on the number or type of antennas, but the maximum height must not exceed 20m.

(b) Restricted Section. One antenna only which must be a single element having not more than two elevated supports and not exceeding 11m above ground at its highest point.

(c) Low Power Section. Same as the Restricted Section with power further limited to 10W output. Additionally, this section has a time limit of 12 hours. Off-periods must be a minimum of one hour and should be listed on the summary sheet.
3. Equipment: Transmitter power output must not exceed 100 watts (10W in section (c)).

(a) Open Section. One transmitter and two receivers. The receiver section of a second transceiver may be used as the second receiver if desired, so long as the transmitter section is disabled for the duration of the contest. Unused receiver sections must also be disabled for the duration of the contest.

(b) and (c) Restricted and Low Power sections. One transmitter and one receiver or one transceiver. Both receivers in a dual-receive transceiver may be used, if desired.

In all sections, equipment and antennas for packet radio access above 30MHz may also be used, if desired.
4. Frequencies: Contest preferred segments should be used, ie 3510 - 3560 and 14010 - 14070kHz.
5. Scoring: For contacts with: Fixed stations in Europe (including UK) 2 points. Fixed stations outside Europe 3 points. Portable and Mobile stations in Europe (including UK) 4 points. Portable and Mobile stations outside Europe 6 points. Contacts on 1.8MHz and 28MHz should be scored as above and then multiplied by two to obtain the band score. Points must not be claimed for contacts made by a competing station with members of its own group.
6. Logs: Paper and disk entries must be postmarked no later than Monday 23 June 2003. E-mail entries must be sent to nfd.logs@rsgbhfcc.org by that date.
7. Awards: The National Field Day Trophy to the overall leading station. The Bristol Trophy to the station having the leading score in the other section. The Reading QRP Trophy to the leading station in the QRP section. The Scottish Trophy to the leading Scottish station. The Gravesend Trophy to the runner-up in the Restricted section. The G6ZR Memorial Trophy to the runner-up in the Open section. The Frank Hoosen, G3YF, Trophy to the leading station on the 14MHz band. Certificates of Merit to first, second and third in each section and to the band leaders in each section.

Low Power Contest

This a serious event for the QRPer, providing a choice of fixed station operation or outdoor fun.

Date	Time	Freqs	Mode	Exchange
Sun 20 Jul	0900-1200	3510-3580	CW	RST + Serial Number + Power
	1300--1600	7000-7040	CW	

1. Sections: Single or multi-operator (a) Fixed (b) Portable, both sections 10W RF output maximum. (c) Fixed (d) Portable, both sections 3W RF output maximum.
2. Frequencies: Both bands may be used during each session. Any station may be contacted once on each band.
3. Special conditions for Portable sections:

(i) A Portable station is defined in General Rule 6.

(ii) Antennas must not exceed 11m above ground and may have no more than two elevated supports.
4. Exchange: RST, serial number and RF output power in Watts. Serial numbers commence at 001 and continue through both

sessions. Output power should be expressed as one or two digits plus 'W' in place of the decimal point, eg 1W, 1W5. Participants using more than 10W should send 'QRO'.

5. Scoring: 15 points for each contact with a QRP Portable or Mobile station; 10 points for a QRP Fixed station; 5 points for all other contacts. For the purposes of scoring, 'QRP stations' are those using 10W RF output or less.

6. E-mail logs: E-mail logs should go to: lowpower.logs@rsgbhfcc.org

7. Awards: The 1930 Committee Cup to the winner of section (a). The Houston-Fergus and Southgate Trophies to the winners of sections (b) and (d) respectively.

IARU Region 1 SSB Field Day

A popular club activity. Finding the best ratio of contact rate to country multipliers provides a challenging back drop to weekend outdoors.

Date: 5 / 6 September 2003

Time: 1300 - 1300UTC

Bands: 3.5, 7, 14, 21, 28MHz

Mode: SSB

Exchange: RS + Serial Number.

1. Sections: All sections are multi-operator. This is a portable contest as defined in General Rule 6.

(a) Open Section. Full licensed power. There is no restriction on the number, height or type of antennas.

(b) Restricted Section. 100W output power. One antenna only which must be a single element having not more than two elevated supports and not exceeding 15m above ground at its highest point.

2. Equipment:

(a) Open Section. Linear amplifier, one transmitter and two receivers. The receiver section of a second transceiver may be used as the second receiver if desired, so long as the transmitter section is disabled for the duration of the contest. Unused receiver sections must also be disabled for the duration of the contest.

(b) Restricted Section. One transmitter and one receiver or one transceiver. Both receivers in a dual-receive transceiver may be used, if desired.

In all sections, equipment and antennas for packet radio access above 30MHz may also be used, if desired.

3. Scoring: For contacts with:
Fixed stations in IARU Region 1: 2 points
Stations outside IARU Region 1: 3 points
/P or /M stations in IARU Region 1: 5 points.

IARU Region 1 countries include those in Europe, Africa, USSR, ITU Zone 39 and Mongolia. For a more precise definition refer to the RSGB *Amateur Radio Operating Manual*. Points must not be claimed for contacts made by a competing station with members of its own group.

4. Multiplier: One for each DXCC Country worked on each band.

5. E-mail logs: E-mail logs should go to: ssbfd.logs@rsgbhfcc.org

6. Awards: The leading station in the Open section will receive the Northumbria Trophy and in the Restricted section, the G3PSH Memorial Trophy.

21 / 28MHz Contests

During the peak years of the sunspot cycle this contest provides much DX to be worked. This is a real test of maximising openings on both bands. The Restricted section allows less complex antenna systems to be used.

Date	Time UTC	Freqs kHz	Mode	Exchange
Sun 5 Oct	0700-1900	21150-21350 28400-29000	SSB	RS + Serial No + District Code (UK)
Sun 19 Oct	0700-1900	21000-21150 28000-28100	CW	RST + Serial No + District Code (UK)

1. Sections: (a) UK Open **(b)** UK Restricted **(c)** UK QRP **(d)** Overseas Open **(e)** Overseas Restricted **(f)** Overseas QRP **(g)** UK Receiving **(h)** Overseas Receiving.

QRP stations must use 10W RF output maximum. Open section has no antenna limitations. In the Restricted section, only one antenna per band is allowed, which must be a single element with a maximum height of 15m and a maximum of 100W output. Single or Multi-operator entries accepted in the transmitting sections. Entrants are reminded that stations using packet or other spotting facilities must enter as multi-operator stations.

2. Frequencies: CW: Entrants are requested not to operate in the sub-band 21075 - 21125kHz.

3. Scoring: The same station may be contacted on both bands for points and multipliers. **(a)** UK. 3 points per contact with Overseas stations. Multipliers as per General Rules except that the UK call areas do not count for multiplier or QSO point credit. **(b)** Overseas. 3 points per contact with UK only stations. 1 Multiplier for each UK District worked on each band. Final Score is the total QSO points for all bands added together, multiplied by the number of multipliers from all bands added together.

4. Closing date for logs: to be e-mailed or postmarked by 17 November 2003. E-mail entries should be sent to 2128cw.logs@rsgbhfcc.org for the CW event and 2128ssb.logs@rsgbhfcc.org for the SSB event.

5. Awards: SSB: The Whitworth Trophy to the UK single operator overall winner. The Powditch Transmitting Trophy to the leading single operator entry on 28MHz. **CW**: The T E Wilson, G6VQ, Trophy to UK single operator overall winner.

Receiving Section

Single-operator entries only will be accepted. General Rule 11 and transmitting section rules apply except where specified below.

1. Scoring: UK SWLs log only Overseas stations in contact with UK stations participating in the contest. Overseas SWLs log only UK stations in contact with Overseas stations participating in the contest. Scoring and multipliers as for the transmitting section.

2. Logs: Columns to be headed: time UTC; callsign of station heard; report / serial number sent by that station; County Code sent by that station (if applicable); callsign of station being worked; multiplier (if new); points claimed. Note: in the column headed 'station being worked' the same callsign may only appear once in every three contacts except when the logged station counts as a new multiplier.

3. Awards. SSB: the Metcalf Trophy to the overall leading UK entrant. The Powditch Receiving Trophy to the leading 28MHz entrant.

Club Calls Contest

The aim of this event is to encourage contacts between Affiliated Societies, to give their callsigns an airing and to encourage Class B licensees to operate under appropriate supervision.

Date	Time UTC	Freqs kHz	Mode	Exchange
Sat 8 Nov	2000-2300	1870-1990	SSB	RS + Serial No+ other data

1. Eligible Entrants: All licensed amateurs and SWLs in the UK.

2. Exchange: RS + serial number + name of Club + "Club Station", "Club Member" or "No Club", as appropriate. NB: the name of the club must be sent in full. It must not be sent as initials. A Club Station must use a callsign which is specifically issued to a Club or Society which is affiliated to the RSGB. Use of special club station prefixes such as GX etc by club stations is allowed in this event.

3. Scoring: 3 points per contact, plus bonuses of 5 points for contacts with any club members, and 25 points for contacts with any Club Station.

4. Awards: The Ariel Trophy to the leading Club station. Certificates to the leading club, individual club and non-club member. The David Hill, G4IQM, Memorial Trophy will be awarded to the club having the highest aggregate score of five club members operating within a 30 mile radius of the club meeting place.

5. E-mail logs should be sent to: club.calls.logs@rsgbhfcc.org

Receiving Contest

General Rule 10 and transmitting section rules apply except where specified below.

1. Log column 'Other Data' to show name of Club + 'Member', or 'No Club', or name of Club + 'Club Station' as appropriate. Any station may appear only once in the 'station heard' column, regardless of mode.

Islands on the Air (IOTA) Contest 2003

(The General Rules for RSGB HF Contests do not *apply to this event.)*

1. GENERAL The aim of the contest is to promote contacts between stations in qualifying IOTA island groups and the rest of the world and to encourage expeditions to IOTA islands.

2. WHEN 1200UTC Saturday 26 July to 1200UTC Sunday 27 July 2003.

3. BANDS AND MODES 3.5, 7, 14, 21 and 28MHz, CW and SSB. IARU band plans should be observed, with CW contacts being made only in the recognised CW ends of the bands (see RSGB Yearbook and similar sources, for recognised IARU bandplans). Contest-preferred segments should be observed, no operation to take place on 3560 - 3600, 3650 - 3700, 14060 - 14125 and 14300 - 14350kHz.

4. CATEGORIES

(a) Location:

- **Island** (Any station operating from a qualifying island, as listed in the *RSGB IOTA Directory*. Island stations must ensure beforehand that the island from which they are operating is a valid qualifying island for IOTA. Any questions about the IOTA programme and island validity should be addressed to the IOTA Manager G3KMA (g3kma@dial.pipex.com).)
- **World** (any station not on a qualifying island).

(b) Operators:

- **Single operator**
- **Single-operator Assisted** (passive use (self-spotting not allowed) of DX spotting nets and *DXCluster* is allowed).
- **Multi-Operator** (24-hour Mixed Mode only. Multi-ops are restricted to a maximum of two transceivers, the second transceiver to be used to find and call other stations only if the station is a new multiplier. It must not be used to solicit other contacts, eg by calling "CQ" or "QRZ". Any non-multiplier QSOs made accidentally on the second station should be logged, but scored as zero points. Multi-ops may make passive use (self spotting not allowed) of DX spotting nets and *DXCluster.* Multi-operator entrants should include a full list of operators with their entry).
- **Short Wave Listener**.

(c) Mode:

- **CW**
- **SSB**
- **Mixed-mode** (multi-operator entries must be Mixed Mode).

(d) Operating Time:

- **24 hours**
- **12 hours** (Multi-operator entries must be 24 hours. In the 12-hour categories, operation need not be for one continuous 12-hour period but, once operation has commenced, off periods should be a minimum of 60 minutes.)

(d) Power (Any station not indicating transmitter power will be classified as High Power):

- **High-power**
- **Low power** (maximum 100 watts output)
- **QRP** (maximum 5 watts output).

5. DXPEDITIONS

1. Island stations may, *additionally*, indicate that they are a DXpedition station as defined below, and compete for a range of expedition trophies and certificates (an additional listing will be shown in the results). It is essential that you make this clear on your cover sheet as notification after the entry deadline cannot be accepted.

2. The definition of DXpedition for this optional listing is one:

- where the island can only be reached by boat or air (islands which can be accessed by bridge or causeway - man-made or natural - are not eligible),
- where none of the operators is resident on the island,
- where the operators take all radio equipment and antennas with them and do not rely on a resident for any part of the station,
- where, in the case of 100W IOTA Island DXpedition stations, the antennas are limited to one element per band (eg dipole, vertical). (High power DXpeditions have no antenna restrictions).

6. EXCHANGE

Send RS(T) and serial number starting from 001, plus IOTA reference number if applicable (island stations MUST include the IOTA reference as part of their exchange with every QSO). Do not use separate numbering systems for CW and SSB. Stations may be contacted on both CW and SSB on each band.

7. SCORING

(a) **QSO Points** - Contacts with own IOTA reference count 3 points and with other IOTA islands 15 points. Contacts with non-island stations count 3 points.

(b) **Multiplier** - The multiplier is the total of different IOTA references contacted on each band on CW, plus the total of different IOTA references contacted on each band on SSB. Multi-op stations may *not* work members of their own group for multiplier credit.

(c) **Total Score** - The score is the total of QSO points on all bands added together, multiplied by the total of multipliers.

8. LOGS

1. Electronic submission of logs by disc or e-mail is encouraged - and in fact required - for all high scoring entrants and all who use a computer to log or prepare the logs. Electronic entries are preferred, preferably in Cabrillo format (a definition of Cabrillo, as applied to the IOTA contest, can be found on the RSGB HFCC website). For other electronic log formats, include both log and summary files. Always ensure that your logging software produces a log file which correctly contains all the QSO data, and that the summary file clearly indicates your category. However, if you prepare your log electronically by *any* means (eg Excel, Word) then please send the electronic version, as it reduces the need for retyping data.

2. Logs must show: Time, Callsign, Band, Mode, RST / serial number / IOTA reference sent, RST / serial number / IOTA reference received. Please ensure you send a single log in order of sent serial number. **Do not** send separate logs for each band. Logs from IOTA stations must state their island name and IOTA reference number.

3. Entries can be emailed to iota.logs@rsgb.org.uk and should be sent as a normal attachment to the e-mail. In the "subject" line of your e-mail message, please include your contest callsign.

4. Postal (paper and disc) entries should be addressed to: RSGB IOTA Contest, PO Box 9, Potters Bar, Herts EN6 3RH, England.

5. The closing date is for mailing of logs is 1 September 2003.

9. PENALTIES

Points may be deducted, or entrants disqualified, for violation of the rules or the spirit of the contest. This includes, for example, refusal by IOTA island stations to make contacts with their own country when requested, use of a third party to make contacts on a list or net, working CW multipliers on an SSB frequency, or not giving the IOTA reference for every contact. The decision of the IOTA Contest Manager and RSGB HF Contests Committee is final in all matters of dispute.

10. SWL CONTEST

Scoring is as for the transmitting contest. Logs must be separate for each band, and show Time, Callsign of station heard, RST / serial number / IOTA reference sent, Callsign of station being worked, Multiplier claimed, QSO points.

Under 'callsign of station being worked', there must be at least two other QSOs before a callsign is repeated, or else 10 minutes must have elapsed. If both sides of a QSO can be heard, they can be logged separately for points if appropriate.

11. AWARDS

Certificates will be awarded to leading stations in each category and section, and in each continent, according to number of entries. Awards include:

- CDXC Geoff Watts Memorial Trophy to the leading IOTA Islands (non expedition) station.
- IOTA Trophy presented by the IOTA Committee to the leading IOTA Island DXpedition station.
- Roger Balister, G3KMA, Trophy to the leading IOTA Island DXpedition 100W station.
- David King, G3PFS, Trophy, in memory of Geoff Watts, to the leading British entrant operating from a location in the UK in the single operator 12-hour SSB category.
- G3DYY Memorial Trophy to the leading British entrant operating from the UK in the single operator 24-hour CW category.
- W9DWQ Contest Award to the leading Single Operator North American Island Expedition Station.

A range of additional trophies will be available for the 2003 Contest, for most Category winners. In addition, the Certificate program will be extended substantially. Details are being finalised at press time, and will be posted on the RSGB HFCC Web site as soon as they are available. No entrant will be eligible for more than one trophy.

12. NOTE FROM RSGB IOTA CONTEST MANAGER:

The IOTA Contest Manager, G3XTT, can be reached via the RSGB, or by e-mail at: iotacontest@rsgb.org IOTA Contest information, including the results of the contest, will be available at www.rsgbhfcc.org A list of entries received will be posted at that site by 30 September. Claimed scores will be posted on the website by mid-October. The official Results will appear in *RadCom* and on the RSGB HFCC website. Entrants providing an e-mail address will receive a copy of the results by e-mail. Copies of the *RSGB IOTA Directory*, if required, can be purchased from RSGB (see www.rsgb.org/shop). A full list of IOTA islands, and other information relating to the IOTA program can be found on the IOTA Manager's website (http://www.eo19.dial.pipex.com/index.shtml).

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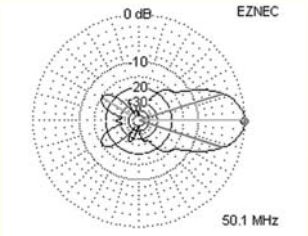

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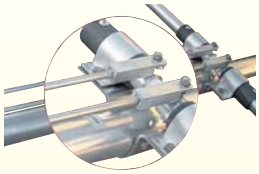

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6M6L	6 el Yagi	12.40	7.22	n/a	£225.00
6M7LDX	7 el. Long Yagi	13.31	9.60	11kg	£249.95
Lightweight Economy Range					
TR 6-3	3 el. economy	8.20	1.9	n/a	£75.00
TR 6-5	5 el. economy	10.20	3.6	n/a	£99.95
Baluns					
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2 Metres					
2M5L	5 element	12.24	2.50	2.2Kg	£85.00
2M7L	7 element	14.19	4.40		£99.95
4 Metres					
4M3L	3 element	8.70	1.48		£85.00
Trident HF Yagis					
28MHz Yagis					
10M3L	3 element Std	7.41	3.0	6.5Kg	£129.95
10M4LDX	4 el Long Yagi	9.42	5.40	11Kg	£189.95
21 MHz Yagis					
15M3L	3 element Std	8.21	4.40	tba	£225.00
15M4L-DX	4 el.Long Yagi	10.6	8.20	17.5Kg	£255.00
17 MHz Yagis					
17M3L	3 element Yagi	8.21	tba	tba	tba
17M4L	4 element Yagi	tba	tba	tba	tba
14 MHz					
20M2L	2 element Yagi	6.37i	3.00	tba	£179.95
Log Periodic Yagis					
LP270	144 - 440 MHz	9.50	1.40	2.6Kg	£110.00
LP1300	105 - 1300 MHz	11-13	1.50	2.2Kg	£129.00
LP1830	18 - 30 MHz	7.8	3.0	16Kg	£399.00
Verticals					
V4M	70 MHz 1/2 wave	2.2	2.35mtrs long		£59.95
V6M	50 MHz 1/2 wave	2.2	3.75mtrs long		£59.95
2M258	144 MHz 2 x 5/8	8.5	3.20mtrs long		£69.95

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Boom.....3 mtrs
Power .....2 kw
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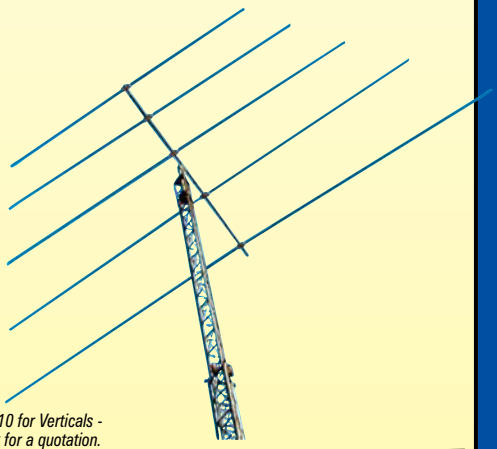

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Dear Nevada

In September I purchased from you a **Trident 50MHz Yagi**. I found it to be very well constructed and lightweight. Its 3 elements are perched barely 5mtrs above ground. Like all new products I was a little wary but your advice proved my initial 'wobble' to be unfounded when I worked Terry VK8TM in Alice Springs at 10:10hrs last Sunday (4/11). Obviously good conditions, yes - but I was only using 10 Watts!

73s Jim Rabbitts GM8LFB

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Newcomers' News

News and Comment from and for Amateur Radio's Newcomers. Compiled by Steve Hartley, G0FUW *

THE SCOUTS seem to have been my main correspondents this month, with various reports coming in from all over the country and some news of a gathering a little further afield.

The DX post award for this month goes to Frank Cox, M0OPW, who sent in a first-day issue postcard from his holiday QTH in Australia. The card, and stamp, shows how many VK youngsters get on the air with the School of the Air. I wonder how many go on to take up amateur radio as a hobby?

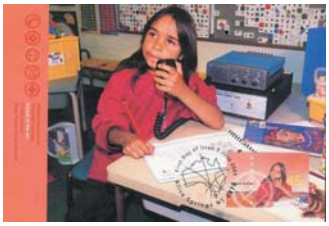
LAST EDITION

FROM A FIRST-DAY cover to a final edition in one fell swoop? It was with mixed feelings that I received the final edition of the *Scout Radio Newsletter*. The newsletter is always a good read, but falling subscriptions and the growth of the Internet have meant that the paper version has come to an end.

The first edition was published in the summer of 1986 by Duncan Wheelhouse, G8TRP, who acted as editor for four years, and the newsletter has been a regular publication ever since. Geoff Dellbridge, G0PMF, the current editor says that "this is not the end of an era - rather it is recognition of the march of technology, with the newsletter being replaced by the web, in particular www.radio-scouting.org.uk which has the major advantage of being free and always current".

If you take a look at the web pages you will find information about Jamboree on the Air (JOTA), radio Scout badge details, games, a picture gallery, Scout operating frequencies and code sheets amongst lots of other useful bits and pieces.

It is recognised that not every potential reader will have access to the on-line version, but most people seem to know at least someone who has access and can print out useful information. We bid the paper newsletter a fond farewell and wish the new venture all the success it deserves.



Schools on the Air first day cover (see leading paragraph).

WORLD JAMBOREE

BETWEEN 27 December 2002 and 7 January 2003 the 20th World Scout Jamboree will be taking place at Sattahip in Thailand [see *RadCom* December 2002 page 10 - *Ed*]. These camps are held every four years and this year's event is to be attended by over 30,000 Scouts and Guides from around the world, including a contingent of over 3000 from the UK.

The event will feature an amateur radio station with the callsign E20AJ. The station will be manned by a large team from Thailand assisted by some 15 other operators from other countries, including John Crowder, G0GDU, and Frank Heritage, M0AEU.

I for one will be looking out for the station, let's hope it inspires more global newcomers into the hobby. John has promised to let us know how it went.

SCARF SUCCESS

ON THE WEEKEND of 28 / 29 September the Chelmsford Scout Amateur Radio Fellowship (SCARF) ran its first amateur radio Foundation Course weekend. Thirteen Cub Scouts, Scouts, Explorer Scouts and Leaders from the 2nd Chelmsford, 1st Boreham, Bicknacre, Sandon and Komodo Explorer Scout Units met at the 2nd Chelmsford Scout HQ early on the Saturday morning for a 12-hour course over two days.

The course was run by Christopher Chapman, G0IPU, District Cub Scout Leader, ably assisted by Geoff Blake; Nigel Hull, G6ZVV; Paul Leach and Martyn Medcalf, M3VAM, as instructors. The support staff, headed by Vicky Balding, kept everyone supplied with the all-important hot and cold drinks and assisted during the course and exam.

Not surprisingly, it was a very tiring weekend but with the reward of seeing 11 successful participants passing the final exam. The two participants who were unsuccessful on this occasion are expected to sit a new exam any time now. Well done to all concerned and good luck to those preparing to have another try.

A GOOD TEST?

A FEW WEEKS AGO I gave a talk at the Swindon and District Amateur Radio Club entitled 'Dispelling the myths surrounding the Foundation Licence'. The talk was well received and I hope it inspired the club members to put on some training. There were one or two M3 callsign holders in the audience and one of them asked me to pass on a tip to other newcomers through this column.

The advice related to testing out your HF set-up. He said that he had spent a long time calling CQ without any reply and was beginning to wonder if he was radiating a signal at all. The following weekend there was a large world-wide contest and he suddenly found that he could be heard by stations far and wide, the contest operators listening for any station to gain a few points.

I know exactly what he meant and I too have used contests to test out new gear. The only problem is that the reports you receive will invariably be "5 and 9" or "599" and are therefore of limited value, but at least you know you are making the trip! Another good idea for the lower power station is to 'tail end', ie wait until a QSO finishes and then call the station on their frequency. You will find that your response rate will be far greater than from calling CQ on a busy band.

Thanks for the tip! I am afraid that, in amongst the enthusiastic chatter after the talk I missed your name and callsign but I am sure you know who you are! ♦

Spread The Word!

Send your news and colour photos to: Steve Hartley, G0FUW, QTHR.

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

One of the SCARF students takes to the mic (see 'SCARF Success').

* *5 Sydenham Buildings, Lower Bristol Road, Bath BA2 3BS; e-mail: newcomers.radcom@rsgb.org.uk*

Down To Earth

How to Handle a Special Event Pile-Up

by Don Lamb, G0ACK, * and Roy Clayton, G4SSH **

YOU ARE OPERATING a special event station on 40m SSB and you are overwhelmed with callers, all wanting to make a contact with you. How do you handle the situation? The experience of handling a pile-up can be very satisfying, if done well and efficiently. But the special event pile-up can also be very daunting to newcomers. And yet newcomers are often invited by their radio clubs to help out with the operating when the club puts on a special event station. There are few things more frustrating to the experienced operator than hearing an inexperienced one struggling to handle a pile-up - and making a real hash of it!

Some time ago we received a letter from Don Lamb, G0ACK, in which he admitted to having a dilemma when trying to handle the sort of pile-up a special event station can generate. However, Don has developed his own methods of dealing with this, which he outlines here. To obtain further tips, we asked Roy Clayton, G4SSH, of the Scarborough Special Events Group, for his advice.

It should be emphasised that in this article we are addressing the style of operating required for domestic special event stations. The techniques needed for the DXpedition operator are quite different, as Roy explains . . .

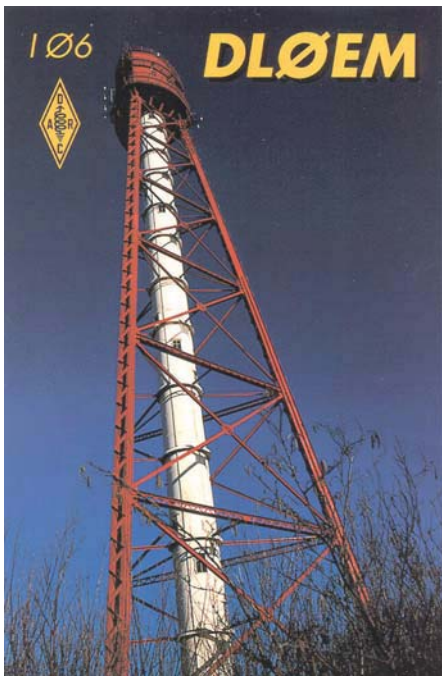
DON LAMB, G0ACK, writes: "I am actively involved in managing a permanent special event station, GB2DHH. I also visit friends in Germany and as a native English speaker operate special event stations DL0EM and DA0IMD over there. Naturally, such calls are very popular and I am often overwhelmed by the response. I have a dilemma. I am never sure how best to work the pile-ups.

"Because I only run modest power at home, I am conscious of the difficulties many operators are having when trying to make contact. I want to be fair and work as many stations as possible. Of course the loudest stations are easily heard, but what about those that lie beneath the strong signals, those that do not run high power?

"My preferred way is to ask for the last two letters of the callsign and make a list of, say, 10 or so. This method can quickly remove the strongest callers from the cacophony and enable me to winkle out some of the weaker stations trying to make contact. On occasions I have been able to reach a readability threshold. Although I find this process fairly slow, it has the advantage of there being two letters already in the log and, by removing the powerful signals, it gives those amateurs with weaker signals a chance. As far as my response is concerned, I often feel guilty that after a station has tried for some considerable time trying to contact me, I can really only give a signal report and thanks for being patient.

"Another option, which seems to be favoured with DX stations, is just to call and then to try to pick out what I can. This seems unfair, as the strongest stations will be dominant. Perhaps another way, which I have heard but not used, is to use the number in the callsign and run through from zero to nine.

"These are just some personal thoughts with an explanation of how I prefer to manage any pile-up I create. However, I would be interested to hear from others how they think a special event station should respond to many people calling at once."



QSL from German special event station DL0EM, one of the stations operated by Don Lamb, G0ACK.

* 339 Victoria Road, Ruislip, Middlesex HA4 0DS. ** 9 Green Island, Irton, Scarborough, North Yorkshire YO12 4RN.

EXPERT ADVICE

WE ASKED Roy Clayton, G4SSH, to respond to Don's dilemma. Roy is a founder member of the Scarborough Special Events Group (SSEG), which celebrates its 15th anniversary in June this year and has activated numerous special event stations during this time. This is what Roy had to say:

The overriding priority of a special event station is to showcase amateur radio to the general public, usually to commemorate some unique occasion. Whilst running a special event station the operator is an ambassador for the United Kingdom and amateur radio as a whole. The person at the microphone has a unique opportunity and a responsibility to ensure that certain basic operating standards and aims are met. It is his job to organise efficiently, manage and control the calling stations to ensure that as many stations as possible make a contact, whilst giving all callers an equal chance of getting through.

One method is to call CQ, pick the loudest station from the ensuing melee, exchange details, then repeat the process with the next powerful station. However, this is absolutely soul-destroying for many callers, such as the hesitant newcomer, the QRP station, 2E and M3 stations with limited

Another of Don's German special event stations: the International Marconi Day activity from Borkum Island in the North Sea.

Don Lamb, G0ACK, with his wife beneath the massive tower at the DL0EM special event station.

ing each callsign a number in the list and asking the station concerned to stand by. Continue this process right down to the noise level and when the frequency is quiet; only then can you be sure that you have the weakest stations in the log. At this point make a brief announcement explaining the reason for the event, the QSL route for direct cards and the name of the operator. Then run smoothly down the list, exchanging reports, names and QTH, until it is time to repeat the exercise.

Take control! Any station calling as you run down the list should be politely asked to stand by whilst you complete the current list. This method will slow the rate, but you are now reaching those elusive stations who do not usually manage to make a contact with a GB station. However, it is important to be flexible, this method will work well for most of the time, but the operator should recognise abnormal conditions such as rapid or deep fading, and revert to single calls until propagation improves.

The Scarborough Special Events Group has used this procedure when operating every GB station over the past 14 years, making in excess of 300 contacts per day. The most common comments on the incoming QSL cards are thanks for the orderly operating procedure which allowed them to make contact. The majority of calling stations do not mind the short wait, they are just delighted to be in the log. This method is often frowned upon by some 'big guns' whose pleasure is to crack the pile up with a single call and move on in triumph, but you cannot please everyone.

Running a special event station should not be confused with running a DX pile-up, where the objectives are completely different. To a DX station, maximising the number of contacts is of paramount importance, often resulting in a feeding-frenzy of undisciplined callers shouting over the exchange of signals in an effort to make contact. This must never be allowed to happen when you are demonstrating amateur radio to the general public.

power, and the person with an indoor antenna. These stations will often call for hours without success.

The operator of a special event station is in an ideal position to assist and encourage such modest stations to enjoy the hobby. These people are the future of amateur radio and should be considered to be the target audience.

LEVEL PLAYING FIELD

THE ONLY WAY to get these target stations into the log is to create a level playing field. The most efficient way is to call CQ, ask for full calls only, then make a list of stations calling by acknowledging one at a time, giv-

Roy Clayton, G4SSH (foreground, second from left), with other members of the Scarborough Special Events Group, takes delivery of a Kenwood TS-570D transceiver from David Wilkins, G5HY, of Kenwood (UK). The transceiver is used on many of the Scarborough group's special event station operations.

The spectacular - and very colourful - QSL cards used for the 2002 Manchester Commonwealth Games special event stations.

M3 LICENSEES

WITH JANUARY 2003 marking the first anniversary of the Foundation Licence, it is interesting to note that M3s in particular are interested in 'collecting' special event stations. In 2002, M3s accounted for more than 25% of our total QSOs for each event. The system of making a list appears to both encourage newcomers to call in, perhaps for the first time, and also it allows them to get through without the discouragement of a pile-up. Most newcomers write direct for a QSL card and the following comments from M3 stations have been received following recent SSEG events: "Many thanks for my first QSO on HF. I got my call in June." "Many thanks for letting me work my first GB station. I am disabled and sat my Foundation Licence at home." "I am limited to simple antennas in a small garden so I really appreciate the procedure used by your group to encourage low-power stations."

"Many thanks for your patience in digging around in the mud at the end of a list to get me in the log. I shall cherish my first-ever GB card." "Your system of taking callsigns then calling them in strict rotation works 100% and should be adopted by other special event stations. More power to your elbow." "I have been using my M3 call for the last four weeks on the HF bands but have been unable to have a contact with any special event station until you answered me at the end of a list, so I am absolutely delighted. I tried for three hours for a contact with a GB station yesterday and was drowned out by high-power stations. Two friends of mine have suffered the same way. . . With more and more M3 calls coming on the air I feel that it is very important for other GB stations to make a list and give us the incentive to make a contact."

It is clear that collecting commemorative QSL cards from special event stations has become one of the fastest-growing specialist interests amongst newcomers to amateur radio. To these stations a contact with a GB station is a moment to treasure that allows them take part in a piece of history brought to life by amateur radio. Your choice of operating procedure can make the difference between delight or disappointment. ♦

Down To Earth

Choosing a Feeder

What you need to consider when connecting a transceiver to an antenna, by Ian Poole, G3YWX *

THE ANTENNA system is the vital element in any amateur radio station. A poor antenna system will limit the performance of the whole station regardless of the equipment used in the shack, whereas a good antenna will enable the station to perform at its best. The radiating section of the system is obviously very important, but so is the feeder. Because feeder can be very expensive, a careful balance has to be struck between spending money on the antenna and spending money on the feeder to obtain the best overall performance. To make this decision, a general knowledge of feeders is very important.

FEEDERS AVAILABLE

THERE IS a variety of different types of feeder available for use. The most common type by far is coaxial cable (or 'coax' for short). Open-wire or twin feeders are also available and can be used to good advantage in a number of situations.

First let's look at coax. As the name suggests, coaxial cable consists of two coaxial (having the same axis) conductors as shown in **Fig 1**. The centre conductor is normally made of copper, and it may be a single conductor or may consist of several strands twisted together.

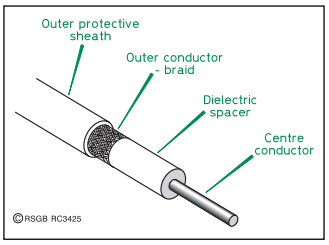


Fig 1: Coaxial feeder.

The outer conductor is usually in the form of a sheath of copper braid. This prevents leakage of the signal, while enabling the cable to be flexible. A sheath of solid copper would make the cable rigid. Where better screening is required, double- or even triple-screened cables are available. This may be accomplished by placing one braid over another, or by using a metal foil as one of the screens, but generally these cables are more expensive and less flexible than single screened varieties.

It is obviously necessary to separate the two conductors and to hold them in place relative to each other. This is accomplished by the dielectric, an insulator placed between them. This dielectric may be solid or, as in the case of many low-loss cables, it may be semi-airspaced, because it is the dielectric that introduces most of the signal loss. This may be in the form of long 'tubes' in the dielectric, or a 'foam' construction, where air forms a major part of the space between the two conductors.

On the outside of the cable is a protective plastic sheath. This serves mainly to protect the outer braid from mechanical damage and to prevent the ingress of moisture. Moisture causes the copper to oxidise, and it results in a significant degradation of the efficiency of the braid, resulting in signal loss. When burying coax cable it is best not to rely only on the outer sheath. Instead, conduit can be used, or one of the 'bury direct' cables that can be purchased.

It is also worth noting that the end of the coax should be sealed when used outside to prevent moisture entering the dielectric. When coax is connected to the centre of a wire antenna, rainwater will collect on the wire and run to the centre, entering the coax if it is not sealed.

Coax is an 'unbalanced' feeder. This means that one conductor (the outer conductor) should be connected to earth for proper operation. It can be connected directly to unbalanced antennas such as vertical antennas connected to earth or a ground plane. However, when connected to a balanced antenna such as a dipole, where neither side is related to earth, it is advisable to use a 'balun' or BALanced-to-UNbalanced transformer. If one is not used, it can cause radiation to occur from the feeder itself. This can lead to interference under some circumstances, and a distortion of the radiation pattern.

Coaxial cable is not affected by nearby objects. As the signal is confined within the feeder itself, the cable can be run through the house with little problem.

Another form of feeder is known as 'open-wire' or 'twin' feeder as shown in **Fig 2**. It is often used at HF, but only seldom on the VHF and UHF bands.

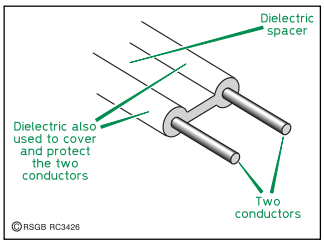


Fig 2: Open-wire feeder.

It consists of two parallel conductors that are typically less than 0.01 wavelength apart. As they are electrically very close together, the fields from them are equal and opposite and cancel each other out. As no radiation can take place, this means that the energy will propagate along the feeder. This type of feeder is generally not used above about 150MHz, because the spacing is small at these frequencies and the feeder is not normally practicable to use.

Open-wire feeder can be made very easily by using two ordinary wires and keeping them apart using plastic spacers. Spacers are often placed as much as ten to fifteen times the line spacing apart. Commercial versions of twin feeder may also be bought. There are two main varieties. The most common is a feeder having a translucent plastic dielectric. This type is found in the temporary VHF FM antennas that can be bought. However, for most amateur uses, it is not particularly satisfactory. The plastic absorbs moisture and consequently, when it is wet, the level of signal loss rises dramatically. A second type is far more suitable, and consists of black plastic with holes in the plastic as shown in the photograph.

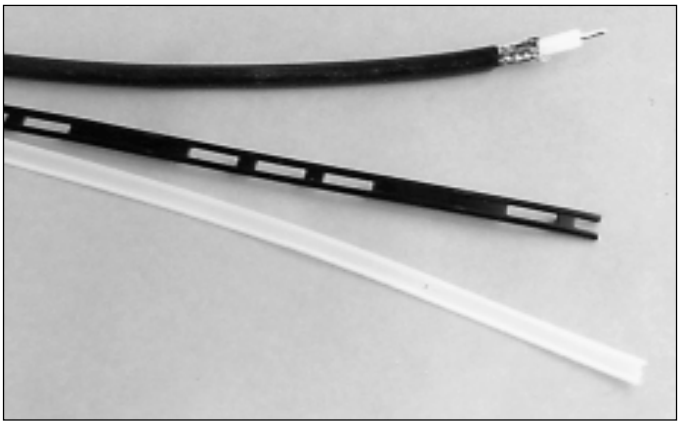
The advantage of open-wire or twin feeder is that it can have a very low level of loss - often much lower than coax. However, it is easily disturbed by nearby objects. This makes it unsuitable for runs within a house or other buildings. It is also a balanced feeder. In other words, neither of the two conductors is connected to earth. This makes it ideal for feeding antennas that are balanced, such as a dipole, but will need a balanced connection on an ATU or a balun as the transceiver antenna connection is normally unbalanced.

IMPEDANCE

ONE OF THE MAJOR characteristics of a feeder is its impedance. In just the same way that a transmitter or receiver output or input has a characteristic impedance, or an antenna has one, so does a feeder. For the optimum transfer of power, the impedance of all three must match. For most amateur applications, 50Ω is the standard that is adopted, and as a result most coax is of this impedance. The coax used for domestic television and hi-fi, however, is 75Ω. Also, beware of coax used for computer applications. Although this is generally very low loss, it may not be 50Ω. Open-wire feeder has a variety of impedances. 300Ω is one of the more common values.

The impedance of a feeder is

* 5 Meadway, Staines, Middx TW18 2PW.



Various types of feeder. The top and bottom examples are those of Fig 1 and Fig 2, respectively.

governed by a number of factors. The physical dimensions of the feeder have a very large bearing on it. Also the dielectric constant of the material between and sometimes around the feeder can vary the impedance. Fortunately, it is relatively easy to control these factors to a sufficient degree to make feeders with the right value of impedance.

FEEDER LOSSES

THE LOSS in a feeder has already been mentioned. It would be nice if the same amount of power left a feeder at the remote end as entered it. However, all feeders have some loss and it is measured in decibels for a given length of feeder. It also varies with frequency, rising as the frequency increases and this is stated in any specifications as well. It is generally stated at a number of frequencies so an estimate of loss at the actual frequency of operation can be made.

Feeder loss arises for a number of reasons. One is the actual resistance of the wire although, at high frequencies, the skin effect of the wire dominates. Having stranded conductors increases the surface area to reduce this. This makes the cable larger if the same impedance is to be maintained. Another cause of loss is the dielectric itself. A poor dielectric will absorb power that will be dissipated as heat. It is for this reason that moisture must be kept out of the dielectric. Some loss also arises from stray radiation.

Effects of feeder loss

The level of loss of the feeder in any antenna system is of great importance. When transmitting, any signal lost in the feeder will not be radiated by the antenna, resulting in the radiated signal being weaker. For receivers, it is of greatest importance when the signals are close to the receiver noise level. On the lower frequency bands, where atmospheric noise picked up by the antenna is the dominant factor, this may not be such a problem. However, as frequencies rise, the noise generated by the receiver front-end becomes the dominant factor and, when receiving weak signals, it is necessary to ensure they are as strong as possible as they enter the receiver, to ensure that they are not masked by the receiver noise.

It is important to realise that an antenna having a feeder that introduces a significant loss will always appear to have a very good standing wave ratio. The reason for this is that the meter measures the power in the forward and reverse directions. The forward power will always remain the same regardless of the loss in the feeder. However, if the feeder introduces any loss, it will attenuate the signal travelling towards the antenna, and then any that may be returned. If the loss is high enough, even a complete mismatch at the load will not result in much power being returned. **Table 1** shows the VSWR generated when a known lossy feeder is short-circuited at the far end

Feeder loss (dB)	VSWR reading
20	1.02
16	1.05
13	1.10
10	1.20
7.5	1.4
6	1.6
5	1.8
4.5	2.0
3.5	2.5
3	3
2	4
1.75	5
1.5	6
0.75	10
0.6	15
0.4	20

Table 1: VSWR created by a lossy feeder short-circuited at the far end.

TYPES OF COAX

THERE IS a very large variety of feeders available. Rather than each manufacturer having his own specifications, there are two numbering systems used in the industry to provide some form of standardisation. As a result, most forms of coax used for amateur applications are given these numbers. An American system uses part numbers beginning with RG followed by two or three numbers, eg RG-213, and a European system exists where the numbers start with UR again followed by numbers, eg UR-67. The two systems have cables that are very similar and equivalents exist between the two systems for many of the cables.

For each of type of coax there are associated specifications giving figures such as loss, velocity factor, capacitance over a given length, diameter and much more. In very broad terms, coax types such as UR-76 and RG-58 which have an outside diameter of around 5mm are 'normal' types giving about 7dB loss per 10m at 1000MHz. Low-loss types such as UR-67 and RG-213 have an outside diameter of 10mm and losses around 2.5 to 3dB for lengths of 10 metres at a frequency of 1000MHz. Then there are the more specialist types, such as LDF-450 These are very low-loss types with an impressive performance, but they come with an equally impressive price tag.

CONSIDERATIONS

IT MAY APPEAR that it is necessary to buy the very best feeder for every application. While it is important to ensure that losses are kept as low as possible, it is worth taking a look at the actual losses that will be incurred and then making a judgment. The manufacturer or supplier of the cable should be able to provide loss figures. From these figures, and knowing the frequencies and length of coax to be used, the likely figures for loss can be calculated. For low frequencies, it is likely that ordinary coax may be used, even for reasonably long runs. However, as frequencies rise, the loss increases and the requirement for much lower loss cables becomes more critical.

At high frequencies, especially those in the VHF and UHF regions, long coax runs can mean that high levels of loss have to be tolerated, even when using low-loss cable. One way of overcoming this is to use some of the specialist very-low-loss cables such as LDF-450. However, the cost of this cable is very high, and it may be worth looking at whether the same result could be achieved by repositioning the antenna and using a shorter cable run.

Another point to consider is the quality of the coax. It is necessary to be wary of using surplus computer coaxial cable because the impedance may not be 50Ω. When it can be ascertained that it is suitable, many of these cables are often constructed to high standards and may offer low values of loss. Conversely, it is wise to be wary of cheap versions of RG-58 cable intended for CB applications. This coax often has a braid coverage of less than 50%, resulting in higher levels of leakage and much greater loss.

SUMMARY

THE FEEDER used in an antenna system is very important and should not introduce any significant loss. Choosing the right type is often a compromise, but by ensuring that it is sufficiently specified means that money is well spent and not wasted. In this way the investment made can be split to give the best overall performance for the whole antenna system. ♦

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This new exciting range of interactive handbooks is aimed at those wanting to explore electronics for the first time in an interesting and fun way. Each handbook has an easy to read and full colour 32-page booklet that has been carefully researched and is packed with fascinating facts & explanations exploring the subject. In addition an exciting and challenging project is contained within each folder. The project is fully complete with all parts provided and a comprehensive instruction sheet is included. These books make ideal gifts for youngsters or those wanting to have a crack at something a little different.

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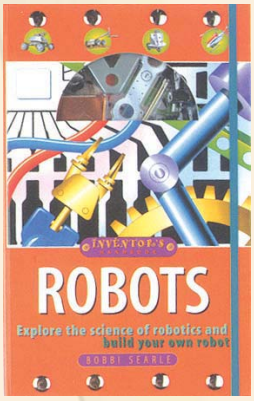

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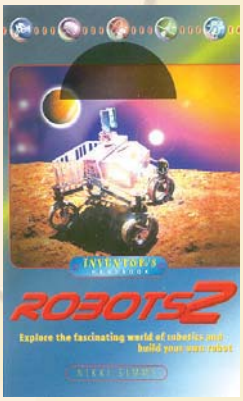

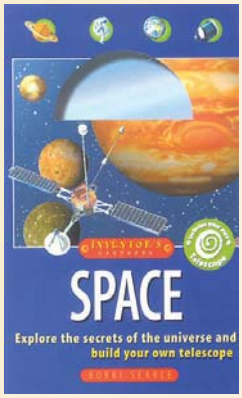

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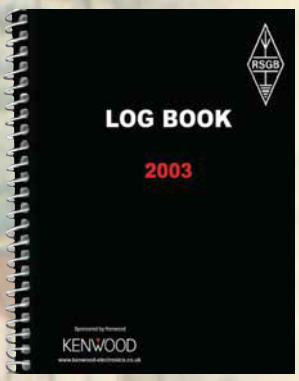

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- 2003 Events Calendar
- Current UK Band Plans
- European Locator Map
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- Repeater Listings
- QSL Bureau Information
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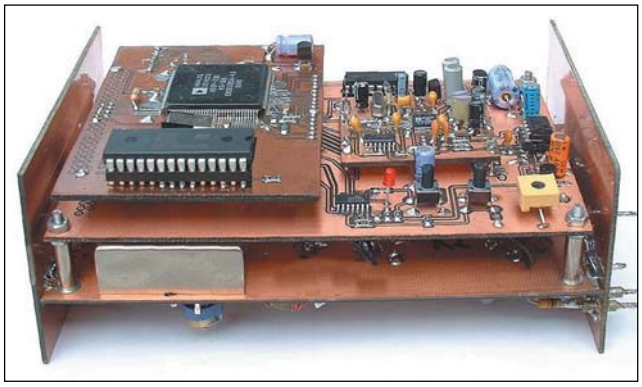
PIC-A-STAR:

a Software Transmitter And Receiver

*Part six of the regular series by Peter Rhodes, BSc, G3XJP **

THIS MONTH covers the component location and external connections for the DSP mother board and its two daughters. These are shown in **Fig 9**. Also, the procedure for a stand-alone test of the completed board is provided.



The DSP assembly. That is, the DSP mother board with CODEC and Processor daughters boards - mounted back-to-back with the IF board in its enclosure. The top, bottom and side screening panels are not fitted until after final test.

COMPONENT SPECIFICATION

SMD COMPONENTS have been specified here where space, cost, or performance considerations requires them - but not otherwise. 1206-size devices are used and these are no more difficult to handle than conventional leaded components.

Specifically, SMD electrolytic capacitors are not used since these are expensive - and the small space savings which are achievable are not needed.

All the small coupling and decoupling capacitors are 100nF and, in general, they are SMD. However, on the CODEC board, C85-C89 are specified as wire-ended disc ceramic units because their leads are used to couple power and ground between the two sides of the board.

SMD resistors are used throughout, since these save a great deal of space. The single exception is R78 - where I positively needed a larger component to span an otherwise unbridgeable gap.

In any event, all components are mounted on the track surface, but in some cases, leads are also soldered underneath. You need not take this to extremes, but every reasonable opportunity should be taken to interconnect the top and bottom grounds.

'EZLITE' COMPATIBILITY

IT IS ANTICIPATED that this DSP board will find applications in other DSP projects. If you are contemplating this, contact the author of that project in the first place for the current status. This hardware is a functionally-compatible subset. It has the same overall dimensions albeit with different connector locations. The address, data and emulation expansion sockets have not been provided on this board - and nor, realistically, could they be. PIC-A-STAR uses a different CODEC chip, which requires a different DSP code module to handle it. A source code shell for this is available on request.

* *Danvers House, Wigmore, Herefordshire HR6 9UF.*
E-mail: G3XJP@qsl.net

HARDWARE TEST

AS THE DSP BOARD is progressively completed, it is highly desirable to test it in stand-alone mode before moving on. This process also proves the interface to your PC - which will be needed operationally later.

PREREQUISITES

The first requirement is that you are running *QBASIC* under Windows on your PC. On older machines it is a standard application; later it was provided on the archive disc and on Windows ME it is not provided at all - but *does* run. In any event, it is an absolute prerequisite. The PC itself is totally uncritical.

You need to make up a lead from your PC serial port - but only two of the lines are used. These are pin 3, the signal - and pin 5, the ground. These connect (temporarily) to the mother board at 'DSP code and user commands' as per Fig 9. Ensure the ground lead is indeed grounded.

SET UP

On your PC, establish a new directory. The software assumes C:\STAR but you can edit the software for any other location.

In that directory, place the files testxx.xjp (where xx is the current version number of the test program) and XJPload.bas which is the utility used to load all STAR DSP software, not least this test program.

Open *QBASIC* and from there, open XJPload.bas. To run the test program, just follow the on-screen instructions!

PROCESSOR TEST

This requires the Mother board with Processor daughter - but not necessarily the CODEC. The test process starts with D35 flashing at 1Hz. Once you start to load the test program, the LED will be permanently lit. Once the program has loaded, the LED will be off if the CODEC was successfully initialised, on if it was not (particularly if it is not yet even fitted). In either event, if you press the Interrupt switch, S3, the LED will toggle on and off. This verifies that the code has loaded and that the processor is running and is in (or indeed, under) control. This also establishes your capability of loading *any* code over the serial link and unless and until you can achieve this, no further progress can be made.

CODEC TEST

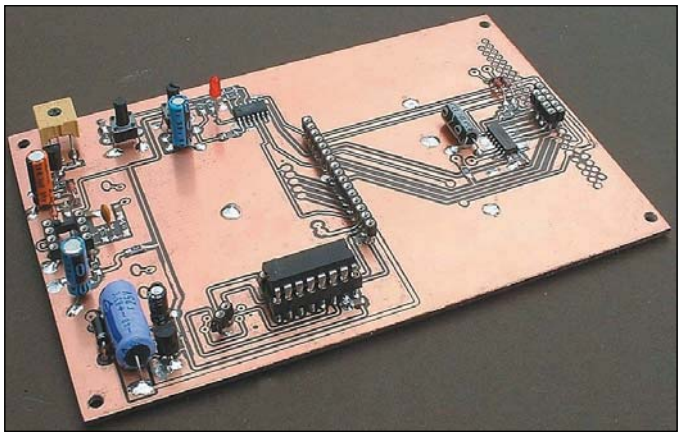
Once the CODEC daughter has been fitted and the previous test successfully repeated, power down and connect a patch lead from the CODEC left and right outputs to a stereo amplifier.

Power on again and reload the test program. A damp finger placed on the CODEC left or right inputs should now produce a corresponding hum on the respective output. Should you prefer something more exciting, you could connect up a microphone or any standard line-level stereo input.

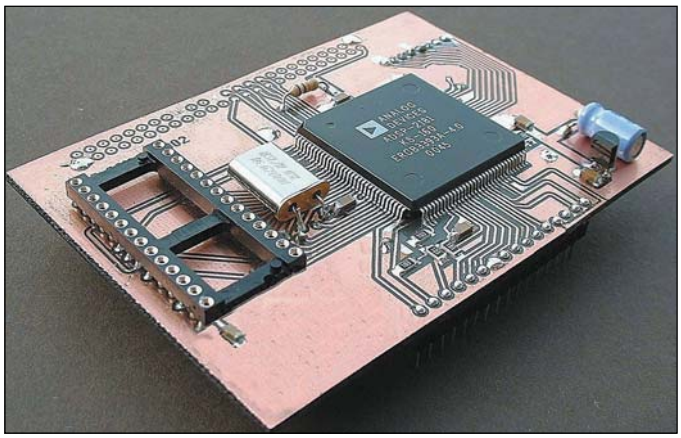
This is a test of a full loop-back on both channels. That is, the input is being digitised, sent to the processor where a minimal operation occurs in the digital domain before it comes back to the CODEC, where it is converted back to analogue form and thence to your ears.

Thus, when this test works, you have completely proved the CODEC and the vast majority of the processor functionality - and the interface between them.

If, however, it should fail, yet the processor successfully loaded the test program in the first place, the problem almost certainly lies on the CODEC board itself - or the link between it and the processor.



The DSP mother board, ready for daughter board fitting and test. Note IC8 and its associated components are located under the Processor daughter board. In fact, neither they nor IC22 need be fitted for stand-alone testing.



The finished Processor daughter board. Note that the crystal X3 is fitted after bending its leads - to reduce height. C120 and C121 are fitted under the board. IC26, when fitted in its socket defines the overall height of the complete DSP board.

A 12.288MHz clock train is generated by the CODEC on the Bit Clock line. In response, the processor provides a 48kHz clock on the Sync line. If these are both present and you can see data pulses on the Data in / out lines, then the problem is probably on the analogue side of the CODEC. But, if you rigorously checked the board in the first place, there can't be a problem, can there?

COMING NEXT

NEXT MONTH concludes the DSP hardware. It covers the PCB artwork, making the DSP board PCBs and assembling them. ♦

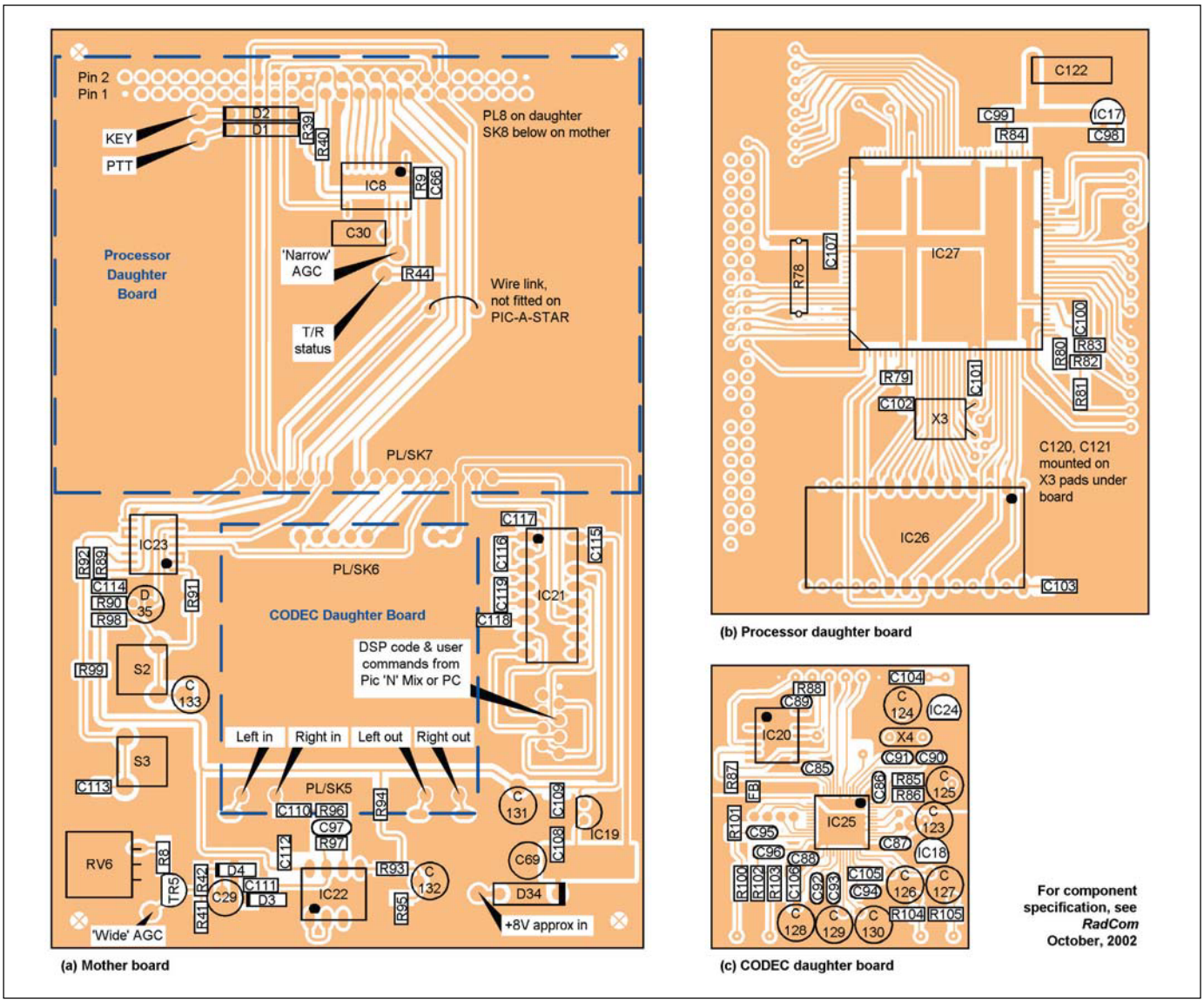


Fig 9: DSP boards component location diagram. SMD capacitors are shown as rectangles, disc ceramics with 'rounded' ends. The Processor daughter should be rotated clockwise through a right-angle to visualise the fit on the mother board A significant number of pins on PL8 and SK8 are not used by PIC-A-STAR, but were included for compatibility with Analog Devices EZLITE board. These locations need not be populated for STAR. For a photograph of the CODEC board, see Part 3.

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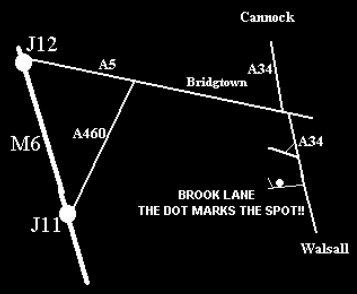

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YAESU	FT-7100	2M / 70CMS DUALBAND TRANSCEIVER	£249.00
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YAESU	FT-100	HF / VHF / UHF ALL MODE TRANSCEIVER	£599.00
YAESU	FT-840	HF TRANSCEIVER	£425.00
YUPITERU	MVT-225	AIRBAND SCANNER	£150.00
YUPITERU	MVT-7300	MULTIBAND HANDHELD SCANNER	£199.00
YUPITERU	OP-90	CASE	£10.00
YUPITERU	VT-125	AIRBAND SCANNER	£120.00

Please note, the equipment listed may have been sold / updated, please ring 01922-414796 to check availabilty

A Class-D Transmitter for 136kHz

Part one of a two-part 300W design by David Bowman, G0MRF *

The completed 136kHz transmitter, with its cover removed.

THE 136kHz low-frequency allocation was announced in the UK in February 1998. In the intervening five years, LF has been introduced in many countries, and there are now over 30 DXCC entities licensed for 135.7 to 137.8kHz. Several other administrations, including the United States and Canada, are considering similar allocations in the LF region and some have already issued experimental permits.

Initially, there was a degree of scepticism about the distances that could be worked with just 1W of effective radiated power. To put the DX potential into perspective, the Atlantic was first spanned with a cross-band QSO in September 2000 and currently, the two-way record is 5418km between Laurie, G3AQC, and VA3LK.

With no commercial equipment available from the established 'big four' manufacturers, LF designs have relied on individuals bringing a variety of ingenious ideas to the band. This transmitter combines a number of proven techniques and, with over 300W output, allows you to get on to this exciting amateur allocation with a good signal. The transmitter is based around an amplifier using two low-cost power FETs in a high-efficiency class-D configuration. The transmitter is protected against over-current and high-VSWR conditions. The single PCB also includes forward- and reflected-power metering, output filtering and transmit / receive switching.

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E-mail: g0mrf@aol.com

CIRCUIT DESCRIPTION

THE TRANSMIT DRIVE is generated by a pair of crystals operating as variable crystal oscillators. Crystal X1 is 8000kHz while Crystal X2 is 8274kHz (see **Fig 1** opposite). Each crystal is connected across a CMOS NAND gate, which functions as an oscillator. Varicap diodes are used for differential-tuning of the crystals. The two outputs are applied to a third NAND gate which, because logic gates are non-linear, functions as a mixer. The output of IC1(c) contains several products including the difference frequency at 274kHz. A low pass filter, comprising L1, C10 and C11, removes the high-order products, leaving a sine wave at twice the required output frequency. The filter is terminated by R7, which is part of the inverting amplifier IC2. C13 in the feedback loop adds some additional low-pass filtering before the signal is applied to the clock input of a 4013 D-type flip-flop. A small PCB jumper provides the option of driving the transmitter from an external source [1].

IC3 has two functions. Firstly, it divides the input frequency by two, producing 136kHz at the (Q) and (not Q) outputs. The second function of IC3 is to act as a switch in the event of a fault condition. In normal operation the Set Direct input, pin 8, is held at 0V by R16. The circuit uses D1 - D3 as a simple discrete OR gate to provide control and protection functions. Diodes D1 and D2

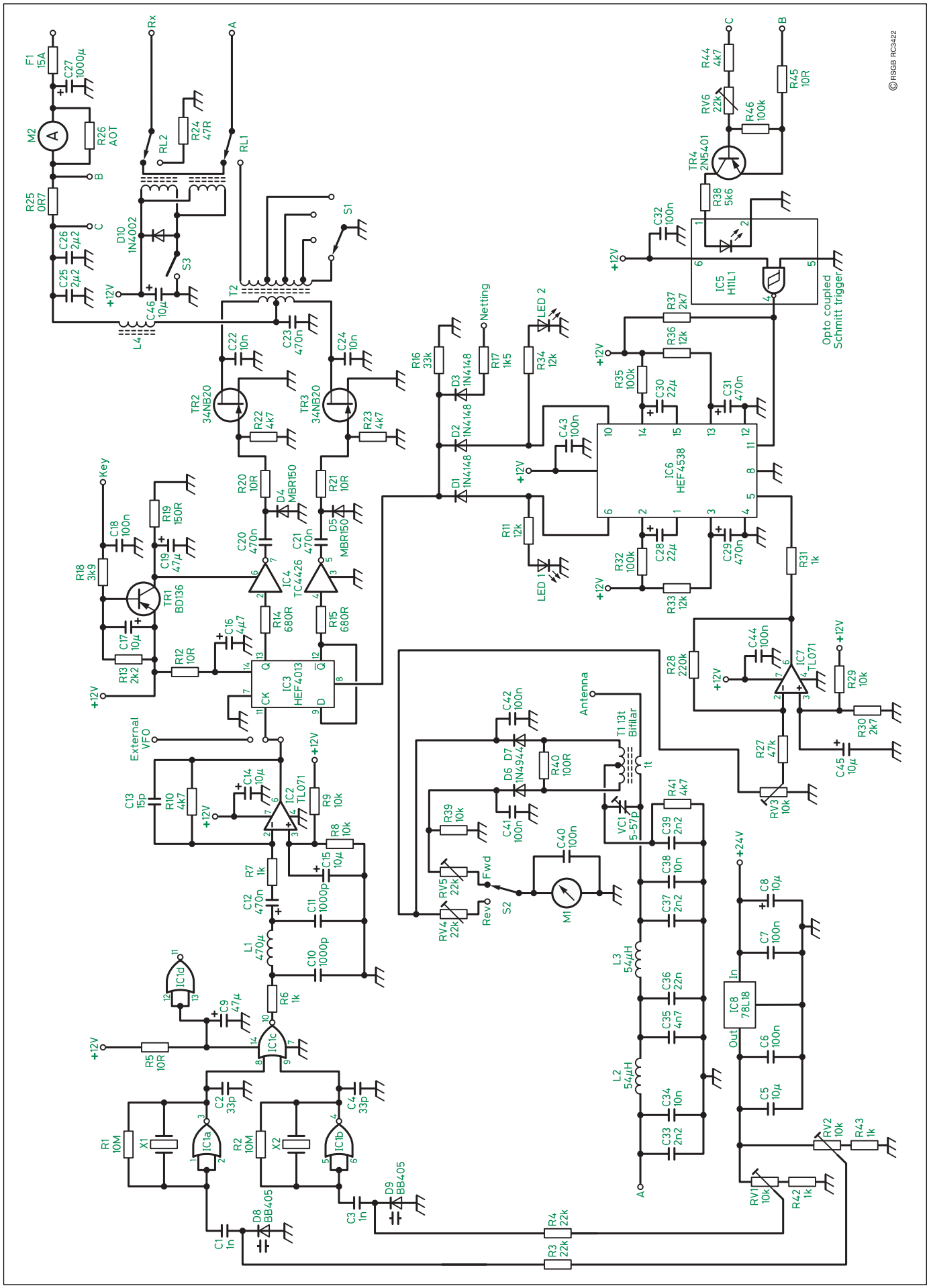

Fig 1: Complete circuit diagram of the 136kHz transmitter.

feed in signals from the reflected power and over-current protection circuits, while D3 is used to provide a netting facility on receive.

If D1 *or* D2 *or* D3 conduct, the Set Direct input will go to 12V, causing IC3 to shut down, removing the drive from the power amplifier. **Fig 2** shows how these functions can be controlled with a double-pole centre-off switch. One pole is used to drive the transmit / receive relays, while the other switches on a cooling fan during transmit periods.

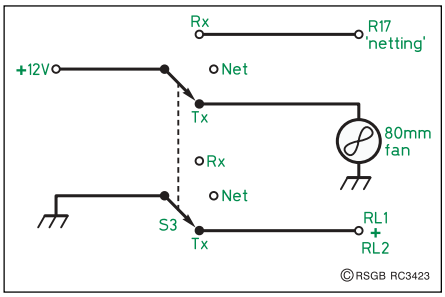

Fig 2: Transmit / receive switching, using a DPDT centre-off switch.

Netting is carried out with the switch in its centre-off position. This puts the relays in the receive position, but keeps the 4013 divider active.

IC4 is a dual-inverting FET driver. It amplifies the CMOS-level signal from IC3 and is capable of driving up to 1.5A into the gates of the power FETs. A fast charge / discharge time is essential for highly efficient, and disaster-free operation of a class-D amplifier. C20 and C21 AC-couple the drive to the FETs. Schottky diodes, D4 and D5, restore the correct DC level at the gates while R20 - R23 ensure stability.

The Class-D push-pull output stage comprises FETs TR2 and TR3 and output-matching transformer, T2. Initially, I selected a large E-core transformer for T2. This ETD44 core worked well, and was used in the prototype. Unfortunately, it proved both expensive and difficult to reproduce. Finally, it was replaced by a toroidal design, which was easier to construct. The drain-to-drain impedance of the FETs is matched to 50Ω by the turns ratio of T2. A series of taps on the secondary allows the turns ratio of T2 to be changed, allowing the power delivered to the antenna to be selected via a front panel ceramic switch. The highest number of secondary turns provides the highest output power.

The DC supply is passed through an ammeter and current-sense resistor and is decoupled by C26 and C27. DC is applied to the centre tap on the primary of T2. L4 and C23 provide additional filtering.

The RF output passes from the secondary of T2 through transmit / receive relay, RL1. A second relay, RL2, has been included to terminate the receiver input when in transmit mode. These relays are rated at 12A, and have been tested at 136kHz with power levels of 1000W. Diode D10 is included to protect any semiconductors included in the external switching arrangements.

From the relays, the RF passes through a multi-element low-pass filter to the output. The LPF is essential for removing the high levels of harmonics which are present in the square-wave output from the amplifier. The T157 core used for L3 is rated to about 400W, while the polypropylene capacitors are all specified at 1kV and are capable of handling much higher power levels. The cut-off frequency of the filter is 200kHz, ensuring a very low insertion loss at 136kHz.

REFLECTED POWER PROTECTION

FORWARD AND REFLECTED power are detected by directional coupler, T1. A single wire passing through the centre of the toroid acts as a single-turn primary, while the secondary is a bifilar winding of 13 turns. The secondary produces outputs proportional to forward and reflected power. These AC signals are rectified by diodes D6 and D7. Preset potentiometers, RV4 and RV5, set the sensitivity. Switch S2 selects whether forward or reflected power is displayed on the meter.

Resistors R29 and R30 define the reference voltage at the non-inverting input of IC7, and hence set the trip point of the protection circuit. Under normal operation, pin 6 of IC7 is at 12V. When the voltage at the wiper of RV3 exceeds the voltage at pin 3, the output at pin 6 rapidly falls from 12V to zero. This circuit was adapted from a Motorola application note [2] and is very fast-acting. It is claimed to be capable of switching off the drive in about 10µs. The op-amp output is connected to the input of IC6, a 4538 dual-monostable. Once triggered, the output of the monostable changes from 0V to 12V. This voltage forward-biases D1, which causes the Set Direct function of the 4013 to shut down the device. The output of the 4538 also illuminates a front panel LED giving a visual indication of the cause of the shutdown. Having cut off the drive, the monostable maintains this condition for a period determined by R32 and C28, about 2.2s. The circuit resets automatically.

OVER-CURRENT PROTECTION

OVER-CURRENT protection has been implemented by utilising current-sense resistor, R25, with TR4 and opto-coupler IC5. When the current flowing through R25 causes a potential difference of 0.7V to be developed across it, the pnp transistor, TR4, will switch on. Current then flows through R38 and the diode contained within the opto-coupler.

When the LED forward current reaches 600µA, an internal Schmitt trigger causes the output voltage to fall rapidly from 12V to zero. This triggers the other half of the dual-monostable, IC6. To preserve the speed of the over-current trip, there are no decoupling capacitors around TR4 or IC5. Once again, the response time of this circuit is very fast and it can reduce the output to zero in about 10-20µs. The exact value of the trip point can be adjusted over a small range by RV6.

CONSTRUCTION

THE PCB SHOULD be assembled and tested before being fitted into an enclosure. Start by constructing the VXO and logic circuits, leaving the low-pass filter coils, transformer T2, and directional coupler T1, until last. The power FETs can be temporarily fitted for testing and then mounted permanently after testing is complete. The coils L2 and L3 in the low-pass filter are quite large and can be held in place using a little epoxy glue for extra support. When fitting inductors, ensure that the enamelled wire does not come into direct contact with the earth plane. This avoids high voltages arcing through the thin insulation and other damage due to abrasion. The primary of T1 is a single wire passing through the centre of the toroid. I used a small length of the inner conductor from RG58 coaxial cable.

The powder-coated ready-punched enclosure used in the prototype is available from H J Morgan Smith [3].

NEXT MONTH

TESTING IS COVERED next month, together with some ideas on antennas for LF. Some consideration is also given to what you might expect to work on LF, and what computing equipment you would need for more sophisticated modes. There is also a list of components.

REFERENCES

[1] PIC- or PC-controlled 0-6 MHz DDS VFO (AD9832). Johan Bodin, SM6LKM. **http://home4.swipnet.se/~w-41522/minidds/minidds.html**

[2] AR510: 'VSWR Protection of Solid State RF Power Amplifiers', by H O Granberg, *RF Design*, Feb 1991.

[3] H J Morgan Smith, sheet metal engineers. Tel: 01293 452 421. ♦

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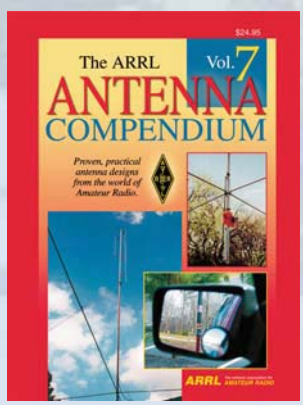

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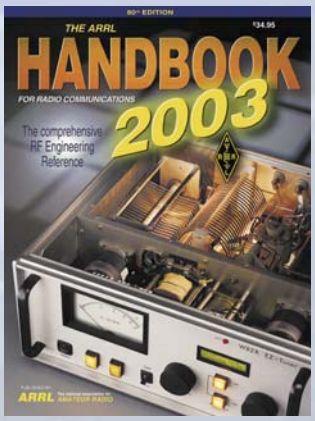

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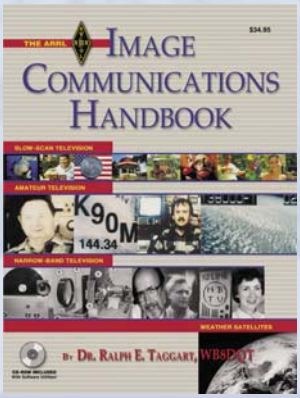

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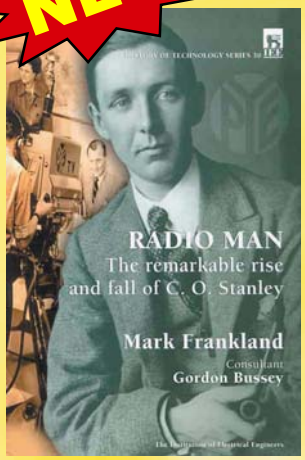

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Technical Topics

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MORE ABOUT TRANSDUCTORS (TUNABLE TOROIDS)

'TT', DECEMBER 2000 (pp63/64) noted the advantages of permeability tuning, not least the virtually-constant Q throughout the frequency sweep, quoting a number of practical applications in communications and domestic receivers, etc. It also reported the view of Jack Hardcastle, G3JIR, that it was time to look again at these techniques, both at LF and at HF. More importantly, he showed how they could be applied to toroid-type cores, by varying the strength of an applied magnetic field, either mechanically with a permanent magnet or electrically with the aid of a relay coil. This was followed in 'TT', April 2001 (pp61/62) by details of a wide range constant reactance voltage-controlled oscillator described by engineers at the American firm of Wenzel Associates using a permeability-tuned TO50 inductor with the toroid mounted in the jaws of an electromagnet, much as suggested by G3JIR.

Michael Smallwood, VP8AEM, draws attention to the web site of *Applied Microwave & Wireless* magazine at **www.amwireless.com** He writes: "The magazine has placed most of its articles online in PDF format at **www.amwireless.com/mainarchive.html** One interesting article is about using saturable-core inductors (transductors) as mentioned several times in 'TT' [see above]. A good feature of this article 'The Forgotten Use of Saturable-Core Inductors (Transductors)', by Christopher Trask of ATG Design Services [Technical Editor of *QRP Quarterly*], which can be found at **www.amwireless.com/archives/1997/Sep-Oct/sepoct1997-p76.pdf**, is that it includes instructions for winding transductors. One method is to wind your RF coil through the centre holes of a pot core, turning the pot core into a toroid for the RF winding. This approach was proposed by T A O Gross in 'Revisiting the Cross-Field Inductor', *Electronic Design,* March 15, 1977: **Fig 1(a).**

To quote the *AM & W* article: "In general, a transductor is composed of three elements: the core material itself, properly chosen for the application at hand; the controlled winding, which is the inductance that we wish to control; and the control winding, through which we will apply the controlling current. The controlled and control windings must be constructed on the core material in a way that will prevent them from coupling with each other… **Fig 1(b)** illustrates a form known as a parallel-field reactor, commonly found in magnetic amplifiers… Fig 1(a) illustrates a form referred to as a cross-field inductor, so called because the magnetising field is perpendicular to the signal field in the core material. In this construction, the control winding is placed on a bobbin, or coil former, which is part of a ferrite pot core assembly. This is very convenient, as a large number of turns can be placed on the bobbin… The bobbin is then assembled between two pot core halves of suitable material, and the controlled inductor winding is formed on the outside of the pot core, through the centre hole normally used for a tuning slug, in effect turning the pot core into a toroid of sorts. This latter form of construction ensures a high degree of isolation between the two windings, and at the same time is easy to reproduce and manufacture."

The article stresses the distinct advantage that transductors offer in terms of linearity, compared with varactors, "a highly desirable feature in the design of communications equipment". It includes test results at 1MHz of four transductors, one using a Philips P18/11-4C6 pot core with no gap and three using Philips P18/11-3D3 pot cores. Christopher Trask also compares the linearity of varactor-tuned and transductor-tuned bandpass filters, showing that the transductor possess superior linearity properties, especially in terms of second-order distortion over its varactor counterpart (45dBc decrease in second-order products, 5dB increase in the third-order intercept point). To quote: "This feature may well override the disadvantages of cost and physical size when designing critical system functions, such as a remotely-tuned receiver preselector, where harmonic and intermodulation distortion performances are important considerations."

VP8AEM adds: "I built a cross-field transductor using a 300mm diameter by 20mm high pot core salvaged from a radio telephone voice-channel filter. I used six turns of hook-up wire through the centre hole and I was able to reduce the inductance from 280μH to 250μH by increasing the DC current through what was the original winding from 0 to 100mA, to 170μH at 200mA, 155μH at 300mA, 115μH at 400mA and to 90μH at 500mA. The inductance of the control winding is 40mH.

"Another salvaged pot core, in the shape of a 13mm cube, but again with a control winding of 40mH, when wound with four turns of fine hook-up wire went from 105μH to 50μH with 100mA of control current, and down to 40μH when 200mA was applied. Using two turns for the RF winding, the inductance went from 28μH at 0mA to 15μH at 100mA and 10.5μH at 200mA. This pot core gets too hot with 200mA flowing through the 34Ω control winding, and the inductance falls with rising temperature." The heating effect of the control winding suggests that, when this form of integral transductor is used in a critical tuned circuit, some care must be taken to avoid frequency drift, possibly by limiting the control current and hence limiting the range over which the inductance is changed. This would not be a problem with the use of an external electromagnet, as suggested by G3JIR, and in the Wenzel VFO. Incidentally, for control currents, the *AMW* article misleadingly uses μA in the text but (apparently correctly) mA on the diagrams. Usefully, the author provides 13 published references to the use of magnetic tuning devices between 1938 and 1996 (the original reference is to

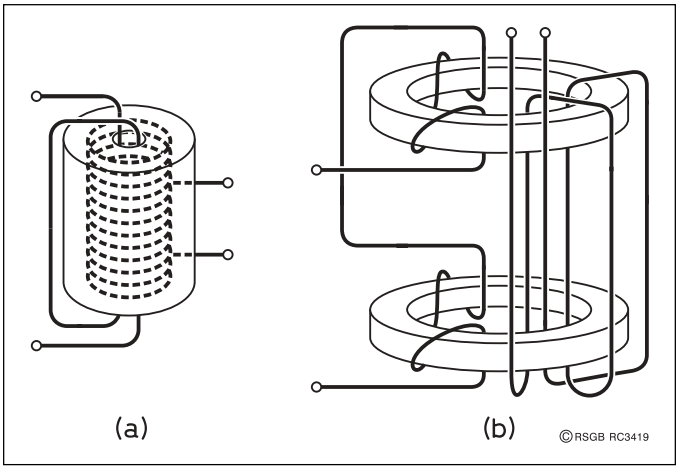

Fig 1: Methods of realising transductors as originally described by T A O Gross in 1977. (a) Pot core (cross-field) transductor as used experimentally by VP8APM. (b) Toroid (parallel field) transductor using a pair of ferrite (or tape-wound) toroids as commonly used in magnetic amplifiers. (Source: *Applied Microwave & Wireless)*

Wireless World, February 1938 (L de Kramolin).

MORE ON POWER SOURCES

THE DECEMBER 2002 item on 'Alternative Power Sources', touched upon the continued development of hydrogen-powered fuel cells, and this topic was reviewed in more detail in 'TT', August 1999 (see *TTS 1995-99,* pp289-291) which also discussed progress in batteries including nickel-metal hydride, lithium-ion, lithium polymer and re-usable alkaline. The promising PEM (proton-exchange-membrane) fuel cells were seen as being under development for applications requiring from 3 - 10kW for domestic applications at economic costs. Recently, General Motors unveiled its new Hy-Wire car at the 2002 Paris Motor Show, built on a fuel-cell chassis that is claimed will last for 20 years. The customer will be able to choose the 'top' that will be snapped on to the fuel-cell chassis. A chassis incidentally steered, not by a steering wheel, but a joystick!

But it may still be some years before DXpedition stations are powered by portable fuel cells (although these are already under development for the US military), even though some writers believe that future generations will turn their back on the exhaustible supplies of fossil fuels. They may then have to embrace hydrogen as a main source of energy along with other renewable and less-polluting sources.

The environmentally-conscious and energetic amateur could already fall back on the hand / pedal generators that have for many years provided up to about 50W output. Up to 100W has been reported by W1BG using a bicycle wheel to drive an alternator. In 'TT' April 2000, I reported on the work of John Longhurst, G3VLH, of the Flying Doctor Development Service who had developed a generator drawing on the ergonomic and structural development of the bicycle: "Sitting on the [stationary] frame, a man pedalling steadily at around 60RPM can generate in excess of 200W of energy, sufficient to power fully a 100W SSB transceiver. The pedal and chain transmission drives a high-efficiency disc alternator that produces a three-phase AC output. Acting as a heavy flywheel, the alternator smooths the transition between receive and transmit loads. The output of the alternator is rectified and fed into an 85% efficiency switch-mode power control, the output of which is a regulated 13.8V DC output at around 20A peak".

In practice, most field operations with medium- and high-power stations depend on transportable petrol-electric generators, with ratings of from about 150W to 2kW. A 'TT' October 1999 item 'Field, Emergency and Stand-By Power Generators' (*TTS 1995-1999, p299* with further note on p310), gave detailed advice on the use of P-E generators.

As someone with WWII experience of 150W Onan P-E generators, I have always regarded these devices with some misgivings, remembering how I once managed to burn out the field windings of a generator. This was the result of an ill-advised attempt to use it imaginatively, if incorrectly, in November 1944 at Nijmegen. The idea was to supply fill-in lighting for the Dutch family and the IS9 (MI9) Evader group with whom I was sharing the house. Unfortunately, on one occasion, I forgot to remove the Onan connection to the house-wiring before closing the mains-supply switch shortly before mains power was restored for its daily two-hour ration. Later, in the Rhineland, I nearly missed several schedules frantically pulling at the starting rope of a replacement generator, which seemed always to suffer from a moist spark plug.

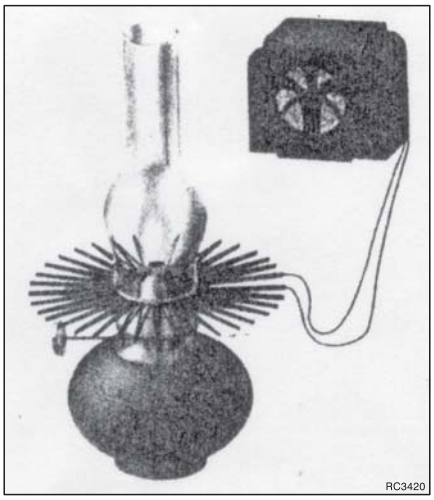

Fig 2: Thermocouple-powered generator powered from a paraffin lamp as used by the Russians in the 1930s and 1940s to power valve radio receivers in rural areas lacking mains-electricity supplies.
(Source: Ralph Hancock, *New Scientist)*

But, over the years, P-E generators have become more user-friendly. A review of the Honda EU2000i in *QST* (November 2002, p61) mentions also the 1kW EU1000i used on some recent DXpeditions.

The EU2000i is a compact 2.5HP model providing a maximum of 2000W (1600W standard) at 120V with a dry weight of 46lb and measuring 17 x 11 x 20in. The fuel tank holds 1.1 gallons, sufficient for over five hours continuous operation at standard output. Perhaps the most notable feature of this modern P-E generator is that the four-stroke engine runs much more quietly than the traditional field-day generators, with a specified loudness of only 59dB at rated load. At 46lb, with a built in handle, it can be quite easily carried for short distances. The claimed 'exclusive Honda inverter technology' provides 'clean' power suitable for operating computers and other sensitive testing equipment - and amateur equipment. Presumably, there are similar European models by Honda providing 230V output.

As noted in December, there is renewed interest in the field-generation of electric power from heat sources, as exploited during WWII for clandestine radio. Mostly, these were intended to charge car batteries rather than to give an AC output. These WWII generators included steam-driven generators fuelled from wood or charcoal; multiple thermocouples (eg 350 chromium-constantan junctions in a fireproof brazier heated by wood or charcoal).

It was noted in December that current work at Cardiff and Beirut universities is aimed at developing 'Third World' power for television receivers from domestic stoves. Up to 100W have been produced by modifying thermocouples made of bismuth telluride and aluminium and making them more resistant to high temperatures. A later letter from Ralph Hancock in *New Scientist* pointed out that in the 1930s and 1940s, the Russians used a simple thermoelectric device to power valve radios in areas where there was no electricity supply: "It consisted of a zigzag array of thermocouples arranged in a circle around the flame of a paraffin lamp, making the inner junctions hotter than the outer ones (**Fig 2**)".

Thermocouple generators were also used post-war on American railways for mobile radio, and later by NASA to power Voyager 1 and 23 with a decaying radioisotope to provide the heat source. Thermocouple generators are generally inefficient, but low-efficiency is better than no electricity!

The major post-war development has been the use of photovoltaic solar cell chargers - valuable indeed in sunny climes, but requiring the use of large-capacity batteries to provide 24-hour service. I recall an experimental IBA installation at a low-power UHF television relay station in North Devon in the 1980s that functioned for a time, but was discontinued, mainly because of the maintenance required to keep the batteries in good trim. Medium-power wind generators require mechanical maintenance and have to cope with the wide range of wind forces from dead

calm to force nine gales, although the large wind-generator farms seem to cope. Efforts to harness the tides have so far had limited success in the UK.

For DXpeditions, the petrol-electric generator still seems to rule supreme. The laws of thermodynamics indicate that any form of energy should be capable of being converted to any other form. It seems likely that the future will draw increasingly on the most common element of all - hydrogen for fuel cells - rather than exhaustible and polluting fossil fuels. Meanwhile, for remote amateur stations, it looks as if the P-E manufacturers such as Honda still call the shots.

LOOPS LARGE AND SMALL

DR JOHN BELROSE, VE2CV, was interested to see in the October 'TT' the low (8ft high) horizontal loop-style antenna designed by Peter Ball, G3HQT, for 3.5MHz NVIS, but which he had found a surprisingly useful DX antenna on the higher bands. In effect, the antenna (**Fig 3**) was fed in a manner that resembled a very broad three-wire folded dipole rather than a conventional large horizontal loop antenna.

VE2CV writes: "Since I had never seen an antenna fed like that erected by G3HQT, I decided to model its vertical radiation pattern numerically with EZNEC/4: **Fig 4.** The antenna is a NVIS radiator for 16m (18.75MHz) - not shown - to 80m (3.5MHz), with little azimuthal directivity. The vertical plane patterns plotted are for a 90° azimuth, ie the pattern in the Y-Z plane, the broadside direction.

"The pattern starts to break down into lobes for 15m and below. The azimuthal directivity for the 15m (21MHz) band is in the X-Z plane (0° azimuth) but, for the 10m (28MHz) band, it is back in the broadside direction (90° azimuth)."

VE2CV has also sent along further comments on the CFA broadcast antenna, including some more of his articles on this topic and describing further problems he encountered in trying to reproduce the performance claimed by the inventors. He has also provided an article he wrote in an attempt to explain the good results achieved at Tanta, Egypt, with the antenna erected on the roof on a building, although not found repeatable with the antenna on top of a building in Santos, Brazil.

I have also received through RSGB HQ a long description from Italy of the so-called 'E-H' antenna, which is a modified version of the CFA antenna developed in the USA by Ted Rule, W5FJ, with the assistance of American and Italian engineers. It is described as utilising Poynting Vector Synthesis (PVS), though no mention is made of the origins of PVS and the CFA. It is fed from a quadrature phasing network. VE2CV in one of his articles shows that the CFA broadcast antenna, when fed in accurate phase quadrature, does have improved efficiency, compared with the standard CFA installations. It may well be that the E-H antenna has some role to play in HF amateur practice, though I suspect that PVS plays no significant part in its operation. Some may even see it as an ingenious, if justifiable, way of circumventing the Hately and Kabbary patents. Even if the E-H antennas prove more versatile than (and comparable in performance) to a short-stubby dipole/monopole, this would not validate the PVS hypothesis!

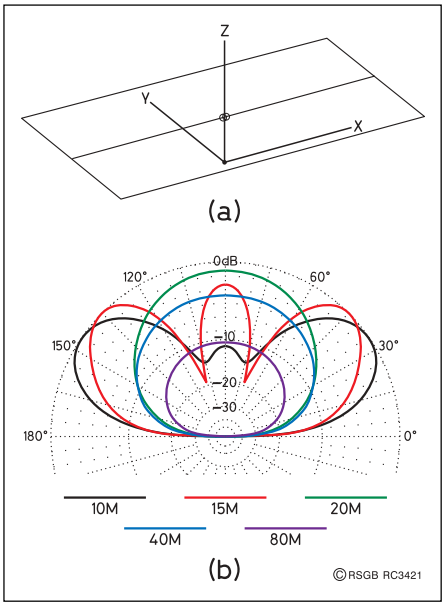

Fig 4: VE2CV's EZNEC-4 modelling of the vertical radiation pattern of G3HQT's antenna for 80, 40, 20, 15 and 10 metres.

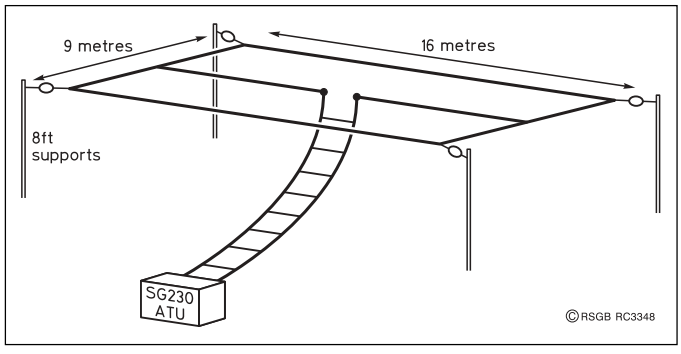

Fig 3: G3HQT's low large 'loop' antenna as described in 'TT' October 2002, p61.

SALVAGING PARTS FROM PCBs

STEVE KIMBER, W7VEW (*QST,* Hints & Kinks, November 2002, p69), describes a neat way of removing the components from surplus printed circuit boards, unharmed and ready for use in new projects. He writes: "To fill my parts box, I once used a heat gun, torch, soldering gun, etc to remove components from PCBs. Not any more. The answer is to mount a belt sander (with a fresh medium grit belt), belt side up in a vice and place a collection drop cloth under the sander.

"Now for the fun: with the power switch locked on, just sand the solder blobs off the bottom of the PC board, and watch all those parts fall on the collection cloth. In just a few minutes you have every part off the board, undamaged and ready for use. Make sure you use eye and breathing protection while sanding, and be safe around the belt."

W7VEW notes that this sanding method applies only to PC boards soldered on one side: "Most any kind of sander can be used by securing the PCB, component side down, with a couple of sheet metal screws and sanding off solder in the normal manner. Make sure there are no high points on the solder connections that might snag and rip the belt. This method makes the removed leads on components a little short, but there is no problem mounting them on new PC boards or Vector boards."

EMF HEALTH EFFECTS – CONTROVERSY CONTINUES

THE EXTREME difficulty of scientifically proving a negative is seldom appreciated by the public. No matter how many times it is suggested that there are no proven ill-health effects of low-level non-ionised radiation, including radio transmissions, there remains a seemingly irreversible belief that cellular UHF base-stations (and, by extrapolation, other transmitters) represent a health hazard to those living or working in the neighbourhood. It is not universally recognised that the 'inverse square law' means that a medium-power transmitting antenna on a mast or tower presents a far lower field than the hand-held units within an inch or so of the brain of the many people happy enough to use mobile telephones while organising protests against the antennas on nearby (but relatively distant) masts. Admittedly, one cannot rule out completely the possibility of effects of radiation from hand-held phones used over long periods in close proximity to the brain.

An inquiry in April 2000 by the British

government found no evidence of any health risks from mobile phones, but it recommended that people should take a precautionary approach until further evidence emerged. It suggested that children, whose brains are still developing, should not use mobile phones excessively. Yet the rash of articles continues. Even *New Scientist* (26 October 2002, p19) recently included an article 'Cancer Cell Study Deepens Fears Over Cellphone Safety', by Duncan Graham-Rowe.

Apparently, an Italian team at the National Research Council in Bologna decided to study whether radio waves had any effect on leukaemia cells (previous epidemiological studies show some slight support for the view that electromagnetic fields (EMFs) might just possibly be a cause of a small proportion of child leukaemia although this is still unproven). The Italian biologists suggest that 900MHz 2W radiation from mobile phones could make leukaemia cells grow more aggressively, paradoxically by initially killing off cancer cells. These were laboratory experiments and the biologists admit "We don't know what the effects would be on healthy human cells but, in leukaemia cells, the response is always the same."

Ray Herbert, G2KU, drew my attention to an article 'Biological Effects of Electromagnetic Fields', by Dr Zenon Sienkiewicz of NRPB (IEE *Engineering Science and Education Journal,* June 1998, pp127-134), which stressed that "there is much concern and controversy surrounding the effects of low-level EMFs and radiation. After many years of study, a few subtle effects have been seen, but there is still no convincing biological evidence to suggest that exposure to the fields commonly encountered in the environment would cause any significant adverse health effects in humans."

More recently, the IEE Policy Advisory Group on EMFs, pooling expertise from academia, industry, scientific consultancy and public service, has provided an Editorial in the same journal (August 2002, pp122-3) 'EMF Health Effects – Are They Real?'. It reads "The Group has been systematically reviewing the literature on EMFs for over a decade and, during that time, it has examined over 3000 relevant papers. Sadly, it has come to realise that not all science is equally good. In the history of EMFs, it has seen all too often a result published, frequently without peer-review, that seems to show a clear effect of EMFs, but which then proves impossible for independent groups in other laboratories to replicate… Published results should be regarded as scientifically established only when they have met certain criteria. These not only include the quality of the study, and the plausibility of the result in the context of existing knowledge, but also, and most importantly, whether the result has been replicated… The Group agrees that the EMF issue deserves careful attention. Further well-targeted research is still needed… But this is not because a wide range of health effects is starting to look real. It is because, even though the evidence is currently only strong enough to amount to a 'possibility' of an increased risk for one disease [childhood leukaemia], even that possibility should be taken seriously."

SUBMARINE CABLES – A FORGOTTEN INVENTOR

FOLLOWING THE September 2002 item advancing the claims of Antonio Meucci to have been the original inventor of the telephone, I received a phone call from Dr W F Wheeler pointing out that his great grandfather Charles Samuel West is the overlooked inventor of the submarine cable. Marine cable provided the original means of communicating electrically across the seas; for many years limited to telegraphy, but still flourishing as a wide-band system capable of handling telephony, television and high-speed data. His story has remarkable similarities to the pioneering work on maritime radio by Captain Henry Jackson RN (later Admiral of the Fleet Sir Henry Jackson FRS, DSc, a Past President of the RSGB) who contemporaneously with, but independently of Marconi, developed practical wireless telegraphy on board HMS *Defiance* during the early months of 1896.

C S West, who appears to have served in the Royal Navy, was sent to Canada in 1837-38 to report to the British Government on an uprising in the French part of Canada. It was then that he had the idea of using the recent invention of the telegraph by Samuel Morse (1838) to convey his reports to London faster than he could send them by surface routes. His idea was frustrated because there was no satisfactory method of insulating a wire conducting an electric current under water. On his return to England, probably in 1839, he began experiments to find a satisfactory medium, and soon hit on the idea of using gutta-percha, pursuing this idea in conjunction with the firm of S W Silver in Woolwich. The firm had developed a method of impregnating cloth with India rubber or gutta-percha to render it waterproof for the manufacture of clothing etc.

In 1847, West obtained permission from the Admiralty to carry out experiments between two warships, the *Pique* and the *Blake*, moored in Portsmouth Harbour and succeeded in sending messages between them. The cable was recovered by the Navy and laid across the harbour itself, with equal success. West then applied to both the British and French Governments for permission to lay a cable across the English Channel, but was frustrated by lack of funds. In 1850, two brothers, Jacob and John Brett took over the permission that West had obtained, without his knowledge or consent. Although bankrupt at the time, they had sufficient funds and completed the laying of the cable between Dover and Cap Gris Nez on 31 August 1850. Unfortunately, the next day a French fisherman caught the cable in his anchor, and cut a length from it believing he had found a new type of seaweed with a gold core! The cable was insulated with gutta-percha from Malaya, although West believed that India rubber from South America would prove superior. He advanced this belief in a lecture to the Royal United Service Institution in February 1859, but does not appear to have continued work on submarine cables, of which it would seem, he was the original, if now forgotten, inventor.

HERE & THERE

ACCORDING TO S Chekcheyev (*Electronics World*, June 2002) the output voltage of a very short receiving antenna can be substantially increased (on a specific channel) by adding a quartz crystal, connected as shown in **Fig 5**. It is claimed that the quartz crystal can increase the output voltage some 22.6 times. Thus an antenna of just 0.1m, with the crystal, produces the same output voltage as a whip antenna 2.26m long without the crystal, provided that the input resistance of the receiver is very large to avoid shunting of the quartz crystal. To quote: "Such an input resistance can be ensured by field-effect transistors." It is suggested that the arrangement is convenient for application in single-frequency receivers of remote control systems, etc. ♦

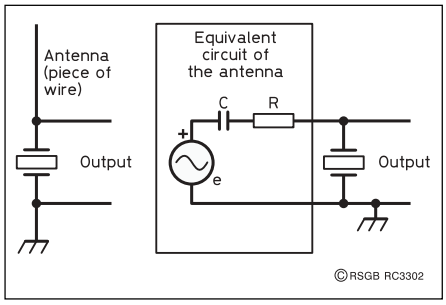

Fig 5: S Chekcheyev of Moldova claims that a quartz crystal across a very high-input-impedance (FET) of a single-channel receiver has the effect of greatly lengthening a very short antenna. For example, at 1MHz the output from a 0.1m antenna with a crystal provides the equivalent input voltage of an antenna 2.26m long.
(Source: *Electronics World*)

WHATEVER NEXT

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THE UNIVERSAL Serial Bus (USB) interface has been with us for some years, and USB2 is now becoming more commonplace, but USB3 isn't far off. From what I hear, USB3 might be wireless, or at least have a wireless version. With data rates of between 200 and 500MB/s being bandied about, USB3 is going to require some *serious* bandwidth. Current projections are for release in 2005 / 2006.

GPRS SPIN-OFFS

THE NEXT GENERATION of mobile phones which employ Global Packet Radio Service technology are now coming onto the market. Users of GPRS can expect to enjoy a raft of new features and facilities, one of the more interesting (and well publicised) being that they can be permanently connected. So far as I know, when transferring data, you will pay per megabyte, rather than per minute. GPRS is said to be ideal for transferring data that is 'bursty' in nature, so of what direct use might GPRS be to radio amateurs?

According to Karel Kotrba, OK1DSF, the GPRS service could soon revolutionise DXing. Many of us will be familiar with the packet radio DX cluster network, which alerts DX enthusiasts to the appearance of something interesting or rare on the bands. At present, most users of this network employ a VHF or UHF transceiver and a TNC. Typically it takes no more than a couple of minutes for a 'spot' to propagate around the network, but DX cluster nodes can't be accessed easily everywhere in Britain, let alone the world. In more recent times some DX clusters have become available on the Internet. The next stage seems to be a GPRS mobile phone and a PDA. As OK1DSF says, "With *newTelnet* software, it is possible to connect with a small PDA device, log the cluster output to file and analyse the file later. When looking for an effective setup, the best choice is the Psion 5 or a similar PDA device, running *newTelnet* software and a mobile phone. However, with the mobile phone, the data connection for a long time would be very expensive. With the introduction of GPRS it is possible to stay connected for a long time and pay only for the data transferred.

"The *newTelnet* software is well positioned to be used as *the* telnet client for DX cluster access, because of the shortcut capability, high port number ability and logging to file function… Practical results with a Psion 5 and a Motorola Timeport 260 mobile phone, connected via cable, are very positive. The connection is fast enough (more than 35Kbits/s on downlink in my case) and reliable."

As I see it, the facility to access the DX cluster in remote areas could be of significant interest to contesters and remote IOTA operations when the GPRS network becomes better developed.

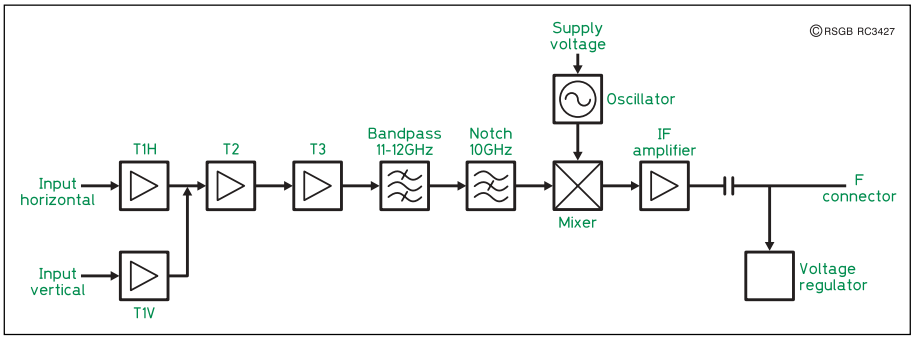
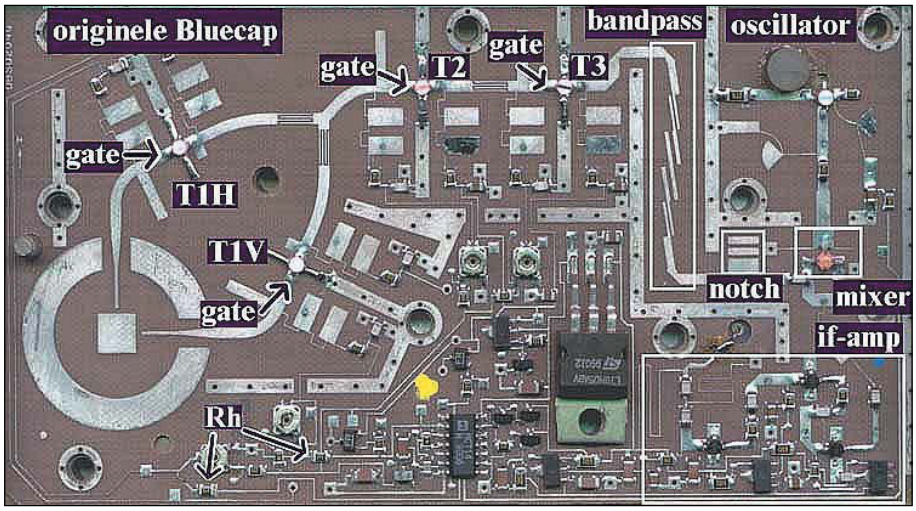


Fig 1: Block diagram of the blue-cap LNB before modification.

VEHICLES ON THE MOVE

From a recent conversation with a communications engineer, I gather that before too long the Control Centre of the London Ambulance Service will be linked to Mobile Data Terminals in ambulances. When an emergency call is taken, the orders which instruct the driver where to go will be sent directly from the centre's computer network to an MDT in an ambulance, via the GPRS network. In the reverse path, a GPS receiver in the ambulance will keep the control centre up-to-date with the location of each vehicle.

I doubt that it will be long before this kind



Blue-cap LNB circuit board before modification.

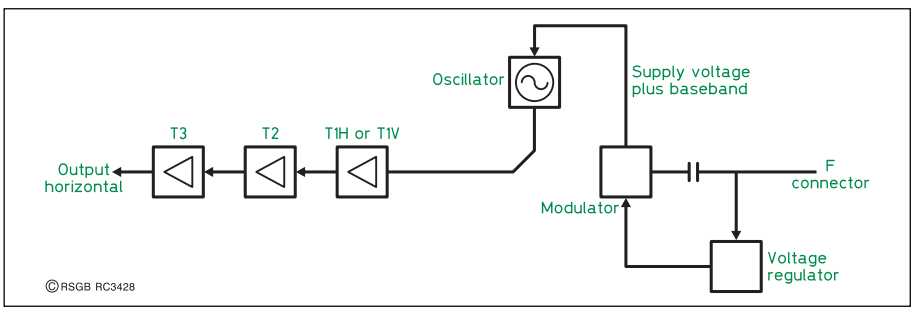
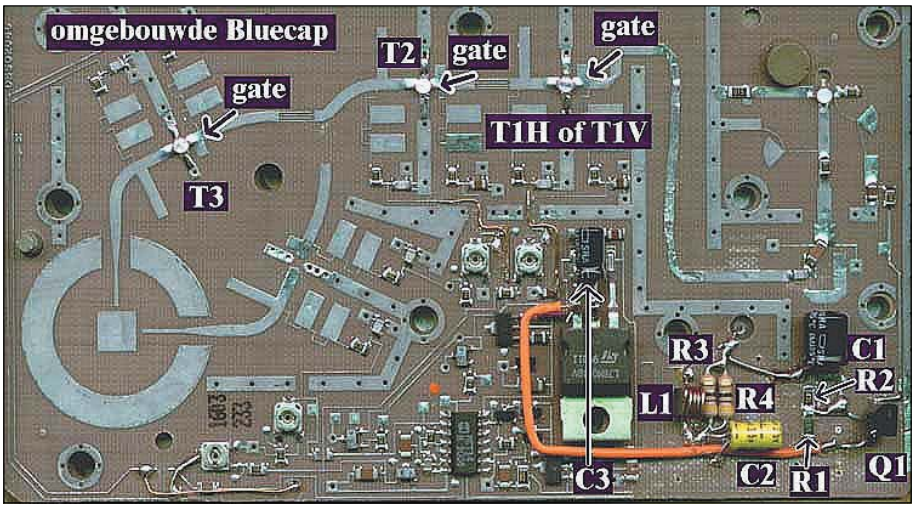


Fig 2: Block diagram of the blue-cap LNB re-engineered as a transmit converter.



Blue-cap LNB circuit board after modification.

of technology finds its way into the area of tracking-down stolen vehicles. An enterprising company could design an in-car unit that automatically initiates a GPRS data call to a control centre if the vehicle's alarm is triggered, giving real-time updates of its position derived from an on-board GPS receiver. It should be possible for the control centre to phone the registered owner of the vehicle to check if everything is OK, and send a command back to the vehicle to immobilise it if the alarm call turns out to be genuine. Alternatively, the in-car unit could be programmed to send an SMS to the vehicle owner's mobile phone, informing him that it is on the move. The owner could then send an SMS back, instructing the in-car unit to take appropriate action.

BLUE-CAP TRANSMITTER

WHEN SATELLITE TV took-off in this country, the most popular receive system was made by Amstrad. It included a 60cm white steel dish and the ubiquitous 'blue-cap' Low Noise Block (LNB). After a while these LNBs were superseded. Developments meant that lower-noise models could receive sufficient signal from a smaller dish, but the main reason for wholesale replacement was that the bandwidth of the blue-cap LNB was insufficient to keep pace with the ever-increasing block of frequencies transmitted from the Astra satellites. In the 1990s, I well remember seeing dishes and LNBs on sale for a few pounds at rallies. In more recent times I have seen them being dumped in skips, but what's this, an amateur radio use for a blue-cap LNB as a 10GHz transmitter for ATV and high-speed data?

The blue-cap LNB uses a Dielectric Resonance Oscillator (DRO) on 10GHz to convert the incoming signals from the satellite at 11GHz down to 1GHz (all frequencies approximate). **Fig 1** shows the block diagram of the LNB in its original configuration. Interestingly, this down-converter can be re-engineered into an up-converter and used as a transmitter instead (**Fig 2**). About 30-50mW output can be expected. Using a stand-alone blue-cap as a transmitter (ie no dish) it is possible to transmit over a path of 20km to a receiver which uses a 30cm dish. If a 30cm dish is employed at the transmit end as well, distances of 40km can be covered.

This article isn't intended as a constructional feature, so I won't go into the detail of the conversion. Suffice to say, this can found on the Internet.

PHONING FROM AIRCRAFT

AS ANYONE WHO takes commercial airline flights knows, there is invariably an announcement before take-off, telling passengers to switch off their mobile phones for the duration of the flight. The reason given is that they may interfere with aircraft systems but, even if they didn't, there wouldn't be much signal to receive at altitudes of 30,000ft or so. The reason for this is that signals are intentionally concentrated at ground level by employing antennas at the base stations that transmit beams with a low vertical spread. In radio amateur parlance, this means collinears. However, at least two companies, AirCell and Verizon Airfone, are developing technology that will enable passengers to use mobile phones in the air without disrupting aircraft electronics or cellular services on the ground.

As reported by Paul Davidson in *USA Today*, the impetus for this development is the lack of use that passengers are now making of seatback aircraft phones and consequent pullout of one of the main suppliers. These phones always were expensive to use, and now that many passengers have mobiles, they are being used even less (even though passengers are only allowed to use their mobile phones while planes are on the ground).

Basically the system would work by having upward facing antennas at selected rural base sites, as **Fig 3** shows. A separate block of frequencies would be used by phones in flight, to ensure they did not interfere with any ground-based services. AirCell's system would also reduce the phones' power and limit the number in use at any one time.

AirCell believe its system could be ready for use by 2004, although it would still require the agreement of the FAA and FCC for it to be used. Airline officials, many of whom seem to be all in favour of the idea, say it might be 2005 before the system can be implemented. ♦

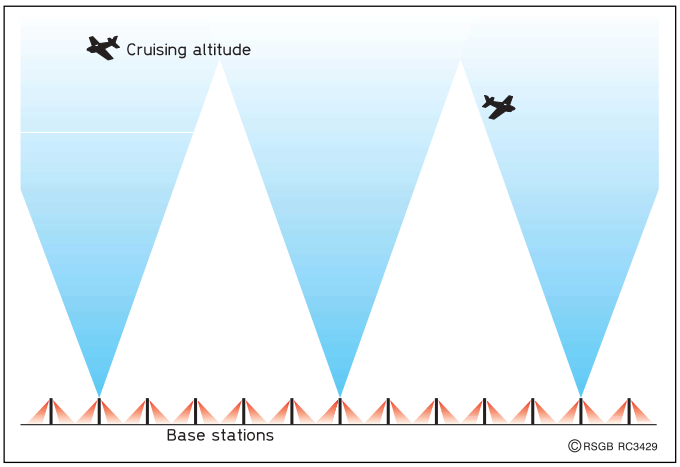


Fig 3: Several base stations could be equipped with upward-facing antennas, to provide coverage of the skies by mobile phones. Calls via upward-facing antennas would be considered as roaming on another network.

WWW.

USB3	www.theinquirer.net/?article=5920
Packet cluster nodes available by telnet	http://ve9dx.weblink.nbtel.net/telnet/sites.html
Packet cluster resource	www.cestro.com/pcluster/index.shtml
Blue-cap LNB conversion	www.qsl.net/pa3gco/zelfbouw/blauwkap/bluecap.html www.danovitsch.dnsq.org/ham/homebrew/upconverter/
Cellphone coverage to commercial aircraft	www.radio-scanner.co.uk//article.php?sid=41

If there is an item of new technology you would like to know more about - or one that you know about and think ought to be mentioned here - drop a line to the author, or e-mail him at the address at the start of the feature.

Is there some aspect of amateur radio that you have never really understood? Do you have an interesting technical problem? E-mail or write to 'In Practice' to find out the answers! Here's the place to pass on your own practical ideas to other readers!

in practice

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ADDING A CROWBAR

Q *WHAT IS 'CROWBAR protection' of a power supply? How can I add this to my existing 13.8V supply?*

A IT PROTECTS your transceiver, in case the power supply fails and delivers excessive voltage. Mains-operated DC power supplies can easily do that, because internally they produce a much higher 'raw' rectified DC voltage than your rig requires. There are several failure modes that can connect this voltage straight through to the output, and your rig probably won't survive the experience.

Fig 1 shows the outlines of a typical 13.8V regulated supply [1], the traditional 'linear' kind with a substantial mains transformer, rather than the switch-mode kind. The mains transformer, bridge rectifier and reservoir/smoothing capacitor (T1, BR1, C1) produce an unregulated output of typically 16-20V, with a considerable AC ripple voltage. The electronics then regulate this down to the required 13.8V DC output. In Fig 1, the series pass transistors TR1a-d act as an electronically controlled variable resistors. They aim to maintain the output voltage exactly at the required value, compensating for both the AC ripple and the effects of varying current demand. But if the control electronics fail, or if one of the pass transistors fails short-circuit (as semiconductors often do) then there's a risk of connecting that 16-20V directly through to your rig.

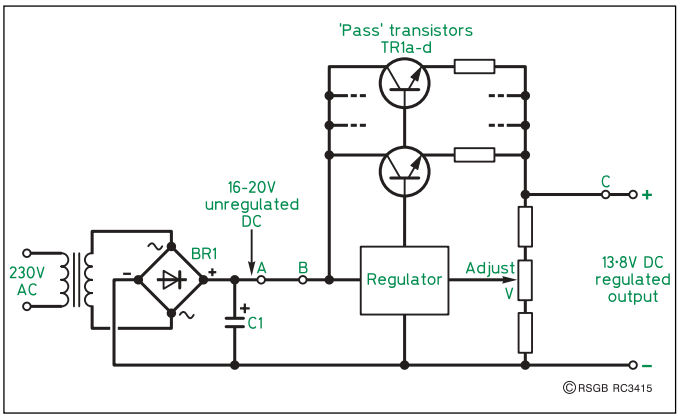

Fig 1: Outline of a typical mains power supply for 13.8V DC.

The common and simple solution is to include a 'crowbar' circuit which will short-circuit the output and blow a fuse if such a fault ever occurs. The circuit gets its name from the electrical engineering practice of providing a simple brute-force short-circuit across a power line before working on it - in the old days, this was literally a metal crowbar. We also talk of 'crowbarring' a high voltage supply to ground with an insulated screwdriver before working on it, to make absolutely certain that the capacitors are discharged.

Over-voltage faults in 13.8V supplies are not all that rare, and these supplies are often used to power transceivers worth £1000 or more... so of course every power supply includes a crowbar circuit to protect your investment, right? Wrong! Many supplies costing upwards of £100 don't include the extra few pounds-worth of components that could eliminate that risk. Fortunately, it's easy to do it yourself.

All you need is a thyristor, a fuse, a zener diode and three resistors and capacitors. **Fig 2** shows where they go, relative to Fig 1. If you haven't met a thyristor (or silicon controlled rectifier) before, think of it as a triggered diode. It has an anode and a cathode like an ordinary diode, but also a third terminal, the gate. Until it's triggered by supplying current into the gate [2], the thyristor doesn't conduct in either direction. If you feed it gate current, it acts as a diode and conducts in the forward direction. Once the thyristor is triggered, you can remove the gate current if you wish, and it will continue to conduct for as long as the anode remains positive of the cathode. When the anode-cathode voltage falls to zero or reverses, the thyristor resets itself into the non-conducting state.

In Fig 2, the thyristor TH1 gets its gate current from the regulated DC output, via a 15V zener diode ZD1 - but that zener will never conduct unless the output voltage rises above 15V. When the supply is producing the correct 13.8V output, the thyristor sits there and does nothing. But if there is a fault and the output voltage rises, ZD1 will conduct and TH1 will 'fire'. This throws a 'crowbar' short across the power supply, pulling the output voltage down to near-zero and protecting your rig. An instant later the fuse F1 blows, so the 16-20V input is safely disconnected.

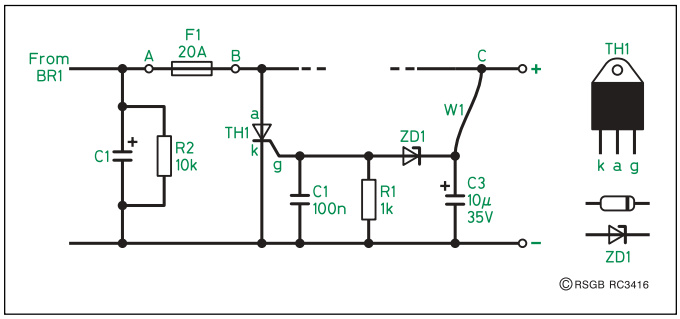

Fig 2: Added components for a thyristor crowbar.

Now what about component values? The values I have given are for a typical 20A supply. Note that F1 is rated at 20A, because (contrary to popular belief) the rating of a fuse is the maximum current it will handle and *not* blow. If your power supply has a higher or lower current rating, change the rating of F1 accordingly. When TH1 fires, it obviously has to handle far more current than 20A for the few milliseconds until F1 blows, but a typical thyristor rated at 30A average will have a surge current rating of over 500A, and that's more than adequate [3]. The zener diode ZD1 is rated at 15V to give a bit of 'headroom' above 13.8V, which prevents nuisance tripping due to any brief spikes or surges. In fact the thyristor gate voltage adds another 0.7V, so the circuit actually trips at around 15.7V. Your rig is most unlikely to be harmed by this small excess voltage during the very short time it takes to trip the crowbar - it's the combination of a higher voltage applied for a longer time that would do the damage. The additional components R1, C2 and C3 provide more protection against nuisance tripping by short spikes.

In practice, you can make the whole modification in under half-an-hour, but it may take you a little longer to work out how to separate the points A and B in Fig 2, and exactly where to put the added components. Here's an example of how I modified a typical '£99 black box'. **Fig 3** shows how all the high-current wiring passes through a small PC board soldered directly to the top of the large smoothing capacitor C1. Fortunately the input connection from the bridge rectifier is at one corner of the board, and all the output wiring is along one edge. Using a small burr in a hand-held drill, I was able to remove the copper foil in the right place to isolate the output side

COMPONENTS LIST

C1	Part of existing power supply
C2	100nF (0.1µF) 15V
C3	10µF 35V electrolytic
F1	Automotive fuse, typically 20A (auto spares shop). Holder for F1 optional, eg Farnell 287143
TH1	30A 'plastic' thyristor, any voltage, eg BTW69200 (Farnell 251940)
R1	1k0 0.25W
R2	10k 0.25W (if needed)
ZD1	15V 0.5W zener diode, eg BZY88C15 or BZX55C15

(point B in Fig 2) and leave the input (point A) still connected to C1. You can see the wobbly cut line in Fig 3. You could also remove the foil by making two parallel knife-cuts, right through the copper, and then scrape out the foil strip using the hot tip of the soldering iron.

For F1, I chose a 20A automotive-style fuse in a wired-in holder (see components list). However, I could have saved money by soldering F1 directly into place, because, if F1 ever blows, this is not the kind of fault that needs a quick-change fuseholder. **Fig 4** shows TH1 connected directly between the output side of F1 and the negative tag of the capacitor C1. TH1 requires no heatsink because it only has to dissipate power in the few milliseconds while it's blowing F1 - before and after, it dissipates no power at all. The rest of the components are wired in 'rat's-nest' fashion, which is perfectly adequate. The final connection is the wire W1 to the output terminal of the power supply (the pink wire in Fig 2) - but you might not want that just yet.

A small digression: in this particular supply, there was no bleeder resistor to discharge C1 when the power is switched off. Sparks flew when I inadvertently crowbarred C1 with the soldering iron! That's why R2 has also appeared in Fig 4.

Since this is a circuit that does nothing in normal use, you'll have to find some way to check that it will work when needed. In case this is one of your first construction projects, I'll take you through the testing step-by-step.

1. Check your wiring. Put the project aside to clear your mind, and then check it again!
2. If your power supply is variable up to about 16V, you can test the crowbar circuit directly - connect W1 from the crowbar circuit to the output terminal (point C in Fig 2). If your supply only goes up to 15V or less, that won't be enough to trigger the crowbar, so you'll need to connect an external variable supply between the junction of ZD1 and C3 (positive) and the common negative rail [4].
3. Remove F1 and replace it by a 100Ω 2W resistor. This avoids sacrificing fuses until you have to.
4. Plug the power supply into the mains, but don't connect anything to the output. Switch on the mains, observing normal safety precautions. The DC output should come up to 13.8V, as normal. If it doesn't, and / or if the 100Ω resistor gets hot, then switch off and unplug the mains, and check your wiring.
5. If all seems normal, *very slowly* increase the output voltage past 15V; or switch on the external DC supply connected to W1 and *very slowly* increase its voltage. Somewhere around 15.5V, TH1 will fire (silently and with no drama). The output voltage will drop almost to zero, and the 100Ω resistor will get hot. Switch off the mains quickly, and unplug.
6. OK, the trigger circuit works - so next you must confirm that it can blow a fuse. Reduce the output voltage setting (do it now, while you remember) and replace the 100Ω resistor with a real fuse. Plug in and switch on the mains, and then repeat step 4 - this time you'll hear a 'tick' as the crowbar blows the fuse. Switch off and unplug the mains.
7. That's fine - but is TH1 still OK? To find out, repeat steps 3 and 4 using the 100Ω resistor, and TH1 should fire as before. Now you know that everything is OK, and you'll be able to rely on this circuit to work if needed.
8. Switch off the mains and unplug. If you've been using the external power supply, connect W1 to the output terminal as shown in Fig 2. If you've been using only the main supply, reduce the output voltage setting. Replace the 100Ω resistor with another fuse, and replace the cover on the power supply.

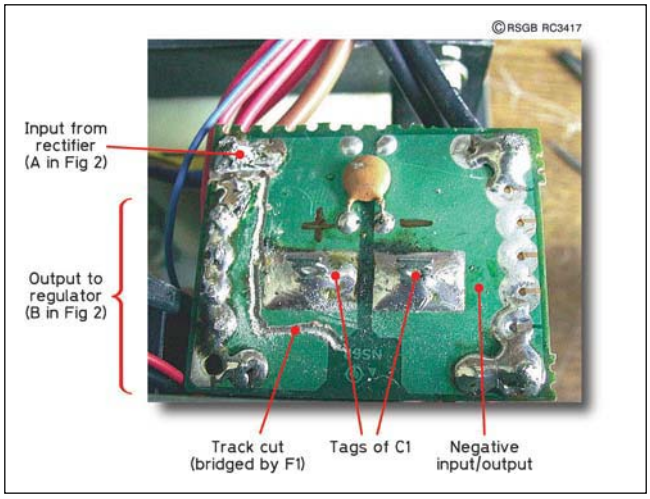

Fig 3: Example of how to separate points A and B in Fig 2. The track cut will be bridged by fuse F1.

9. Plug in the mains and switch on, and finally re-set the output voltage to 13.8V.

There - you're done. These few pounds-worth of components will protect your expensive transceiver against any future over-voltage failure.

POWER ATTENUATORS AGAIN

GEOFF PIKE, GI0GDP, has pointed out another way that you can make a quite satisfactory attenuator for HF, and even 50 or 70MHz.

THIS USES a small toroidal transformer (**Fig 5**). This idea comes from the excellent *Solid-State Design for the Radio Amateur* book [5]. The transformer is wound on a high-permeability toroid, and the primary is a single wire passing through the centre. This samples the current flowing through into the load resistor and, for a 20dB coupler, the secondary consists of 10 turns of wire. If both outputs are terminated in 50Ω, the -20dB-coupled output will be transformed

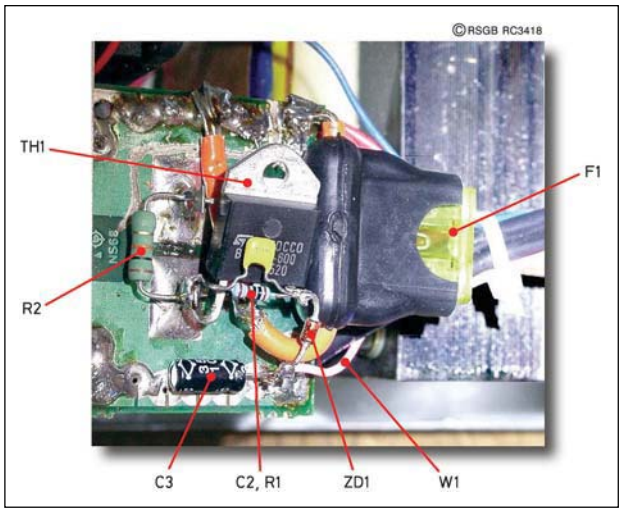

Fig 4: 'Rat's nest' construction of crowbar circuit, on top of C1. Most components are suspended from their wires, or connected to existing points on the PC board.

Please remember that I can answer questions through this column only, so they need to be on topics of general interest.

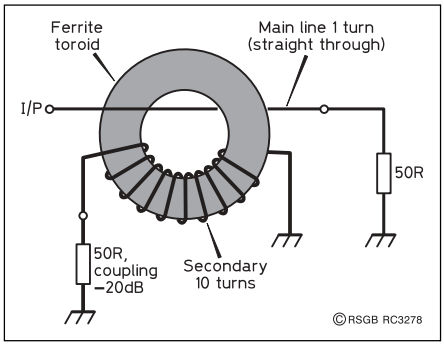

Fig 5: Using a small toroidal transformer as an RF sampler or attenuator. The 1:10 turns ratio gives -20dB coupling to the branch line.

into 0.5Ω in series with the load resistor in the main line, so the total load resistance is essentially unchanged. This transformer can be used either as a 'through-line' RF sampler, or as a 20dB attenuator if the main line is terminated in a 50Ω dummy load (eg two 100Ω TO-220 thin-film units in parallel, on an appropriate heatsink).

REFLECTIONS REVISITED

SOME CORRECTIONS to September's item:

THANKS TO Ron Barker, G4JNH, for pointing out that the equations for SWR and |ρ| should both have been described in terms of E_V and E_I as vector quantities - in other words, taking account of their phase relationship.

Ron has prepared an Excel spreadsheet which gives a superbly clear step-by-step analysis for any value of SWR and phase angle of reflection, and this is now on the 'In Practice' website.

RUSTED THREADS

A USEFUL TIP from Graeme, G0EEA:

"When doing antenna maintenance, unsticking a rusted nut on a U-bolt is often only half the battle. The other half is unscrewing it along the long rusted thread, but this can be speeded-up by applying some valve-grinding paste from the car spares shop. Don't forget to clean it off thoroughly when you've finished!" I would add: don't forget to coat the whole thing with Waxoyl next time, working it well into the exposed thread, and you won't have that problem again.

WATERPROOF SEALANT

A USEFUL TIP from G4ERP, following-up the discussion in the July 2000 column.

"I HAVE BEEN using Unibond Waterproof All-purpose Sealant on electronic components for over two years now with no ill-effects. Unlike most sealants, it does not seem to cause corrosion - which would have been the case with acetic acid-based compounds as it has been used in a moist environment. There is a variety of colours. I use translucent. Also, it seems to have a good shelf life, unlike some of the non-corrosive compounds which refuse to set as they get older."

NOTES AND REFERENCES

[1] Any equipment capable of running from a 12V car battery must also be capable of operating from the maximum voltage under full charge, which is nominally 13.8V. The RF power amplifiers of '12V' transceivers work better at this higher voltage, so 13.8V DC has also become the standard for '12V' mains power supplies.

[2] A thyristor can also be triggered by rapidly increasing the anode-cathode voltage (so-called dV/dt triggering), but when you look into this effect, it turns out to be just another way of supplying gate current through the device's internal capacitance.

[3] More specifically, the I^2t rating of the thyristor must be greater than the I^2t rating of the fuse. For a discussion of fuses and I^2t ratings, see 'In Practice' for February 1997.

[4] If you can think of other ways to increase the voltage of the power supply temporarily, then go ahead - you don't need these detailed instructions.

[5] *Solid State Design for the Radio Amateur*, by Wes Hayward, W7ZOI, and Doug DeMaw, W1FB. Published by ARRL and available from the RSGB Bookshop, this is *the* classic handbook for home-builders! ♦

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Antennas

PETER DODD, G3LDO
37 The Ridings, East Preston, West Sussex, BN16 2TW
E-mail: g3ldo@ukonline.co.uk

IN THE November 2002 'Antennas' column I described a method of plotting the polar diagram of an antenna using a computer. I said that all my early work was done using a BBC computer, and although the idea was not mine the original had been written by G4IJE and G3NOX [1].

I received a letter from Tom Lawless, GM6JOD, stating that he had written such a program for the BBC computer and that it had been published in 1984 [2], predating [1] by three or four years. Tom sent me a copy of this article, which includes a computer listing and an interface circuit for connecting the receiver S-meter signal to the BBC computer ADC input. The listing has only 60 lines of code; BBC BASIC was a nice tool for small computation programs in amateur radio.

MULTIBANDING THE MOXON RECTANGLE

SOME MONTHS AGO I asked if any of you had built a successful *multiband* Moxon rectangle or VK2ABQ beam. To those of you who replied, my thanks. It would appear those of you who built the design by G6XN were satisfied with the results. The photo shows the antenna built by Reg Gibbs, GM3SVE, who has built several similar antennas over the years, starting with the square VK2ABQ arrangement while the latest was the G6XN design. He reports a gain of approximately 4dBd and a front-to-back better than 25dB.

This antenna is for the 10, 15 and 20m bands. During assembly and test some interaction between the bands was evident and was overcome by adjusting the highest-frequency elements first.

A HYBRID TRIBAND MOXON-YAGI

W4RNL HAS AN excellent website about antennas (see WWW below) and the quotes below are from this source. He received a number of notes enquiring if parasitic elements might be added to a 20-metre Moxon (the close-spaced W4RNL design) to produce a triband beam. The addition of a 10 metre director and a 15 metre reflector yields some forward gain, but there are large excursions of feedpoint impedance, precluding the direct connection of coax.

He goes on to say "These initial steps into developing a tri-band antenna around a 20 metre Moxon tend to stop short of something truly satisfactory. What is required for easy use is a system that permits a 50Ω feed for each band. The result will be more elements, but not a major increase in the footprint over and above the initial addition of a reflector and director.

"To develop a beam of this order, one might well adapt some of the principles underlying the Force 12 C3. This popular antenna uses a 2-element 20 metre driver-reflector Yagi at its core. It also places a 15 metre driver-reflector combination behind the 20 metre driver. The two drivers are close enough to permit open-sleeve coupling. Ahead of the 20 metre driver are three 10 metre elements - a driver (also open-sleeve coupled to the 20 metre driver) and two directors. The furthest director provides the essential pattern shaping function, while the closely-spaced first director functions much like the added director on the NW3Z/WA3FET OWA designs: it helps form a wider band feedpoint impedance than a single director could provide. Performance remains essentially the same as a two-element driver-director Yagi, but over a larger portion of the band.

"It is possible to replace the 20 metre elements with a Moxon rectangle and obtain triband performance on a 16ft boom. **Fig 1** shows the general outline. For this exercise, the 20 metre elements were set at 1in diameter, the 15 metre elements at 0.75in diameter, and the 10 metre elements at 0.5in diameter. Since the design uses open-sleeve coupling, a single feedpoint suffices for all bands.

"The antenna was designed using *MININEC* (AO 6.5), since the close spacing of the drivers produces excess gain estimates in NEC-2. The error is an especially large overestimation of gain on 10 metres. Hence, *MININEC* is the core

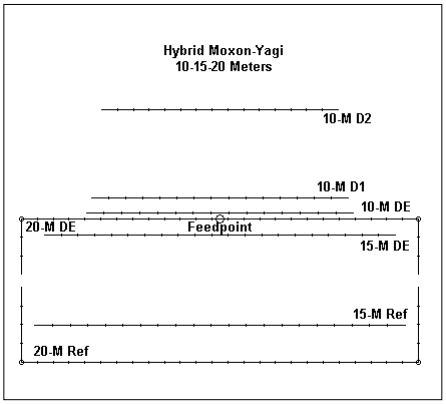

Fig 1: *MININEC* (AO 6.5) model of the W4RNL hybrid tri-band Moxon-Yagi.

The three-band G6XN antenna by GM3SVE. The top mast section is aluminium scaffolding pole fixed to the top of a 40ft Tennamast via a rotator. The fibreglass rods are fixed to the mast using 2in aluminium angle.

of choice for this exercise. On 20 metres, the Moxon rectangle performs normally, with a typical Moxon rectangle pattern. On 15 metres the pattern is that of a two element driver-reflector while on 10m again it is a typical two-element Yagi pattern, with a slightly better front-to-back ratio due to the use of directors.

"Undoubtedly, one can improve on this hybrid design. Indeed, the requirement for adjusting element lengths and spacings to account for element diameter taper schedules would enforce an exploration of possible improvements. As with all models of open-sleeve coupling, considerable adjustment may be needed in the slaved drivers to achieve the correct impedance and bandwidth. Moreover, although home construction of single antennas for personal use requires no special attention to any legalities, any other use of the non-Moxon-rectangle techniques noted in the design should involve consultation with Force 12 to ensure compliance with any proprietary or patent rights held by that company".

So I was interested to see a description in W8FX's column in *CQ* magazine [3] on what appears to be a commercial application of the computer designed multiband antenna described by W4RNL above. The antenna is manufactured by a German company called Optibeam and antenna model is the OB6-3M. A full description and photo of the antenna can be found on their website. It appears to have a shorter boom length that the design by W4RNL.

REFERENCES

[1] 'VHF/UHF' column, Ken Willis, G8VR, *RadCom* Jan 1987.
[2] 'Polar Plotting', by B P Hainey and Tom Lawless, *Computing in Radio,* autumn 1984.
[3] 'What's New', Karl T Thurber, W8FX, *CQ Amateur Radio*, October 2002. ♦

WWW.
W4RNL antennas: www.cebik.com/radio.html
Optibeam: www.msl-net.de/optibeam

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KEITH WATT, G4MSF, has reported a remarkable QRP QSO which took place last summer. Perhaps the easiest way to describe it is to quote the QSL card Keith received from Chuck Counselman, W1HIS. The reverse of the card reads:

"*To* G4MSF, Keith Watt, who was operating his Wireless Set No 22 deployed to his back garden.

Keith Watt, G4MSF, operating his No 22 set.

"*From* W1HIS, Chuck Counselman, operating a Wireless Set No 19 deployed to his back garden.

"Confirming our WS22 to WS19 QSO on 26 June 2002 at 0100UTC, on 7.0293 MHz, via two-way CW (W/T). Your signals were RST 329 with QRM. Aerial here was a quarter-wave Windom fed with quarter-wave open-wire line from WS19 variometer. Tnx, 73, Chuck."

Keith suggests, and I have no reason to doubt him, that this was probably the first trans-Atlantic amateur radio contact between two stations using a Wireless Set No 19 (10 watts) and a Wireless Set No 22 (1 watt). Both are WWII items of equipment using authentic power sources and appropriate antennas. The total distance of the contact was 3160 miles.

It is remarkable in that the WS19 and WS22 were designed for tank use and short-range communication on the battlefield. Neither transceiver has the receiver capabilities for the crowded modern 7MHz band, nor is it convenient to operate. The photograph shows the station at the UK end of the contact. [Some of the history of the Pye 19 and 22 sets is recounted in the book *Radio Man - the Remarkable Rise and Fall of C O Stanley*, available from RSGB Books, and reviewed on p25 of the December 2002 *RadCom - Ed.*]

A CONSTRUCTION PROJECT ON THE WEB

AMONGST the regular visitors to the Rochdale QRP Mini-Convention are Jan Verduyn, G0BBL, Steve Farthing, G0XAR, and Alan Rowe, M0PUB. These three gentlemen comprise the design team behind the QRP2001 Project and, at the Mini-Convention in October, Jan demonstrated the QRP2001 receiver.

The QRP2001 is a multi-band HF receiver for the home constructor, which will later be expanded to a complete transceiver. It is a development of their QRP2000 Project - a phasing direct-conversion radio based on the KK7B R2/T2 modules, using a synthesised VFO and covering 1.8 - 30MHz. The QRP2001 is a simpler design of higher performance. Both designs have been featured in the FDIM (Four Days in May) QRP symposium at the Dayton Hamvention. The design and practical implementation of the project can be followed on a website set up for that purpose.

The website says of the QRP2001 Project, "The QRP2001 is a multi-band HF receiver for the home constructor. In the near future we aim to expand it to full transceiver capability. The receiver consists primarily of a single board, to which you must add a suitable VFO. Three possible VFO options are presented and, depending on which VFO option is selected, the feature list can include: general coverage from 100kHz to 30MHz; selectable bandwidths for SSB and CW; about 50dB of AGC; excellent sensitivity (about 0.3mV for 10dB SINAD without preamp); very high IP3 (no pre-selector filters normally needed); full-featured microprocessor control, and remote control from a PC."

The project aroused a lot of interest when demonstrated in my shack on the evening of the mini-convention and gave a very impressive performance. Details of the project can be found on **www.qrp2001.freeserve.co.uk/main.htm**

This site is in the process of construction and people interested in the project might like to view the information on the QRP2000 at **www.stevef.demon.co.uk/qrp2k/qrp2000home.htm** ♦

The QRP2001 multi-band HF receiver.

THE GACW KEY DAY

THE FIRST ITEM, a pair of vintage radios in contact using straight Morse keys, leads nicely into one of the increasing number of events on the air using straight keys. This one is rather different in that it is more of a 'QSO party' than a contest, designed for fun rather than competition. Raul Diaz, LU6EF, of the Grupo Argentino de CW (GACW) has sent me details of the group's annual straight key day.

The GACW KD is not a competition or contest, but an event to encourage all radio amateurs to bring out manual keys (no electronic keys) and make as many contacts as they can with other participants.

Date: Starting the last Saturday in February each year - 22nd February 2003.

Time: 1800 Saturday till 0600UTC Sunday.

Frequencies: Close to (higher not lower) 3530, 7030, 14,030, 21,030 and 28,030 kHz. Contacts in the WARC bands are allowed, but there are no recommended frequencies.

Mode: A1A - CW, straight key only (no-electronic keys).

Call: "CQ KD", "CQ GACW KD", etc.

Exchange: Greetings and RST plus your GACW number. Non-GACW members send "KD". Any station having more than 10 contacts is invited to vote for three different stations with good CW sending skills. The GACW Key Day certificate will be awarded to the five stations with the most votes.

Logs: A simple list using logbook format.

Deadline: Not later than 15 March to GACW. Logs can be sent via e-mail as text-files to: gacw@lan.no-ip.org or by post to GACW, PO Box 9, B1875ZAA - Wilde, Buenos Aires, Argentina.

Further details are obtainable from Raul Diaz, lu6ef@yahoo.com.ar

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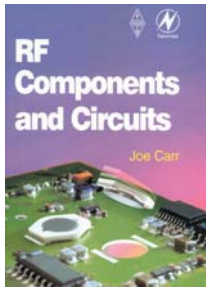

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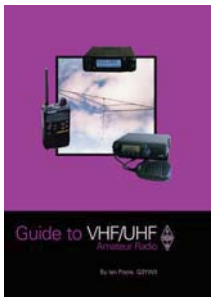

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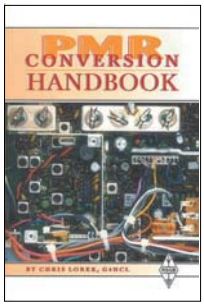

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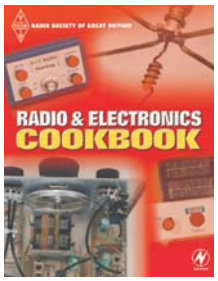

Radio & Electronics Cookbook

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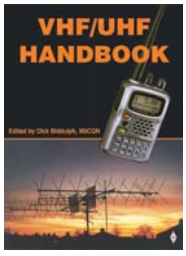

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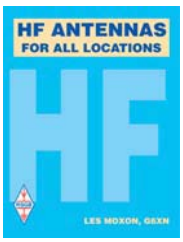

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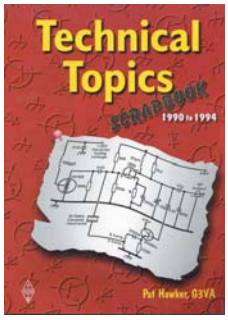

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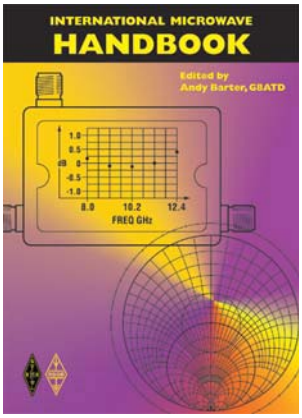

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The microwave bands are an excellent area for radio amateurs who want to experiment and construct their own equipment. The RSGB in partnership with the ARRL has produced this invaluable source of reference information for those interested in this area, along with excellent designs from around the world. Material has been drawn from many sources including RadCom and QST & QEX.

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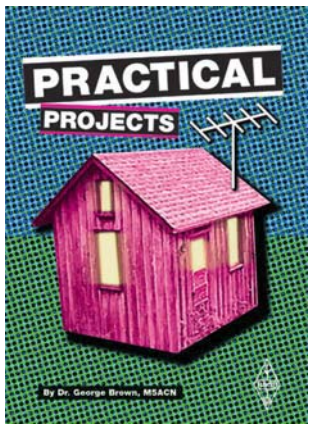

Practical Projects

Packed with around fifty "weekend projects" this is a book of simple construction projects for the radio amateur and those just interested in electronics. A wide variety of radio ideas are covered with everything from an 80m Transceiver, Antennas, ATUs and simple electronic keyers all included and much more. This book is excellent for those just looking for interesting ideas to construct and for the newcomers to the hobby looking to expand their knowledge.

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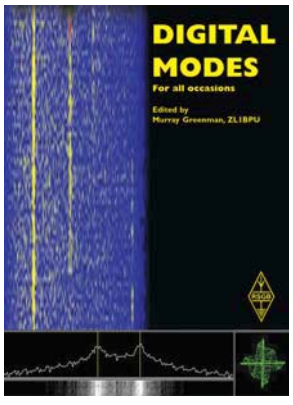

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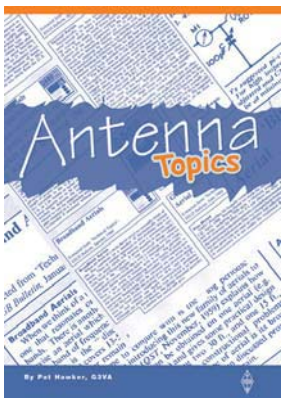

Antenna Topics

If you are interested in antennas this book is a goldmine of information and ideas on the subject. Pat Hawker has been writing his "Technical Topics" column in Radcom since 1958 and has produced much excellent work in this time. This book is a chronological collection of cuttings of Pat's words. Hundreds of areas and subjects are covered. A great reference work and also a history of over forty years of antenna design.

384 pages

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MICROWAVE

SIMON LEWIS, GM4PLM
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YOU WILL notice that there are two pages in this issue and they are dedicated to coverage on the Martlesham Heath Microwave Round Table that was held at the BT Adastral Labs near Ipswich in November last year. These events have been running for many years, but get little publicity in the mainstream amateur press. That is a shame, because the events are very popular with the UK microwave fraternity and offer an excellent opportunity to meet other like-minded individuals and use the wide range of test equipment available at each event.

So just what is a 'round table' event? The microwave round tables were organised to provide a central meeting point, so that people could have access to test equipment unavailable to most normal amateurs. This is still the case today, and most of the round tables have a wide range of test equipment available that allows testing right up into the millimetric bands. This is still an important task as most of us do not have access to testgear that works at 76GHz! I can assure you, after walking round at Martlesham during the dedicated weekend, there was a great range of discussions going on all day. Combined with a lecture programme and small trade show, these events are certainly worth a visit. So it was with this in mind that my wife and I decided to invade England for the weekend and pay a long-overdue visit to the Martlesham event.

Brisk trading in the flea market.

Martlesham kicked off this year on the Saturday afternoon with an arranged visit to the RAF Air Defence Radar Museum at RAF Neatishead near Norwich.

The museum tells the story of the development of Radar from the Second World War, and includes exhibits of an original WWII Chain Home transmitter, the development of the magnetron, and full-scale exhibits of the control rooms used until recently for UK air defence. For those of you with QRO ambitions, keep an eye open for the 5MW klystrons, and pictures of the radome at RAF Fylingdales catching fire. Those who took the trip reported it to be very worthwhile and very interesting.


The antenna range.

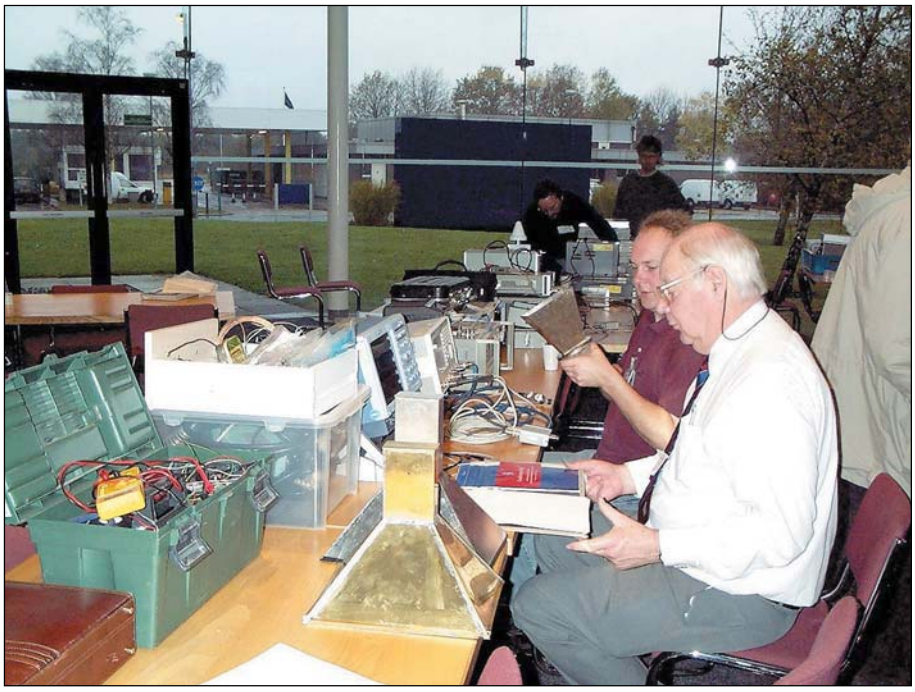
We arrived at Martlesham around 5.30pm after travelling down via York and a visit to an equestrian emporium (which pleased Lyn, my wife - 2M1EJK). The Saturday evening kicked off with an excellent meal at the hotel that had been booked for the travellers and revellers, and radio conversations were well under way by the time we had downed the first pre-dinner drinks! There was already a dedicated crowd in the bar just after 6pm. The meal was delicious and the highlight was watching a few of the UK microwave fraternity having to carve the three enormous joints of roast beef for the rest of the visitors; it is a tradition, we were informed!

With food out of the way, the conversations continued until the small hours and for me, this was a very enjoyable evening. What could be better than great food, a good drink and a whole room of microwavers! With an early breakfast finished, I travelled with Mike, G3LYP, along to the Martlesham labs, leaving Lyn to go riding for the day, even though it was already raining heavily when we headed down for breakfast. Although we arrived just after 9am, the trade show was already in full swing with a vast assortment of SHF goodies available on the tables. Sam, G4DDK, was busy with the UK Microwave Group sales and doing brisk business with his wares. Purchasers from him found themselves clutching a DB6NT shopping bag with some nice goodies in it - very useful for those little items one always collects at rallies! The South Birmingham Radio Society seemed to be doing well, with a good crowd round its stand, as did GH Engineering. There was plenty of gear for sale and, with the number of

cheap 20W PAs for 3400MHz sold at this event, I would hope to see a huge burst of activity on that band next summer!

The famous test equipment area kicked off almost immediately with Jason Flynn, G7OCD, and John Quarmby, G3XDY, being kept busy for most of the day.

Test gear stretched well into the millimetric bands, and included some fine examples of modern spectrum analysers, GPS-locked frequency counters and noise-figure measuring equipment, all of which was enough to make you drool.



Jason, G7OCD, and Mike, G3LYP, testing his beautifully-made 13cm horns.

Peter, G3LTF, arrived with a whole box of preamps for test and a crowd gathered watching the results as the pile was progressed through. A super low-noise L-band preamp was tested for DB6NT and that had an amazing noise figure of 0.3dB. Modern devices are getting better by the day!

The day also had a fine lecture programme included and this was started at 11am by Chris, GW4DGU, with a talk on crystal oscillator design. The other lectures included talks on components and discussions on the UK microwave contest calendar. The highlight of the lecture programme for me was the excellent talk on microwave antennas by Paul Wade, W1GHZ, who was this year's special guest, and whom I'd had the pleasure of meeting at dinner the previous evening. Paul's talk included some fine animated diagrams of antenna feeds, delivered in his own inimitable style.

Paul also presented Ian White, G3SEK, with the 2002 Thomas Kirby Memorial Trophy, awarded by the Eastern VHF/UHF Society in the US, for outstanding technical achievement at VHF / UHF. This was accepted on his behalf by Sam, G4DDK.

Lyn re-appeared mid-afternoon, looking decidedly soggy round the edges, having been out riding in the dreadful weather for most of the day - and she calls radio amateurs mad! She reminds potential visitors to the event that there are plenty of activities around Martlesham for the 'better halves' and, indeed, it was good to see a few wives braving the elements and joining the activities.

Although activity inside the labs was brisk, the awful weather did not assist the antenna-testing range set up on the car park at the back of the building, but it did dry up enough mid-afternoon for a quick session run by Sam, G4DDK. A few hardy souls braved the wind and cold to test some antennas, but it was not long before the rain returned and everyone returned indoors. This is another excellent part of the Martlesham round table events and very useful to test new feeds or antennas using a known and calibrated RF source.

The activities and discussions continued for all of the afternoon and was still in full swing when I decided to take my leave and head for home, as the weather was so poor and we had a long drive ahead of us. We finally arrived home at 11.30pm after a fairly uneventful trip back north of the Border.

I have to say that it was a thoroughly enjoyable weekend despite the weather, and good to see so many of the names, callsigns and faces linked together. The whole weekend was well organised and delivered. On behalf of all who attended I would like to offer thanks for all the hard work that went into planning this successful event. Particular praise must go to the Martlesham Radio Society for their continued support of this prime event; Paul Wade, W1GHZ; Jason Flynn, G7OCD; John Quarmby, G3XDY; Sam Jewell, G4DDK (and his wife), and all of the refreshments crew, for their sterling work. Thanks to the RSGB's Microwave Committee and BT for their continued support for such an important date in the UK microwave calendar.

There are more round table events coming next year and you would be mad to miss them. Keep an eye on this column for news of upcoming events and make sure you book early to avoid disappointment. Now, where do I book for next year? ♦

The author and Paul Wade, W1GHZ, this year's special guest.

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Kings Heath,
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E-mail: lf.radcom@rsgb.org.uk

HAPPY NEW YEAR! 2002 may not go down in history as the most exciting year for amateur LF work but it did have its moments:

OM2TW got across the Atlantic, *Jason* was born, the Russians were worked, the FCC started the process to get the USA on 136kHz and Brazil and Argentina followed suit (none of them is on yet, though!), G3NYK launched his propagation website and, most importantly, the experiments continued.

LAST CHANCE ON 73kHz

TALKING OF EXPERIMENTS - 73kHz is with us only until June so, if there are any experiments left to do down there, we'd better get on with them! Some 73kHz activity days are being planned; if you are like me and need some notice to get the 73kHz system up and running, keep an eye on the LF news pages for the dates.

The dual-band coil at G3LDO.

Peter, G3LDO, is back on 73 and has sent me this information on his new dual-band loading coil. "The bottom section of the coil is constructed from Decca loading coil components. The coil former is made from 'Lego'-type sections that plug into one another to make a multi-layer coil. The original coil was completely dismantled and the parallel layers of 4mm diameter Litz wire used to make one single multi-layer winding. The coil also has a variometer, which was also rewound and the winding connected in series with the main winding.

"The top section is the 73kHz extension. It is wound on a section of plastic material used to construct drain inspection shafts. The ridges in the material allow 12 to 14 turns of 2.5mm Litz wire to be held neatly in place.

"The coils are fed via a matching transformer and variometer located in the transmitter shed.

"The coil is mounted in a covered wooden building which serves to house the LF coil and to provide cover in the winter when working on antenna projects."

'LF CONVENTION'

THE NEW VENUE for the HF convention certainly proved a success as far as LF was concerned. For the first time in many years, we were actually able to hear signals on the main aerial without high levels of man-made noise. On transmit though, despite considerable effort from some of the best LF brains, we failed to get the aerial current much above 2¼A! Even so, we worked 17 stations in five countries, and received a report from Spain for our QRSS transmissions.

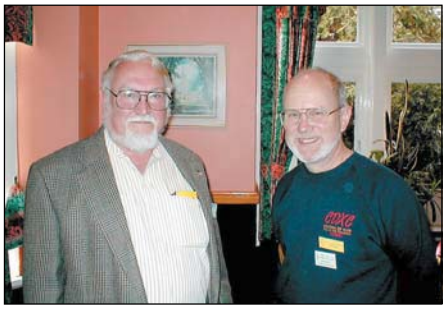
The lecture programme was as good as ever, with fascinating talks on many aspects of LF working. To pick out just a couple - Laurie, G3AQC, told the story of his trans-Atlantic success on 73kHz, and Frank Gentges, K0BRA, gave us a sneak preview of the new AMRAD project, an LF network analyser. After presenting one of the 'short papers', Jim Moritz, M0BMU, was presented with the Nevada cup for his unceasing experimentation and valuable contribution to the sum of LF knowledge.

If you haven't attended one of these events in the past it comes highly recommended.

ACTIVITY DAYS

ONE THING discussed in the LF Forum was the idea of activity days or portable days, when people who can't get on 136kHz from their homes go out somewhere and work /P. This is to combat the perceived reduced level of local activity by giving people a date and time in which to concentrate their efforts. The actual dates haven't been decided, but they will be published on the RSGB GB2RS News and via the LF News page. I wouldn't like to think that these events will reduce activity at other times, so do keep a listening watch whenever you're in the shack. I was in the shack recently on a Wednesday morning and heard SM6BHZ and ON6ND, so it's worth keeping an ear open!

Saturday and Sunday mornings are still the peak times, of course, and activity has actually been pretty high over the last few months.



John Gould, G3WKL, with Frank Gentges, K0BRA, of AMRAD who demonstrated his LF network analyser at the RSGB HF Convention in October. (photo: G3XDV)

RUSSIAN ACTIVITY

THE RU6LWZ CLUB was active on 136kHz on 26 to 29 September from Machta in locator square KN97LN, 50km north of Taganrog. It had a large aerial supported from a 130m tower, which enabled them to put a good signal into G, DL, SV, I and EA at 3662km. Local thunderstorms made reception difficult, and the only two-way LF contacts were with IK5ZPV and DL3FDO. It also had problems with the planned beacon tests in QRSS that were hoped to reach ZL or Asiatic Russia, and plans to try again. I will report on that next time.

This activity has sparked some more interest, and it is now hoped that stations from UA2, UA3, UA6, YL (Latvia), ES (Estonia) and EU (Belarus) will join it soon.

'WATERFALL' FOR LINUX USERS

AMATEURS BEING the experimenters they are, it's a wonder this hasn't happened before! Alongside the ranks of Windows audio spectrum display programs is now *GLFER*, written by Claudio, IN3OTD, for Linux. As is so often the case with these generous fellows, this is a free download, and Claudio is always interested in suggestions and comments on the program. See WWW.

CHRISTMAS ZL TESTS

AS THIS REACHES you before Christmas, you will be in time to try receiving the next ZL6QH test transmission scheduled for 27 - 29 December. Check the LF News web page for details. ♦

WWW.

G3NYK's propagation news www.alan.melia.btinternet.co.uk
LF News page www.wireless/org.uk
Download *Glfer* www.qsl.net/in3otd/glfer.html

ATV

TREVOR BROWN, G8CJS
E-mail: chairman@batc.org.uk

WHEN I PLAN this column, I usually start by choosing the pictures in order to get everyone's attention. For the last column I had been promised a picture of the ex-Yorkshire Television outside broadcast vehicle. This unit was built by the Marconi company in the late 60s. I wrote the words, and when the picture arrived, I was a little disappointed; it looked like a furniture truck in need of a paint job. To say I was surprised by the e-mails it generated would be an understatement. Sam Bassford remembers these units from his days at ABC Television: "I rarely read the 'ATV' column in *RadCom*, but when I saw the picture in [the November] issue, I immediately recognised it as a 'scanner', as the mobile control units were commonly known.

"Almost the first job I had was helping in the mechanical design and interior layout of what were three large vehicles that were to form the backbone of ABC's mobile division in the Midlands and the North." Sam went on with some very useful history on these units.

John Rolleston e-mailed: "Your photo in the November *RadCom* p101, took me back a bit. I was involved in marketing the MkVII camera in OBs from 1966 to about 1971. I made many trips to YTV with overseas visitors. I sold six vans to the East Germans, each of which had four Marconi MkVII cameras."

My thanks to everyone who wrote and sent me pictures of other OB scanners. As yet no other scanners have been located, but it's early days yet.

NEWSLETTERS

EVERY TIME I write this column and e-mail it, a copy of *Line Out*, the Home Counties ATV Group's newsletter arrives on my doorstep. This time the newsletter arrived two weeks *before* the column deadline. The letter is full of interesting snippets, including a report on upgrades to the Group's 24cm ATV repeater, GB3HV. These are numerous and include some work on the aerial systems carried out by Lewis, G6HVQ. It might be worth pointing your aerial at GB3HV, particularly on Sunday mornings between 9.30am and 10am, when Roy, G8CKN, reads the GB2RS news service through it just as he did on the 'Big Breakfast' last year.

GB3HV, the Home Counties ATV Group's 24cm ATV repeater site.

The latest edition of the Dutch ATV magazine *Repeater* is also available. It has an article on generating video test waveforms using a PIC16C84 and a MC1377 PAL coder. It also carries an interesting article about the Dutch work on D-ATV using the DVB-S system. There is also an up-to-date list of all the German ATV repeaters. This magazine is published in both Dutch and English.

The German ATV magazine *TV Amateur* is also available. This magazine is published only in German, but a circuit is still a circuit, and this issue carries a very nice video processing amplifier using what I suspect is a Field Programmable Gate Array. These chips are finding their way into everything. Does anyone have any experience of programming these chips? If so I would like to hear from you. *TV Amateur* also includes a full report on F3YX's trip down to Perpignan in his purpose-equipped ATV van.

CQ-TV 200 from the BATC is also in print, with a re-launched letters page sponsored by the BlackBoxCamera Company. After each issue, it will award one of its TV character generators for the best letter published. This simple unit uses a PP3 battery and can superimpose colour captions stored in four pages of non-volatile RAM. The pages are programmed by connection to the serial port of a PC. Peter J Stonard has also written a fascinating article to commemorate the 75th anniversary of Philo T Farnsworth. Peter traces who contributed what to the development of television in the USA. Dicky Howitt weighs in with TV production history set in the mid 1950s. Dicky covers everything from the Chelsea Palace to the Wood Green Empire along with a picture of ABC's OB base at Didsbury (just for Sam Bassford). *CQ-TV200* is not full of nostalgia; there are several experiments on D-ATV. Mike Cox also reports from IBC, where the SDI vision mixer he has been building over several of the last issues was finally used in anger.

Last, an apology. The BATC website used to provide access to the back archive of *CQ-TV* magazines and, at the moment, we have a space problem so this has been removed. It also had password access to the last four issues, the password being published in *CQ-TV*. This has been suspended pending better security measures. You can still download a single sample issue of *CQ-TV* (currently number 185) and this will be periodically rotated for other issues. ♦

WWW.

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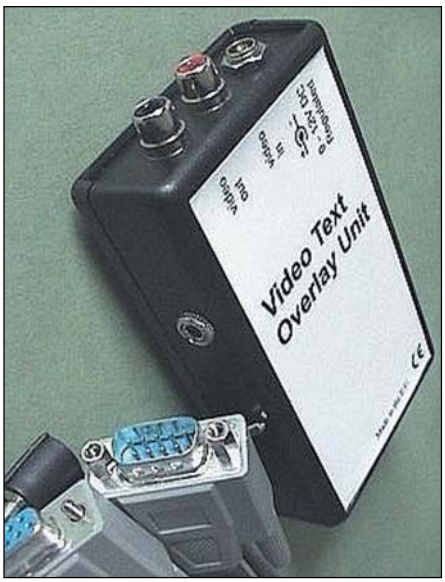

A prize for the best letter - see 'Newsletters'.

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COLLINS 302C3 directional wattmeter for 'S'-line. 200W/2kW scales (rare item), £90. Datong RF speech processor, £30. Datong FL3 multimode filter, £40. Tokyo high power 6m amp, 10W in 50W out, model HL-66V, £60. All plus postage. GM4BIT, QTHR, 01292 317 188 (Troon).
E-mail: richard@gm4bit.freeserve.co.uk

COLLINS KWM-2 dial, £10. LSB/USB xtals, £10. Plug in relay conversion kit, £5. KWM-2 meter, £15. Three new Collins mic plugs, £12. New KWM-2 h/book, £15. KWM-1 relay (used), £3. 30S1 blower motor, £10. PM2 speaker, £3. Speaker to fit 516F2 PSU, £5. BC221 with ACPS, £25. 01379 783 657 (Nr Diss).

COMPLETE HF station, JRC JST-135 150W HF tcvr, £400. Heil Proset HC4 with foot switch, £110. W2IHY audio equaliser, brand new, £210. Hunter HF amplifier, soft-start fitted, £350. Tennamast 25ft Adaptamast with head unit and rotator, £150. Force 12 C3SS, as new, £300. MFJ-962 ATU, £195. Buyer to inspect/collect or carriage extra. Neil, G0UYI, 01902 680 281 (Wolverhampton).

CONGRATULATIONS

to the following whom our records show as having reached 50 or 60 years' continuous RSGB membership this month:

50 years		*60 years*	
GW3KJW	Mr P E W Allely	G3AIN	Mr D Withers
		G3BPM	Mr P J H Matthews
		G3CXP	Mr R A Gill

FREE – Old Hi-Fi system, t/table, Philips CD player, new Kenwood tuner, amp, cassette deck, twin speaker octagonal cabinets, stereo, very good quality sound. I am moving to a small flat due to old age. G3EFK, QTHR, 01305 852 134 (Dorchester).
E-mail: talbot@clegg94.fsbusiness.co.uk

FREQUENCY Electronics caesium precise time and frequency standard model FE5446A, £750. Redifon transmitter drive unit model GK203N, £250. Nigel, G0UGD, 01323 486 822 (Eastbourne).
E-mail: nigel@irisys.co.uk

FT-101ZD full service mans. Spare matched valves, £125. YD-148 desk mic, £25. TS-820S, £125. Altai sig gen, £35. Maplin MF-1000 multi-function counter, £75. SX-200 desk scanner, £50. Collect or carriage at cost. 01279 489 239 (Bridport).
E-mail: g3zue@tiscali.co.uk

FT-290 MkII, 2m multimode, 2.5W & external linear, mobile mount bracket, AC charger, carry case, NiCads and man, £200 ono. Rexon RL-102, 2m hand portable, 5W tcvr, 138 – 174MHz, 6 x AA batts, 152 x 63 x 34mm, AC charger, multifunction, boxed with mans, £60 ono. Garry, GW7GDH, 07768 457 026 (Cardiff).

FT-736R all-mode VHF rig, exc cond, £700 ono. G8VG, QTHR, 01453 883 739 (Stroud).
E-mail: g8vg@supanet.com

G4AML Silent key sale. Two-tier radio antenna tower, ~45ft, £200. HF beam, six-element, £30. Rotator, £120. All in good/exc cond, but can't verify rotator. Tower still erect, help in removing will be considered as payment, or can be brought down. 07816 564 699.

HEATHKIT SB-401 Tx, electronic keyer HD-10, Shure 444 mic, PTT, mans for Tx & keyer. Offers? G3KUG, QTHR, 01922 614 438 (Walsall).

IC-275H, £500. IC-575A and 100W Microwave Modules linear, £500. Buyer to collect or pay carriage. 01754 820 038 (Skegness).
E-mail: tony.jarvis@rsgb.org.uk

ICOM 726S 10W tcvr 160-6m, gc, CW filter, man, mobile mount, gwo but needs minor repairs, £325. Icom CT-17 PC interface, £40. MFJ-901B ATU, £45. Tokyo 6m 60W linear, £75. MFJ-1704 four-position coax switch, £40. Comet 6/10m base vertical 6.9m high, £50. Sandpiper V5+3 trapped vertical, 40-6m, £20. Carolina Windom 80 special, 66ft long, £25. Steve, G4MPK, QTHR, 01424 893 386 (Bexhill-on- Sea).
E-mail: stephen.foster@btopenworld.com

ICOM 745 HF tcvr with CW filters, IC-AT100 auto-ATU, Daiwa PS-304II 30A, PSU, MFJ-1701 six-way switch, £420 ono. G4AIB, QTHR, 01159 301 527 (Ilkeston).
E-mail: p.holt@dtn.ntl.com

ICOM IC-706 MkIIG, £899 on 28/3/02, now £670. DCI 1452H filter, £50. Kenwood 430 speaker, £15. Daiwa DAX 150 dual-band mobile antenna, £20. Watson duplexer, £10. Rotator stub pole casting, £15. Mick, M3TMP, 01782 876 700 (Stoke on Trent).

ICOM IC-765 HF tcvr, late serial number, just serviced by Icom UK, c/w box, mans, HM-36 mic, non smoker, £700. 01227 738 520 (Canterbury).
E-mail: g3xaq@hotmail.com

ICOM IC-R7100, wide-band rcvr, all modes 25MHz to 2GHz. Good clean cond with man, £450 plus p&p. Trio/Kenwood rcvr, TS-130S, SSB/CW, 100W on all bands from 80 to 10m, incl WARC, with second, external VFO type VFO-120 & matching LS. Fitted three crystal filters, excellent cond, with mans, £225 plus p&p. Wide-band h/held rcvr, Yupiteru MVT-7100, excellent, boxed with accessories and two mans, £135 plus p&p. Two tcvrs for PMR-446, high power (7W), BNC aerial connectors, drop-in charger, with newish NiCads. Not lightweight toys, £75 the lot plus p&p. Binatone 600 Twin, PMR 446, lightweight, standard spec, boxed and new. Two h/h plus drop-in charger, just cost £49, sell for £35 ono plus p&p. Yaesu FT-209RH, 2m h/h, with newish NiCad and charger, works OK but has lost its memory! Including two others, non-working for spares, £25 plus p&p. Electronic Morse key, Kenpro model KP-100, squeeze keying, auto/semi-auto. Mains operated, mint cond, £25 plus p&p. Amstrad 'portable' computer, PPC-640, with carrying bag, all accessories, software (3.5in) and mans. In almost "as new" and exc working cond, any offers? (This is 1983 vintage, runs DOS and does *not* use a hard disc). Icom IC-PCR1000 or similar wanted, must be one owner and in as new cond with software etc. 01427 752 284 (N Lincolnshire).

INDEX QRP Plus £300, FT-757GXII, FC-757AT, FP-757HD, vgc, £500. Collect or plus postage. Alan, M0BFU, 01253 731 558 (Lytham & St Annes).

KENWOOD MC-60A mic, unused, boxed, £75. W9GR DSP-3 digital signal processor, boxed, as new, £180. Martin, G3ZZS, 01752 216 453 (Plymouth).

KENWOOD TS-2000 c/w box, man, mic, mint cond, non-smoking owner, includes ARCP computer software, UK model, prefer buyer inspects, £1250 ono. SGC-230 Smartuner, excellent cond, £250. Together, £1400. 01492 533 611 (Colwyn Bay).
E-mail: pjleach@ntlworld.com

KENWOOD TS-850S tcvr, exc cond, £450. Garmin GPS12 personal navigator, very little use, £60. Both boxed with mans, delivery within 50 miles or pay carriage. Dave 01443 683 912 (Rhondda).

LDG AT-11MP auto-ATU, six months old, mint cond and boxed, £200. Colin, MW3FLI, 01352 731 794 (Flint).
E-mail: colincarole14@tiscali.co.uk

MIRACLE whip for FT-817. Good performer, unwanted gift, as new, £80. 01582 764 616 (Harpenden).

MOSLEY PRO 57B five-band Yagi, six months old, excellent performer, reluctantly forced to sell. Asking £300 firm. M0CEL, 0161 860 6586 (Manchester).
E-mail: stepien@attglobal.net

RACAL HF rcvr RA-217D with user and service mans, £265. This is the solid state RA17 with exc performance. Photo and specification on request, carriage extra, exchange for Racal military HF radio equipment considered. John, G3GTJ, 01963 240 319 (Castle Cary).

RADCOM 1978-1998 incl (1978-1989 in binders), £5 plus packing and postage if required. G4LTC, QTHR, 020 8568 9489 (Isleworth).

RADIO Shack HTX-10, 25W all-mode 10m mobile, boxed, vgc, man, mic, mounts, see product review at www.eham.net, £79. Ardet 0-1.2GHz sig gen, vgc, £145. M3GVC, 07870 617 171 (Portsmouth) .
E-mail: phil.wayer@hsra.co.uk

SGC SG-2020 HF tcvr portable/base, in mint cond, boxed etc, £450, carriage extra. Ray, 01305 777 691 after 6.30pm (Weymouth).
E-mail: g4owy@aol.com

STRUMECH P60 tower, post cut, all winches, cables, head unit and bearing. QTH move, offers please. 0151 734 0565 (Liverpool).
E-mail: g0stf@yahoo.co.uk

STRUMECH Versatower model SP60 c/w head unit, but less socket. Dismantled ready for buyer to inspect and collect. OIRO £250. TA33 Jr triband 3-ele. Yagi, £30 ono. Eddie, G4EUE, 01564 742 517 (Solihull).

THANDAR PFM-200A h/held frequency counter 20Hz-200MHz , £30. Function generator GFG-8050 0-5MHz digital display, sweep control and frequency counter to 100MHz, £150 ono. Tektronix 2225 50MHz dual trace oscilloscope vgc, £250 ono. Phil, 01525 874 657 (Bedford).

TOWER three-section Altron, vgc no rust, c/w electric hoist, 600RC rotator HF tribander, 2m, 70cm beam etc, £250. Icom ATU AT-180, HF/50, boxed, £175. Icom AT-500 HF ATU, boxed, £200. Kenwood TM-741 2m/70, £150. JRC NVA575 spkr,

boxed, £20. Icom, 275H, £300. 01435 812 191 (Eastbourne).
E-mail: jrwatson@rya-online.net

YAESU 101ZD, vgc and gwo, bargain at £150. Yaesu FRG-7 fair cond and gwo, £60. Telephone for more details, 01132 941 332 (Leeds).

YAESU dynamic mic MD-200 A8X (BBC studio style). Unwanted gift, still in box, new £250, yours for £175. 01227 738 520 (Canterbury).
E-mail: g3xaq@hotmail.com

YAESU FT-1000MPAC-100W c/w auto-ATU. As new in immaculate cond with original box and man etc, £1200. Icom FL-100 CW filter 500Hz, £40. G3RCU not QTHR, 01202 475 048 (Christchurch).
E-mail: chris@g3rcu.fsnet.co.uk

YAESU FT-290RII exc cond, with NiCads, charger, h/book and soft case, boxed, £175 to include p&p. 01443 437 345 (Tonypandy).

YAESU FT-847 tcvr, vgc, £900 ono. Daiwa active SSB/CW filter, £40. MFJ Cub 40m QRP tcvr, £80. Alinco DJ-580 dual band h/held, £100 ono. G0STK, QTHR, 01423 330-767 after 5pm.

YAESU FT-847, SEC. s/mode 23A PSU, MD-1 desk mic, MH-31 hand mic, three-band vertical HF, three-band colinear UHF/VHF. G2DYM all-band and 2m butterfly aerials, triplexer, Zetagi 1kW transmatch, Daiwa CN401L SWR/pwr meter. G3LIV Isoterm interface. All poles and cables, plus AMD K6/2-400 computer, 128MB RAM, full multimedia, plus software. Buyer dismantles, £1,300 ovno. M0ASD, QTHR, 01788 331 804 (Rugby).
E-mail: m0asd1@ntlworld.com

ZX 15-3 21MHz beam, brand new, never erected (neighbours). All parts and documents available. Offers? Buyer collects. G8RW, QTHR, 020 8462 1592 (Bromley).

WANTED

23cm module for FT-736R. Also 23cm tvtr. G4DKB, QTHR, 01277 631 232 or 01277 653 561 (Billericay).
E-mail: paul@g4dkb.freeserve.co.uk

BABANI book BP76 *Power Supply Projects* for disabled ham, plus any working 100W HF rcvr, cheap please. 01634 379 140 (Gillingham).

BC348 WWII rcvr also matching transmitter BC191 and dynamotor. Any details of fitting equipment to planes and ground stations. G0LJS, 01380 859 088 (Bath).
E-mail: h.j.sims@bath.ac.uk

COLLINS or similar first-class 455kHz SSB filter with USB and LSB crystals. G3AMF, QTHR, 01353 720 583.

DISABLED fan of old days seeks unwanted QSL cards, log books etc and magazines pre-1970. Mike, 8 Windsor Road, Reydon, Southwold, Suffolk IP18 6PQ.

EARLY valve and crystal wireless wanted, especially interested in early Marconi items. Also looking for good top end valve comms rcvr and early valve test equipment. G4ERU, 01202 510 400 (Bournemouth).

GERMAN WWII spy sets wanted by collector. S88/5, S89/80, S90/40, SE92/3, SE108/10, SE109/3. Cash waiting. Bill, 020 8505 0838 (London).

IC-251E or later. IC-735 plus add-ons, IC-202 S, TM-255E, TM-751E, FT-301D, FT-900. 01788 334 471 (Rugby).
E-mail: keith@jpl.co.uk

ICOM IC-AT 500 auto-ATU complete with cables and h/book, working with original packing. Vic, G3IKN, QTHR, 01344 485 635 (Bracknell).

MORSE keys wanted by private collector straight and bug keys. Sounders, galvanometers, relays, all telegraphy and signalling-related items. For a friendly chat ring Gerald, 01189 834 307 (Reading).

MOTOROLA DSP-56002 EVM must be complete and in gwo. G0ILO, QTHR, 01227 375 029 (Herne Bay).
E-mail: paultaylor69@yahoo.com

PLESSEY TDMS70, TSG10, TSG20. Rees-Mace Marine (PYE) 619 Tx and Cat Rx. Creed 75 teleprinters, unused spares and tools. Rohde & Schwarz Polyskop SWOB IV. Racal Speedrace MA-275 oscillator coupling unit. Racal valve radio equipment, mans and sales literature bought for cash. Nigel, G0UGD, 01323 486 822 (Eastbourne).
E-mail: nigel@irisys.co.uk

SB200 linear, electrical condition unimportant but must be good mechanically. G3WCE, QTHR, 01692 538 794 (N Walsham).

SHURE 444D (black) must be exc cond, sensible price please. Mike, G4MJA, QTHR, 0191 389 2822 or 07958 049 026 (Durham).

SILENT Key clearout or just not needed, I collect QSL cards for their historic interest and a research project, especially from periods before 1970. Can collect or arrange collection. 0113 269 3892 (Leeds).
E-mail: g4uzn@qsl.net

TOWER Three-section tiltover 40 - 45ft. Prefer with groundpost. Will collect and dismantle if necessary within 100 miles of Coventry. M0CUS, 02476 334 808 (Coventry).

VIBROPLEX iambic paddle, CR100 spares, knobs, valve screening cans, consider complete rcvr for spares or repair if local. G3TSS, QTHR, 01434 633 125 (Corbridge).

YAESU FT-990, complete with auto-ATU, must be in good cond and in fwo. 01379 741 693 (Diss).
E-mail: nolan@nolanb.co.uk

The Members' Ads order form is now published here. 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 separate sheets of paper, but if you choose to do this, you *must* supply an accurate word count - and, of course, the correct fee in the normal manner.

RSGB MEMBERS' ADS ORDER FORM

Application form for one For Sale, Exchange or Wanted advertisement. Do not mix classifications on this form; separate applications must be made.

Please ensure you read and understand the conditions of acceptance of these subsidised Members' Advertisements, printed at the top of the Members' Ads page of the current *RadCom*.

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Tick one box

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SILENT KEYS

WE REGRET to record the passing of the following radio amateurs:

G0PZK	Mr W J F Cocker	23/10/02
G0TGA	Mr J Taylor	30/10/02
G1ONF	Mr R Creedy	03/11/02
G2BNI	Mr D Drage	06/10/02
G3DZT	Mr J Beamand	27/10/02
G4DOG	Mr T H H Illingworth	29/10/02
G6ADX	Mr M J Waterman	04/11/02
GW1GEX	Mr T Williams	15/09/02
LA6A	Col L R Heyerdahl	11/02

Rallies & Events

26 JANUARY 2003

FENLAND RG Horncastle Winter Amateur Radio Rally - Horncastle Youth Centre, The Old School, Cagthorpe, Horncastle, Lincs (nr Horncastle Police Station). OT 10.30am, £1. C, MT, TI on S22. Chris, G0PXB, 01526 860 320 or Tony, G3ZPU, 07778 274 535. [www.fenlandrepeater.org.uk]

OLDHAM ARC Rally - New venue - Clayton Arms Sports Club (next to Oldham Athletic's stadium). Steve or Hazel, 01706 848 092 or m5aeg@btinternet.com [www.oarc.zen.co.uk]

2 FEBRUARY 2003

SOUTH ESSEX ARS Canvey Island Radio & Computer Rally - The Paddocks, Long Road, Canvey Island, Essex, at the southernmost extremity of the A130. Radio, computers and electronics . OT 10.30am, £1.50. C (home-made), CP free, DF, TS, MT, MA (book with examiners before midday for both exams). Brian, G7IIO, 01268 756 331 or briang7iio@yahoo.com [www.southessex.ars.btinternet.co.uk]

9 FEBRUARY 2003

HARWELL ARS RADIO & COMPUTING RALLY. Ann, G8NVI, on 01235 816 379 or ann.stevens@btinternet.com [www.hamradio.harwell.com]

16 FEBRUARY 2003

CAMBRIDGE & DARC Rally - Britten Arena, Wood Green Animal Shelter, King's Bush Farm, London Road, Godmanchester. OT 10am, £2, concessions £1.50. CP free, LB, C, FAM. [www.cdarc.org.uk]

WAKEFIELD & DRS Northern Cross Radio Rally - Thornes Park Athletics Stadium, Wakefield, W Yorkshire. Just out of town on the Horbury Road. Easy access from M1 jns 39 and 40 - well signposted. OT 10.30/11am. B&B, MT. John, G7JTH, 01924 251 822 or g7jth@wdrs.org.uk [www.wdrs.org.uk]

23 FEBRUARY 2003

SWANSEA ARS Amateur Radio & Computer Show - Swansea Leisure Centre, on the A4067 Swansea-to-Mumbles coast road. OT 10.30am, £1.50, children 50p. TS, B&B, SIG, C, LB. Roger, GW4HSH, 01792 404 422.

2 MARCH 2003

18th RAINHAM RADIO RALLY - Rainham School for Girls, Derwent Way, Rainham, Kent. Exit M2 jn 4, on to A278, follow RRR arrows. OT 9.30/10am, £2, under-14s free. TI on S22, TS, SIG, C. Martin, M0AAK, martinm0aak@yahoo.co.uk

8 MARCH 2003

CRYSTAL PALACE R & EC Spring Radio Fair - St John's Hall, Sylvan Road, SE19. OT 10.30am, £1 (includes one free drink), under 16s free. C, CP free. Bob, G3OOU, 01737 552 170. [www.members.aol.com/rfcburns]

LAGAN VALLEY ARS Annual Rally & Hamfest - Conference Centre, Lagan Valley Hospital, Hillsborough Road, Lisburn. OT 12 noon. TI on S22. Martin, MI3TIN, 07986 171 256 or martinsailor@hotmail.com

KEY

Rallies & Events
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.

9 MARCH 2003

BLACKMORE VALE ARS Valve Day - Youth Club Hall, Coppice Street, Shaftesbury, Dorset. OT 10am, entry free. LEC, demonstrations, displays, test gear, TS, C, Internet resource hobby groups, BYLARA, BVARS and YARC. Tony, 01258 860 741.

16 MARCH 2003

BOURNEMOUTH RS 15th Annual Sale - Kinson Community Association Centre, Pelhams Park, Millhams Road, Kinson. OT 10am, £1. TI on S22, TS, B&B, SIG, C. Olive & Frank, G0GOX, 01202 887 721.
NORBRECK Amateur Radio, Electronics & Computing Exhibition - Norbreck Castle Exhibition Centre, Blackpool. TS, B&B, CP free, DF. TI on S22. MT. Peter, G6CGF, 0151 630 5790.

22 MARCH 2003

SOUTH NORMANTON & DARC and G QRP CLUB Junction 28 Mini-Convention - Village Hall Community Centre, South Normanton, 5 minutes from jn 28 of M1 and A38. OT 10am, £1. TS, SIG, LEC, B&B. Duncan, G4DFV, 01623 465 443 or pentode@ntlworld.com

30 MARCH 2003

TIVERTON (Mid Devon) Radio Rally - Pannier Market, Tiverton. OT 10am, £1. TS, B&B, C, CP free, TS, B&B. 07815 439 432 or club@g4tsw.freeserve.co.uk [www.g4tsw.freeserve.co.uk]
YEOVIL & DARC 19th QRP Convention - Digby Hall, Hound Street, Sherborne, Dorset. OT 10am. LEC, C, TS, B&B, Construction Challenge, TI on S22 via GB2LOW. Derek, M0WOB, 01935 414 452, m0wob@tiscali.co.uk

6 APRIL 2003

NORTHERN MOBILE RALLY - Gerald, G0UFI.

25 - 27 APRIL 2003

SCANDINAVIAN HAMVENTION 2003 - Göteborg, Sweden. [www.scandiham.com]

26 APRIL 2003

INTERNATIONAL MARCONI DAY - [www.gb4imd.co.uk]

26 / 27 APRIL 2003

LONDON COMMUNICATION & COMPUTER SHOW - RadioSport 01923 893 929. [www.radiosport. co.uk]

27 APRIL 2003

ALDRIDGE & BARR BEACON ARC 4th Annual Radio & Electrical Sale - Doug, G4LQY, 01543 571 269.
ANDOVER RAC Radio & Computer Spring Boot Sale - Terry, G8ALR, 01980 629 346 or aracnews@ntlworld.com

5 MAY 2003

DARTMOOR RC Dartmoor Radio Rally - Ron, G7LLG, 01822 852 586.
MID-CHESHIRE ARS Rally - David, G4XUV, 01606 77787.

18 MAY 2003

MIDLAND ARS Drayton Manor Radio & Computer Rally - Norman, G8BHE, 0121 422 9787 or 07730 132 726. [http://midamradio.members.beeb.net]

1 JUNE 2003

SPALDING & DARS Annual Radio & Computer Rally - New venue. Ray, M0CTM, 01775 711 953, or John, G4NBR, 07946 302 815. [www.sdars.org.uk]
WEST MANCHESTER RC 7th Red Rose QRP Festival - Les, G4HZJ, 01942 870 634, g4hzj1@ ntlworld.com

8 JUNE 2003

NUNSFIELD HOUSE ARG 34th Elvaston Castle National Radio Rally - Les, G4CWD, 01332 559 965 or secretary@elvastonrally.co.uk

15 JUNE 2003

NEWBURY & DARS Amateur Radio Boot Sale - [www.nadars.org.uk]

22 JUNE 2003

EPSOM RADIO & ELECTRONICS FAIR - Paul, M0CJX, m0cjx@lineone.net [www.epsomrally.co.uk]

12 JULY 2003

CORNISH RAC Radio & Computer Rally - Ken, G0FIC, ken@jtarry.freeserve.co.uk or John, G4LJY, g4ljy@hotmail.com

20 JULY 2003

LINCOLN SWC Hamfest - New venue. John, G8VGF, 01522 525 760.
McMICHAEL RALLY & BOOT SALE

27 JULY 2003

COLCHESTER RA Amateur Radio Rally & Computer Fair - Gary, 01621 818 620 or James, 01255 242 748. cra2003@garycavie.com or cra2003@mcginty.net

8 AUGUST 2003

COCKENZIE & PORT SETON ARC 10th Annual Radio Junk Night - Bob, GM4UYZ, 01875 811 723 or bob.gm4uyz@btinternet.com

10 AUGUST 2003

FLIGHT REFUELLING ARS Hamfest - hamfest@frars.org.uk [www.frars.org.uk]

24 AUGUST 2003

TORBAY ARS Communications Fair - Anna, anna.cok@btinternet.com

26 OCTOBER 2003

GALASHIELS & DARS Annual Rally - Jim, GM7LUN, 01896 850 245.

GB calls

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.

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@ntlworld.com

Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

10 Jan GB4HC: Horndon Church. Essex. H (G3IUC)
11 Jan GB2AL: Accrington Lions. Accrington, Lancs. LH (G4PKD)
17 Jan GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0REL)
GB4YOU: Youlbury Scout & Guide Radio. Oxford. TLH27P (G0RJX)

Helplines
FOR MEMBERS

● Andy, G0JLX, is in need of a service manual, including the circuit diagram, for a **Trio TS-500 HF transceiver with external PSU and VFO**. If he cannot borrow it, a legible photocopy is welcomed. G0JLX, QTHR. Tel: 07768 282 880 or e-mail andy.digby@mail.com

● G R Wilson has a **National HRO, with nine coils, loudspeaker and PSU**, working when last switched on. He seeks a good home for it, in exchange for a modest cheque to Oxfam. He is located in Newport, S Wales. Please contact grwilson@iname.com

● Geoff, M5AGJ, requires information on the **'Elizabethan' transmitter** by **G5RV**. Documentation, notes, mods, circuits, anything about this transmitter is needed. He hopes to refurbish one and much paperwork is missing. All costs, copying, postage etc, will be refunded. M5AGJ, QTHR. Tel: 01462 672 983 or e-mail gahaydock@aol.com

● Douglas, G3KPO, is searching for an ex-RAF **R1082 receiver** and a **T1083 transmitter** for the National Wireless Museum at Ryde, on the Isle of Wight. G3KPO, QTHR. Tel: 01983 567 665.

● Roy, G3JNM, needs operating and installation instructions for a **Landis & Gyr central heating controller type RWB2**. Postage and photocopying expenses will be refunded. G3JNM, QTHR. Tel: 01204 843 999.

● Peter, RS185319, is looking for a **Grundig microphone type GDM18** from the reel-to-reel tape recorder TK18. He also needs instructions for the **Philips Capacitance Meter model GM4144/01**. A copy or loan would be very welcome. RS185319, tel: 01622 890 244.

● Ivor, 2E0AUW, is seeking source information for the **resistor type 889sp500k**, as used in the **Heathkit Cantenna**, as he wishes to build a similar device. 2E0AUW, tel: 01952 604 196.

● John, GM8MLH / MM3MLH, has a moribund **Geloso G209 hamband receiver**, so he is looking for a circuit diagram or manual. He will refund postage and copying costs. GM8MLH, QTHR. Tel: 01838 200 304.

● Des, G3LCS, is looking for information on the **rotary converter** for the **Type 19 Set**. He needs, in particular, the various output voltage and current requirements. He is currently assuming 12VDC in and 2xxV out plus heater supplies. Can you help? G3LCS, QTHR. E-mail: desg3lcs@aol.com

● Richard, G3AAT, needs help with setting the internal adjustments for zero and scale on the **HP5265A digital voltmeter** plugin for an **HP counter**. The external zero adjust will not reduce the reading to zero. G3AAT, tel: 023 9247 5077.

● Enver, G3DCS, needs infomation (operating manual, circuits, etc) on the **nuclear radiation scintillation counter model SR2 MkI**, believed to be of AWRE origin. He will repay photocopying and postage. G3DCS, QTHR.

- IMPORTANT NOTE -

Respondents to items in the 'Helplines' column are advised not to send original documents, but to copy them and send the copies. This is to protect your (often valuable) property in those very few instances where the originals are not returned.

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the last WORD

Promoting Amateur Radio

Last year I received an e-mail from Bernd, DF1FB, who had entered the words "amateur radio" and "Cromer" into his Internet search engine (*Google*) and came up with my details of my website (www.qsl.net/m0cnp), thus enabling him to get my e-mail address. Bernd lives in Nidda and is an active member of its twinning association. He talks regularly with Evelyne, F5RPB, in Crest, France. Nidda and Crest are twin towns with Cromer and it was Bernd's desire to bring the three towns together.

Having made contact, a three-way CW QSO was set up. A little later, SSB was tried, also successfully. The Sunday morning net became a regular event. The local twinning town co-ordinator heard about the QSOs, and came round to see me. He was very interested, so much so that he invited the press to come and interview us. By then, of course, another amateur, Alec, G3HSP, had joined us on Sunday mornings.

The newspaper reporter and photographer did their business, and the article duly appeared in the newspapers (*Eastern Daily Press*, 27 March 2002, and *North Norfolk News*, 28 March 2002).

The Sunday morning nets continue regularly on 7026kHz ± QRM. Alec and I look forward to meeting Bernd and Evelyne when they visit Cromer as part of the twin town's exchanges and, who knows, we might go out to France or Germany to see them.

Try putting into your favourite Internet browser engine the words "amateur radio" and your home town / district / city / county and see what comes up.

David Edwards, M0CNP

Why Go QRT?

I've often wondered why so many radio amateurs insist on being inactive for long periods of time? Obviously, there are circumstances such as family or business commitments which preclude any active participation in amateur radio. However, the more I think about it the more I'm convinced that there has to be a far deeper explanation as to why, when somebody has put so much time and effort into obtaining an amateur licence, they decide for whatever reason suddenly to go QRT - in some cases for decades. For example, in the USA, where there are approximately 750,000 radio amateurs, apparently only a small percentage actually appear on the bands on a regular basis. Thousands just disappear never to return, or reappear years later. Ditto in the UK, albeit in much smaller numbers.

So, although the agenda of a Foundation Licence is to be applauded - well, we *have* to do something constructive to encourage new blood into our ranks - perhaps we should also address the strange phenomenon as to why to many people choose to remain what is in effect a voluntary silent key?

Ray Howes, G4OWY

New Calls for All?

It seems likely that in 2003 the UK licensing system will be rationalised, and we will have three classes of license - Foundation, Intermediate, and Full. The current, transitional situation, with its G, M, and 2 prefixes followed by combinations of other letters and numbers, and five or six licence categories (some amateurs holding more than one callsign), is very confusing. It is particularly difficult to explain to overseas amateurs.

I would like to take this opportunity to suggest that when the rationalisation takes place, we are all issued with brand new callsigns. Further, I suggest that they should all be based on numerical call areas, which would be more in keeping with the practice in other countries. There are 10 digits to use and, without doing away with the distinction between the constituent countries of the UK, it should be possible to allocate these numbers in proportion to the amateur population. The basic prefix would still be 'G'. There could be a second letter in the prefix to denote the licence class, although this is not necessary these days, because an individual's entitlements could be checked instantly by reference to a database, website, or CD-ROM.

There would be teething problems, perhaps, in the QSL bureau. Also it would mean that we would have to give up our cherished and, is some cases, notorious callsigns. I am prepared to give up mine.

The advantage would be that it would instantly cut out old distinctions. What do I mean? Well, I am sorry to say that in the many years I have been a listener and a licence-holder, I have heard G-hams snub and insult other G-hams so many times, based on their prejudices about the other's status, qualifications, etc. For good or ill, from 2003 we are unlikely to require people to pass a Morse test before allowing them on HF, so we do *not* want to perpetuate the attitude of "I'm not going to talk to you - you aren't a real ham" which has plagued us for too many years already.

Let 2003 be Year Zero, and let us all start on an equal basis with a new system.

Paul Thompson, GM6MEN

Fact Stranger than Fiction

I have serviced thousands of Yaesu FT-101ZDs since they came out in 1978, but last week I had brought in an FT-101ZD with a fault that I had never had before. On 'Tune' and 'CW' the drive control did not function, and so the rig operated at full power all the time. The fault traced back to a bad contact on the 'mode' switch, and without a great deal of hope I tried cleaning it. Somewhat to my surprise this completely cleared the fault.

Two days later I received an e-mail from ZL4JJC who was experiencing exactly the same trouble. I suggested he cleaned his mode switch which he did with 100% success.

What the odds are for a fault that I have never had before in 24 years occurring on two rigs 12,000 miles apart, and both being brought to my attention within two days, are somewhat beyond my powers of calculation. Perhaps some mathematician reader of *RadCom* would like to have a go.

Harry Leeming, G3LLL

Speech Processing

The 'What is Speech Processing?' article by Ian Poole, G3YWX (*RadCom* October 2002) was very interesting and brought back memories of W0IYH's article 'A Logarithmic Audio Speech Processor' in the Winter 1997 *Communications Quarterly*, which I built and installed. One point not mentioned is that this requires a 100% duty cycle amplifier as do AM, FSK, and PSK. Many of the transceivers now used are only rated for 40W for AM, which should be considered when setting up the compressor.

Wayne Cooper, AG4R

Tribute to G0MTL

On behalf of the large number of listeners and licensees who became her friends, might I, through the kindness of your columns, pay tribute to Dorreen Barnes, G0MTL, of Grays who became a silent key on 24 October 2002. Encouraged by her late husband Dennis, G0JBG, she passed the RAE and Morse test at the challenging age of 66. For 12 years thereafter she embraced and demonstrated the true spirit of amateur radio through her daily operations on the 2m band. Often well into the night, she could be heard nurturing the extensive network of friendships that developed around her in Essex, Greater London, Hertfordshire, Kent and Norfolk. Typically, she was always listening for newly-licensed stations. Over the years she must have welcomed and encouraged several hundred new licensees nervously making their initial QSOs.

Rarely did a week pass without several licensees visiting this popular and generous lady in her simple home. She had her own signature, closing each evening's net

with "Goodnight to all listeners; goodnight children; goodnight children everywhere". Goodnight and thank you Dorreen for your immense contribution to the fellowship we call amateur radio.
Rev Tom Gladwin, G3UFA

Incentive to Upgrade

I have heard comments and seen letters indignant that some thought that the Foundation Licence is 'given away'. I have to say that, in respect to the many hours that a lot of us spent studying for the RAE (to the detriment of my 'A' levels) and the further time spent studying for the Morse, 10 to 20 hours *is* 'giving it away'. This in itself is no bad thing, I have long felt that we need some way of getting people on the air more quickly before they lose interest in passing the exam. What I *do* object to is *how much* has been given away. The Foundation Licensee has about 80% of the privileges that I and, I think, most hams actually use. They have access to every band that I have ever used (and a few more besides) except for 10 metres. They have to buy their station, not build it, but then how many of us built our own transmitter? They are restricted to 10 watts PEP, but who would know if they were running 100, a limit that most of us are forced to stick to in densely-populated areas.

From the above, what incentive then does a Foundation Licensee have to upgrade? Power? Some people love QRP, and even if they don't, power limits are notoriously difficult to police (this is no reflection on the integrity of M3s just on the unenforceability of the licence terms). The desire to build transmitters? Or the desire to use 10 metres or the microwave bands? The microwave bands are another area which require building skills and a specialist interest, so there is little incentive there to upgrade.

Personally I feel that 10 metres is the only difference between the Foundation Licence, and the licence that most of us *use* regularly. I feel that we should give the Foundation Licensees 80m, 2m, 70cm and the WARC bands, and no more. This gives them ample opportunity to find DX, chat to local hams, and find out what amateur radio is about whilst still withholding enough to give an incentive to upgrade.
Joe Bette-Bennett, GJ0NYG

Once again, a bumper postbag in recent weeks has necessitated devoting (nearly) two pages to 'The Last Word'. Keep those letters coming in! Please note that as well as using the postal service, letters for 'The Last Word' may be e-mailed to: radcom@rsgb.org.uk The editorial staff at RadCom would like to take this opportunity to wish all members a very Happy New Year!

Caveat Vendor - again

I thoroughly endorse the warning by Trev Harris, G2KF ('The Last Word', December 2002). In August I let a potential buyer take away a rig which, quite suddenly, had developed what I think was a minor fault - probably the external speaker socket. He was going to repair it and pay for the rig, but I have heard nothing from him.

The address he gave me turns out to be 'inaccessible' as three letters have been returned to me and there is no phone listing.

How foolish of me.
Derek Rooke, G0OEW

Letters published in 'The Last Word' do not necessarily reflect RSGB policy. It is a condition of publication that all letters may be edited for grammar, length and / or clarity.

E-Mail Piracy

I have had reports from radio amateurs that they have been receiving e-mails from mm1tss@qsl.net that have the message header "Re: RSGB" and an attachment that contains a Trojan horse virus.

I held the callsign MM1TSS until June 2002 and I wish it to be known that these messages do not come from me. It is a sad state of affairs that this type of problem seems to be so common.
Toby S Sigouin, MM0TSS

Problem Solved?

To prove that I read *RadCom* from cover to cover, may I suggest that the request by Pat Hawker for a helicopter to measure vertically radiated power (*RadCom* November 2002 p79) is virtually answered on page 31. Come on you boffins, you must have some aeromodelling friends.
Martin Crosfill, G7TJD

Raynet

Knowing the RSGB's dislike of adverse criticism I doubt if you will print the following letter, but I will write it anyway.

I am afraid that it is the RSGB General Manager who has missed the point ('The Last Word', November 2002), not Mr Bubb. Recent history has shown that unjustified changing of a familiar name of a product is a disaster in PR terms and can alienate the users, workers or volunteers. The ARRL has never changed its Emergency Service logo since its inception more than 50 years ago. The sterling work of Raynet members can be coordinated without forcing another acronym on them.
Geoff Voller, G3JUL
[I am informed that neither the Raynet name nor logo is to change - *Ed.*]

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MFJ-259B £269.95 B
MFJ-269 £349.95 B

Connect it to your antenna and get all the information you need to optimise it for best performance including resonance, VSWR and impedance. Totally portable (using AA cells), you can work right up by the antenna. The MFJ-259 is the basic design covering 1.8 - 170MHz. The MFJ-269 has extended coverage up to 470MHz and gives an extremely wide range of measurements, even indicating where a break is in a coax cable.

MFJ DUMMY LOADS

MFJ-264 or MFJ-264N
1.5-150MHz 1.5kW £74.95
"N" version of above £79.95
MFJ-260C or MFJ-260CN
1.5 - 150MHz 300W£37.95
"N" version of above £44.95

Carr. £9.00

MFJ-962D ATU £279.95 C

1.8 - 30MHz 1.5kW "T" Match

For use with medium linears. Using the famous "T" Match design, this ATU will cope with any antenna whether it be coax, end fed wire or balanced feed. You can monitor your power (average or PEP 200W or 2kW max))and VSWR. Antenna switch selector is included for two antennas. Size 270 x 375 x 115mm.

MFJ-989C ATU £379.95 C

3kW 1.8- 30MHz "T" Match

This design has a roller coaster coil and a 4:1 balun to match balanced line. Ideal for coax, end fed wires and open wire feeder. Features PEP or RMS power measurement VSWR, antenna switch, bypass, built-in dummy load etc. Size 270 x 375 x 115mm.

MFJ

MFJ-1025 Local Noise Cancell £159.95 C

Kills local noise, but lets signals through. Handles electrical noise, TV time-base etc. Short length of wire picks only local interference and cancels it out.

MFJ-1026 As MFJ-1025, but has active whip antenna for picking up noise signals (as illustrated above). £159.95 C

MFJ COMPACT VERTICALS

MFJ verticals are compact, yet offer a large number of bands. Being vertical dipoles, they offer exceptionally low angle of radiation for DX. They are rated up to 1kW on the HF bands.

MFJ-1796 (40, 20, 15, 10, 6 & 2m)
Just 3.65m long, it is the ideal antenna for really small spaces.VSWR typically 1.2:1
£219.95 C

MFJ-1798 (80, 40, 30, 20, 17, 15, 12, 10, 6 & 2m!)
Only 6.7m long, it covers every popular band. No radials and no ground needed. **£299.95 C**

MFJ-616 SPEECH INTELLIGIBILITY ENHANCER £179.95 C

HEAR SIGNALS BETTER

Designed to enhance the audio of your transceiver. MFJ President, Martin Jue suffers with deafness and said that this has put the enjoyment back into radio for him!

Dummy Loads

MFJ-260C
300W 50 Ohm load
(30 secs) 1.5 - 150MHz. SO-239
"N" version £44.95

£37.95

MFJ-264 **Carriage £6.00**
1.5kW 50 Ohm load
1.5 - 150MHz
(100W 10 mins
1.5kW 10 secs)
"N" version £79.95

£74.95

MFJ-1704 4-way switch £69.95 B

DC - 500MHz 2.5kW

This is a heavy duty die-cast 4-way switch with SO-239 sockets, central earth position and built-in static discharge protector. Makes changing antennas a breeze!

MFJ-392 Mono Padded Communications Earphones £24.95 A

These are purpose designed communications padded headphones that are ideal for all the modern transceivers and receivers. Suits 3.5mm and 1/4" jacks - adaptor provided.

WEBORDERING
www.wsplc.com

PRICE MATCH

WON'T BE DISCOUNT. CUSTOMER SERVICE THE ONLY THING WE

THE SCIENCE OF AUDIO
RECOGNISED AROUND THE WORLD

When Bob Heil came to the Donington show this year, he gave a seminar on the art of good audio. He didn't have to sell, he just demonstrated! That was enough to convince everybody!

NEW CLASSIC — £259 B

QUALITY RETRO-LOOK DESK MIC

Fitted standard element plus HC4 DX or HC5 or ICOM type. Acclaimed as the "Best Yet" with soft touch PTT and voucher for call-sign transfer. Requires CC-1 adaptor to match your radio. (£29.95)

GOLDLINE — £129 B

HAND/DESK MICROPHONE GM-4/GM-5/GM-V

The Gold Line range brings distinctive quality to your transmissions. Choose between HC-4 for DX work or HC-5 for normal response, or GM-V for high impedance vintage radios. Either way you will experience the Heil amazing audio quality, famous around the world. Requires CC-1 adaptor for your radio £29.95)

NEW TRAVELER — £89-95 B

HEADSET BOOM MICROPHONES FOR FT817/1C706/ICOM 8PIN

Nothing more to buy. Ready wired for your choice of rig above. Includes PTT in-line switch. Great audio that will punch through and be loved!

BM-10-4/5 — £89-95 B

LIGHTWEIGHT DUAL HEADSET/BOOM MIC

Now everybody can experience the convenience and quality of "hands-free" operation, plus Heil quality. Choose the DX (HC-4) or normal (HC-5) insert. You will need an AD-1 adaptor to match your radio (£16.95).

BM 5-4/5-5 — £69-95 B

LIGHTWEIGHT SINGLE HEADSET

A single earpiece version lets you communicate with others in the room but gives "hands-free" operation, plus Heil quality. Choose the DX (HC-4) or normal (HC-5) insert. You will need an AD-1 adaptor to match your radio (£16.95).

NEW PRO-SET PLUS & IC — £199.95 B

HEADSET DUAL INSERTS SWITCHABLE PHASING

Not only do you get dual inserts (HC-4 & HC-5), you also get the unique phase switch for DX monitoring in the earpieces. Amazing! Requires AD-1 adaptors for your choice of radio.

£219.95 ICOM TYPE

MFJ BEST SELLER

MFJ-461 MORSE CODE READER

JUST PLACE NEAR YOUR RECEIVER AND INSTANTLY DECODE CW - NO CONNECTION REQUIRED

£84.95 B

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. Truly pocket sized at 57 x 82.5 x 25.5mm and 156g.

New DSP Extension Speaker — NES CB

£79.95

This new DSP speaker has a single pre optomised DSP module that radically reduces all forms of interference, both in fixed station and mobile use. Simply connect to extension speaker output of your radio and connect to 12V supply. Hear the interference drop away.

NES-10 model with switched filtering available at £99.95. Both models now come with fused DC leads for 12V

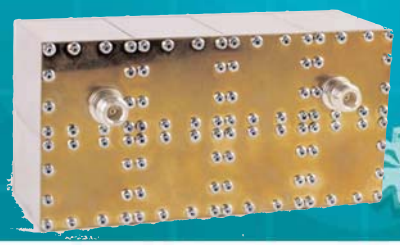
SP-170F MOBILE SPEAKER — £12.95 A

-8 Ohms
-Variable Volume Control
-Switchable Filter
-3m of lead & 3.5mm plug
-Fitted 3.5mm mono jack plug
-Size 97x67x27mm

DCI-145/430-DB — £189.95

DUAL BAND PASS FILTER

This bandpass filter will remove all adjacent band breakthrough, no matter what. If it does not solve your problem we guarantee to offer you a full refund. The filter is centred on 145MHz and 435MHz with less than 1dB insertion loss and very steep skirts.



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COMMUNICATIONS ANTENNAS

WORLD CLASS PERFORMERS

R8

- Bands: 6, 10, 12, 15, 17, 20, 30, 40m
- Gain: 3dBi
- Power rating: 1.5kW
- VSWR: 1.2:1 (typical)
- Bandwidth (2:1) varies with band
- Height: 8.7m
- Weight: 10.5kg

£529.95 C

MA-5V

- Bands: 10, 12, 15, 17, 20m
- Gain: 1-2dBi
- Power rating: 250W (PEP)
- VSWR: 1.2:1 (all bands)
- Bandwidth (2:1) varies with band
- Height: 4.48m
- Weight: 2.95kg

£229.95 C

MA-5B

- Bands: 10, 12, 15, 17, 20m
- Gain: varies with band
- Front to back ratio: 10, 0, 12, 0, 22dB
- Power rating: 1.2kW
- VSWR: 2:1
- Bandwidth: varies with band
- Boom length: 2.2m
- Longest element: 5.2m
- Turning radius: 2.7m
- Weight: 12kg

£349.95 C

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VX-7R

FM 5W HANDHELD
50/144/430MHz 5W

FT-897

PORTABLE ALL MODE
1.8 - 430MHz Transceiver

FT-8900R

MOBILE QUADBAND
29/50/144/430MHz FM Transceiver

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